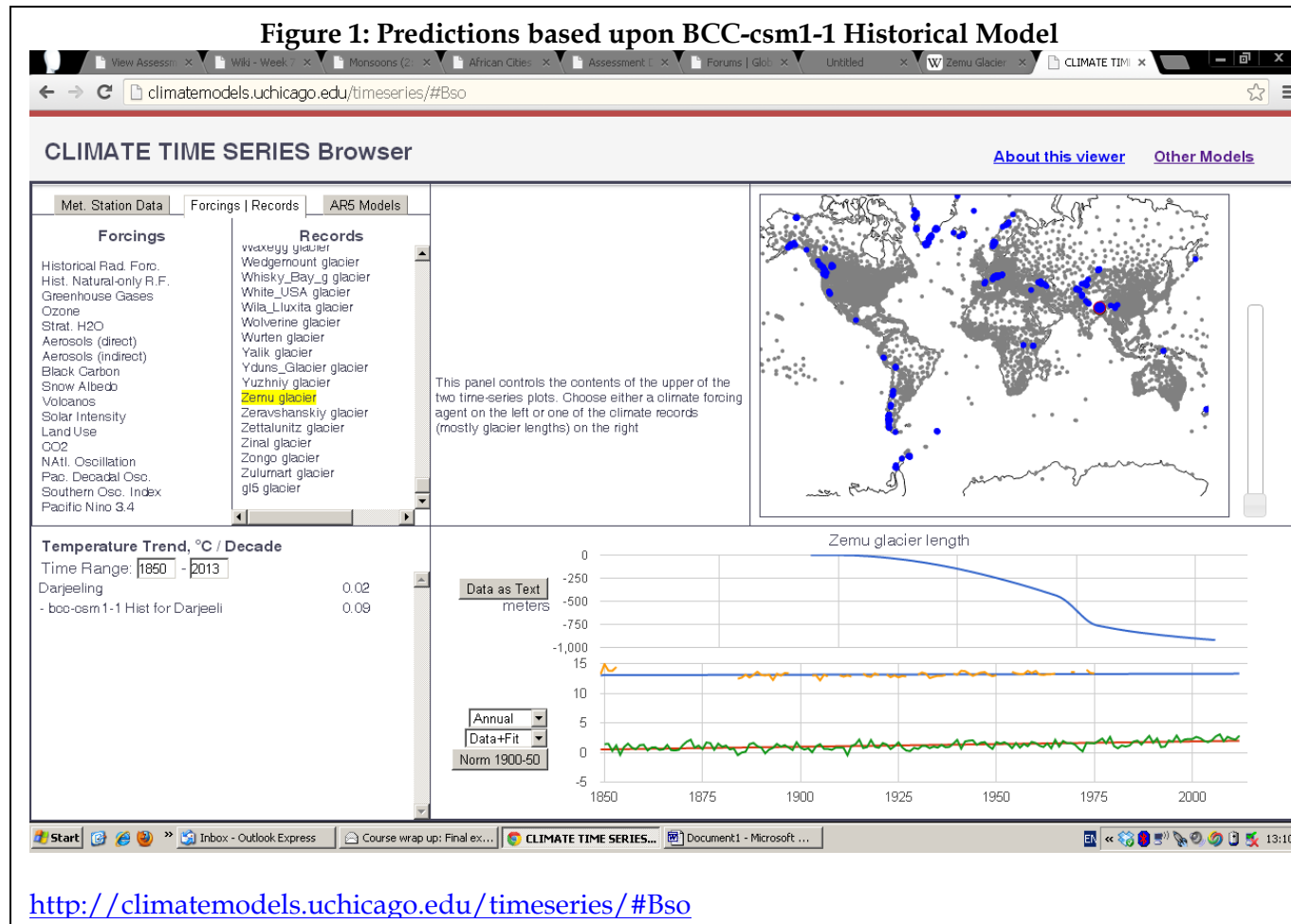


IMPACT OF THE MELTING OF ZEMU GLACIER ON DARJEELING AND THE SURROUNDING AREA, AND ITS POSSIBLE ECONOMIC IMPACTS

The Zemu Glacier comes out of Kanzozonga and feeds a number of rivers such as the Teesta which are important sources of water for the area. Darjeeling is also an important tea growing area, known for some of the best tea in the world, and an important part of the local economy. Therefore, this report looks at the changes in the Zemu Glacier and temperature changes in Darjeeling, to identify

what possible changes may exist for the place.

Using the bcc-csm1-1 Hist for Darjeeling there can be seen an increase in temperature, with an estimated 1.44 C change, till 2012 (Fig 1). The temperatures required for specific tea requirements - such as that of the Darjeeling olong are between 5C and 20C, and in general temperatures need to be between 1C to 15 C, going to a maximum of 20C. This helps provide for the winter cooling and the summer growing period, as required by the tea bush. However, as the temperature goes up there could be a change



in the yield of the tea bush. Also, as predicted by a report on mountains and climate change by the Centre for Development and Environment, (2009) there is likely to be an increase in droughts in the Eastern Himalayas. This will definitely mean lower humidity, and perhaps an increasing need for irrigation. There may also be some impact on reduced humidity and rainfall on tea growing. (Koher T, and D Maselli , ed 2009, Das, N.K, 2003, wikipedia)

The Zemu glacier in 1905 to 1982 has reduced by 815 kms. Recent discussions with the Government of Sikkim, through which River Teesta flows, identify increasing concerns of lakes being formed as the glacier recedes. This may in the long run create floods as the moraine barriers break, impacting downstream development like hydropower stations. It will also impact water availability for irrigation. The report of the Centre for development and Environment all regions with valley glaciers to have greater glacier Lake Outburst Floