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OA/ID Number: 13704
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Folder Title:
Global Warming / Greenhouse 2/5/90 [OA 8312] [1]

Stack:	Row:	Section:	Shelf:	Position:
G	26	19	6	3

DOE

Bill Hatch – policy

Molly 586-4767

↓

Mike Davis 586 9220

Fred Gladstein

~~Herb Grunwald~~ ~~Fred~~ Budget 9262

↓

Asst Sec for ~~Renewables~~ Reed Dutchin 586-9220

Call

- Reifsnyder acknowledgements

~~Lolsom~~ ~~10X more~~

- McBee X6437
  - State's comments
  - mtg.

Get

~~* Maria – POTUS S.O.W.~~

- McBee – State's comments

Fri @ 11:30 IPC Working Group

TAB A 3

Proposal for Presidential Speech before the Intergovernmental Panel on Climate Control (IPCC)

1. General statement of commitment to and concern for the global environment and economic development.

   -- Reiterate determination that the President will take active role in addressing concern about global climate change.

   -- Reiterate Secretary Baker's approach (spelled out in January 1989).

   -- Reiterate Noordwijk commitment to greenhouse gas stabilization as soon as possible, consistent with the requirement for global economic growth that can enhance the quality of life for people everywhere.

   -- Stress strong U.S. commitment to environment; e.g., domestic programs, leadership in forging international agreements on environment, assistance to and cooperative efforts with developing countries and current or former centrally planned economies.

2. U.S. Supports the IPCC Process

   -- Stress need for international cooperation.

   -- Congratulations to IPCC sponsors, the United Nations Environment Program (UNEP), the World Meteorological Organization (WMO) and to Dr. Bolin of Sweden, IPCC Chairman.

   -- Establishment of the IPCC has filled the need for an orderly, intergovernmental process to assess scientific understanding, evaluate potential impacts and develop appropriate response options. to any potential climate change

   -- Welcome IPCC reports due in August.

   -- U.S. is committed to playing a leadership role through our chairmanship of the Response Strategies Working Group (RWSG) and supporting IPCC as best forum for global climate change policy development.

   -- Support for UK proposal at UN to continue IPCC.

4

3. **Past and Ongoing U.S. Contributions and Views on Key Issues of Convention and Emissions Limiting Agreements**

-- **Science**

- o **U.S. budget is the largest in the world and is rising, nearly $500 million in FY 1990 and to increase to almost $1 billion in FY 1991.**

- o Importance of all countries, no matter what their level of development or economic system, contributing to understanding of the science. This cooperation needs to take several forms:

  - cooperation in assessment of state of the science; and

  - cooperation in monitoring and analysis of climate change.

- o Periodic international reassessment of the science at fixed intervals to aid in our decision making.

-- Technology Development

- o U.S. has active technology development programs to improve the efficiency of both supply and demand side technologies, and reduce greenhouse gas emissions.

  - More efficient fossil fuel generation technologies.

  - Renewable and energy efficiency technology initiative.

  - Conservation technology: end-use efficiency.

  - Nuclear: new generation with enhanced safety features under development.

- o Any framework convention should provide for regular assessments of the state of technology development to determine the availability and cost of technologies.

-- U.S. is sensitive to the need for technology transfer to other countries.

  - o Clean coal, renewable, conservation, end-use services for technology transfer, and nuclear.
  - o A.I.D. appropriation bill.
  - o EPA/Peace Corps agreement.
  - o Change in World Bank policy.
  - o EPA's IETTAB and DOE's CORECT program to examine technology transfer.
  - o Policy aid package.

-- Economics

  - o Follow-up on Administration commitment to develop real data on costs of various response strategies and assess new response measures.
  - o Challenge others to do the same.
  - o Offer technical support to those who need it.

-- Policy

  - o President should encourage consideration of truly innovative responses including:
    - comprehensive approach: all major greenhouse gases are included; and
    - trading of emission permits.
  - o President should define general criteria for future agreements to limit greenhouse gas emissions:
    - market mechanisms such as "integrated resource" planning and consistency with economic growth in all countries; and

- need to work with industry to ensure that response actions do not adversely affect economic growth around the world.

-- U.S. Clean Air Act Legislation - our actions

o Encourages emissions trading.

o Use of efficiency energy supplies; e.g., new clean coal technology and conservation technologies.

-- National Energy Strategy

o Comprehensive blueprint for addressing future energy needs with consideration to climate change and other environmental issues.

o As first step, take those steps which contribute tO other goals, but also reduce greenhouse gas emissions; e.g., clean coal technology, new conservation programs.

-- Energy efficiency programs: lighting, appliance efficiency standards, model building codes, industrial process improvement, encouraging utilities to provide the service of electricity demand reduction, transportation research and development, etc.

-- Alternative energy sources are being developed

o Renewables: hydro, solar, biomass, geothermal.

o Nuclear: new reactor design.

-- Reforestation: Trees for U.S. cf. '91 Budget

-- Phase-out of CFCs by 2000 providing safe substitutes are available.

o U.S. contribution to: development of substitutes, assessments of needs by countries.

→ 4. Reiterate Malta Offer to Host Convention Negotiations when IPCC is Ready

-- Express commitment to finding global solutions.

@ Malta Summit, I proposed to Bush that U.S. is prepared to host a conference next fall to begin framework treaty on global climate change, after the working groups of the Intergovernmental Panel on Climate Change have completed their work.

TAB B

Issue: How to carry forward and expand in the IPCC the cost and economic impact analysis of measures to limit greenhouse gas emissions?

Discussion: The IPCC's Response Strategies Working Group (RSWG) must conclude its work in the next couple of months for its report to be written on schedule. Consequently much of the cost and economic analysis that is beginning to emerge will not be included in the report. Without an ongoing analytical effort, the international discussion of emission targets and timetables will be dominated by the countries who are prepared to make substantial political commitments without much information on how they will fulfill those commitments.

To move the debate over commitments to limit greenhouse gas emissions away from bold rhetoric to a realistic assessment of what is possible over different timeframes, the IPCC's work on cost and economic impact analysis must be continued and expanded. Furthermore, because targets and timetables, especially for CO_2 are likely to be a major focus of attention at the fourth IPCC plenary next August and at the Second World Climate Conference (SWCC) next October-November, a means must be found for an ongoing effort over the next 5-7 months.

There are three major options for proceeding. The first is to request individual countries such as the U.S., Japan and the FRG to conduct studies and continue to provide results to the IPCC even after the conclusion of the RSWG's report. A second is to instruct the RSWG's Energy and Industry Subgroup (EIS) led by Japan to continue its analyses beyond the Spring and prepare a supplemental report. The third is for the U.S. to offer to lead, under the auspices of the RSWG and perhaps in collaboration with EIS, a special effort and produce a supplemental report in time for the fourth IPCC plenary. The latter option might entail a significant commitment of resources but may be most likely to result in substantive output. The latter option also offers the possibility of bringing a number of developing countries more fully into the process, because of a cooperative project already underway in ten developing countries.

Position: The U.S. should promote an ongoing effort to analyze the costs and economic impacts of a variety of targets and timetables for limiting greenhouse gas emissions. This should include the production of a supplemental report for consideration by the fourth IPCC plenary. The U.S. should favor a leadership role for EIS but be prepared to offer to lead the effort if discussions at the February IPCC meeting suggest it would be necessary to ensure meaningful output.

United States Department of State
Washington, D.C. 20520

POLICY PLANNING STAFF

FACSIMILE COVER SHEET

****

Date Sent: 1/23/90 **Number of Pages:** 10 (Excluding Cover Sheet)

Time Sent: 9:35am

S/P FAX #: 202-647-0753 **Verification #:** 202-647-1965

****

TO:	NAME	AGENCY	PHONE #	FAX #
	Carolyn Cawley	WH	456-7750	456-6218

FROM: Chris Dawson **PHONE #:** 647-3638

SUBJECT: President's Speech Before IPCC

COMMENTS:

United States Department of State
Policy Planning Staff

Carolyn,

EPA has included all the comments I gave them. I know Secretary Baker believes it is particularly important to reiterate explicitly the points he made in his January, 1989, speech (I've attached a copy for your use).

I look forward to working with you on this.

Chris Dawson

647-3638

√ Flip pos. to front.

√ p. 2 reaffirm our commit

3 ~~Honest~~ people disagree -- until do, expensive, unwarranted, action

5 So many nations are now contrib. You in this room e.g. that U.S. will continue its aggressive [illegible], efforts impr. the science. U.S. Ded. to use sci [illegible] mankind working w/ friends around world

Bracket
add Malta
W.H. Conf.

Document No. 109727SS

WHITE HOUSE STAFFING MEMORANDUM

DATE: 2/1/90 ACTION/CONCURRENCE/COMMENT DUE BY: 2/1/90 5:00 PM

SUBJECT: PRESIDENTIAL REMARKS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

	ACTION	FYI		ACTION	FYI
VICE PRESIDENT	☐	☑	MCCLURE	☑	☐
SUNUNU	☐	☑	NEWMAN	☐	☐
SCOWCROFT	☑	☐	PORTER	☑	☐
DARMAN	☑	☐	ROGICH	☑	☐
BATES	☑	☐	UNTERMEYER	☐	☐
CARD	☐	☑	ROGERS	☐	☑
CICCONI	☐	☑	WINSTON	☐	☑
DEMAREST	☑	☐	PINKERTON	☑	☐
FITZWATER	☐	☑	DELAND	☑	☐
GRAY	☑	☐	BROMLEY	☑	☐
HAGIN	☐	☐	_____	☐	☐

REMARKS: Please forward any comments directly to Chriss Winston, Rm. 122, x2930, no later than 5:00 PM TODAY, Tuesday, February 1, with a copy to my office. Thank you.

RESPONSE: Please see attached memo plus comments in fax

D. Allan Bromley
Director, OSTP

James W. Cicconi
Assistant to the President
and Deputy to the Chief of Staff
Ext. 2702

GENERAL POINTS
ON THE PRESIDENT'S IPCC REMARKS

1. This is a unique opportunity for the President to establish clearly the continuity, direction and strength of the U.S. program relating to climate change. the Watkins-Reilly memo emphasized this; the DPC Working Group endorsed it, but this draft does not take adequate advantage of this opportunity for the President to reaffirm U.S. leadership in addressing climate change on the basis of sound science and sound economics, as well as concrete actions already taken.

2. The President should use the occasion of this talk to build upon his Malta announcement and discussion with President Gorbachev and now announce that he is inviting a small but representative cross-section of the world's most senior science, economics and environmental officials to participate in a seminar in Washington (April 18-19) where he intends to participate personally in the discussions and educate himself on these matters. In hosting this seminar, it is his intention to improve the quality and understanding of the analytic tools and data required to address the problems of climate change; to sensitize the science, economics and environmental research communities to each other's activities, uncertainties and problem areas; and to at least begin developing an international research plan that would draw upon the experience, expertise and data of all the participating countries in addressing the gaps and uncertainties remaining in our understanding of the science and economics of global change.

   It is his clear intent that this seminar break new ground in bringing the scientific and economic aspects of global change into close interaction and that the results of the seminar would feed into this IPCC process. We would hope to provide new information toward the formulation of sound policy in this area.

3. The President should use this occasion to reinforce his Malta invitation to host the first negotiating session on The Framework Convention. Not to do so would imply a desire to pull back from that invitation and leave the President open to a whole range of unfair charges.

D. ALLAN BROMLEY
2/1/90

(Lange/Cawley)
February 1, 1989
10:45 A.M.
[IPCC.DOC]

1990 JAN 32 PM 12:04

PRESIDENTIAL ADDRESS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
~~MONDAY~~, ~~FEBRUARY 5, 1990~~
10:15 A.M.

Thank you, Dr. Bolin [Bo-leen]. Professor Obasi. Dr. Tolba. Delegates of the World Meteorological Congress, and the United Nations Environment Program. Let me thank and congratulate **all** of you, for taking on an issue of such great importance. The decisions this organization makes will have a profound effect on the world's environmental and economic policy.

In the post-war era, we've produced the most technologically advanced creations of man. We've also gained new understanding -- though still incomplete -- of the most ecologically fragile creations of nature.

But unfortunately, somewhere along the way, we picked up a bias, that has harmed both man and nature: a mistaken belief that there is a divergence of interests -- a logical division -- between the natural world and we who inhabit it.

Nothing could be further from the truth -- or more central to the work of this Panel. You are called upon to strike an unprecedented international bargain: a convergence between global environmental policy, and global economic policy, where **both** sides benefit -- and **neither** is compromised.

~~You are called upon to end the environmental cold war.~~

- There is no environmental cold war [redacted]
- internationally, not a good reference

This will be possible only if we understand that economic growth and environmental integrity are **not** contradictory priorities. One reinforces and complements the other.

A sound environment is the basis for the continuity and quality of human life and enterprise. And strong economies allow nations to fulfill the obligations of environmental stewardship. Where there is economic strength, such stewardship is considered a necessity. But where there is poverty, it is too often a luxury.

For that reason, I believe we must usher in a new era of global cooperation: for environmental protection **and** economic growth. For intelligent management of industrial **and** natural resources. Above all, for **sustainable** development -- around the world.

The United States believes the I.P.C.C. is the best forum to develop policy on global climate change. We're committed to international cooperation on this issue. And we consider it vital, that the community of nations is drawn together -- in an ordered, rational way -- to assess the potential for climate change.

The state of the science; the social and economic impacts; and the right response strategies: all are crucial components to a global resolution. **The stakes here are very high.**

There is no question that human activities are changing the atmosphere in unexpected and unprecedented ways. Since the mid-

1800s, the level of carbon dioxide in the atmosphere has gone up by 25 percent.

What we **don't** yet understand is the extent of the alterations we've brought about -- and how they're linked to a significant, imminent climate change.

Last fall, many clear thinkers -- among them, world leaders -- were citing a significant thinning of sea ice at the poles as evidence that global warming had arrived. Recent observations show that the polar ice sheets are not melting, they're **growing** in size.

I'm not prepared -- academically, or otherwise -- to draw conclusions. But I have noticed something about the scientists drawing the conclusions.

Those who see climate change as a clear and present danger represent one distinct minority. Those who discount it completely, represent another minority. But many scientists -- if not most -- are **not** ready to claim that the extent of global climate change can now be reliably detected -- or predicted. That may be to their credit.

When he was observing the fervor of the French Revolution, the English poet William Blake wrote, "The best lack all conviction, while the worst are filled with passionate intensity." Here, too, we are called upon for action based on observation -- not media-driven emotion, or the politics of apocalypse. **The decisions being made are too important to be compromised intellectually -- or polarized politically.**

Questions remain: about the reflective effects of cloud cover, the cooling effects and CO2 absorption of oceans, and other sinks and feedback mechanisms we don't yet understand. Those questions, among others, suggest that we should attend to what is known about climate change -- and work to know more.

Current computer models are marvels of mathematics. Still, they cannot yet be said to represent reality -- and cannot be expected to predict the future. ~~Above all, responsible~~ policy cannot rest on ~~the shifting sands of hypothesis and a chaos~~ of conjecture.

In the search for answers, the United States ~~continues to lead the world~~. We're seeking hard data and new ways to improve the science. Because what science now knows with confidence, policy-makers can't use. And what policy-makers need to make decisions, science doesn't yet know.

In spite of this uncertainty, some suggest we should act now, on the chance that significant climate change becomes certain. Others point to the opposite edge of that sword: any meaningful preemptive policies would bring only the certainty of prohibitive expense; conflict with Third World development; and declining standards of living, worldwide.

~~I believe we can do better~~. There is a reasoned middle ground, that matches policy to emerging scientific knowledge -- and reconciles environmental protection to economic development.

With every word, with every decision made here, we're also making a committment that is profoundly personal. I think all of

us understand, deep inside, how the actions we take now speak to the future.

Last week, in my State of the Union address, I spoke of stewardship. I believe it's something we owe our children and grandchildren -- because the earth we stand upon is only borrowed, never owned.

So the United States remains committed to ~~a leadership role~~ on environmental issues. In our domestic programs. Our work to forge international agreements. Our assistance to developing and East Bloc nations. And here, by leading the Response Strategies Working Group.

Overall, we're already doing ~~more~~ [more than any other country] to understand and address global warming -- in terms of financial and human resources, **by more than a factor of ten.**

I just proposed a budget to ~~our~~ Congress for fiscal 1991 that devotes a total of over [$70] billion to environment-related work. Funding for the U.S. Global Change Research Program will increase by nearly 60 percent, to over $1 billion.

That will allow NASA to move forward with its "Mission to Planet Earth" -- and will fund the launch of the first U.S. Earth Observing System, to advance the state of knowledge about the planet we share.

We've already taken many steps that bring major benefits in their own right. Steps that make sense on their own merits, and that will **also** help reduce emissions of carbon dioxide and other

gases now building up in the atmosphere. **Let me outline them very briefly:**

We want to stabilize -- and reduce wherever we can -- both ~~our energy consumption~~ **and** our total emissions. So we're pursuing new **technology development.** Creating a revised **Clean Air Act** with incentives for industry to find creative, market-driven solutions. Working out a comprehensive review and revision of our **National Energy Strategy.** And launching a major **reforestation initiative** to plant a **billion** trees a year on private land across America.

We're also working through diplomatic channels, and through innovative measures like debt-for-nature swaps, to do more than simply reduce global deforestation. **We hope to reverse it.**

The **economics** of our response strategies to climate change are getting intensive study. We intend to develop real data on the costs of various response strategies, assess new measures, and ~~challenge other nations to follow suit~~. And we ~~will offer~~ technical support ~~to those who need it~~.

As we work to create **policy** to manage CO2 and other emissions, we want to encourage the most innovative responses. Wherever possible, we believe that market mechanisms should be applied -- and that policy must be consistent with economic growth and free market principles in **all** countries. But we will break the hold of the environmental cold war only through dialogue -- through a shared commitment to consensus.

If we hope to promote environmental protection **and** economic growth around the world, it will be important to work with, not against industry. That will mean moving beyond the tradition of command, control, and compliance -- toward a new kind of environmental cooperation. Many industries, in fact, are already providing crucial research and solutions. And a few are already ahead of us.

good

One power-plant management firm, just across the river in Virginia, donated $2 million in 1988 for tree planting in [Guatemala] -- to compensate for a coal-fired plant it was building in Connecticut. And the company expects to couple tree-planting programs with **all** of the new power plants now on its drawing boards.

not in this speech!

Where developing nations are concerned, some suggest we'll have to abandon the laissez-faire, free-market principles that allowed the industrial world to prosper. In fact, we think it's all the more crucial, in the developing countries, to apply the principles of the free market in the **service** of the environment.

To the extent we can accelerate the **advancement** of these nations, it will take **less** energy for them to produce wealth: in modern industrial countries, energy use per unit of G.N.P. has **declined** over time -- steadily, and dramatically.

look forward to working with

So we ~~need to work with~~ the developing nations: Applying the power of the marketplace, considering technology transfer, and encouraging industry ~~to assist~~ to work with developing nations in making quantum leaps in technologies. That will allow developing

nations to grow more quickly and easily -- and may help them avoid making the environmental mistakes we older nations have made.

As I said a moment ago, I believe we should make use of what we know. We know that the future of the earth **cannot** be compromised. We bear a sacred trust in our tenancy here -- and a covenant with those most precious to us: our children, and theirs.

We also know of the efficiency of economic incentive -- and that free markets yield the most creative solutions. We must now apply the wisdom of the market, in **defense** of the environment we share. ~~**It is time to heal this false schism. It is time to put an end to the environmental cold war.**~~

Working together, with good faith and earnest dialogue, I believe it can be done. But more important: We know it **must** be done.

Thank you -- and God bless you.

# # #

More here about the good work of IPCC, etc and wish them well in their continuing efforts to address this very difficult issue

THE WHITE HOUSE

WASHINGTON

February 1, 1990

MEMORANDUM FOR CHRISS WINSTON

FROM: JIM PINKERTON

SUBJECT: Intergovernment Panel on Climate Change draft

This speech is excellent in parts, but it tries to do too much and is too long. Specifically, in explaining that we are taking the middle ground between absolute faith in global warming and absolute skepticism, we bash both sides too much. We believe that the speech should aim to accomplish three things:

First, to underscore that the President's very presence at the conference speaks to his feelings about the issue. He will be, after all, the very first American President to attend such a conference.

Second, we should articulate the President's feelings about his attending, e.g., the President could note that a few days before he was addressing the issue of reducing American and Soviet troop levels and that he considers this issue to be on the same plane of global importance. The President could also expand on his personal feelings about the environment.

Third, we should emphasize, as the draft in part does, that we are taking actions and spending large sums to get better answers on the issue.

Specific comments:

pg. 1, para. 5, line 1 The cold war metaphor is very apt.

3,4,1 "I'm not prepared -- academically, or otherwise -- to draw conclusions. But I have noticed something about the scientists drawing the conclusions."

The first sentence in this pair of sentences is the right position to take. It is the second sentence that starts a series of deprecating statements about those who have drawn conclusions on global warming.

These criticisms culminate in the Blake quote -- it's way too harsh, and end at 4,2,2 with "Above all, responsible policy cannot rest on the shifting sands of hypothesis and a chaos of conjecture" -- a veiled jab at those who have decided to decide.

(more)

The point is that we do not need to characterize those who have made up their minds.

It is entirely sufficient that the President merely state his willingness to get better answers to this controversy. We do not need, in other words, to go out of our way in order to be critical -- thereby causing controversy to rebound onto the President.

5,2 &3 This is more like it: talking about the importance of stewardship and the commitment of the U.S. to be a leader on this and other environmental issues.

6,2,4 Naturally, we applaud the reforestation language. And the example of the tree-planting in Guatemala at 7,2,1 is the perfect illustration.

###

Document No. 109727SS

WHITE HOUSE STAFFING MEMORANDUM

DATE: 2/1/90 ACTION/CONCURRENCE/COMMENT DUE BY: 2/1/90 5:00 PM

SUBJECT: PRESIDENTIAL REMARKS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

	ACTION	FYI		ACTION	FYI
VICE PRESIDENT	☐	☑	MCCLURE	☑	☐
SUNUNU	☐	☑	NEWMAN	☐	☐
SCOWCROFT	☑	☐	PORTER	☑	☐
DARMAN	☑	☐	ROGICH	☑	☐
BATES	☑	☐	UNTERMEYER	☐	☐
CARD	☐	☑	ROGERS	☐	☑
CICCONI	☐	☑	WINSTON	☐	☑
DEMAREST	☑	☐	PINKERTON	☑	☐
FITZWATER	☐	☑	DELAND	☑	☐
GRAY	☑	☐	BROMLEY	☑	☐
HAGIN	☐	☐	_____	☐	☐

REMARKS: Please forward any comments directly to Chriss Winston, Rm. 122, x2930, no later than 5:00 PM TODAY, Tuesday, February 1, with a copy to my office. Thank you.

RESPONSE:

James W. Cicconi
Assistant to the President
and Deputy to the Chief of Staff
Ext. 2702

Mark C.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
MONDAY, FEBRUARY 5, 1990
10:15 A.M.

THANK YOU, DR. BOLIN [BO-LEEN]. PROFESSOR OBASI. DR. TOLBA. ALL THE DELEGATES OF THE WORLD METEOROLOGICAL ORGANIZATION, AND THE UNITED NATIONS ENVIRONMENT PROGRAM. LET ME COMMEND ALL OF YOU, FOR COMING TOGETHER TO EXAMINE AN ISSUE OF SUCH GREAT IMPORTANCE. THE RECOMMENDATIONS THIS DISTINGUISHED ORGANIZATION MAKES CAN HAVE A PROFOUND EFFECT ON THE WORLD'S ENVIRONMENTAL AND ECONOMIC POLICY.

BY BEING HERE TODAY, I HOPE TO UNDERSCORE CONCERN -- MY COUNTRY'S, AND MY OWN -- ABOUT ENVIRONMENTAL STEWARDSHIP; AND TO REAFFIRM OUR COMMITMENT TO FINDING RESPONSIBLE SOLUTIONS. IT IS BOTH AN HONOR AND A PLEASURE TO BE THE FIRST AMERICAN PRESIDENT TO SPEAK TO THIS ORGANIZATION, AS ITS WORK TAKES SHAPE.

YOU ARE CALLED UPON TO ~~DEVELOP~~ DELIVER RECOMMENDATIONS WHICH STRIKE A DIFFICULT YET CRITICAL INTERNATIONAL BARGAIN: A CONVERGENCE BETWEEN GLOBAL ENVIRONMENTAL POLICY, AND GLOBAL ECONOMIC POLICY. A BARGAIN WHERE BOTH PERSPECTIVES BENEFIT -- AND NEITHER IS COMPROMISED.

AS EXPERTS, YOU UNDERSTAND THAT ECONOMIC GROWTH AND ENVIRONMENTAL INTEGRITY NEED NOT BE CONTRADICTORY PRIORITIES. ONE REINFORCES AND COMPLEMENTS THE OTHER. EACH, A PARTNER. BOTH ARE CRUCIAL.

A SOUND ENVIRONMENT IS THE BASIS FOR THE CONTINUITY AND QUALITY OF HUMAN LIFE AND ENTERPRISE. CLEARLY, STRONG ECONOMIES ALLOW NATIONS TO FULFILL THE OBLIGATIONS OF ENVIRONMENTAL STEWARDSHIP. WHERE THERE IS ECONOMIC STRENGTH, SUCH PROTECTION IS POSSIBLE. BUT WHERE THERE IS POVERTY, THE COMPETITION FOR RESOURCES GETS TOUGHER. STEWARDSHIP SUFFERS.

FOR ALL OF THESE REASONS, I SINCERELY BELIEVE WE MUST DO EVERYTHING IN OUR POWER TO PROMOTE GLOBAL COOPERATION: FOR ENVIRONMENTAL PROTECTION AND ECONOMIC GROWTH. FOR INTELLIGENT MANAGEMENT OF OUR NATURAL RESOURCES AND EFFICIENT USE OF OUR INDUSTRIAL CAPACITY. AND FOR SUSTAINABLE AND ENVIRONMENTALLY SENSITIVE DEVELOPMENT -- AROUND THE WORLD.

THE UNITED STATES IS STRONGLY COMMITTED TO THE I.P.C.C. PROCESS OF INTERNATIONAL COOPERATION ON GLOBAL CLIMATE CHANGE. WE CONSIDER IT VITAL, THAT THE COMMUNITY OF NATIONS BE DRAWN TOGETHER -- IN AN ORDERLY, DISCIPLINED, RATIONAL WAY -- TO REVIEW THE HISTORY OF OUR GLOBAL ENVIRONMENT, TO ASSESS THE POTENTIAL FOR FUTURE CLIMATE CHANGE, AND TO DEVELOP EFFECTIVE PROGRAMS.

THE STATE OF THE SCIENCE; THE SOCIAL AND ECONOMIC IMPACTS; AND THE APPROPRIATE STRATEGIES -- ALL ARE CRUCIAL COMPONENTS TO A GLOBAL RESOLUTION. THE STAKES HERE ARE VERY HIGH; THE CONSEQUENCES, VERY SIGNIFICANT.

THE UNITED STATES REMAINS COMMITTED TO AGGRESSIVE AND THOUGHTFUL ACTION ON ENVIRONMENTAL ISSUES. LAST WEEK, IN MY STATE OF THE UNION ADDRESS, I SPOKE OF STEWARDSHIP: BECAUSE I BELIEVE IT'S SOMETHING WE OWE OURSELVES, OUR CHILDREN AND THEIR CHILDREN.

SO WE ARE RENEWING THE ETHIC OF STEWARDSHIP IN OUR DOMESTIC PROGRAMS. IN OUR WORK TO FORGE INTERNATIONAL AGREEMENTS. IN OUR ASSISTANCE TO DEVELOPING AND EAST BLOC NATIONS. AND HERE, BY CHAIRING THE RESPONSE STRATEGIES WORKING GROUP.

I HAVE JUST SUBMITTED A BUDGET TO OUR CONGRESS FOR FISCAL 1991. IT INCLUDES OVER $2 BILLION IN NEW SPENDING TO PROTECT THE ENVIRONMENT. AND, UNDERSCORING OUR COMMITMENT TO YOUR EFFORTS, I AM PLEASED TO NOTE THAT FUNDING FOR THE U.S. GLOBAL CHANGE RESEARCH PROGRAM WILL INCREASE BY NEARLY 60 PERCENT, TO OVER ONE BILLION DOLLARS.

THAT COMMITMENT, BY FAR THE LARGEST EVER MADE BY ANY NATION, REFLECTS OUR DETERMINATION TO IMPROVE OUR UNDERSTANDING OF THE SCIENCE OF CLIMATE CHANGE.

WE ARE WORKING WITH OUR NEIGHBORS AROUND THE WORLD TO ENHANCE GLOBAL MONITORING AND DATA MANAGEMENT, IMPROVE ANALYSIS, REDUCE THE UNCERTAINTY OF PREDICTIVE MODELS, AND CONDUCT REGULAR REASSESSMENTS OF THE STATE OF THE SCIENCE.

OUR PROGRAM ALLOWS NASA, HER SISTER AGENCIES, AND ALL OUR INTERNATIONAL PARTNERS, TO MOVE FORWARD WITH THE "MISSION TO PLANET EARTH." THAT WILL INITIATE THE U.S. EARTH OBSERVING SYSTEM, IN COOPERATION WITH EUROPE AND JAPAN, TO ADVANCE THE STATE OF KNOWLEDGE ABOUT THE PLANET WE SHARE.

FURTHERMORE, EVEN AS WE WAIT FOR THE BENEFITS OF THIS RESEARCH, THE UNITED STATES HAS ALREADY TAKEN MANY STEPS IN OUR COUNTRY THAT BRING BOTH ECONOMIC AND ENVIRONMENTAL BENEFITS. STEPS THAT MAKE SENSE ON THEIR OWN MERITS IN TERMS OF RESPONSIBILITY AND EFFICIENCY, WHICH HELP REDUCE EMISSIONS OF CFC'S, AND CARBON DIOXIDE, AND OTHER POLLUTANTS NOW ENTERING THE ATMOSPHERE. LET ME OUTLINE THEM VERY BRIEFLY:

WE ARE PURSUING NEW TECHNOLOGY DEVELOPMENT THAT WILL INCREASE THE EFFICIENCY OF OUR ENERGY USE, AND THUS REDUCE TOTAL EMISSIONS.

WE'RE CRAFTING A REVISED CLEAN AIR ACT WITH INCENTIVES FOR OUR PRIVATE SECTOR TO FIND CREATIVE, MARKET-DRIVEN SOLUTIONS TO ENHANCE AIR QUALITY.

WE'VE LAUNCHED A MAJOR **REFORESTATION INITIATIVE** TO PLANT A **BILLION** TREES A YEAR ON PRIVATE LAND ACROSS AMERICA.

AND WE'RE WORKING OUT A COMPREHENSIVE REVIEW AND REVISION OF OUR **NATIONAL ENERGY STRATEGY**, WITH INITIATIVES TO INCREASE ENERGY EFFICIENCY AND THE USE OF RENEWABLE SOURCES. THESE EFFORTS, ALREADY UNDERWAY, ARE THE HEART OF A $336 MILLION DEPARTMENT OF ENERGY PROGRAM, AND ARE EXPECTED TO PRODUCE ENERGY SAVINGS THROUGH THE YEAR 2000 OF OVER $30 BILLION -- WHILE ACHIEVING SIGNIFICANT POLLUTION REDUCTION. QUITE A RETURN ON INVESTMENT.

WE'RE ALSO WORKING THROUGH DIPLOMATIC CHANNELS WITH OUR COLLEAGUES IN OTHER COUNTRIES, AND THROUGH INNOVATIVE MEASURES LIKE DEBT-FOR-NATURE SWAPS, TO DO MORE THAN SIMPLY REDUCE GLOBAL DEFORESTATION. WE HOPE TO REVERSE IT -- NOT UNILATERALLY, BUT BY WORKING WITH OUR INTERNATIONAL NEIGHBORS.

THE ECONOMICS OF OUR RESPONSE STRATEGIES TO CLIMATE CHANGE ARE GETTING INTENSIVE STUDY ~~IN AMERICA~~ here in our country. WE ARE DEVELOPING REAL DATA ON THE COSTS OF VARIOUS STRATEGIES, ASSESSING NEW MEASURES, AND ENCOURAGING OTHER NATIONS TO FOLLOW SUIT. AND WE LOOK FORWARD TO SHARING THIS KNOWLEDGE AND TECHNICAL SUPPORT WITH OUR INTERNATIONAL COLLEAGUES.

AS WE WORK TO CREATE POLICY AND AGREEMENTS ON ACTION, WE WANT TO ENCOURAGE THE MOST CREATIVE, EFFECTIVE APPROACHES. WHEREVER POSSIBLE, WE BELIEVE THAT MARKET MECHANISMS SHOULD BE APPLIED -- AND THAT OUR POLICIES MUST BE CONSISTENT WITH ECONOMIC GROWTH AND FREE MARKET PRINCIPLES IN ALL COUNTRIES. OUR DEVELOPMENT EFFORTS AND OUR DIALOGUE CAN HELP US REACH EFFECTIVE AND ACCEPTABLE SOLUTIONS.

LAST DECEMBER AT MALTA, IN MY MEETING WITH PRESIDENT GORBACHEV, I PROPOSED THAT THE UNITED STATES OFFER A VENUE FOR THE FIRST NEGOTIATING SESSION FOR A FRAMEWORK CONVENTION, ONCE THE I.P.C.C. COMPLETES ITS WORK. I REITERATE THAT INVITATION HERE, AND LOOK FORWARD TO YOUR COOPERATION IN THAT AGENDA.

WE ALL KNOW THAT HUMAN ACTIVITIES ARE CHANGING THE ATMOSPHERE IN UNEXPECTED AND UNPRECEDENTED WAYS. MUCH REMAINS TO BE DONE. MANY QUESTIONS REMAIN TO BE ANSWERED. TOGETHER, WE HAVE A RESPONSIBILITY TO OURSELVES AND THE GENERATIONS TO COME, TO FULFILL OUR STEWARDSHIP OBLIGATIONS. BUT THAT RESPONSIBILITY DEMANDS THAT WE DO IT RIGHT.

WE ACKNOWLEDGE A BROAD SPECTRUM OF VIEWS ON THESE ISSUES, BUT OUR RESPECT FOR A DIVERSITY OF PERSPECTIVE DOES NOT DIMINISH OUR RECOGNITION OF OUR OBLIGATION -- OR SOFTEN OUR WILL TO PRODUCE "POLICIES" THAT **WORK**. SOME MAY BE TEMPTED TO EXPLOIT LEGITIMATE CONCERNS FOR POLITICAL POSITIONING. OUR RESPONSIBILITY IS TO MAINTAIN THE QUALITY OF OUR APPROACH, OUR COMMITMENT TO SOUND SCIENCE, AND AN OPEN MIND TO POLICY OPTIONS. SO THE UNITED STATES WILL CONTINUE ITS EFFORTS TO IMPROVE OUR UNDERSTANDING OF CLIMATE CHANGE -- TO SEEK HARD DATA, ACCURATE MODELS, AND NEW WAYS TO IMPROVE THE SCIENCE -- AND DETERMINE HOW BEST TO MEET THESE CHALLENGES. WHERE POLITICS AND OPINION HAVE OUTPACED THE SCIENCE, WE ARE ACCELERATING OUR SUPPORT OF THE TECHNOLOGY TO BRIDGE THAT GAP. AND WE ARE COMMITTED TO COMING TOGETHER PERIODICALLY, FOR INTERNATIONAL ASSESSMENTS OF WHERE WE STAND.

THEREFORE, THIS SPRING, THE UNITED STATES WILL HOST A WHITE HOUSE CONFERENCE ON SCIENCE AND ECONOMIC RESEARCH ON THE ENVIRONMENT -- CONVENING TOP OFFICIALS FROM A REPRESENTATIVE GROUP OF NATIONS, TO BRING TOGETHER THE THREE ESSENTIAL DISCIPLINES: SCIENCE, ECONOMICS, AND ECOLOGY. THEY WILL SHARE THEIR KNOWLEDGE, ASSUMPTIONS, AND STATE-OF-THE-ART RESEARCH MODELS, TO OUTLINE OUR UNDERSTANDING AND HELP FOCUS OUR EFFORTS.

I LOOK FORWARD personally TO PARTICIPATING IN THIS SEMINAR, AND TO LEARNING FROM ITS DELIBERATIONS.

OUR GOAL CONTINUES TO BE MATCHING POLICY COMMITMENTS TO EMERGING SCIENTIFIC KNOWLEDGE -- AND A RECONCILING OF ENVIRONMENTAL PROTECTION TO THE CONTINUED BENEFITS OF ECONOMIC DEVELOPMENT. AND AS SECRETARY BAKER OBSERVED A YEAR AGO, WHATEVER GLOBAL SOLUTIONS TO CLIMATE CHANGE ARE CONSIDERED, THEY SHOULD BE AS SPECIFIC AND AS COST-EFFECTIVE AS THEY CAN POSSIBLY BE.

IF WE HOPE TO PROMOTE ENVIRONMENTAL PROTECTION AND ECONOMIC GROWTH AROUND THE WORLD, IT WILL BE IMPORTANT NOT TO WORK IN CONFLICT, BUT WITH OUR INDUSTRIAL SECTORS. THAT WILL MEAN MOVING BEYOND THE PRACTICE OF COMMAND, CONTROL, AND COMPLIANCE -- TOWARD A NEW KIND OF ENVIRONMENTAL COOPERATION -- AND TOWARD AN EMPHASIS ON POLLUTION PREVENTION, RATHER THAN MERE MITIGATION AND LITIGATION. MANY OF OUR INDUSTRIES, IN FACT, ARE ALREADY PROVIDING CRUCIAL RESEARCH AND SOLUTIONS.

ONE CORPORATION, FOR EXAMPLE, STARTED AN IN-HOUSE PROGRAM CALLED "POLLUTION PREVENTION PAYS," THAT HAS SAVED THE COMPANY WELL OVER HALF A BILLION DOLLARS SINCE 1975 -- AND PREVENTED 112,000 TONS OF AIR POLLUTANTS, 15,000 TONS OF WATER POLLUTANTS, AND ALMOST 400,000 TONS OF SLUDGE AND SOLID WASTE FROM BEING RELEASED INTO THE ENVIRONMENT. THEY'VE DONE IT BY REWARDING EMPLOYEES FOR COMING UP WITH THE IDEAS. AND THEY HAVE CLEARLY DEMONSTRATED THE BENEFITS OF DOING IT RIGHT.

WHERE DEVELOPING NATIONS ARE CONCERNED, I know SOME ARGUE WE'LL HAVE TO ABANDON THE FREE-MARKET PRINCIPLES OF PROSPEROUS ECONOMIES. IN FACT, WE THINK IT'S ALL THE MORE CRUCIAL IN THE DEVELOPING COUNTRIES, TO HARNESS INCENTIVES OF THE FREE ENTERPRISE SYSTEM, IN THE SERVICE OF THE ENVIRONMENT. \\

I BELIEVE WE SHOULD MAKE USE OF WHAT WE KNOW. And WE KNOW THAT THE FUTURE OF THE EARTH MUST NOT BE COMPROMISED. WE BEAR A SACRED TRUST IN OUR TENANCY HERE -- AND A COVENANT WITH THOSE MOST PRECIOUS TO US: OUR CHILDREN, AND THEIRS. And WE ALSO UNDERSTAND THE EFFICIENCY OF INCENTIVES -- AND THAT WELL-INFORMED FREE MARKETS YIELD THE MOST CREATIVE SOLUTIONS. WE MUST NOW APPLY THE WISDOM OF THAT SYSTEM, THE POWER OF THOSE FORCES, IN DEFENSE OF THE ENVIRONMENT WE CHERISH.

WORKING TOGETHER, WITH GOOD FAITH AND EARNEST DIALOGUE, I BELIEVE WE CAN RECONCILE VITALITY WITH ENVIRONMENTAL PROTECTION. And so LET ME COMMEND YOU ON YOUR OUTSTANDING WORK -- AND WISH YOU ALL DELIBERATE SPEED IN YOUR EFFORTS TO ADDRESS A VERY DIFFICULT, BUT VERY IMPORTANT, HUMAN CONCERN.

very much of it a great

THANK YOU -- AND GOD BLESS YOU.

# # #

# # #

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 18 1990

OFFICE OF
THE ADMINISTRATOR

MEMORANDUM

SUBJECT: IPCC Speech Material

FROM: Daniel C. Esty DCE
Special Assistant to the Administrator

TO: Robert E. Grady
Associate Director
Natural Resources, Energy and Science

Attached is a copy of the proposed Presidential speech outline, as revised through consultations with the Energy Department. Also attached are several sets of "raw material" to help flesh out the outline.

The draft speech outline has been sent to Dr. Bromley as a joint product of Secretary Watkins and Administrator Reilly. The State Department (Zoellick) has also reviewed the draft.

Let me know if you would like anything else.

Attachments

Raw Input for Presidential Speech

U.S. Supports the IPCC Process

1. Congratulations to its sponsors, UNEP and WMO, and to Dr. Bolin (Sweden) its chairman.

- In May, 1987 the Tenth World Meteorological Congress asked the Executive Council of the World Meteorological Organization (WMO), in cooperation with the U.N. Environment Programme(UNEP) "to arrange appropriate mechanisms to undertake further developments of scientific and other aspects of greenhouse gases."

- In June 1987, the WMO Executive Council (which consists o representatives of WMO member countries) and the UNEP Governing Council (which is made up of representatives of essentially the same countries) responded by asking the Secretary-General of WMO, Professor Obasi, and the Executive Director of UNEP, Dr. Tolba to cooperate in the establishment of an intergovernmental mechanism to carry out the intentions of the Tenth Congress.

- The IPCC was established after subsequent discussions.

- The first session of the IPCC was held in Geneva, Switzerland, on November 9-11, 1988. It was attended by representatives of 30 countries and 18 international organizations.

- Dr. Bert Bolin of Sweden, a senior science advisor to the government of Sweden, was elected Chairman. Dr. Bolin is generally recognized as an outstanding chairman -- even handed, adroit, with an excellent, understated sense of humor.

2. U.S. saw a need for an orderly, intergovernmental process to assess scientific understanding, evaluate potential impacts and develop appropriate response strategies.

- The issue of global climate change began to emerge as an important public policy issue during early and mid nineteen eighties as the earth experienced some of the hottest years in the last century (5 of the 10 hottest years in the last 100 have occurred in the 1980s) and as evidence of a significant build-up in the atmosphere of certain "greenhouse gases" became more widely known.

- During the early and mid 1980s, discussion of the issue took place largely in the context of a number of loosely resultad, albeit important conferences.

HISTORY

NO

- As the implication of the issue became clearer, the U.S. and a number of the countries began to perceive the need to address the issue through an on-going, international process that spann the broad range of relevant issues and expertise.

- This led to the proposals by the Tenth World Meteorological Congress, the WMO Executive Council, and the UNEP Governing Council.

3. IPCC has filled that role.

- Participation in the IPCC has increased continuously and now includes over 50 nations, hundreds of scientists and policy makers, and many non-governmental and international organisations.

- The work of the IPCC is carried out through three major working groups:

  The Working Group on Science, chaired by the United Kingdom, is reviewing and assessing the existing scientific information on, and understanding of, global climate change.

  The Working Group on Impacts, chaired by the USSR, is assessing the potential environmental and socio-economic impacts of global climate change.

  The Response Strategies Working Group, chaired by the U.S., is identifying and assessing possible strategies for responding to global climate change -- both by limiting greenhouse gas emissions and adapting to climate change.

4. Welcome the IPCC reports due in August.

- The three working groups will complete their reports to the IPCC late this Spring. The overall IPCC report will be prepared during the Summer and considered by the full IPCC at a meeting in Stockholm at the end of August. It will then be forwarded to UNEP and WMO and considered by the U.N. General Assembly next Fall and at the Second World Climate Conference (SWCC) during the last week of October and first week of November.

5. U.S. is committed to playing a leadership role and supporting the IPCC as the best forum for global climate change policy development.

- The IPCC is the best forum for global climate change policy development because: (a) it is focused exclusively on the issue; (b) its program of work addresses the broad range of relevant issues, not just e.g. emission reduction; (c) it has successfully involved the broad range of necessary expertise; (d) it is not overly politicized; and (e) it is truly international, with over 50 countries currently involved and more becoming involved. Essentially, it has proved a productive and increasingly popular forum for international analysis and discussion of the issue.

- The President is committed to playing a leadership role in the international community's efforts to address global climate change. The U.S. is playing a major leadership role in the IPCC and has provided substantial financial and analytic support for all major IPCC activities.

6. Support the UK proposal at the UN to continue the IPCC

- In her speech on November 9, 1989, to the UN General Assembly, Prime Minister Thatcher proposed the continuation of the IPCC after it submits its interim report next Fall so that it can provide an authoritative scientific basis for the negotiation of protocols to a framework convention. We should strongly support this proposal and broaden its rationale to include the need for a sound analytical basis, broadly construed to include analysis of the administrative and technical feasibility, costs and economic consequences of future protocols. There will be a need for years to come to (a) continually improve and periodically assess our scientific understanding of global climate change and its impacts, and (b) develop and evaluate response measures.

No
No
No

Much softer commitment

to reality of warming

i.e. - her policy is okay, here - but don't frame it w/ attempt of warming.

RAW MATERIAL FOR A PRESIDENTIAL SPEECH TO THE IPCC

Section 5:

1. The Clean Air Act

I have submitted to Congress extensive revisions to the Clean Air Act which should result not only in cleaning the nation's air, but in reducing greenhouse gas emissions as well. Powerful incentives exist in our acid rain program for conserving energy. These will reduce carbon dioxide emissions from electric utilities by about 75 million tons. The alternative transportation fuels program in the bill also offers the potential for reductions in emissions, up to 60 million tons, depending on what fuels make it to the market.

2. Energy Conservation Program.

Since taking office, my Administration has proposed or promulgated energy efficiency standards for refrigerators, dishwashers, washing machines, and dryers. Together, these will reduce emissions by around 15 million tons. In addition, I have submitted a request to Congress to increase the size of DOE's Conservation Program by $150 million.

3. Alternative Energy Sources

to be provided by DOE

4. Reforestation

The U.S. is firmly committed to positive action in response to threats imposed by global climate change. One immediate and tangible action which I have called for is a major reforestation program within the U.S. I am calling upon all Americans to join in a twenty-year program to plant and maintain twenty billion trees. We expect to provide up to $175 million per year to support programs ranging from urban tree planting, to sharing the cost of large tree plantations, to enhancing the quality and ultimately the biological yield of existing timber stands.

Complimenting these public investments, I have called for a private, non-profit foundation called the "America the Beautiful Foundation", which would capitalize a fund of potentially billions of private dollars, the yield of which will be used to support tree planting and maintenance throughout the United States. The objectives of these tree planting programs will be to absorb from 5 to 10 percent of U.S. carbon dioxide emissions, as well as enhance water quality and wildlife habitat.

5. Chloroflourocarbons (CFCs)

These currently account for 25% of the current U.S. contribution to global warming. In addition to possibly affecting the climate system, these substances also are responsible for the depletion of the ozone layer. I fully support the international efforts to fully phaseout production of these substances by the year 2000. In addition, the US is aggressively working with developing countries to assist them in making the transition to

substitute chemicals. For example, we are working with the refrigeration industry to facilitate CFC substitution in China and we are sending technical missions to Brazil, Egypt and Mexico.

6. State Initiatives

The States deserve significant credit for their contributions to reducing greenhouse gas emissions. Their efforts include programs to increase energy efficiency in homes, offices, and industries, to expand the use of alternative fuels in the transportation sector, and to plant trees. Several states have even mandated general greenhouse gas emissions reduction efforts. For example, the Governor of New Jersey recently signed an executive order requiring state agencies to implement measures designed to reduce energy and CFC use and to maximize the number of trees in New Jersey. The Oregon legislature has mandated that the state reduce emissions of greenhouse gases by 20% by 2005.

Almost every state has implemented energy efficiency programs. An example of a program that has successfully reduced energy consumption in industry is the Energy Advisory Service to Industry in New York. In 1988, CO_2 reductions attributable to this program were approximately 682,000 tons, while consumers saved more than $60 million in energy costs. In California, the South Coast Air Quality Management District is implementing stringent air quality standards that will eventually require substantial use of alternative fuels. (However, this plan calls for the use of methanol fuel, which, if derived from natural gas, is only slightly less carbon intensive than coal, and, if derived from coal, is 50-

75% more carbon intensive than coal.)

In addition to individual programs, a number of states are now undertaking "Least-Cost Utility Planning" which requires utilities to undertake the least cost alternative to providing power, which is also often the option with the lowest greenhouse gas emissions, i.e., energy efficiency. A few states, such as Wisconsin, New York and Oregon, are taking this a step further by applying an environmental weighting factor in competitive bidding procedures for private power supply options. This tends to encourage natural gas and non-fossil sources of energy.

States are also undertaking their own tree planting programs geared toward reducing carbon dioxide. The States of North Dakota and Missouri, for example, have established tree planting programs. The former has set a target of 100 million trees by 2000.

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20508

DATE: 1-25-90

TO: Mark Lange

ADDRESS: Speechwriting

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NUMBER OF PAGES, INCLUDING COVER SHEET: 9

SPECIAL INSTRUCTION:

This is what we have...

9.

PRESS
DEPARTMENT OF STATE

PR NO. 11
January 30, 1989

REMARKS BY
THE HONORABLE JAMES A. BAKER III
SECRETARY OF STATE
BEFORE THE
RESPONSE STRATEGIES WORKING GROUP
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
DEPARTMENT OF STATE
JANUARY 30, 1989

Thank you Fred Bernthal, Professor Bolin, ladies and gentlemen. I am very pleased to have the opportunity to join you this morning, however briefly, and to welcome you to the Department of State. You are the first official group that I've had the pleasure of welcoming to the Department.

I would also like to welcome Bill Reilly, who is here with us this morning -- President of the World Wildlife Fund and the Conservation Foundation. Bill has let President Bush talk him into becoming the nominee for the post of Administrator of the United States Environmental Protection Agency, and it's my fervent hope, Bill, that nothing you hear at this conference this morning will cause you to change your mind.

The truth is, though, as I don't need to tell those of you who are here, we face some very difficult problems. It is also true, though, that we now recognize them to be problems, and in my experience in government that is at least half of the battle.

Some months ago President Bush said, "We face the prospect of being trapped on a boat that we have irreparably damaged -- not by the cataclysm of war, but by the slow neglect of a vessel we believed to be impervious to our abuse."

The establishment of the Intergovernment Panel on Climate Change and this meeting of the Panel's Response Strategies Working Group, I think, shows beyond a doubt that this is a transnational issue. We are all in the same boat. And as I put it in my testimony to the Senate recently, "The tides and the winds can spread environmental damages to continents and hemispheres far removed from the immediate disasters."

10

PR NO. 11

So, if I may borrow a phrase from the environmentalists, the political ecology is now ripe for action. We know that we need to act, and we also know that we need to act together. That is what this meeting is all about.

But I would take it even a step further. One of the big advantages of being Secretary of State is that because I am not a scientist, I am, therefore, not called upon to assess the evidence, especially on global climate change. Yet it is also clear, I think, that we face more than simply a scientific problem. It is also a diplomatic problem of when and how we take action. And here, if I might, I would like to make four points.

Not true

The first is that we can probably not afford to wait until all of the uncertainties have been resolved before we do act. Time will not make the problem go away.

almost ok

The second is that while scientists refine the state of our knowledge, we should focus immediately on prudent steps that are already justified on grounds other than climate change. These include reducing CFC emissions, greater energy efficiency and reforestation.

✓

The third is that whatever global solutions to global climate change are considered, they should be as specific and cost-effective as they can possibly be.

✓

The fourth is that those solutions will be most effective if they transcend the great fault line of our times, the need to reconcile the transcendent requirements for both economic development and a safe environment.

Without in any way downgrading the difficulty of the task, I would conclude, ladies and gentlemen, by noting that progress generally results when common interests are joined to a common understanding. This meeting and others like it will play a crucial role in moving us all toward that common understanding of what we must do to protect and to preserve our environment.

Thank you very much for having me this morning, and Godspeed.

* * * *

30-50 yrs -- we have the sci -- we should do it right

IPCC (Intergovernmental Panel on Climate Change

Source: Dan Reifsnyder, State Department: Global Change
647-4069

WHEN/WHERE: Monday, February 5
Georgetown University, Leavey Conference Center
10:15 a.m. (approx.)

WHO: POTUS will be addressing the 3rd Plenary Session of the IPCC

BACKGROUND: The IPCC is a program under the auspices of the UN Environment Program and the World Meteorological Organization. The group was formed in 1988 as an initial effort to study the science, impact, and necessary responses to global change. Its 1st session was held in November '88, the 2nd in July '89 (this is the third meeting).

The panel is composed of 3 working groups:
(1) Science, chaired by the UK;
(2) Impacts, chaired by the USSR;
(3) Strategic Responses, chaired by the US.

The purpose of this session is to focus on the efforts of the three working groups and put together a 1st assessment report in June. They will meet again in August in Sweden for the final plenary and the report will be issued in October at the 2nd World Climate Conference.

The US delegation is hosting this session. They are expecting 50 national delegations plus various non-governmental organizations. This means 250-300 guests plus Americans involved.

~350 total

The "head table" and speaking order is as follows: IPCC Chairman Bert Bolin (Sweden) will open the session and introduce POTUS; President Bush; Secretary General of the World Meteorological Organization Mr. Obasi† (Nigeria); Executive Secretary of the UN Environment Program Mr. Tolba*.

† G.O.P. Obasi

* Dr. M.K. Tolba

They are considering a VIP seating section for members of Congress and agency heads that will inevitably attend. Dan Reifsnyder will get back to me concerning acknowledgements.

NOTE: Dr. Hecht, of the EPA office involved in this, told me that Bill Reilly and Admiral Watkins collaborated on a memo to Mr. Bromley (Domestic Policy Chair for this issue). This memo supposedly incorporates guidance from the EPA and Energy as well as ideas from State/Baker. Action apparently has yet to be taken and everyone is waiting for Bromley to pow wow with Sununu and decide on US policy.

As of 1/27 – Bromley & Sununu minds apparently still haven't met.

Recent discussion → interdiction
money laundering } & drugs

3:30 - mtg. re
Gordon Blackmer

(Lange/Cawley)
February 4, 1989
3:30 P.M.
[IPCC.DOC]

PRESIDENTIAL ADDRESS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
MONDAY, FEBRUARY 5, 1990
10:15 A.M.

Thank you, Dr. Bolin [Bo-leen]. Professor Obasi. Dr. Tolba. Delegates of the World Meteorological Organization, and the United Nations Environment Program. Let me commend **all** of you, for coming together to examine an issue of such great importance. The recommendations this distinguished organization makes can have a profound effect on the world's environmental and economic policy.

By being here today, I hope to underscore concern -- my country's, and my own -- about environmental stewardship; and to reaffirm our commitment to finding responsible solutions. It is both an honor and a pleasure to be the first American President to speak to this organization, as its work takes shape.

You are called upon to develop recommendations which strike a difficult yet critical international bargain: a convergence between global <u>environmental</u> policy, and global <u>economic</u> policy. A bargain where **both** perspectives benefit -- and **neither** is compromised.

As experts, you understand that economic growth and environmental integrity are **not** contradictory priorities. One reinforces and complements the other. Each, a partner. Both are crucial.

A sound environment is the basis for the continuity and quality of human life and enterprise. Clearly, strong economies allow nations to fulfill the obligations of environmental stewardship. Where there is economic strength, such protection is possible. But where there is poverty, the competition for resources gets tougher. Stewardship suffers.

For all of these reasons, I sincerely believe we must do everything in our power to promote global cooperation: For environmental protection **and** economic growth. For intelligent management of our natural resources **and** efficient use of our industrial capacity. And above all, for **sustainable** and **environmentally sensitive** development -- around the world.

The United States is strongly committed to the I.P.C.C. process of international cooperation on global climate change. We consider it vital, that the community of nations be drawn together -- in an orderly, disciplined, rational way -- to review the history of our global environment, to assess the potential for future climate change, and to develop effective programs.

The state of the science; the social and economic impacts; and the appropriate strategies -- all are crucial components to a global resolution. **The stakes here are very high; the consequences, very significant.**

The United States remains committed to aggressive and thoughtful action on environmental issues. Last week, in my State of the Union address, I spoke of stewardship, because I believe it's something we owe ourselves, our children and their

children.

So we are renewing the ethic of stewardship in our domestic programs. In our work to forge international agreements. In our assistance to developing and East Bloc nations. And here, by chairing the Response Strategies Working Group.

I have just submitted a budget to our Congress for fiscal 1991. It includes over $2 billion in new spending to protect the environment. And, underscoring our commitment to your efforts, I am pleased to note that funding for the U.S. Global Change Research Program will increase by nearly 60 percent, to over **one billion dollars**.

That commitment, by far the largest ever made by any nation, reflects our determination to **improve our understanding of the science** of climate change.

We are working with our neighbors around the world to enhance global monitoring and data management, improve analysis, reduce the uncertainty of predictive models, and conduct regular reassessments of the state of the science.

Our program allows NASA, her sister agencies, and all our international partners, to move forward with the "Mission to Planet Earth." That will initiate the U.S. Earth Observing System, in cooperation with Europe and Japan, to advance the state of knowledge about the planet we share.

Furthermore, even as we wait for the benefits of this research, the United States has already taken many steps in our

country that bring both **economic and environmental benefits.** Steps that make sense on their own merits in terms of responsibility and efficiency, which help reduce emissions of CFC's, carbon dioxide, and other pollutants now entering the atmosphere. **Let me outline them very briefly:**

We are pursuing new **technology development** that will increase the **efficiency** of our energy use, and thus reduce total emissions.

We're crafting a revised **Clean Air Act** with incentives for our private sector to find creative, market-driven solutions to enhance air quality.

We've launched a major **reforestation initiative** to plant a **billion** trees a year on private land across America.

And we're working out a comprehensive review and revision of our **National Energy Strategy**, with initiatives to increase energy efficiency and the use of renewable sources. These efforts, already underway, are the heart of a $336 million Department of Energy program, and are expected to produce energy savings through the year 2000 of over $30 **billion** -- while achieving significant pollution reduction. Quite a return on investment.

We're also working through diplomatic channels with our colleagues in other countries, and through innovative measures like debt-for-nature swaps, to do <u>more</u> than simply reduce global deforestation. **We hope to <u>reverse</u> it** -- not unilaterally, but by working <u>with</u> our international neighbors.

The **economics** of our response strategies to climate change

are getting intensive study in America. We are developing real data on the costs of various strategies, assessing new measures, and encouraging other nations to follow suit. And we look forward to sharing this knowledge and technical support with our international colleagues.

As we work to create **policy** and agreements on action, we want to encourage the most creative, effective approaches. Wherever possible, we believe that market mechanisms should be applied -- and that our policies must be consistent with economic growth and free market principles in **all** countries. Our development efforts and our dialogue can help us reach effective and acceptable solutions.

Last December at Malta, in my meeting with President Gorbachev, I proposed that the United States offer a venue for the first negotiating session for a framework convention, once the I.P.C.C. completes its work. I reiterate that invitation here, and look forward to your cooperation in that agenda.

We all know that human activities are changing the atmosphere in unexpected and unprecedented ways. Much remains to be done. Many questions remain to be answered. Together, we have a responsibility to ourselves and the generations to come, to fulfill our stewardship obligations. But that responsibility demands that we do it right.

We acknowledge a broad spectrum of views on these issues, but our respect for a diversity of perspective does not diminish our recognition of our obligation -- or soften our will to

produce policies that **work**. Some may be tempted to exploit legitimate concerns for political positioning. Our responsibility is to maintain the quality of our approach, our commitment to sound science, and an open mind to policy options.

So the United States will continue its efforts to improve our understanding of climate change -- to seek hard data, accurate models, and new ways to improve the science -- and determine how best to meet these challenges. Where politics and opinion have outpaced the science, we are accelerating our support of the technology to bridge that gap. And we are committed to coming together periodically, for international assessments of where we stand.

Therefore, this spring, the United States will host a White House conference on science and economic research on the environment -- convening top officials from a representative group of nations, to bring together the three essential disciplines: science, economics, and ecology. They will share their knowledge, assumptions, and state-of-the-art research models, to outline our understanding and help focus our efforts. I look forward to participating in this seminar, and to learning from its deliberations.

Our goal continues to be matching policy commitments to emerging scientific knowledge -- and a reconciling of environmental protection to the continued benefits of economic development. And as Secretary Baker observed a year ago, **whatever** global solutions to climate change are considered, they

should be as specific and as cost-effective as they can possibly be.

If we hope to promote environmental protection **and** economic growth around the world, it will be important not to work in conflict, but with our industrial sectors. That will mean moving beyond the practice of command, control, and compliance --toward a new kind of environmental cooperation -- and toward an emphasis on pollution **prevention**, rather than mere mitigation and litigation. Many of our industries, in fact, are already providing crucial research and solutions.

One corporation, for example, started an in-house program called Pollution Prevention Pays, that has saved the company well over half a **billion** dollars since 1975 -- and prevented 112,000 tons of air pollutants, 15,000 tons of water pollutants, and almost 400,000 tons of sludge and solid waste from being released into the environment. They've done it by rewarding employees for coming up with the ideas. And they have clearly demonstrated the benefits of doing it right.

Where developing nations are concerned, some argue we'll have to abandon the free-market principles of prosperous economies. In fact, we think it's all the more crucial in the developing countries, to harness incentives of the free enterprise system, in the **service** of the environment. \\

I believe we should make use of what we know. We know that the future of the earth must not be compromised. We bear a sacred trust in our tenancy here -- and a covenant with those

most precious to us: our children, and theirs. We also know of the efficiency of incentives -- and that well-informed free markets yield the most creative solutions. We must now apply the wisdom of that market, the power of those forces, in **defense** of the environment we cherish.

Working together, with good faith and earnest dialogue, I believe we can reconcile vitality with environmental protection. Let me commend you on your outstanding work -- and wish you all deliberate speed in your efforts to address a very difficult, but very important, human concern.

Thank you -- and God bless you.

# # #

have 3 copies w/ guard

(Lange/Cawley)
February 4, 1989
1:45 P.M.
[IPCC.DOC]

PRESIDENTIAL ADDRESS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
MONDAY, FEBRUARY 5, 1990
10:15 A.M.

Thank you, Dr. Bolin [Bo-leen]. Professor Obasi. Dr. Tolba. Delegates of the World Meteorological Organization, and the United Nations Environment Program. Let me commend **all** of you, for coming together to examine an issue of such great importance. The recommendations this distinguished organization makes can have a profound effect on the world's environmental and economic policy.

By being here today, I hope to underscore concern -- my country's, and my own -- about environmental stewardship; and to reaffirm our commitment to finding responsible solutions. It is both an honor and a pleasure to be the first American President to speak to this organization, as its work takes shape.

You are called upon to develop recommendations which strike a difficult yet critical international bargain: a convergence between global <u>environmental</u> policy, and global <u>economic</u> policy. A bargain where **both** perspectives benefit -- and **neither** is compromised.

As experts, you understand that economic growth and environmental integrity are **not** contradictory priorities. One reinforces and complements the other. Each, a partner. Both are crucial.

A sound environment is the basis for the continuity and quality of human life and enterprise. Clearly, strong economies allow nations to fulfill the obligations of environmental stewardship. Where there is economic strength, such protection is possible. But where there is poverty, the competition for resources gets tougher. Stewardship suffers.

For all of these reasons, I sincerely believe we must do everything in our power to promote global cooperation: For environmental protection **and** economic growth. For intelligent management of our natural resources **and** efficient use of our industrial capacity. And above all, for **sustainable** and **environmentally sensitive** development -- around the world.

The United States is strongly committed to the I.P.C.C. process of international cooperation on global climate change. We consider it vital, that the community of nations be drawn together -- in an orderly, disciplined, rational way -- to review the history of our global environment, to assess the potential for future climate change, and to develop effective programs.

The state of the science; the social and economic impacts; and the appropriate strategies -- all are crucial components to a global resolution. **The stakes here are very high; the consequences, very significant.**

The United States remains committed to aggressive and thoughtful action on environmental issues. Last week, in my State of the Union address, I spoke of stewardship; because I believe it's something we owe ourselves, our children and their

children.

So we are renewing the ethic of stewardship in our domestic programs. In our work to forge international agreements. In our assistance to developing and East Bloc nations. And here, by chairing the Response Strategies Working Group.

I have just submitted a budget to our Congress for fiscal 1991. It includes over $2 billion in new spending to protect the environment. And, underscoring our commitment to your efforts, I am pleased to note that funding for the U.S. Global Change Research Program will increase by nearly 60 percent, to over one billion dollars.

That commitment, by far the largest ever made by any nation, will allow NASA, her sister agencies, and our international partners to move forward with the "Mission to Planet Earth." That program will initiate the U.S. Earth Observing System, in cooperation with Europe and Japan, to advance the state of knowledge about the planet we share.

Furthermore, even as we wait for the benefits of this research, the United States has already taken many steps in our country that bring both **economic and environmental benefits.** Steps that make sense on their own merits in terms of responsibility and efficiency, which help reduce emissions of CFC's, carbon dioxide, and other pollutants now entering the atmosphere. **Let me outline them very briefly:**

We are pursuing new **technology development** that will

increase the **efficiency** of our energy use, and thus reduce total emissions.

We're crafting a revised **Clean Air Act** with incentives for ~~industry~~ our private sector to find creative, market-driven solutions to enhance air quality.

We've launched a major **reforestation initiative** to plant a **billion** trees a year on private land across America.

And we're working out a comprehensive review and revision of our **National Energy Strategy**, with initiatives to increase energy efficiency and the use of renewable sources. These ~~initiatives~~ efforts, already underway, are the heart of a $336 million Department of Energy program, and are expected to produce energy savings through the year 2000 of over $30 **billion** -- while achieving significant pollution reduction. Quite a return on investment.

We're also working through diplomatic channels with our colleagues in other countries, and through innovative measures like debt-for-nature swaps, to do more than simply reduce global deforestation. **We hope to reverse it** -- not unilaterally, but by working with our international neighbors.

The **economics** of our response strategies to climate change are getting intensive study in America. We are developing real data on the costs of various strategies, assessing new measures, and encouraging other nations to follow suit. And we look forward to sharing this knowledge and technical support with our international colleagues.

As we work to create **policy** and agreements on action, we

want to encourage the most creative, effective approaches. Wherever possible, we believe that market mechanisms should be applied -- and that our policies must be consistent with economic growth and free market principles in **all** countries. Our development efforts and our dialogue can help us reach effective and acceptable solutions.

Last December at Malta, in my meeting with President Gorbachev, I proposed that the United States offer a venue for the first negotiating session for a framework convention, once the I.P.C.C. completes its work. I reiterate that invitation here, and look forward to your cooperation in that agenda.

We all know that human activities are changing the atmosphere in unexpected and unprecedented ways. Much remains to be done. Many questions remain to be answered. Together, we have a responsibility to ourselves and the generations to come, to fulfill our stewardship obligations. But that responsibility demands that we do it right.

We acknowledge a broad spectrum of views on these issues, but our respect for a diversity of perspective does not diminish our recognition of our obligation -- or soften our will to produce policies that **work**.

So the United States continues its efforts to improve our understanding of climate change -- to seek hard data and new ways to improve the science, and determine how best to meet these challenges. Where politics and opinion have outpaced the science, we are accelerating our support of the technology to

And we are committed to coming together periodically for an assessment of where we stand.

bridge that gap.

Therefore, this spring, the United States will host a White House conference on science and economic research on the environment -- convening top officials from a representative group of nations, to bring together the three essential disciplines: science, economics, and ecology. They will share their knowledge, assumptions, and state-of-the-art research models, to outline our understanding and help focus our efforts. I look forward to participating in this seminar, and to learning from its deliberations.

Our goal continues to be matching policy commitments to emerging scientific knowledge -- and a reconciling of environmental protection to the continued benefits of economic development. And as Secretary Baker observed a year ago, **whatever** global solutions to climate change are considered, they should be as specific and as cost-effective as they can possibly be.

If we hope to promote environmental protection **and** economic growth around the world, it will be important not to work in conflict, but <u>with</u> our industrial sectors. That will mean moving beyond the practice of command, control, and compliance --toward a new kind of environmental cooperation -- and toward an emphasis on pollution **prevention**, rather than mere mitigation and litigation. Many of our industries, in fact, are already providing crucial research and solutions.

One corporation, for example, started an in-house program

called Pollution Prevention Pays, that has saved the company well over half a **billion** dollars since 1975 -- and prevented 112,000 tons of air pollutants, 15,000 tons of water pollutants, and almost 400,000 tons of sludge and solid waste from being released into the environment. They've done it by rewarding employees for coming up with the ideas. And they have clearly demonstrated the benefits of doing it right.

Where developing nations are concerned, some argue we'll have to abandon the free-market principles of prosperous economies. In fact, we think it's all the more crucial, in the developing countries, to harness incentives of the free enterprise system, in the **service** of the environment. \\

I believe we should make use of what we know. We know that the future of the earth ~~cannot~~ must not be compromised. We bear a sacred trust in our tenancy here -- and a covenant with those most precious to us: our children, and theirs. We also know of the efficiency of ~~economic~~ incentive -- and that free markets yield the most creative solutions. We must now apply the wisdom of that ~~market~~ system, the power of those forces, in **defense** of the environment we cherish.

Working together, with good faith and earnest dialogue, I believe we can reconcile economic vitality with environmental protection. Let me commend you on your outstanding work -- and wish you all deliberate speed in your efforts to address a very difficult, but very important, human concern.

Thank you -- and God bless you.

See Our Changing Planet

(Lange/Cawley)
February 2, 1989
2:00 P.M.
[IPCC.DOC]

PRESIDENTIAL ADDRESS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
MONDAY, FEBRUARY 5, 1990
10:15 A.M.

Thank you, Dr. Bolin [Bo-leen]. Professor Obasi. Dr. Tolba. Delegates of the World Meteorological Organization, and the United Nations Environment Program. Let me commend **all** of you, for coming together to examine an issue of such great importance. The recommendations this distinguished organization makes ~~will~~ can & have a profound effect on the world's environmental and economic policy.

By being here today, I hope to underscore concern -- my country's, and my own -- about environmental stewardship; and to reaffirm our commitment to finding responsible solutions. It is both an honor and a pleasure to be the first American President to speak to this organization, as its work takes shape.

You are called upon to develop recommendations which strike ~~an~~ difficult yet ~~significant~~ political ~~challenge~~ international bargain: a convergence between global <u>environmental</u> policy, and global <u>economic</u> policy. A bargain where **both** perspectives benefit -- and **neither** is compromised.

As experts, you understand that economic growth and environmental integrity are **not** contradictory priorities. One reinforces and complements the other. [Each, ~~enables and empowers the other.~~ as a partner. Neither is sufficient]

A sound environment <u>is</u> the basis for the continuity and quality of human life and enterprise. ~~And~~ In fact, clearly strong economies allow

nations to fulfill the obligations of environmental stewardship. Where there is economic strength, such stewardship is possible. But where there is poverty, it all too often fails to coalesce.

For that reason, I sincerely believe we must do everything in our power to promote global cooperation; for environmental protection **and** economic growth; For intelligent management of our natural resources and efficient use of our industrial capacity. And above all, for **sustainable** and **environmentally sensitive** development -- around the world.

The United States is strongly committed to the I.P.C.C. process of international cooperation on global climate change. We consider it vital, that the community of nations be drawn together -- in an ordered, rational way -- to assess the potential for climate change, and develop appropriate, valid, reasoned responses.

The state of the science; the social and economic impacts; and the right response strategies. All are crucial components to a global resolution. **The stakes here are very high; the consequences, very significant.**

Last week, in my State of the Union address, I spoke of stewardship: because I believe it's something we owe ourselves, our children and their children.

Thus the United States remains committed to aggressive and thoughtful action on environmental issues. In our domestic programs. Our work to forge international agreements. Our

assistance to developing and East Bloc nations. And here, by chairing the Response Strategies Working Group.

I have just submitted a budget to our Congress for fiscal 1991. It includes over $2 billion in new spending to protect the environment. And with direct application to the issues at hand here, I am pleased to note that funding for the U.S. Global Change Research Program will increase by nearly 60 percent, to over $1 billion dollars.

That commitment, by far the largest by any nation, ever, will allow NASA to move forward with its "Mission to Planet Earth," together with our international partners, and will initiate the U.S. Earth Observing System, in cooperation with Europe and Japan, to advance the state of knowledge about the planet we share.

The United States has already taken many steps in our country that bring **major benefits in their own right**. Steps that make sense on their own merits in terms of prudence and efficiency, which help reduce emissions of carbon dioxide and other gases now building up in the atmosphere. **Let me outline them very briefly:**

We want to increase the **efficiency** of our energy use, and thus reduce total emissions. So we're pursuing new **technology development**.

We're crafting a revised **Clean Air Act** with incentives for industry to find creative, market-driven solutions to enhance air quality.

We've launched a major **reforestation initiative** to plant a **billion** trees a year on private land across America.

And we're working out a comprehensive review and revision of our **National Energy Strategy**, with initiatives to increase energy efficiency and the use of renewable sources. These initiatives, already underway, ~~will cost our Department of Energy~~ are the part of a $336 million ~~over the next six years, but~~ D.O.E. program, and are expected to produce energy savings through the year 2000 of over $30 **billion** -- while achieving significant pollution reduction. Quite a return on investment.

We're also working through diplomatic channels with our colleagues in other countries, and through innovative measures like debt-for-nature swaps, to do more than simply reduce global deforestation. **We hope to reverse it** -- not unilaterally, but by working with our international neighbors.

The **economics** of our response strategies to climate change are getting intensive study in America. We are developing real data on the costs of various ~~response~~ strategies, assessing new measures, and encouraging other nations to follow suit. And we look forward to sharing this knowledge and technical support with our international colleagues.

As we work to create **policy** ~~on CFC's, CO2 and other emissions~~ and agreements on action, we want to encourage the most innovative ~~responses~~ effective approaches. Wherever possible, we believe that market mechanisms should be applied -- and that ~~our policy~~ our policies must be consistent with economic growth and free market principles in **all** countries. Our

development efforts and our dialogue can help us reach effective and acceptable solutions.

Last December at Malta, in my meeting with President Gorbachev, I proposed that the United States offer a venue for the first negotiating session for a framework convention, once the I.P.C.C. completes its work. I reiterate that invitation here and look forward to your cooperation in that agenda.

But much remains to be done. Many questions remain to be answered. We have a responsibility to ourselves and the generations to come, to do it right. We all know that human activities are changing the atmosphere in unexpected and unprecedented ways. But we must develop solutions that can fulfill our stewardship ~~responsibilities~~, **and** maintain our capacity to extend a beneficial quality of life to those who have not yet seen the benefits of their emerging economies.

We acknowledge a broad spectrum of views on these issues, but our respect for a diversity of perspective does not diminish our recognition of our obligation -- or soften our will to produce policies that **work**.

So the United States continues ~~to work~~ to improve our understanding of climate change -- to seek hard data and new ways to improve the science, and determine how best to meet these challenges. Where politics and opinion have ~~moved faster than~~ the science, we are accelerating our support of the ~~science~~ to bridge that gap.

Therefore, this spring, the United States will host a White House conference on science and economic research on the environment -- convening top officials from a representative group of nations, to bring together the three essential disciplines: science, economics, and ecology. They will share their knowledge, assumptions, and state-of-the-art research models, to outline our understanding and help focus our efforts. I look forward to participating in this seminar, and to learning from its deliberations.

Our goal continues to be matching policy to emerging scientific knowledge -- and a reconciling of environmental protection to the continued benefits of economic development. And as Secretary Baker observed a year ago, **whatever** global solutions to climate change are considered, they should be as specific and as cost-effective as they can possibly be.

If we hope to promote environmental protection **and** economic growth around the world, it will be important to work with, not against our industrial sector. That means moving beyond the tradition of command, control, and compliance -- toward a new kind of environmental cooperation -- and toward an emphasis on pollution **prevention**, rather than mere mitigation and litigation.

Many of our industries, in fact, are already providing crucial research and solutions. And a few are already ahead of us.

One corporation, for example, started an in-house program called Pollution Prevention Pays, that has saved the company well

over half a **billion** dollars since 1975 -- and prevented 112,000 tons of air pollutants, 15,000 tons of water pollutants, and almost 400,000 tons of sludge and solid waste from being released into the environment. And they've done it by rewarding employees for coming up with the ideas.

Where developing nations are concerned, some suggest we'll have to abandon free-market principles that allowed the industrial world to prosper. In fact, we think it's all the more crucial, in the developing countries, to harness the free enterprise system in the **service** of the environment.

I believe we should make use of what we know. We know that the future of the earth **cannot** be compromised. We bear a sacred trust in our tenancy here -- and a covenant with those most precious to us: our children, and theirs. We also know of the efficiency of economic incentive -- and that free markets yield the most creative solutions. We must now apply the wisdom of the market, in **defense** of the environment we share.

Working together, with good faith and earnest dialogue, I believe we can reconcile economic growth with environmental protection. Let me commend you on your outstanding work -- and wish you all deliberate speed in your efforts to address a very difficult, but very important, human concern.

Thank you -- and God bless you.

# # #

(Lange/Cawley)
February 4, 1989
11:15 A.M.
[IPCC.DOC]

PRESIDENTIAL ADDRESS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
MONDAY, FEBRUARY 5, 1990
10:15 A.M.

Thank you, Dr. Bolin [Bo-leen]. Professor Obasi. Dr. Tolba. Delegates of the World Meteorological Organization, and the United Nations Environment Program. Let me commend **all** of you, for coming together to examine an issue of such great importance. The recommendations this distinguished organization makes ~~will~~ can have a profound effect on the world's environmental and economic policy.

By being here today, I hope to underscore concern -- my country's, and my own -- about environmental stewardship; and to reaffirm our commitment to finding responsible solutions. It is both an honor and a pleasure to be the first American President to speak to this organization, as its work takes shape.

You are called upon to develop recommendations which strike an international bargain: a convergence between global environmental policy, and global economic policy, where **both** perspectives benefit -- and **neither** is compromised.

You understand that economic growth and environmental integrity are **not** contradictory priorities. One reinforces and complements the other. Each ~~enables and empowers the other.~~

A sound environment is the basis for the continuity and quality of human life and enterprise. ~~And~~ strong economies allow

nations to fulfill the obligations of environmental stewardship. Where there is economic strength, such ~~stewardship~~ protection is possible. But where there is poverty, ~~it all too often fails to coalesce~~ the competition for resources is > consensus tougher.

For ~~that~~ all these reasons, I sincerely believe we must do everything in our power to promote global cooperation for environmental protection **and** economic growth; For intelligent management of our natural resources and efficient use of our industrial capacity. And above all, for **sustainable** and **environmentally sensitive** development -- around the world.

The United States is strongly committed to the I.P.C.C. process of international cooperation on global climate change. We consider it vital, that the community of nations be drawn together -- in an ordered, ~~rational~~ disciplined way -- to review the history of our global environment to assess the potential for future climate change, and to develop ~~appropriate, valid, reasoned responses~~ effective programs.

The state of the science; the social and economic impacts; and the ~~right~~ appropriate response strategies -- All are crucial components to a global resolution. **The stakes here are very high; the consequences, very significant.**

Last week, in my State of the Union address, I spoke of stewardship because I believe it's something we owe ourselves, our children and their children.

~~Thus~~ the United States remains committed to aggressive and thoughtful action on environmental issues. In our domestic programs. Our work to forge international agreements. Our

assistance to developing and East Bloc nations. And here, by chairing the Response Strategies Working Group.

I have just submitted a budget to our Congress for fiscal 1991. It includes over $2 billion in new spending to protect the environment. And with direct application to the issues at hand here, I am pleased to note that funding for the U.S. Global Change Research Program will increase by nearly 60 percent, to over $1 billion dollars.

That commitment, by far the largest by any nation ever, will allow NASA to move forward with its "Mission to Planet Earth," together with our international partners, and will initiate the U.S. Earth Observing System, in cooperation with Europe and Japan, to advance the state of knowledge about the planet we share.

The United States has already taken many steps in our country that bring major benefits in their own right. Steps that make sense on their own merits in terms of prudence and efficiency, which help reduce emissions of carbon dioxide and other gases now building up in the atmosphere. **Let me outline them very briefly:**

We want to increase the **efficiency** of our energy use, and thus reduce total emissions. So we're pursuing new **technology development.**

We're crafting a revised **Clean Air Act** with incentives for industry to find creative, market-driven solutions to enhance air quality.

We've launched a major **reforestation initiative** to plant a **billion** trees a year on private land across America.

And we're working out a comprehensive review and revision of our **National Energy Strategy**, with initiatives to increase energy efficiency and the use of renewable sources. ~~These initiatives, already underway, will cost our~~ the heart of a Department of Energy $336 million program over the next six years, ~~but~~ and are expected to produce energy savings through the year 2000 of over $3~~2~~0 **billion** -- while achieving significant pollution reduction. Quite a return on investment.

We're also working through diplomatic channels with our colleagues in other countries, and through innovative measures like debt-for-nature swaps, to do more than simply reduce global deforestation. **We hope to reverse it** -- not unilaterally, but by working with our international neighbors.

The **economics** of our response strategies to climate change are getting intensive study in America. We are developing real data on the costs of various ~~response~~ strategies, assessing new measures, and encouraging other nations to follow suit. And we look forward to sharing this knowledge and technical support with our international colleagues.

As we work to create **policy** and agreements on action, on ~~CFC's, CO2 and other emissions~~, we want to encourage the most ~~innovative~~ effective approaches, ~~responses.~~ Wherever possible, we believe that market mechanisms should be applied -- and that our policy must be consistent with economic growth and free market principles in **all** countries. Our

development efforts and our dialogue can help us reach effective and acceptable solutions.

Last December at Malta, in my meeting with President Gorbachev, I proposed that the United States offer a venue for the first negotiating session for a framework convention, once the I.P.C.C. completes its work. I reiterate that invitation here and look forward to your cooperation in that agenda.

But much remains to be done. Many questions remain to be answered. We have a responsibility to ourselves and the generations ~~to come to do it right~~. We all know that human activities are changing the atmosphere in unexpected and unprecedented ways. ~~But~~ we must develop solutions that can fulfill our stewardship ~~responsibilities~~ **and** maintain our ~~capacity to extend a beneficial quality of life to those who have~~ not yet seen the benefits of their emerging economies.

We acknowledge a broad spectrum of views on these issues, but our respect for a diversity of perspectives does not diminish our recognition of our obligation -- or soften our will to produce policies that **work**.

So the United States continues ~~to work~~ to improve our understanding of climate change -- to seek hard data and new ways to improve the science, and determine how best to meet these challenges. Where politics and opinion have ~~moved faster than the~~ science, we are accelerating our support of the ~~science~~ to bridge that gap.

Therefore, this spring, the United States will host a White House conference on science and economic research on the environment -- convening top officials from a representative group of nations, to bring together the three essential disciplines: science, economics, and ecology. They will share their knowledge, assumptions, and state-of-the-art research models, to outline our understanding and help focus our efforts. I look forward to participating in this seminar, and to learning from its deliberations.

Our goal continues to be matching policy commitments to emerging scientific knowledge -- and a reconciling of environmental protection to the continued benefits of economic development. And as Secretary Baker observed a year ago, **whatever** global solutions to climate change are considered, they should be as specific and as cost-effective as they can possibly be.

If we hope to promote environmental protection **and** economic growth around the world, it will be important to work with, not ~~against~~ our industrial sectors. That will mean moving beyond the ~~tradition~~ Machine of command, control, and compliance -- toward a new kind of environmental cooperation -- and toward an emphasis on pollution **prevention**, rather than mere mitigation and litigation.

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Where developing nations are concerned, some ~~suggest~~ argue we'll have to abandon the free-market principles that allowed the industrial world to prosper. In fact, we think it's all the more crucial, in the developing countries, to harness the free enterprise system in the **service** of the environment.

I believe we should make use of what we know. We know that the future of the earth **cannot** be compromised. We bear a sacred trust in our tenancy here -- and a covenant with those most precious to us: our children, and theirs. We also know of the efficiency of economic incentive -- and that free markets yield the most creative solutions. We must now apply the wisdom of the market, in **defense** of the environment we ~~share~~ cherish.

Working together, with good faith and earnest dialogue, I believe we can reconcile economic ~~growth~~ vitality with environmental protection. Let me commend you on your outstanding work -- and wish you all deliberate speed in your efforts to address a very difficult, but very important, human concern.

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# # #

(Lange/Cawley)
February 4, 1989
11:15 A.M.
[IPCC.DOC]

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GEORGETOWN UNIVERSITY
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A sound environment <u>is</u> the basis for the continuity and quality of human life and enterprise. And strong economies allow

nations to fulfill the obligations of environmental stewardship. Where there is economic strength, such stewardship is possible. But where there is poverty, it all too often fails to coalesce consensus.

For that reason, I sincerely believe we must do everything in our power to promote global cooperation: for environmental protection **and** economic growth. For intelligent management of our natural resources and efficient use of our industrial capacity. And above all, for **sustainable** and **environmentally sensitive** development -- around the world.

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We want to increase the **efficiency** of our energy use, and thus reduce total emissions. So we're pursuing new **technology development.**

We're crafting a revised **Clean Air Act** with incentives for industry to find creative, market-driven solutions to enhance air quality.

We've launched a major **reforestation initiative** to plant a **billion** trees a year on private land across America.

And we're working out a comprehensive review and revision of our **National Energy Strategy**, with initiatives to increase energy efficiency and the use of renewable sources. These initiatives, already underway, will cost our Department of Energy $336 million over the next six years, but are expected to produce energy savings through the year 2000 of over $32 **billion** -- while achieving significant pollution reduction. Quite a return on investment.

We're also working through diplomatic channels with our colleagues in other countries, and through innovative measures like debt-for-nature swaps, to do more than simply reduce global deforestation. **We hope to reverse it** -- not unilaterally, but by working with our international neighbors.

The **economics** of our response strategies to climate change are getting intensive study in America. We are developing real data on the costs of various response strategies, assessing new measures, and encouraging other nations to follow suit. And we look forward to sharing this knowledge and technical support with our international colleagues.

As we work to create **policy** on CFC's, CO2 and other emissions, we want to encourage the most innovative responses. Wherever possible, we believe that market mechanisms should be applied -- and that policy must be consistent with economic growth and free market principles in **all** countries. Our

development efforts and our dialogue can help us reach effective and acceptable solutions.

Last December at Malta, in my meeting with President Gorbachev, I proposed that the United States offer a venue for the first negotiating session for a framework convention, once the I.P.C.C. completes its work. I reiterate that invitation here and look forward to your cooperation in that agenda.

But much remains to be done. Many questions remain to be answered. We have a responsibility to ourselves and the generations to come to do it right. We all know that human activities are changing the atmosphere in unexpected and unprecedented ways. But we must develop solutions that can fulfill our stewardship responsibilities **and** maintain our capacity to extend a beneficial quality of life to those who have not yet seen the benefits of their emerging economies.

We acknowledge a broad spectrum of views on these issues, but our respect for a diversity of perspective does not diminish our recognition of our obligation -- or soften our will to produce policies that **work**.

So the United States continues to work to improve our understanding of climate change -- to seek hard data and new ways to improve the science, and determine how best to meet these challenges. Where politics and opinion have moved faster than the science, we are accelerating our support of the science to bridge that gap.

Therefore, this spring, the United States will host a White House conference on science and economic research on the environment -- convening top officials from a representative group of nations, to bring together the three essential disciplines: science, economics, and ecology. They will share their knowledge, assumptions, and state-of-the-art research models, to outline our understanding and help focus our efforts. I look forward to participating in this seminar, and to learning from its deliberations.

Our goal continues to be matching policy to emerging scientific knowledge -- and a reconciling of environmental protection to the continued benefits of economic development. And as Secretary Baker observed a year ago, **whatever** global solutions to climate change are considered, they should be as specific and as cost-effective as they can possibly be.

If we hope to promote environmental protection **and** economic growth around the world, it will be important to work <u>with</u>, not against our industrial sector. That means moving beyond the tradition of command, control, and compliance -- toward a new kind of environmental cooperation -- and toward an emphasis on pollution **prevention**, rather than mere mitigation and litigation.

Many of our industries, in fact, are already providing crucial research and solutions. And a few are already ahead of us.

One corporation, for example, started an in-house program called Pollution Prevention Pays, that has saved the company well

over half a **billion** dollars since 1975 -- and prevented 112,000 tons of air pollutants, 15,000 tons of water pollutants, and almost 400,000 tons of sludge and solid waste from being released into the environment. And they've done it by rewarding employees for coming up with the ideas.

Where developing nations are concerned, some suggest we'll have to abandon free-market principles that allowed the industrial world to prosper. In fact, we think it's all the more crucial, in the developing countries, to harness the free enterprise system in the **service** of the environment.

I believe we should make use of what we know. We know that the future of the earth **cannot** be compromised. We bear a sacred trust in our tenancy here -- and a covenant with those most precious to us: our children, and theirs. We also know of the efficiency of economic incentive -- and that free markets yield the most creative solutions. We must now apply the wisdom of the market, in **defense** of the environment we share.

Working together, with good faith and earnest dialogue, I believe we can reconcile economic growth with environmental protection. Let me commend you on your outstanding work -- and wish you all deliberate speed in your efforts to address a very difficult, but very important, human concern.

Thank you -- and God bless you.

# # #

(Lange/Cawley)
February 2, 1989
2:00 P.M.
[IPCC.DOC]

PRESIDENTIAL ADDRESS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
MONDAY, FEBRUARY 5, 1990
10:15 A.M.

Thank you, Dr. Bolin [Bo-leen]. Professor Obasi. Dr. Tolba. Delegates of the World Meteorological Organization, and the United Nations Environment Program. Let me commend **all** of you, for taking on an issue of such great importance. The recommendations this distinguished organization makes will have a profound effect on the world's environmental and economic policy.

By being here today, I hope to underscore concern -- my country's, and my own -- about environmental stewardship; and to reaffirm our commitment to finding solutions. It is both an honor and a pleasure to be the first American President to speak to this organization, as its work takes shape.

You are called upon to strike an unprecedented international bargain: a convergence between global <u>environmental</u> policy, and global <u>economic</u> policy, where **both** sides benefit -- and **neither** is compromised.

You understand that economic growth and environmental integrity are **not** contradictory priorities. One reinforces and complements the other.

A sound environment <u>is</u> the basis for the continuity and quality of human life and enterprise. And strong economies allow nations to fulfill the obligations of environmental stewardship.

Where there is economic strength, such stewardship is considered a necessity. But where there is poverty, it is too often a luxury.

For that reason, I believe we must do everything in our power to promote global cooperation: for environmental protection **and** economic growth. For intelligent management of industrial **and** natural resources. Above all, for **sustainable** development -- around the world.

The United States is strongly committed to the I.P.C.C. process of international cooperation on global climate change. We consider it vital, that the community of nations be drawn together -- in an ordered, rational way -- to assess the potential for climate change, and develop appropriate, reasoned responses.

The state of the science; the social and economic impacts; and the right response strategies: all are crucial components to a global resolution. **The stakes here are very high.**

With every word, with every decision made, we're also making a commitment that is profoundly personal. I think all of us understand, deep inside, how the actions we take now speak to the future.

Last week, in my State of the Union address, I talked of stewardship: because I believe it's something we owe our children and grandchildren. Because the earth we stand upon is only borrowed, never owned.

So the United States remains committed to aggressive and thoughtful action on environmental issues. In our domestic programs. Our work to forge international agreements. Our assistance to developing and East Bloc nations. And here, by leading the Response Strategies Working Group.

I just proposed a budget to our Congress for fiscal 1991, with $2 billion in new spending to protect the environment. Funding for the U.S. Global Change Research Program will increase by nearly 60 percent, to over $1 billion.

That will allow NASA to move forward with its "Mission to Planet Earth," together with out international partners. And we will initiate the U.S. Earth Observing System, in cooperation with Europe and Japan, to advance the state of knowledge about the planet we share.

We've already taken many steps in our country that bring **major benefits in their own right.** Steps that make sense on their own merits, and that will **also** help reduce emissions of carbon dioxide and other gases now building up in the atmosphere. **Let me outline them very briefly:**

We want to increase the **efficiency** of our energy use, and thus reduce total emissions. So we're pursuing new **technology development.** We're creating a revised **Clean Air Act** with incentives for industry to find creative, market-driven solutions. We've launched a major **reforestation initiative** to plant a **billion** trees a year on private land across America. And we're working out a comprehensive review and revision of our

National Energy Strategy, with initiatives to increase energy efficiency and the use of renewable sources.

These initiatives, by the way, will cost our Department of Energy $336 million over the next six years, but will produce energy savings through the year 2000 of over $32 **billion** -- while achieving significant pollution reduction. Quite a return on investment.

We're also working through diplomatic channels with our colleagues in other countries, and through innovative measures like debt-for-nature swaps, to do more than simply reduce global deforestation. **We hope to reverse it** -- not unilaterally, but by working with our international neighbors.

The **economics** of our response strategies to climate change are getting intensive study in America. We are developing real data on the costs of various response strategies, assessing new measures, and encouraging other nations to follow suit. And we look forward to sharing technical support with our international colleagues.

As we work to create **policy** on CFC's, CO2 and other emissions, we want to encourage the most innovative responses. Wherever possible, we believe that market mechanisms should be applied -- and that policy must be consistent with economic growth and free market principles in **all** countries. Dialogue can help us reach effective and acceptable solutions.

That is why, in my meeting with President Gorbachev, I proposed that the United States offer a venue for the first

negotiating session for a framework convention, once the I.P.C.C. completes its work.

Much remains to be done. Many questions remain to be answered. We all know that human activities are changing the atmosphere in unexpected and unprecedented ways. But we are not yet prepared -- academically, or otherwise -- to draw conclusions.

Those who question the likelihood of climate change if the world continues on its current path represent one distinct minority. Those who see it as an imminent and irreversible threat to mankind represent another. And many scientists are uncomfortable claiming with absolute certainty that global climate change can now be detected -- or predicted. In some quarters, politics or emotion may be outstripping science. So the United States continues to work to improve our understanding of climate change -- to seek hard data and new ways to improve the science. Because what science now knows with confidence, policy-makers can't use. And what policy-makers need to make decisions, science doesn't yet conclusively know.

We feel it is crucial to bridge that gap. So this spring, the United States will host a White House Seminar on Science and Economic Research on the Environment -- convening top officials from a representative group of nations, to bring together the three essential disciplines: science, economics, and ecology. They will share their knowledge, assumptions, and state-of-the-art research models, to outline the gaps in our understanding and

chart a course toward a common understanding. I look forward to participating in this seminar, and to learning from its deliberations.

While some suggest we should make significant policy now, on the chance that real climate change becomes certain, others point to the opposite edge of that sword: that any meaningful preemptive policies would bring only the certainty of prohibitive expense; conflict with Third World development; and declining standards of living, worldwide.

I believe we can do better. We must seek a reasoned middle ground, that matches policy to emerging scientific knowledge -- and reconciles environmental protection to economic development. And as Secretary Baker observed a year ago, **whatever** global solutions to climate change are considered, they should be as specific and as cost-effective as they can possibly be.

If we hope to promote environmental protection **and** economic growth around the world, it will be important to work <u>with</u>, not against industry. That will mean moving beyond the tradition of command, control, and compliance -- toward a new kind of environmental cooperation -- and toward an emphasis on pollution **prevention**, rather than mere mitigation and litigation.

Many industries, in fact, are already providing crucial research and solutions. And a few are already ahead of us.

The 3M Corporation, for example, started an in-house program called Pollution Prevention Pays, that has saved the company well over half a **billion** dollars since 1975 -- and prevented 112,000

tons of air pollutants, 15,000 tons of water pollutants, and almost 400,000 tons of sludge and solid waste from being released into the environment. And they've done it by rewarding employees for coming up with the ideas.

Where developing nations are concerned, some suggest we'll have to abandon the laissez-faire, free-market principles that allowed the industrial world to prosper. In fact, we think it's all the more crucial, in the developing countries, to harness the free enterprise system in the **service** of the environment.

To the extent we can accelerate the **advancement** of these nations, it will take **less** energy for them to produce wealth: in modern industrial countries, energy use per unit of G.N.P. has **declined** over time -- steadily, and dramatically.

So we look forward to working with the developing nations: Applying the power of the marketplace, considering technology transfer, and encouraging industry to work with them. That will allow developing nations to grow more quickly and easily -- and may help them avoid making the environmental mistakes we older nations have made.

I believe we should make use of what we know. We know that the future of the earth **cannot** be compromised. We bear a sacred trust in our tenancy here -- and a covenant with those most precious to us: our children, and theirs. We also know of the efficiency of economic incentive -- and that free markets yield the most creative solutions. We must now apply the wisdom of the market, in **defense** of the environment we share.

[You know, I recently heard from a national champion bass fisherman in America, that just downstream on the Potomac river here in Washington -- right across from Mount Vernon -- the bass fishing is as good as it is anywhere in the country. I take that as reason for optimism. Not too long ago, that river was considered a serious environmental problem. Now the story it tells, is that we are capable, not merely of halting damage done, but reversing it.]

Working together, with good faith and earnest dialogue, I believe we can reconcile economic growth with environmental protection. Let me commend you on your outstanding work -- and wish you all deliberate speed in your efforts to address a very difficult, but very important, human concern.

Thank you -- and God bless you.

# # #

McNally KANSAS CITY (law enforcement)

McGrady Am Spec – jokes good

Acland has 3M-like stuff

DuPont, Shell, ...

(Lange/Cawley)
January 31, 1989
2:45 P.M.
[IPCC.DOC]

PRESIDENTIAL ADDRESS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
MONDAY, FEBRUARY 5, 1990
10:15 A.M.

Thank you, Dr. Bolin. Professor Obasi. Dr. Tolba. Delegates of the World Meteorological Congress, and the United Nations Environment Program. Let me thank and congratulate all of you, for taking on an issue of such great importance.

Over the past century we've produced the most technologically advanced creations of man. We've also gained new understanding -- though still incomplete -- of the most ecologically fragile creations of nature.

But unfortunately, somewhere along the way, we picked up a bias, that has harmed both man and nature: a mistaken belief that there is a divergence of interests -- a logical division -- between the natural world and we who inhabit it.

Nothing could be further from the truth -- or more central to the work of this Panel. For you are called upon to strike an unprecedented international bargain: a convergence between global environmental policy, and global economic policy, where **both** sides benefit -- and **neither** is compromised.

You are called upon to **end** to the environmental cold war.

This will be possible only if we understand that economic growth and environmental integrity are **not** contradictory priorities. One reinforces and complements the other.

A sound environment is the basis for the continuity and quality of human life and enterprise. And strong economies allow nations to fulfill the obligations of environmental stewardship. Where there is economic strength, such stewardship is considered a necessity. But where there is poverty, it is too often a luxury.

For that reason, I believe that ~~within this decade,~~ we must usher in a new era of global cooperation: for environmental protection **and** economic growth. For intelligent management of industrial **and** natural resources. Above all, for **sustainable** development -- around the world.

The United States believes the I.P.C.C. is the best forum to develop policy on global climate change. We're committed to international cooperation on this issue. And we consider it vital that the community of nations is drawn together -- in an ordered, rational way -- to assess the potential for climate change.

The state of the science; the social and economic impacts; and the right response strategies: all are crucial components to a global resolution. ~~But in this, we must attend to what we know. And what we do, must be done responsibly and well.~~

The stakes here are very high.

There is no question that human activities are changing the atmosphere in unexpected and unprecedented ways. Over the past three centuries, the level of carbon dioxide in the atmosphere has gone up by 25 percent. Atmospheric methane has doubled.

What we **don't** yet understand are the extent and consequences of the alterations we've brought about -- and how they're linked to a significant, imminent climate change.

Last fall, many clear thinkers -- among them, world leaders -- were citing a significant thinning of sea ice at the poles as evidence that global warming had arrived. Recent observations show that the polar ice sheets are not melting, they're **growing** in size.

I'm not prepared -- academically, or otherwise -- to draw conclusions. But I have noticed something about the scientists drawing the conclusions.

Those who see climate change as a clear and present danger represent one distinct minority. Those who discount it completely, represent another minority. But many scientists -- if not most -- are **not** ready to claim that the extent of global climate change can now be reliably detected -- or predicted. That may be to their credit.

Observing the fervor of the French Revolution, the English poet William Blake wrote, "The best lack all conviction, while the worst are filled with passionate intensity." Here, too, we are called upon for action based on observation -- not media-driven emotion, or the politics of apocalypse.

Clarity Information

What science now knows with confidence, policy-makers can't use. And what policy-makers are interested in needs, science doesn't yet know.

Questions remain -- over the reflective effects of cloud cover, the cooling effects and CO2 absorption of oceans, and other sinks and feedback mechanisms we don't yet understand. Those questions, among others, suggest that we should attend to what is known about climate change -- and work to know more.

Current computer models are marvels of mathematics. Still, they cannot yet be said to represent reality -- and cannot be expected to predict the future. Above all, responsible policy cannot rest on the shifting sands of hypothesis and a chaos of conjecture.

Despite
~~Given~~ this level of uncertainty, some suggest we should act now, on the chance that significant climate change becomes certain. Others point to the opposite edge of that sword: any meaningful, preemptive policies would bring only the certainty of prohibitive expense; conflict with Third World development; and declining standards of living, worldwide.

We're confident that the world will neither be ~~caught~~ surprised by a greenhouse effect it didn't ~~expect~~ anticipate, nor impoverished in anticipation of a cataclysmic warming that never arrived.

There is a middle way that must be sought -- **a symmetry that must be reached -- that reconciles policy to emerging scientific knowledge, and environmental protection to economic development.**

The United States remains committed to its leadership role on environmental issues: in our domestic programs, in our work to forge international agreements, in our assistance to

developing and East Bloc nations, and through our chairmanship of the Response Strategies Working Group in the I.P.C.C.

Overall, we're already doing more than any other country -- in terms of financial and human resources, **by more than a factor of ten** -- to understand and address global warming, among other major environmental concerns. Funds devoted to environment-related research in our proposed 1991 budget now total over $70 billion.

Funding for the U.S. Global Change Research Program will increase by nearly 60 percent in fiscal 1991, to over $1 billion. It allows NASA to proceed with its "Mission to Planet Earth" -- and funds the launch of the first U.S. Earth Observing System, to advance the state of knowledge about the planet we share.

Along the way, we will seek the involvement of all nations, no matter what their level of development or economic system, to monitor and analyze climate change, and reassess the science. We place the highest priority on better understanding the earth and its interrelated systems -- and developing high-performance computing systems up to the task.

We seek immediate action, and have already taken a number of steps that bring major benefits in their own right, that make sense on their own merits; and that will **also** help reduce emissions of carbon dioxide and other gases now building up in the atmosphere, ~~stimulating concern about potential climate change~~. **Let me outline them very briefly:**

Cut some out

We called last year for a **worldwide ban on chloroflourocarbon production**, to the extent safe substitutes are available. We're working to stabilize, and reduce where possible, both overall **emissions** and **energy consumption.** We're actively pursuing **technology development** to improve the effectiveness of both supply- **and** demand-side technologies for energy of **all** kinds.

We've introduced new **Clean Air Act** legislation -- emphasizing clean coal technology, conservation measures, the trading of emissions permits, and other devices to encourage industry to find creative, market-driven solutions.

We're in the middle of a comprehensive review and revision of our **National Energy Strategy**, considering our future energy needs in light of environmental, efficiency, and conservation issues --and developing alternative energy sources, ~~in hydro, solar, biomass, and geothermal designs.~~

We're working through diplomatic channels, and through innovative measures like debt-for-nature swaps, to do more than simply reduce global deforestation. **We hope to reverse it.**

And here at home -- ~~aware that new growth forests absorb significantly more CO2 than old grove timber~~ -- we've launched a major reforestation initiative, to plant a **billion** trees a year ~~on private land~~ across America.

The **economics** of our domestic strategies are now being scrutinized in Congress. Rest assured, given our role in the

R.S.W.G., that the economics of international responses to potential climate change will get equally intensive study.

We intend to develop real data on the costs of various response strategies, assess new measures, and challenge other nations to follow suit. We will also offer technical support to those who need it.

In creating **policy** to manage CO2 and other emissions now believed to be implicated in climate change, we want to encourage truly innovative responses -- including the trading of emissions permits if appropriate -- as well as a comprehensive approach where **all** major emissions implicated in climate change are included.

Wherever possible, we believe that market mechanisms should be applied -- and that policy must be consistent with economic growth and free market principles in **all** countries. ~~**This is where**~~ **ending the environmental cold war** ~~**will be most**~~ **crucial** is particularly

If we hope to promote environmental protection **and** economic growth around the world, it will be important to work <u>with</u>, not against industry. That will mean moving beyond the tradition of command, control, and compliance -- toward a new kind of environmental cooperation. Many industries, in fact, are already providing crucial research and solutions. And a few are already ahead of us.

One power-plant management firm, just across the river in Virginia, donated $2 million in 1988 for tree planting in Guatemala -- to compensate for a coal-fired plant it was building

in Connecticut. The company expects to couple tree-planting programs with ~~one~~ seven new power plants now on its drawing boards.

Where developing nations are concerned, some suggest we'll have to abandon the laissez-faire, free-market principles that allowed the industrial world to prosper. Well, we don't see it that way. We intend to apply the principles of the free market in the **service** of the environment -- **especially** in the developing nations. Sustainable economic development demands that we **enlist** the desires of the developing world, rather than try to limit them.

The share of total emissions contributed by developing countries is expected to rise dramatically in the future. We understand that China plans to double its use of coal by the end of the century, and India's use may triple.

To the extent we can accelerate the **advancement** of these and other developing nations, it will take **less** energy for them to produce wealth: Because in modern industrial countries, energy use per unit of Gross National Product has **declined** over time -- steadily, and dramatically.

So we need to work with the developing nations: Applying the power of the marketplace. Considering technology transfer for conservation, clean coal and renewable technologies. And encouraging industry to assist developing nations in making quantum leaps in technologies. That will allow developing nations to grow more quickly and easily -- and may help them

avoid making the environmental mistakes we older nations have made.

As I said earlier, I believe we should make use of what we know. We know ~~of the power of~~ that free markets ~~to~~ find creative solutions. ~~To make resources and talent more rapidly available.~~ **We understand the efficiency of an economic incentive. We should apply it now, in defense of the environment we share.**

Just as we rely on the corrective actions of the biosphere, I hope we will learn to rely on the corrective actions of free markets -- to give incentives and integrity to our strategies for climate change.

Let me wish the three working groups the very best of luck. I'm confident that your work will be done carefully, and well -- and that the I.P.C.C. will continue in its vital role.

Thank you -- and God bless you.

# # #

(Lange/Cawley)
January 31, 1989
7:00 A.M.
[IPCC.DOC]

PRESIDENTIAL ADDRESS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
MONDAY, FEBRUARY 5, 1990
10:15 A.M.

Thank you, Dr. Bolin. Professor Obasi. Dr. Tolba. Delegates of the World Meteorological Congress, and the United Nations Environment Program. Let me congratulate all of you...

[[Brief reflection, post-war: even as prospect of world war appears to diminish, importance of world stewardship grows.]]

Over the last forty years, we've unleashed the most technologically advanced creations of man. We've gained new, better, albeit, still incomplete understanding of the most ecologically fragile creations of nature. But whether created by man or nature -- what is critical to endurance, is **balance**.

Balance will certainly be crucial to the efforts of this Panel. For you are called upon to strike an unprecedented international bargain: a balance between global environmental policy, and global economic policy, where **both** sides benefit -- and **neither** is compromised.

This will be possible only if we understand that economic growth and environmental integrity are **not** contradictory priorities. One reinforces and complements the other.

A sound environment is the basis for the continuity and quality of human life and enterprise. And strong economies allow nations to fulfill the obligations of environmental stewardship. Where there is ~~wealth~~ economic strength, environmental stewardship is considered a necessity. But where there is poverty, it is too often a luxury.

For that reason, I believe that within this decade, we must usher in a new era of global cooperation: for environmental protection **and** economic growth. For intelligent management of industrial **and** natural resources. Above all, for **sustainable** development -- around the world.

The United States believes the I.P.C.C. is the best forum to develop policy on global climate change. We're committed to international cooperation on this issue. And we consider it vital that the community of nations is drawn together -- in an ordered, rational way -- to assess the potential for climate change.

The state of the science; the social and economic impacts; and the right response strategies: all are crucial components to a global resolution. **But in this, we must attend to what we know. And what we do, must be done responsibly and well.**

The stakes here are very high.

There is no question that human activities are changing the atmosphere in unexpected and unprecedented ways. Over the past three centuries, the level of carbon dioxide in the atmosphere has gone up by 25 percent. Atmospheric methane has doubled.

What we **don't** yet understand are the extent and consequences

of the alterations we've brought about -- and how they're linked to a significant, imminent climate change. **The state of our thinking, like the state of nature, calls for balance.**

Last fall, many -- among them, world leaders -- were citing a significant thinning of sea ice at the poles, as evidence that global warming had arrived. But recent observations show that the polar ice sheets are not melting, they're **growing** in size.

I'm not prepared -- academically, or otherwise -- to draw conclusions. But I have noticed something about the scientists drawing the conclusions.

Those who see climate change as a clear and present danger represent one distinct minority. Those who discount it completely, represent another minority. But many scientists -- if not most -- are **not** ready to claim that the extent of global climate change can now be reliably detected -- or predicted. That may be to their credit.

Observing the fervor of the French Revolution, the English poet William Blake wrote, "The best lack all conviction, while the worst are filled with passionate intensity." Here, too, we are called upon for action based on observation -- not media-driven emotion, or the politics of apocalypse.

What science now knows with confidence, policy-makers can't use. And what policy-makers are interested in, science doesn't yet know.

The questions that remain -- over the reflective effects of cloud cover, the cooling effects and CO2 absorption of oceans, and other sinks and feedback mechanisms we don't yet understand -- suggest that we should attend to what is known about climate change -- and work to know more.

Current computer models are marvels of mathematics. Still, they cannot yet be said to represent reality -- and cannot be expected to predict the future. Above all, responsible policy cannot rest on the shifting sands of hypothesis and a chaos of conjecture.

Given this level of uncertainty, some suggest we should act now, on the chance that significant climate change becomes certain. Others point to the opposite edge of that sword: any meaningful preemptive policies would bring only the certainty of prohibitive expense; conflict with Third World development; and declining standards of living, worldwide.

We're confident that the world will neither be caught surprised by a greenhouse effect it didn't expect, nor impoverished in anticipation of a cataclysmic warming that never arrived.

There is a middle way that ~~may~~ must be sought -- **a balance that must be struck -- that reconciles policy to emerging scientific knowledge, and environmental protection to economic development.**

The United States remains committed to its leadership role on environmental issues: in our domestic programs, in our work to forge international agreements, in our assistance to

developing and East Bloc nations, and through our chairmanship of the Response Strategies Working Group in the I.P.C.C.

Overall, we're already doing more than any other country -- in terms of financial and human resources, **by more than a factor of ten** -- to understand and address global warming, among other major environmental concerns. Funds devoted to environment-related research in our proposed 1991 budget now total over $70 billion.

Funding for the U.S. Global Change Research Program will increase by nearly 60 percent in fiscal 1991, to over $1 billion. It allows NASA to proceed with its "Mission to Planet Earth" -- and funds the launch of the first U.S. Earth Observing System, to advance the state of knowledge about the planet we share.

Along the way, we will seek the involvement of all nations, no matter what their level of development or economic system, to monitor and analyze climate change, and reassess the science. We place the highest priority on better understanding the earth and its interrelated systems -- and developing high-performance computing systems up to the task.

We seek immediate action, and have already taken a number of steps, that bring major benefits in their own right; make sense on their own merits; and will **also** help reduce emissions of carbon dioxide and other gases now building up in the atmosphere, stimulating concern about potential climate change.

Last year I announced our support for a worldwide ban on cloroflourocarbon production, to the extent safe substitutes are

available. We recently placed a fee on CFC production that is expected to reduce American CFC emissions even below the levels of international protocols.

We have compelling reasons to stabilize -- and reduce where possible -- both overall emissions and energy consumption. Ultimately, but eventually, fossil fuel will be all too finite.

So we're actively pursuing technology development programs to improve the effectiveness of both supply- **and** demand-side technologies for energy of all kinds -- through more efficient fuel generation technologies, renewable sources and end-use efficiency, and enhanced nuclear generation safety. And we're committed to regular assessments of the state of technology development.

To achieve domestic reductions in airborne emissions, we've introduced new Clean Air Act legislation -- emphasizing clean coal technology, conservation measures, the trading of emissions permits, and other devices to encourage industry to find creative, market-driven solutions.

We're in the midst of a comprehensive review and revision of our National Energy Strategy, to consider our future energy needs in light of environmental, efficiency, and conservation issues -- and to develop alternative energy sources in hydro, solar, biomass, and geothermal designs.

Forests, particularly in tropical regions, are being lost at a rate of 40 million acres a year -- an area larger than East Germany. The burning of this biomass and its after-effects

account for as much as a quarter of the carbon dioxide that human beings are adding to the atmosphere. For that reason -- and for the sake of the irreplaceable species being lost day by day -- we are working through diplomatic channels, and through innovative measures like debt-for-nature swaps, to do more than simply reduce deforestation. **We hope to reverse it.**

Here at home -- aware that new growth forests absorb significantly more CO2 than old grove timber -- we've launched a major reforestation initiative, to plant a **billion** trees a year on private land across America.

The economics of our domestic strategies are now being scrutinized in Congress. Let me also assure you, given our role in the R.S.W.G., that the economics of international responses to potential climate change will get equally intensive study.

We intend to develop real data on the costs of various response strategies, assess new measures, and challenge other nations to follow suit. We will offer technical support to those who need it.

In creating policy to manage CO2 and other emissions now believed to be implicated in climate change, we want to encourage truly innovative responses -- including the trading of emissions permits if appropriate -- as well as a comprehensive approach where **all** major emissions implicated in climate change are included.

Wherever possible, we believe that market mechanisms should be applied -- and that policy must be consistent with economic

growth and free market principles in **all** countries. **This is where the quest for balance will be most crucial.**

It will be important to work with, not against, industry if we hope to promote environmental protection and economic growth around the world. That will mean moving beyond the tradition of command, control, and compliance -- toward a new kind of environmental cooperation. Many industries, in fact, are already providing crucial research and solutions. And a few are already ahead of us.

One power-plant management firm, just across the river in Virginia, donated $2 million in 1988 for tree planting in Guatemala -- to compensate for a coal-fired plant it was building in Connecticut. The company expects to couple tree-planting programs with all seven new power plants now on its drawing boards.

Where the developing nations are concerned, some suggest we'll have to abandon the laissez-faire, free-market principles that allowed the industrial world to prosper. Well, we're headed in the opposite direction. We intend to apply the principles of the free market in the **service** of the environment -- **especially** in the developing nations. Sustainable economic development demands that we **enlist** the desires of the developing world, rather than try to limit them.

To be effective, the I.P.C.C. must truly represent the interests of the **world** community of nations. The share of total emissions contributed by developing countries is expected to rise

dramatically in the future -- becoming more than 50 percent by 2025. We understand that China plans to double its use of coal by the end of the century, and India plans a tripling.

But there may be good news here. To the extent we can accelerate the **advancement** of these and other developing nations, it will take **less** energy for them to produce wealth: In modern industrial countries, energy use per unit of Gross National Product has **declined** -- steadily, and dramatically.

So we need to work <u>with</u> the developing nations: Applying the power of the marketplace. Allowing for the trading of emissions permits where appropriate. Considering technology transfer for clean coal and renewable technologies, conservation, and end-use services. And encouraging industry to assist developing nations in making quantum leaps in technologies. Leaps that will allow LDC's to grow more quickly and easily -- and may help them avoid making the environmental mistakes we older nations have made.

As I said earlier, I believe we should make use of what we know. We know of the power of free markets to find creative solutions. To make resources and talent more rapidly available. **We understand the efficiency of an economic incentive. We should apply it now, in defense of the environment we share.**

We rely on the greenhouse effect, as long as it remains in balance. Without it, the surface of the earth would resemble that of the moon.

So just as we rely on the corrective action of the biosphere, we must learn to rely on the corrective actions of free markets to give incentives and integrity to our climate change strategies.

To keep this process moving, and advance the debate, we will host an international environment meeting on April 18 and 19 here in Washington. I look forward to first assessment report in June, and IPCC reports in August, etc.

Wish the three working groups the best of luck. Confident your work will be done carefully and well. Sure the I.P.C.C. will continue to prosper under ____, and benefit from Dr. Tolba's leadership....

# # #

RUARY 12, 1990

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111 RESEARCH

Fortune

THE ENVIRONMENT

BUSINESS JOINS THE NEW CRUSADE

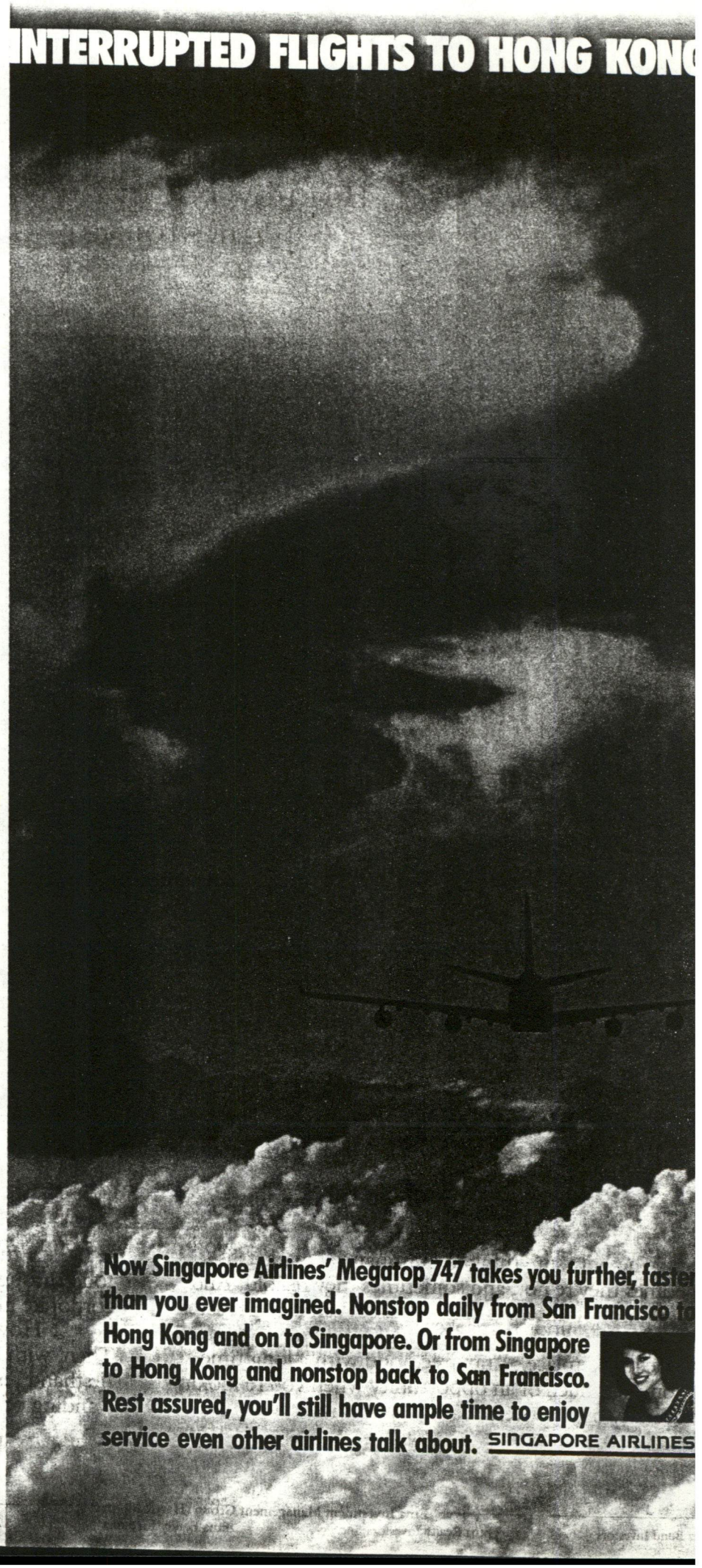
Pacific Gas & Electric's CEO Richard Clarke now works with activists his company once fought.

their homes and the health of their children. That means they are relentless. In general, unlike the mainstream environmental groups, they are not interested in compromise or mediation." McDonald's successfully confronted antipolystyrene picketing at several of its Vermont stores with an aggressive local educational campaign. By the end, local activists were asking that the company convert its paper cold-drink cups to plastic.

ONE LESSON from the company's experience: Don't ever assume you've solved an environmental problem. As knowledge evolves, attitudes change, and so do solutions. McDonald's switched from paper to polystyrene packaging for Big Macs and other sandwiches in 1976 largely because the public was worried about cutting trees and the energy that paper production consumed. As recently as the early Seventies, CFCs, one of today's leading environmental villains, were believed to be a harmless and inert triumph of modern chemistry.

You have to keep looking ahead—way ahead. For gutsy environmental farsightedness, few companies can top Applied Energy Services. The private, Virginia-based power-plant management firm donated $2 million in 1988 for tree planting in Guatemala to compensate for a coal-fired plant it was building in Connecticut. The trees, which of course consume carbon dioxide, are intended to offset the plant's emissions of the gas, which may lead to global warming. Says CEO Roger Sant: "We pride ourselves on being part of the solution, not part of the problem. We weren't trying to do any more than salve our own guilt, I guess." The company expects to couple tree-planting programs with all seven new plants on its drawing boards. Several large outfits have contacted Sant to ask his help in refining similar plans.

One recent weekday afternoon, three men walked out of the Environmental Defense Fund's midtown Manhattan office on their way to have lunch together. On the left was EDF's senior economist. On the right was an environmental expert in the Soviet government. Between them was a businessman, a trader in the nascent enterprise of buying and selling pollution rights. Together that trio forms a picture of how the new environmentalism is shaping up: global, more cooperative than confrontational—and with business at the center. F



Frederick M. Bernthal

Current
Policy
No. 1216

U.S. Climate Change Policy

United States Department of State
Bureau of Public Affairs
Washington, D.C.

Following is an address by Frederick M. Bernthal, Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs, at the National Press Club's Conference on Earth Observations and Global Change sponsored by the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, and the Environmental Research Institute of Michigan, Washington, D.C. September 19, 1989.

"Environmental diplomacy" is now part of the lexicon of international affairs. Indeed, *The Economist* dubbed the recent Paris economic summit the first "green summit," and went on to say: "What defense has been to the world's leaders for the past 40 years, the environment will be for the next 40: an intractable exercise in national self-restraint, where gains depend less on what individual countries do than on whether many countries trust each other and will work together."

At home, while it may have been for the wrong reason—the drought in our own Great Plains—global climate change last summer suddenly emerged in the United States as the most important environmental issue of the day.

Now as luck and nature would have it, chlorofluorocarbons (CFCs) and halons, blamed for destroying the protective stratospheric ozone layer, are also powerful greenhouse gases. And if CFC phaseout and stratospheric ozone depletion raise difficult international issues of equity, economic development, and technology transfer, CFCs will seem like child's play should we find that world action becomes necessary to cope with global warming.

Maintaining Political Interests in the Environment

It is never easy to maintain political interest in an issue that will span the careers—indeed, the lifetimes—of everyone in this room today. But the single political imperative for this issue is focus and continuity—despite last summer's drought in the Great Plains, despite the *New York Times* telling us that the 100-year record shows no evidence after all for warming in the United States, and even despite some future years of cooling that might cause the warmth of the 1980s to fade in our memory.

Such issues place world leaders in the unenviable position of having to distinguish problems that are serious—and this one is—from those that are a crisis.

Making that distinction is never easy, and it is the more difficult when the problems are profoundly scientific in character. In such circumstances, our first priority must be to determine, as clearly as we can, what we know and what we don't know; to increase our understanding of the natural processes we are observing; and finally, to develop an understanding of the potential environmental, social, and economic impacts of the problem.

The American people, to say nothing of the developing world, will not forgive us if they are asked to make great sacrifices and we turn out to be wrong. They would be much less likely to listen next time. And I have little doubt that, one way or another, humankind is capable of concocting a quiet little planetary catastrophe.

So we are working to reach an international consensus on the nature of climate change and potential response strategies for addressing such change. To that end, the United States strongly supported the establishment of the Intergovernmental Panel on Climate Change (IPCC), under the auspices of the UN Environment Program (UNEP) and the World Meteorological Organization (WMO). The IPCC now serves as the primary international forum for this issue.

The IPCC has established three working groups: one to review and assess the science relevant to climate change, another to assess the possible environmental and socioeconomic impacts of such change, and a third to identify potential response options. The United Kingdom chairs the science group; the U.S.S.R., the impacts group; and the United States, the response strategies working group.

This three-track approach is designed to ensure that policy recommendations reflect our best current knowledge of the science and likely impacts of climate change.

Role of the Response Strategies Working Group

The working group, which I chair, is considering both short and long-term policy options for addressing climate change. Four topical subgroups have been formed: energy and industry, agriculture and forestry, coastal zone management, and resource use and management. The first two subgroups will consider strategies for limiting the rate of climate change; the second two for adapting to climate change.

The group is also discussing the implied tradeoffs among emissions reductions, technological changes, population growth, and growth in per capita GNP [gross national product]. The Japanese delegation presented an analysis which implies that a technological revolution would be required to stabilize the atmosphere by the year 2090, if world economic growth is to be maintained at acceptable levels. Such a 100-year perspective is needed to determine what our climate future might hold; whether that future is acceptable, and if not, how it might be modified.

Accordingly, at its next meeting in Geneva in 2 weeks, the group will discuss mechanisms for five categories of response implementation, many of which are of special interest to the developing world. These include financial measures; technology transfer and development; public education; economic (market) measures; and finally, legal measures, including elements of a possible framework convention on climate change.

All of these considerations will form the basis for the IPCC's interim report on global climate change in the fall of 1990. President Bush has said that he expects these efforts will lead to formal negotiations on a framework convention on climate, to set forth the broad principles that should guide world cooperation and attention in the decades ahead. The Group of Seven leaders supported this position at the recent Paris economic summit.

Key Points on Global Warming

Secretary of State James Baker, in his first statement in an international forum last February, made four key points on the climate change issue.

First, we can probably not afford to wait until all of the uncertainties have been resolved before we do act. Time will not make the problem go away.

Second, while scientists refine the state of our knowledge, we should focus immediately on prudent steps that are already justified on grounds other than climate change—what I call the "no regrets" policy: things we will never regret doing, whether or not global warming ever occurs. These include reducing CFC emissions, greater energy efficiency, and reforestation.

Third, whatever global solutions to global climate change are considered, they should be as specific and cost-effective as they can possibly be.

Finally, those solutions will be most effective if they transcend the great fault line of our times—the need to reconcile the human imperative for both economic development and a safe environment.

These remarks have become baseline national and, indeed, international policy on global warming.

But improvements in energy efficiency, dealing with CFCs, reforestation—such measures, if undertaken—only postpone the problem if the world continues to rely on fossil fuels. Permanent solutions that permit continued world economic growth would require energy technologies which minimize greenhouse gas emissions—a permanent shift in the mix of energy sources. For if global warming is inherently an international problem, it is also inherently an energy problem.

We are told that China plans to double its use of coal by the year 2000, and India plans a tripling. If that happens, coal use in just those two countries will exceed that of all the OECD countries combined. So while today's greenhouse gases are primarily the product of the industrialized nations, if current trends continue, by the middle of the next century half of the problem will reside in the developing world.

Should major worldwide reductions in greenhouse gas emissions be deemed necessary to address this problem, it will require nothing less than a global bargain. The industrialized world will have to undertake the research and development of alternative energy sources; developing countries will have to forego the eras of deforestation and smokestack development that nurtured the modern industrial states of the north in their youth.

Such problems serve to remind us, however, that change is not only inevitable, it is the source of new opportunities. The world faced a serious energy crisis in the 19th century—it was running out of whale oil. To John D. Rockefeller and Andrew Mellon this was an opportunity, not a crisis. I imagine the whales would agree. ■

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POLICY OPTIONS FOR S[illegible] GLOBAL CLIMATE

DRAFT

REPORT [illegible]

Volume [illegible]

United States Environmental Protection Agency

Office of Policy [illegible]

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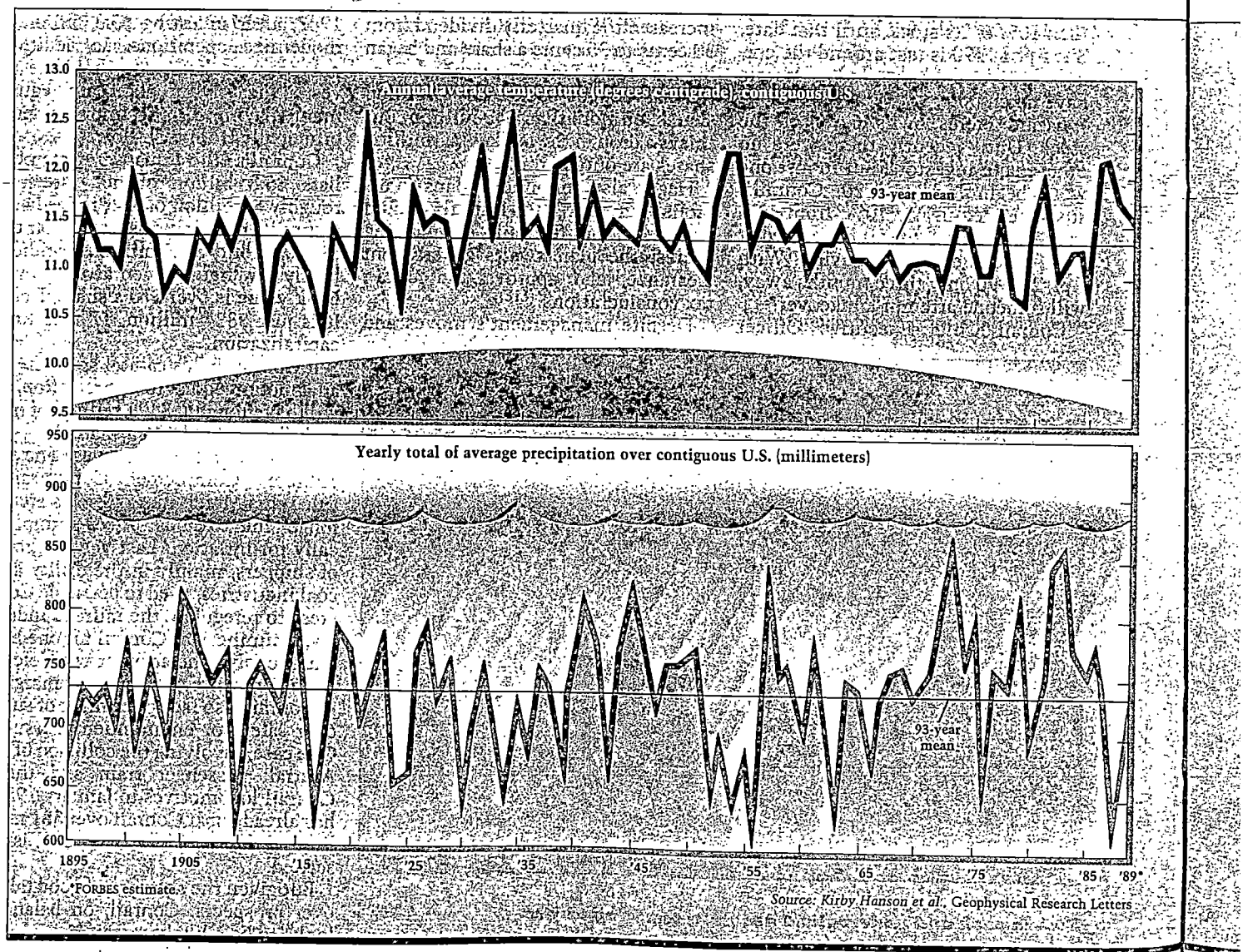
It is conceptually useful to distinguish between production activities and consumption activities. Production emissions arise largely from the processing of bulk materials--steel from ore, plastics from petroleum, cement and glass from limestone and silicate rock--which requires large amounts of energy per unit of industrial value added (i.e., the difference in value between an industry's products and its inputs) and may also be associated with direct emissions of greenhouse gases. For example, during cement making, $CaCO_3$ is reformed to $CaO + CO_2$, which is released to the atmosphere, and during the making of plastic foams, CFCs are released. Much lower emissions per unit of value added are generally associated with fabrication and finishing. Food production leads to emissions of methane and nitrous oxide as discussed in Chapter IV, as well as to emissions of CO_2 and other gases as a result of the energy used on and, even more, off the farm. The large amount of energy required to move freight is also attributable to production activities. Consumption leads to greenhouse gas emissions as individuals use energy, primarily in pursuit of comfort (heating and air conditioning) and mobility (automobile and air travel). Other major end-uses for energy include refrigeration, lighting, water heating, and cooking.

Production

As societies develop over time, both the quantity and the structure of activities that influence emissions change radically. For example, energy use per unit of Gross National Product (GNP) has declined steadily and dramatically in industrialized countries, even in periods of declining real energy prices (Figure 5-1). This decline is due to a combination of two factors. First, improvements in production processes, which often save capital and labor as well as energy, reduce the energy intensity per ton of physical output. For example, in steel production modern energy recovery and process technology make it possible to produce a ton of steel using only 13×10^9 joules (13 GJ) of final

Apocalypse sells well in the media and even better on Capitol Hill. And that is why fears of the greenhouse effect threaten to push the U.S. into a costly environmental mistake.

THE GLOBAL WARMING PANIC



By Warren T. Brookes

On Nov. 7 the U.S. and Japan shocked environmentalists around the world by refusing to sign a draft resolution at a Netherlands international conference on global climate change calling for the "stabilization" of emissions of carbon dioxide (CO_2) and other "greenhouse gases" by the year 2000. Instead, they made the conference drop all reference to a specific year, and to a specific CO_2 reduction target. The Bush Administration view was set forth by D. Allan Bromley, the presidential science adviser, in testimony to Senator Albert Gore's subcommittee on Science, Technology & Space: "My belief is that we should not move forward on major programs until we have a reasonable understanding of the scientific and economic consequences of those programs."

President Bush was immediately savaged by environmentalists, and by politicians like Senator Gore (D–Tenn.). The Bush viewpoint does not sit too well with most of the media, either. Last January *Time* published a cover story on environmental catastrophes, declaring that greenhouse gases could create a climatic calamity. The *New York Times* weighed in a month ago with a story about how melting polar ice would flood the nations that can least afford to defend themselves, Third World countries like Bangladesh and India. Or perhaps you have seen the ads for Stephen Schneider's *Global Warming,* accompanied by a blurb from Senator Tim Wirth (D–Colo.). In his book this well-known climatologist paints a future of seas surging across the land, famine on an epidemic scale and ecosystem collapse.

Is the earth really on the verge of environmental collapse? Should wrenching changes be made in the world's industry to contain CO_2 buildup? Or could we be witnessing the 1990s version of earlier scares: nuclear winter, cancer-causing cranberries and $100 oil? The calamitarians always have something to worry us about. Consider this: In his 1976 book, *The Genesis Strategy,* Schneider lent support to the then popular view that we could be in for another ice age, "perhaps one akin to the Little Ice Age of 1500-1850. Climatic variability, which is the bane of reliable food production, can be expected to increase along with the cooling."

At the very moment Bromley was testifying to Gore's subcommittee, MIT's prestigious *Technology Review* was reporting on the publication of an exhaustive new study of worldwide ocean temperatures since 1850 by MIT climatologists Reginald Newell, Jane Hsiung and Wu Zhongxiang. Its most striking conclusion: "There appears to have been little or no global warming over the past century." In fact, the average ocean temperature in the torrid 1980s was only an eighth of a centigrade degree (a quarter of a Fahrenheit degree) higher than the average of the 1860s. Ocean temperature is now virtually the same as it was in the 1940s. Since two-thirds of the buildup of CO_2 has taken place since 1940, the MIT data blow all of the global warming forecasts into a cocked hat. President Bush wisely told reporters: "You can't take a policy and drive it to the extreme and say to every country around the world, 'You aren't going to grow at all.' "

That is the central issue of the global warming debate, and it explains why the U.S. and Japanese position was supported by some 30 other developing nations which see that just as Marxism is giving way to markets, the political "greens" seem determined to put the world economy back into the red, using the greenhouse effect to stop unfettered market-based economic expansion.

In simplest terms, the earth's atmosphere does operate as a greenhouse. In addition to oxygen, nitrogen and water vapor, the atmosphere contains several gases that trap radiated heat, including methane and CO_2. Carbon dioxide is essential not only to warmth but to vegetation. It is also essential to life in another way: Without its heat-containing effect the planet would freeze, like the atmospherically naked moon.

Throughout most of human history that atmospheric blanket has held global temperatures at an average of about 60 degrees F., plus or minus 5 degrees F. During most of human history, the CO_2 concentration in that blanket has, until this century, hovered around 270 parts per million, although in earlier geologic epochs it reached as high as 20,000.

Over the last 100 years the CO_2 concentration has risen from 270 to today's level of 350. The culprit: man. Most of the greenhouse gas increase is the result of fossil fuel consumption. Add to that the rise in other man-generated trace gases—methane, nitrogen oxides and chlorofluorocarbons—and total greenhouse gases are now at 410 ppm. In other words, because of the combined effect of these gases, we have already gone over halfway to a doubling of CO_2. Even so, there has been less than half a degree of warming in the last 100 years.

What do the environmental pessimists make of all this? The earliest versions of their computer "general circulation models" predicted that the earth would warm up by anywhere from 3 to 5 degrees centigrade, or 5 to 9 degrees Fahrenheit, by the year 2050. The most extreme scenarios warn of coastal flooding (from melting ice caps) and rising inland droughts. However, as the level of sophistication of the models has risen, these forecast effects have been steadily reduced to a new range of 1.5 to 2.5 degrees centigrade.

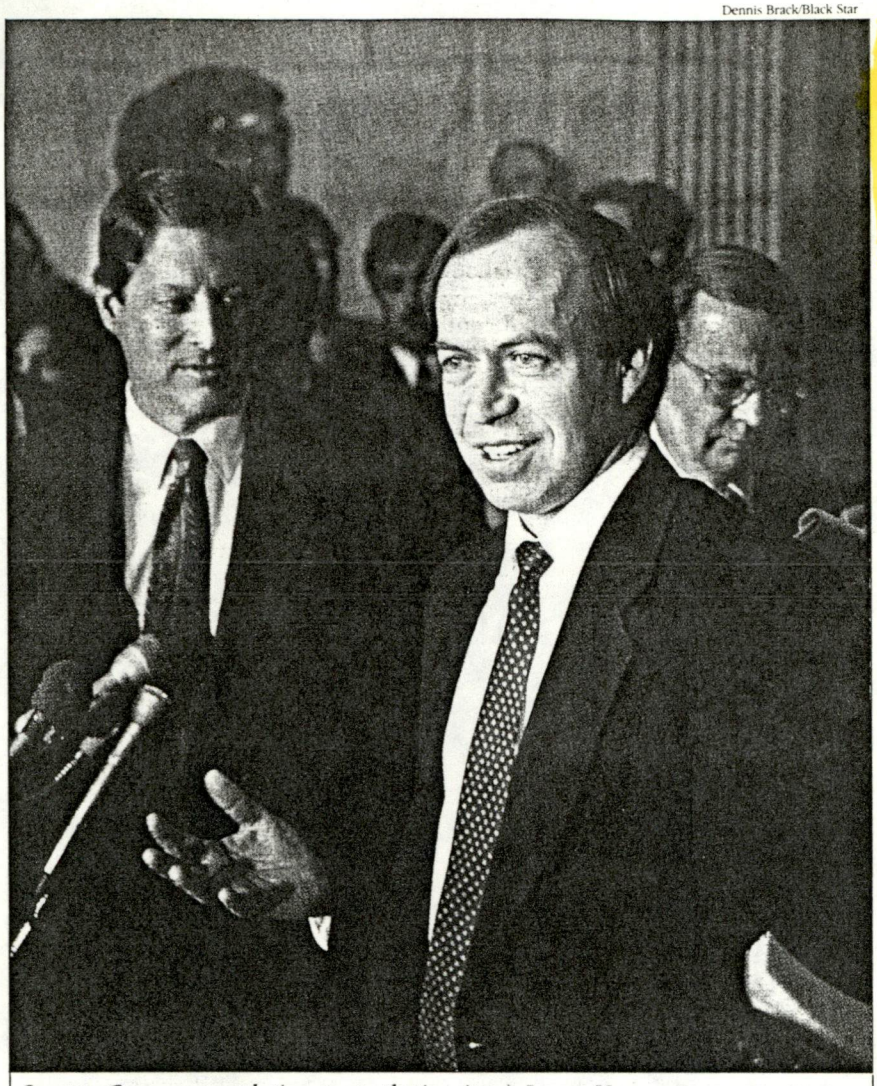
One major exception to this declining rate of doom is the model run by James Hansen of the National Aeronautics & Space Administration, who shocked a congressional hearing in

Fahrenheit 52

That's the average temperature in the U.S. for the period 1895-1987, as displayed in an academic journal article earlier this year by three meteorologists questioning the greenhouse effect. If there is a warming trend at all, it is very hard to see against the background of statistical "noise"—random annual variation. So, too, for rainfall, which has averaged 29 inches a year across the U.S. since 1895. Here we have reproduced the data from the academic article, with the original long-term average lines. We have also extended the history to cover 1988 and an estimate for 1989, extrapolated from January-November recordings. Scientists who are skeptical of the greenhouse theory don't deny that carbon dioxide can trap heat; they argue, rather, that the effect is much fainter and harder to predict than the alarmists want to believe.

Andrew Christie

Dennis Brack/Black Star



Senator Gore contemplating sympathetic witness James Hansen
Censorship? OMB merely said computer models are poor predictors.

June 1988 during the middle of a scorching near-nationwide drought, by saying he was "99% confident" the greenhouse effect is now here.

Even though the vast majority of the climatological community was outraged by Hansen's unproven assertions, environmental advocate Stephen Schneider notes in *Global Warming*, "Journalists loved it. Environmentalists were ecstatic. Jim appeared on a dozen or more national television news programs. . . ."

By the end of 1988, with Hansen and Schneider's enthusiastic support, global warming was deeply embedded in the public consciousness. Now over 60% of the public is convinced it will worsen, even as the evidence of that alleged trend is under increasingly sharp and solid scientific attack.

On the contrary, that attack has been used as a premise for even more immediate action. As one TV anchorman argued, "Even if we aren't sure it's true, shouldn't we take precautions and act now as if it were?"

Unfortunately, "taking such precautions" could well spell the end of the American dream for us and the world. Once CO_2 is in the atmosphere, we can't easily remove it. Since most of the forecast rise in the gas is a function of simple economic and population growth in the Third World, there is no realistic economic way to prevent a CO_2 doubling without slashing growth and risking a revolt of the have-not nations against the haves. The Washington, D.C.-based Center for Strategic & International Studies points out that, even though the U.S. is now the largest carbon fuel user, it's the developing countries that will quadruple their energy consumption by 2025. "By the middle of the next century, they will account for the bulk of the greenhouse gases emitted into the atmosphere, even if they succeed in doubling energy efficiency."

The Environmental Protection Agency finds that just to stabilize U.S. CO_2 emissions at present levels would force 30% taxes on oil and coal, while to meet environmentalists' demands for a 20% reduction in U.S. CO_2 emissions would require a tax of $25 per barrel on oil, and $200 a ton on coal, effectively doubling U.S. energy costs.

Unfortunately, the popular media don't seem to care. In May the national press erupted in a two-day firestorm when Hansen told Senator Gore's subcommittee that the Office of Management & Budget had censored his florid global warming testimony by adding the modest caveat, "These changes should be viewed as estimates from evolving computer models and not as reliable predictions."

Yet, at the moment of that testimony, 61 of the world's top climatologists, gathered for a five-day workshop in Amherst, Mass., were largely agreeing with OMB. *Science* magazine reported that most of the attendees were pleasantly surprised by OMB's efforts to control Hansen: "I can't say I agree with censorship, but it seems OMB has better people than I thought. I'd have to agree with their angle," said Rick Katz of the National Center for Atmospheric Research, one of the leading modelers.

Conference leader Michael Schlesinger, another top modeler (University of Illinois), agreed: "[Hansen's] statements have given people the feeling the greenhouse effect has been detected with certitude. Our current understanding does not support that. Confidence in its detection is now down near zero."

That conclusion was buttressed by one of the deans of U.S. climatology, Reid Bryson, a founder of the Institute for Environmental Studies at the University of Wisconsin, who said in July: "The very clear statements that have been made [by Hansen] that the greenhouse warming is here already and that the globe will be 4 degrees [centigrade] warmer in 50 years cannot be accepted."

On Dec. 24, 1988, Hansen received an unwelcome Christmas present in the form of a new research paper by one of the world's most universally respected climatologists, Thomas Karl, and two of his colleagues at the National Oceanographic & Atmospheric Administration, Kirby Hanson and George Maul. Their review of the best climate record in the world—that of the 48 contiguous United States—concluded: "There is no statistically significant evidence of an

overall increase in annual temperature or change in annual precipitation for the contiguous U.S. 1895-1987." Look at the chart on pages 96-97. As Karl says in an interview, "If there is a greenhouse warming effect, you can't find it in the U.S. records."

That news alone should have cooled off the global warming movement. But the environmentalists accepted Hansen's dismissal of the paper as "not significant" because the data covered only 1.5% of the earth's surface, not nearly enough to identify major trends.

But MIT meteorologist Richard Lindzen says that Hansen's rebuttal is out of line. He points out that because of the law of large numbers—the fact that a large enough sample is likely to give an accurate picture of a larger population—"the absence of any trend in the record of the contiguous U.S. leads to the suspicion that all the trends in the global record may be spurious."

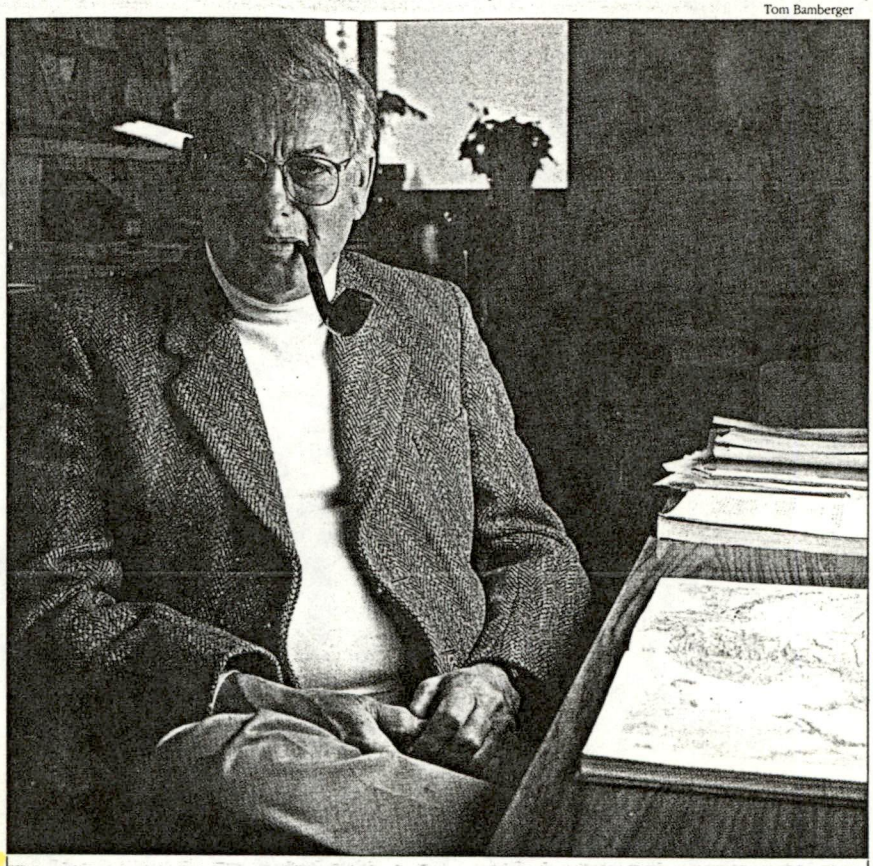
The major reason for this is that when you fully subject global temperature records (as Karl did the U.S. records) to adjustment for the effects of urbanization (cities are heat islands that artificially inflate temperature records), the global warming trend since 1880 has been only a third of a degree centigrade, and over the Northern Hemisphere land masses, no trend at all.

Here's another fact, noted by Hugh Ellsaesser of Lawrence Livermore Laboratories, that should trouble the calamity theorists: Most of the past century's warming trend took place by 1938, well before the rise in CO_2 concentration. From 1938 to 1970 temperatures plunged so sharply a new ice age was widely forecast. Furthermore, the warming trend since 1976 has been just the opposite of that forecast by the greenhouse model, with *cooling* in both the northern Pacific and North Atlantic.

In fact, the Northern Hemisphere shows no net change over the last 55 years, during which CO_2 concentration rose from approximately 300 to 350 ppm and other thermally active trace gases were in their steepest growth phases.

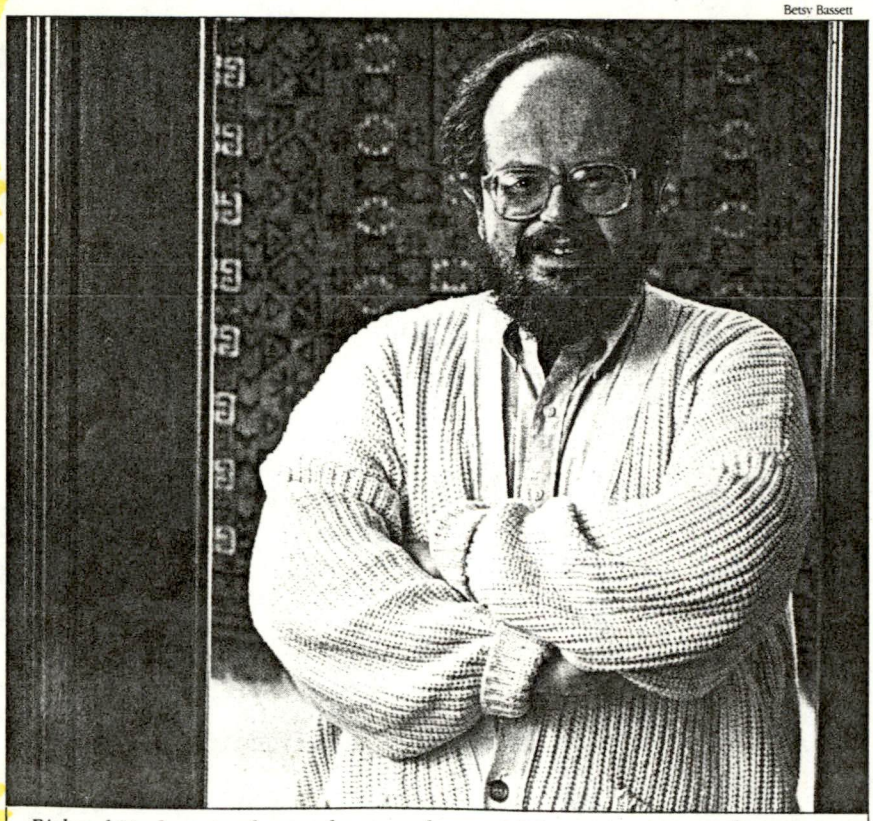
In spite of this clear lack of correlated warming evidence, one of the leading climate models now predicts that a 1% annual rise in CO_2 should, over 30 years, produce a 0.7-degree centigrade warming. But when Patrick Michaels of the University of Virginia applied that formula to the period from 1950 to 1988, when greenhouse

Tom Bamberger



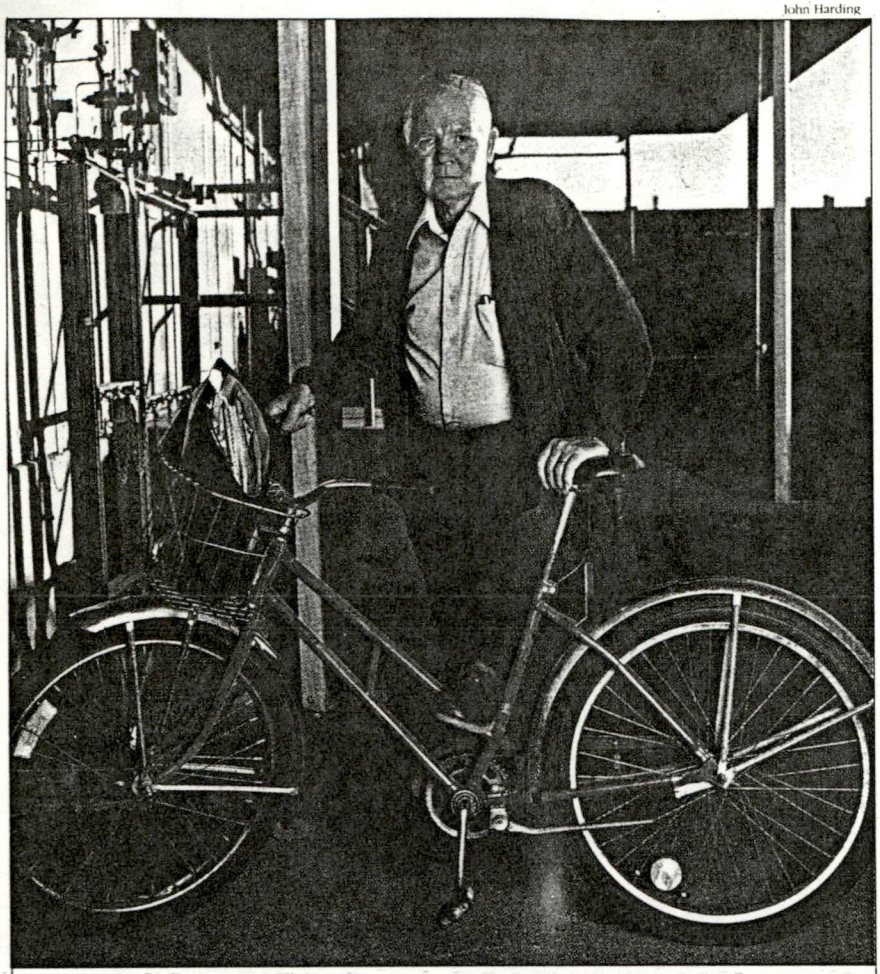
Reid Bryson of the University of Wisconsin
"Models are marvels of mathematics but crude imitators of reality."

Betsy Bassett



Richard Lindzen, professor of meteorology at MIT
His prediction for the next century: a few tenths of a degree of warming.

John Harding



Hugh Ellsaesser of Lawrence Livermore Laboratories
Surprise: At low latitudes, CO_2 actually thins the greenhouse blanket.

gases rose 1.2% per year, he found a tiny 0.2-degree warming in land temperatures, where the model would have predicted 1.3 degrees. When a model cannot come within 500% of explaining the past, it is useless as a predictor of anything.

As Reid Bryson concludes in a 1988 paper, "A statement of what the climate is going to be in the year A.D. 2050 is a 63-year forecast. Do the models have a demonstrated capability of making a 63-year forecast? No. A 6.3-year forecast? No. Have they successfully simulated the climatic variation of the past century and a half? No. They are marvels of mathematics and computer science, but rather crude imitators of reality."

The major weakness of the models is their assumption that the CO_2 buildup is the significant climate variable, and should *ceteris paribus* (all other things being equal) generate warming. But, as it turns out, the *ceteris* are decidedly not *paribus*.

One of those variables is cloud cover, which is at least 100 times more powerful in affecting temperatures than greenhouse gases and is infinitely variable. Yet, because cloud cover has been documented only for a decade or so (by weather satellites), the models have little to go on. Until recently, the modelers assumed that warmth gave rise to the kind of clouds that trap heat, contributing still further to warming, in a vicious cycle. But in June 1988, V. Ramanathan of the University of Chicago and a team of scientists at NASA concluded from preliminary satellite data that "clouds appear to cool earth's climate," possibly offsetting the atmospheric greenhouse effect.

The supreme irony is that this "cooling effect," most pronounced in the Northern Hemisphere, coincides with the paths of coal-burning emission plumes with their high concentration of sulfur dioxide. That confirms a long-held thesis that sulfur dioxide creates "cool clouds." Of course, it is very upsetting to an environmentalist to discover that a pollutant has a beneficial side effect.

Sulfur dioxide emissions not only acidify rain, they combine with water vapor to form what are known as "aerosols," which have the effect of brightening clouds and making them reflect more heat away from the earth. Wisconsin's Reid Bryson described this effect as early as 20 years ago. Bryson's thesis was scorned at the time. But last June, Thomas Wigley, one of England's top climatologists and a global warming enthusiast, conceded in a paper in *Nature* magazine that sulfur dioxide cooling "is sufficiently large that the effects may have significantly offset the temperature changes that resulted from the greenhouse effect."

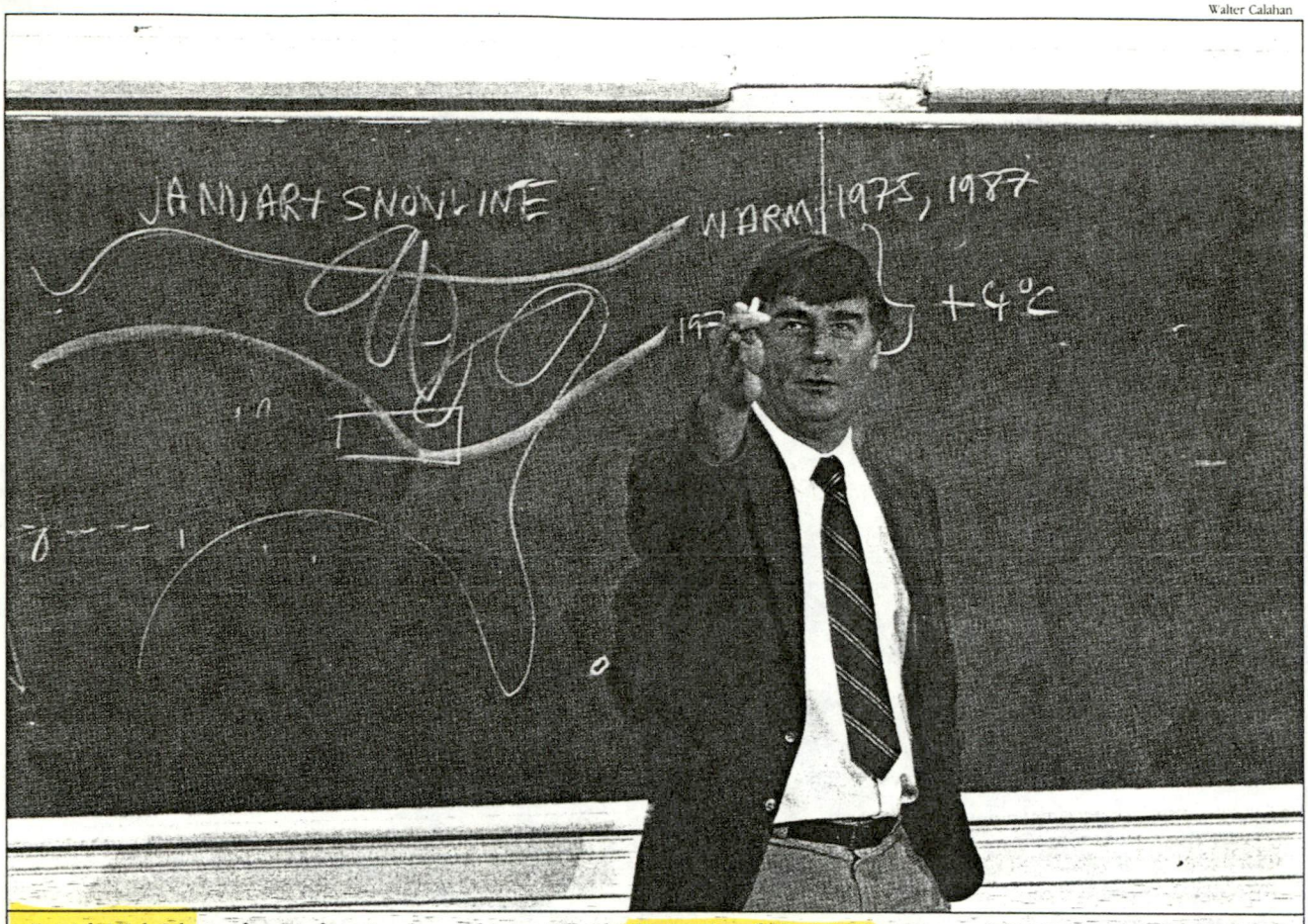
Michaels says this could also explain in part why U.S. daytime highs (when brighter clouds have the most cooling effect) have actually declined substantially in the last 50 years, even as the nighttime lows have risen. "This should make you wonder," says Michaels, "why Hansen [and others] have only perturbed their models with CO_2, and not with SO_2 as well. If you only perturb the model with CO_2, it will predict the greenhouse warming effect. If you only perturb it with SO_2, you get an ice age."

Hugh Ellsaesser says the main reason the models have been so completely wrong in "predicting" the past is that they completely ignore the countervailing, thermostatic effects of the hydrological cycle of evaporation and condensation. Two-thirds of the predicted global warming is due not directly to CO_2's radiative power but to an indirect effect: Carbon dioxide warming supposedly causes a threefold amplification of water vapor surface evaporation into the atmospheric blanket.

But Ellsaesser says in the warmer, tropical latitudes, where the temperature change from sea-level upward is most rapid, evaporation has the opposite effect. There, water vapor rises by deep convection in fast-rising towers. This in turn leads to more rapid condensation and precipitation, which then causes a drying and thinning of the upper atmosphere in a process called subsidence. "In the lower latitudes, a rise in CO_2 emissions will produce a 3-to-1 rise in greenhouse blanket *thinning* due to condensation. That's exactly the opposite of what the models predict," he says.

An eminent British scientist, Sir James Lovelock, says this hydrological process "is comparable in magnitude with that of the carbon dioxide greenhouse, but in opposition to it." National Oceanographic scientist Thomas Karl agrees: "We will eventu-

Walter Calahan



Patrick Michaels, professor of environmental science at the University of Virginia
His prediction for 1991: a heat wave, accompanied by a global warming panic.

ally discover how naive we have been in not considering CO_2's effects on cloud cover and convection. As CO_2 speeds up the hydrological cycle, more convection creates more clouds and more cooling. So, the greenhouse effect could turn out to be minimal, or even benign."

MIT's Richard Lindzen thinks that correcting for deep convection alone could lower the global warming estimates by a factor of six. As a result, he says, "It is very unlikely that we will see more than a few tenths of a degree centigrade from this cause [CO_2] over the next century."

In the face of such mounting evidence, U.S. businesses may stop worrying about devastating legislative enactments. That could be a mistake. As Nobel economist James Buchanan argues, what drives Washington policymaking is not economic or scientific realities but "public choice," the pursuit of power and funding.

The public choice potential of global warming is immense. Under a global warming scenario, the EPA would become the most powerful government agency on earth, involved in massive levels of economic, social, scientific and political spending and interference, on a par with the old Energy Department. Don't forget the energy crisis: During the 1970s, a great many less-than-honest scientists confidently predicted the world was about to run out of fossil fuels, and that by 1985, we'd be paying $100 a barrel for oil, or more. We wasted billions on energy subsidies.

Senator Albert Gore is evidence of this public choice phenomenon. He seems determined to run his next presidential campaign at least in part on climate change, saving Mother Earth. Every year, at least one-sixth of the U.S. is classified by the government's Palmer Index as being in drought. Even though that index overstates the case, Gore could be looking at some very big political states—maybe California or Texas or Iowa—where his message will resonate with farmers and business. All he has to do is wait for a warm spell, and capitalize on what mathematicians call noise in the statistics.

Patrick Michaels explains: "We know that the Pacific Ocean current known as El Niño tends to warm and cool in two-year cycles. Just as its warming cycle produced the 1987-88 droughts, in 1989 it cooled sharply, making the U.S. much cooler and wetter than Hansen had forecast, and that is likely to happen in 1990, again. But that means that 1991 and 1992 should be warmer and drier than usual as the El Niño current warms. It won't matter that this has nothing to do with global warming, the media will perceive it that way, and people will tend to believe it."

Bernard Cohen, a physicist at the University of Pittsburgh, warns, in a 1984 book: "Our government's science and technology policy is now guided by uninformed and emotion-driven public opinion rather than by sound scientific advice. Unless solutions can be found to this problem, the U.S. will enter the 21st century declining in wealth, power and influence. . . . The coming debacle is not due to the problems the environmentalists describe, but to the policies they advocate."

"Global warming" may well prove Cohen right. ■

Greenhouse Skeptic Out in the Cold

A prominent meteorologist says the greenhouse warming will probably be a bust; experts in and out of the climate community staunchly disagree with this latest iconoclast

IF THE LONG, HOT SUMMER OF '88 sparked the greenhouse revolution, the near normal weather of 1989 is bringing on the counterrevolution. A small but growing cadre of skeptics is now decrying predictions that the greenhouse warming of the next century will surely be severe enough to cause drought, agricultural disaster, and inundation by rising seas.

The computer models producing such doomsday predictions are rife with uncertainty, the skeptics say, the alarm is unwarranted at this point, and the rush to reduce the emissions of carbon dioxide and the other greenhouse gases that cause atmospheric warming is ill-advised. The warming in the next century may well be negligible or even benign, a few maintain.

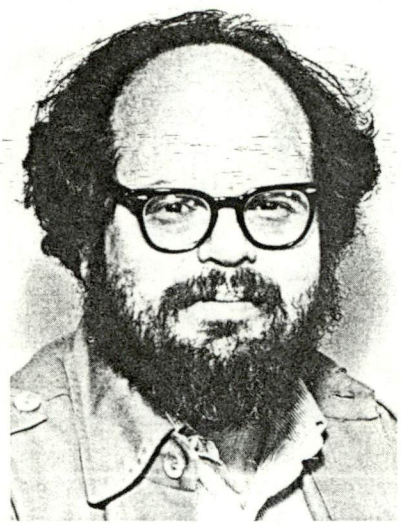
Richard Lindzen, if not the commander-in-chief of these counterrevolutionary forces, is a top general. His troops, at least the outspoken ones, number less than a dozen and are drawn from the ranks of climatologists, meteorologists, and an assortment of related disciplines. Most have not specialized in greenhouse research and have only recently entered the fray.

The claims of Lindzen and his cohorts have not gone unchallenged, however. They are already drawing return fire from mainstream greenhouse researchers, although even some of these concede that greenhouse warming may be less severe than the worst case predictions (see box on p. 1119).

One reason for Lindzen's prominence among the greenhouse skeptics is his credentials. Educated at Harvard, Sloan Professor of Meteorology at the Massachusetts Institute of Technology, and member of the National Academy of Sciences, Lindzen has made major contributions to the theory of how the atmosphere behaves.

No other U.S. skeptic has such scientific stature. So when he says the greenhouse effect "is the only subject in atmospheric science where a consensus view has been declared before the research has hardly begun," people are going to listen. Among those reportedly listening are President George Bush and White House Chief of Staff John Sununu (*Science*, 24 November, p. 992). In September, Lindzen coauthored a letter to the President in support of a report by the George C. Marshall Institute, a Washington D.C. think tank. That report, which also dismisses current forecasts of greenhouse warming as useless, may have influenced the recent U.S. decision not to commit itself to reducing carbon dioxide emissions.

People are also listening to Lindzen because his latest volley in the greenhouse wars is an extreme and potentially devastating one: he says that the computer models that predict a large greenhouse effect are probably fatally flawed because they neglect to consider that the atmosphere can take care of itself. Greenhouse gases will inevitably increase, he admits. They will even double some time in the next century, but the atmosphere will likely warm by at most a few tenths of a degree, not the 1.5° to 4.5°C that researchers running the models expect.



MIT

Richard Lindzen. *The atmosphere can negate most of the greenhouse warming.*

"... both the data and our scientific understanding do not support the present level of concern," he has written in a widely circulated, but as yet unpublished, manuscript on the subject. As Lindzen understands the atmosphere, it will in all likelihood react to the warming effect of additional greenhouse gases with a countereffect of its own, a so-called negative feedback, that will neutralize most of the warming.

Researchers in the computer modeling community under attack by Lindzen disagree—some of them vehemently. One of these is Jerry D. Mahlman, the director of NOAA's Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey. When Mahlman reviewed Lindzen's manuscript for the *Bulletin of the American Meteorological Society*, he "recommended the paper be rejected unless he [Lindzen] wanted to convert it into a paper about science. It came across as a whiny complaint without scientific justification. Dick Lindzen is a friend of mine, so I did not say that lightly. I was very disappointed." The paper is still pending at the *Bulletin*.

Others who run the big climate models join Mahlman in complaining that Lindzen seems to claim he has a better climate model in his head than they have in their supercomputers. But what Lindzen has now is not so much a complete model as an idea about how control of atmospheric temperature works. Indeed, he describes it himself as an idea of a theological or philosophical nature.

"The most likely area to search for severe problems [with the models] is in the interaction of climate with water (in all its phases)," he wrote in his paper. "The remarkable thermodynamic properties of water almost certainly lead to its acting as nature's thermostat."

Where the big greenhouse models go wrong, Lindzen says, is that their water always responds to a warming by amplifying it through positive feedbacks. Water never tends to counteract the warming. For example, a warming would drive more water vapor into the atmosphere, where it can act as a greenhouse gas to trap more heat and further warm the climate. Lindzen finds the absence of counterbalancing negative feedbacks, in which water would respond by cooling climate, to be "highly unlikely."

If water-related negative feedbacks exist, Lindzen argues, they are most likely to occur in the tropics above an altitude of 5 kilometers near towering columns of cloud. They carry air from the lower to the upper troposphere, which is the weather-generating layer of the atmosphere. As air rises, it cools. This cooling wrings out much of the air's burden of moisture, which falls back toward

Dec. 1, 1989

the surface as rain. Thus dried, the rising air fills the upper troposphere.

Lindzen contends that as carbon dioxide increases and tends to warm the atmosphere, this convection-driven conveyor belt will run faster and more efficiently so that it will carry more and even drier air to the upper troposphere. That would reduce the heat-trapping moisture in the upper atmosphere, allowing more heat to radiate to space. Voilà, a negative feedback—the warmer the climate, the dryer the upper troposphere, the greater the heat loss, the more the atmosphere cools. And, crucial to his argument, Lindzen believes the models do not contain this negative feedback.

"When it is recognized that at least some of these [water-related] feedbacks are likely to be *negative* rather than positive," writes Lindzen in his unpublished manuscript, "it is easy to see that the actual response to a doubling of CO_2 may readily be ⅛ to $^{1}/_{14}$—or even less—of what is suggested" by the consensus view. " . . . one may reasonably expect that corrected models may very well end up predicting greenhouse warmings of only a few tenths of a degree Centigrade" for the next century.

The modelers, perhaps predictably, object. "He says water is a negative feedback, but how does he know that?" asks Stephen Schneider of the National Center for Atmospheric Research (NCAR) in Boulder. "Does he have a calculation, or is his brain better than our models? You can't just sit there and build a model of one sector of the atmosphere, then extrapolate to the globe. That's why you build global models."

Lindzen's negative feedback mechanism "is true in a qualitative sense," says Mahlman, "but the magnitude of the effect is tiny. I know of no [observational] evidence supporting it. I could be wrong; Lindzen is a smart person, but I'm afraid he's confused."

Rebuttals from the modelers might be predictable, but none of Lindzen's meteorology colleagues contacted by *Science* will take the extreme stance he has. Their reservations about Lindzen's ideas on negative feedback mechanisms harken back to the modelers' complaints. "He's focused on one aspect," says Peter Stone of Lindzen's own department at MIT, "but if you look at the whole of it, I don't think you'd have a negative feedback."

Alan Betts, a respected independent specialist in the mechanics of convection who works near Middlebury, Vermont, agrees that Lindzen's argument ignores too many of the atmosphere's complexities. According to Betts, moisture is transported into the tropical atmosphere at all levels, and not just near the bottom, as in Lindzen's scheme. "His argument depends very heavily on moisture distribution with height and how it would change with a warming," Betts says. "We don't fully understand moisture transport, but the model studies I have done would not support his arguments. I personally doubt they would hold."

At best, meteorologists take a noncommittal stance on Lindzen's ideas. For example, MIT meteorologist Kerry Emanuel points out that currently no one can estimate how much of the water that goes up in clouds precipitates and how much is left over to moisten the upper troposphere. "It's conceivable that the drying effect could outweigh the moistening effect," Emanuel remarks.

Whether this particular negative feedback counteracts the greenhouse warming or not, Lindzen argues, other negative feedbacks must be operating. In another of his philosophical assertions, Lindzen believes that negative feedbacks, whether his drying effect or others, dominate any positive, warming feedbacks. On timescales of a few hundred years and less, he says, even the hardest push from whatever quarter would not drive the relatively insensitive climate system into a distinctly warmer stage.

Lindzen's confidence in the insensitivity and stability of climate is not shared by many modelers. Skeptics "count all the negative feedbacks we don't know about," says Schneider, "and forget about the positive ones we don't know about."

There are a dozen or so potentially positive, warming feedbacks that, even in their current rudimentary forms, have yet to be included in the models. Increased temperatures would, for example, melt permafrost ice, thereby releasing methane (a greenhouse gas). Whether the net effect of such neglected feedbacks will drive the warming beyond even the range predicted by the models, no one knows. And with that kind of uncertainty remaining, the modeling community is in no mood to entertain Lindzen's criticisms, not in their present philosophical guise. ■ RICHARD A. KERR

Turning Down the Heat

Greenhouse researchers may not be willing to accept Richard Lindzen's thesis that atmospheric warming over the next century will be next to nothing (see accompanying story). But some of them are willing to concede right now that things may not turn out quite as badly as some of the models have predicted. If these researchers are proven right, the scenarios that forecast everything for the next century from a new dust bowl in the American West to beachfront properties being swept away by a rising sea would have to be toned down. However, as often is the case in this business, there is enough lingering uncertainty to give everyone pause.

One major indication that greenhouse warming may be less than expected is the modest rise in global temperatures that occurred during the past 100 years or so. It was only 0.5°C, or perhaps less. And a number of greenhouse skeptics, including meteorologist Lindzen of the Massachusetts Institute of Technology, have argued that the temperature record is so fraught with uncertainties that even this apparent warming is as good as zero. If that is the case, then temperatures are likely to go up only a few tenths of a degree Centigrade by the middle of the next century. Hardly the stuff of cataclysmic drought and coastal inundation.

But even Lindzen has admitted that the observed warming is also consistent with a future temperature increase of as much as 2°C. That still falls in the range predicted by the models, but at the lower end, not the 4° to 5°C increases of the upper end on which the scariest scenarios are based.

This middle ground is becoming more popular. "I agree the past 100 years of warming may not strongly suggest the climate sensitivity is 4°C, but it is consistent with 2°C," says Syukuro Manabe of NOAA's Geophysical Fluid Dynamics Laboratory, where he runs one of the five world-class greenhouse models. Michael MacCracken, who runs another one at Lawrence Livermore National Laboratory in Livermore, California, tends to settle on 2° ± 1°C as well (*Science*, 6 January, p. 28). A 2°C global warming would still have significant social and ecological effects, however.

But there is a catch to these efforts to use the past to predict the future. The past behavior could be misleading because the mechanisms capable of amplifying an increase in global temperatures can be slow to take hold. And so, a big warming could be awaiting us in the next century without having revealed itself up until now.

We may know soon. The models that predict the largest warmings call for the upward trend to become obvious by the early 1990s, barring non-greenhouse changes in climate (*Science*, 2 June, p. 1041). ■ R.A.K.

N.Y.TIMES: 12-13-89

Skeptics Are Challenging Dire 'Greenhouse' Views

By WILLIAM K. STEVENS

As governments try to come to grips with what is widely depicted as a potentially catastrophic warming of the Earth's surface, dissenting scientists are challenging what they see as unnecessarily gloomy predictions.

The skeptics contend that forecasts of global warming are flawed and overstated and that the future might even hold no significant warming at all. Some say that if the warming is modest, as they believe likely, it could bring benefits like longer growing seasons in temperate zones, more rain in dry areas and an enrichment of crops and plant life.

In any case, they argue, it would be a mistake to take drastic and costly steps to limit emissions of carbon dioxide and other gases that trap the sun's heat in the earth's atmosphere until more is known about the problem. These "greenhouse" gases are building up as a result of human activity, especially the burning of fossil fuels.

Split Forecast

Dissent on Global Warming

A special report.

Most Have No Firm Position

Exactly how many scientists are involved in serious climatic research is unclear, but experts in the field say it includes fewer than 300 climatologists, meteorologists, geophysicists and people in related fields. Many of them, perhaps the majority, have not taken a firm position in the debate; they say that while the greenhouse theory is valid in general, there are too many uncertainties about its future effects.

Both of the other factions — those who believe global warming to be a clear and definite threat and those who say there is likely to be no significant warming — appear to be in a minority. Authorities on weather and climate can be found in all three groups.

Much of the dissenters' criticism is aimed at computerized mathematical models of the world's climate on which forecasts of global warming are largely based. The critics also cite data on past climatic trends, and they say the theory of greenhouse warming has not yet been fully explored.

"It's not that we have a bad theory," said Reid A. Bryson of the University of Wisconsin, a leading climate theorist. "It's that we have an incomplete theory with a lot of bad science being done."

Forecast and Its Basis

Most of the dissenters' assertions are being challenged in turn by scientists who adhere to the better-known view of global warming. This view holds that increasing concentrations of greenhouse gases are likely to cause the average temperature of the air at the Earth's surface to increase by three to eight degrees Fahrenheit some time in the next century, from the current global average level of 57 degrees. That amount of increase is generally accepted by a number of national and international scientific groups that have sought a consensus on the issue, including various panels of the National Academy of Sciences.

The forecast is based largely on what the forecasters see as the inherent scientific logic of the greenhouse theory and on the computerized simulations of the future atmosphere. The forecasters expect the warming to raise sea levels, through the expansion of warming water and the melting of ice around the world; to change the climate of the globe, and to disrupt weather, human society and balances among plants and animals.

Both the dissenters and those who call for action have been pressing their arguments in Washington as the Bush Administration grapples with pressures to reduce the burning of fossil fuels like coal and oil, which are the main source of human-produced atmospheric carbon dioxide.

Current forecasts of global warming "are so inaccurate and fraught with uncertainty as to be useless to policymakers," Richard S. Lindzen of the Massachusetts of Institute of Technology and Jerome Namias of the Scripps Institution Oceanography in La Jolla, Calif., wrote in a letter to President Bush in late September. The two authorities on meteorology are both members of the National Academy of Sciences.

Their warning was one of several cautionary pleas now coming forth in the aftermath of months of speeches, writings and testimony to Congress by scientists and environmentalists who urge prompt countermeasures. Some important officials in the Administration, including John H. Sununu, the White House chief of staff, have also urged caution until further research is performed.

Arguments and Evidence

Computer Models' Accuracy Debated

Some of the dissenters, including Dr. Lindzen, say the scientific uncertainty could be reduced through a decade or less of intensive research, perhaps in three to five years. They counsel against drastic action to cut fossil-fuel emissions until then.

"The expense is patently obvious," said one of the most outspoken skeptics, Patrick Michaels, a professor of environmental sciences at the University of Virginia and a former president of the American Meteorological Society. "If the policy is going to be that expensive, the science should be much less murky than it is now," he said.

Other scientists have long acknowledged the uncertainties of global warming predictions, but argue that they will not be eliminated in time for effective action to be taken.

"My feeling is that the uncertainty will always remain," said Syukuro Manabe of the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory at Princeton University, a leading climatologist. Dr. Manabe's laboratory runs one of the major mathematical models of the global climate on which attempts to forecast future warming are mostly based. "We have to make decisions based on uncertain information," he said. "I don't think we have any other choice."

In view of the uncertainty, some scientists favor taking actions that would bring major benefits in their own right, like increasing energy efficiency and pressing the development of alternative power sources.

The Theory's Backers

Among those who oppose dissenters like Dr. Bryson, Dr. Lindzen, Dr. Namias and Dr. Michaels are, for example, James E. Hansen of the Goddard Institute for Space Studies in New York City; Michael Oppenheimer, a senior scientist with the the Environmental Defense Fund; George M. Woodwell, director of the Woods Hole Research Center, and Stephen H. Schneider of the National Center for Atmospheric Research.

Dr. Hansen helped propel the issue of global warming to the forefront last year when, at the height of the 1988 heat wave and drought, he testified before Congress that global warming caused by increasing concentrations of greenhouse gases was already under way.

The climate models that draw much of the dissenters' criticism are mathematical equations that simulate the physical workings of the atmosphere. Scientists can insert any set of conditions they like — a given concentration of greenhouse gases, for instance — and a computer calculates how the climate would change, including changes in the average global temperature.

Global warming theorists maintain that a relatively small increase in the temperature can have major consequences. For example, they point out, the average temperature since the end of the last ice age has increased by nine degrees.

But the computer models "are seriously exaggerating the warming by at least two to threefold," said Hugh W. Ellsaesser, a meteorologist at Lawrence Livermore Laboratory in California who retired in 1986. He has been working on the question of global warming since 1972.

Complicating Factors

Clouds and Oceans Poorly Understood

All the models, said Dr. Lindzen, contain flaws that "could easily reduce the predictions for warming to well under a degree" centigrade, or 1.8 degrees Fahrenheit. Not least among the flaws, he and others say, is that the models fail to properly reflect the climatic effects of water vapor and clouds, which can each overwhelm the effect of the greenhouse gases.

Skeptics say that clouds might well reduce the warming by reflecting sunlight back into space, but some of the

model experts say they could also, through a complex set of feedback mechanisms, increase the warming.

Clouds are poorly simulated in all the models, most climatologists agree. A team at the United Kingdom Meteorological Office in England reported in September that by representing clouds more realistically, its model had reduced the projection of expected warming from about nine degrees to about five. The British model has usually produced the highest estimates.

The findings have been cited by the skeptics as evidence that they are probably right in their contention that the warming has been overstated. But John F. B. Mitchell, the chief scientist on the British project, said the result did not mean that the group was cutting its forecast in half.

So little is known about the characteristics of clouds, he said, that even this latest simulation cannot be taken as realistic. Rather, he said, the result "essentially illustrates our uncertainty" and underscores a serious lack of data on how clouds behave. Without better data, he said, "we can go on doing numerical experiments till we're blue in the face and we won't reduce the uncertainties."

Oceans' Moderating Effects

The models have only recently begun to reflect the enormous capacity of the oceans to absorb heat, a factor that scientists believe will slow down global warming substantially. Scientists studying a model at the National Center for Atmospheric Research in Boulder, Colo., recently completed a simulation that included the ocean's influence. It resulted in a warming of nearly three degrees when carbon dioxide in the atmosphere doubled, as against about seven degrees in an earlier model run.

This was also seen by some dissenters and Government officials as a one-half reduction in the models' warming estimates, but Warren Washington, one of the chiefs of the Boulder experiment, said that was a misinterpretation. The modeling exercise was not fully played out because of lack of computer access, and the simulation was carried only 30 years into the future, he said. If it had continued to the point where full effects were felt, he said, the warming would have been substantially larger.

Models and Measurements

Both Sides Claim Support in Data

To some scientists who see themselves as neither dissenters nor backers of specific warming predictions, the uncertainties are perplexing and frustrating.

"Common physical sense tells us something is going to be happening" to the world's climate because of the greenhouse effect, said Robert D. Cess, a professor of atmospheric sciences at the State University of New York at Stony Brook, who heads an international group that assesses the models. But he said the group's conclusion, soon to be published, is that "we don't know what these models are doing." He said the models "as presently formulated" cannot be used to predict future global warming, and that "whether they can ever be used for that purpose is problematical."

Dr. Hansen defends the models, pointing out that even as they have become more sophisticated, their conclusions about global warming have generally remained within the range predicted in the 1970's. Some defenders of the models say they doubt that another decade of refinements would substantially alter the range.

Defenders also say the models have validated themselves by successfully simulating the waxing and waning of ice ages, present-day seasonal variations and the workings of the atmospheres of Venus and Mars.

But the critics say that the models have not done well at matching the climatic trends on the scale of a century. In the last century, according to some studies of temperature records, the average global temperature has risen by about one degree. Simulations by some models show that it should have risen by about twice that much.

To the dissenters, this gap casts doubt on the models' credibility. To some environmental scientists it shows the opposite. "We should be flabbergasted that the models can come that close, given the uncertainties," said Dr. Oppenheimer of the Environmental Defense Fund, a research and advocacy organization. The dispute on this point is muddied by the variations in temperature profiles for past decades that emerge from different studies. Some studies suggest little or no warming over the last century, depending on the data and methods used, and this has occasioned argument.

Positive Views

Some See Benefits In Warmer Earth

Few scientists believe greenhouse warming can now be detected amid the normal swings of climate. But if it can, says Dr. Michaels, the evidence might be emerging from data collected by a team headed by Thomas Karl, a climate-change analyst at the Government's climatic data center at Asheville, N.C.

Studies there found that since the mid-1950's, nighttime temperatures in much of the United States have risen in fall, summer and winter, while daytime temperatures have dropped slightly. There is evidence of the same pattern in China and Australia, Mr. Karl said. He said the reasons are unclear, although increasing cloudiness appears to have contributed to it in this country.

"If nature is declaring her greenhouse with a relative rise in the nighttime rather than the daytime," said Dr. Michaels, "then the severity of the problem is drastically reduced." In fact, he said, warmer nights in temperate regions would lengthen growing seasons.

This could especially benefit northern regions, in the Northern Hemisphere, some scientists believe, and southern regions in the Southern. Some say, in fact, that countries like the Soviet Union and Canada might well benefit from even a high degree of warming.

Russians Predict Benefits

Two Soviet scientists, M. I. Budyko and Y. S. Sedunov, have said in a paper that increased rainfall over all the continents, along with the "fertilizer" effect on plants of carbon dioxide, "will considerably enhance" plant productivity, increase harvests, make large barren territories suitable for agriculture and permit the expansion of crops in other regions.

But Dr. Woodwell of the Woods Hole Institute argues that global warming would produce even more atmospheric carbon dioxide by speeding the decay of organic matter and accelerating the respiration of plants. This new source of carbon dioxide, he believes, would more than offset the amount absorbed by plants in photosynthesis. It could easily exceed the amount from fossil-fuel burning, he says, and cause the planet to warm up even more.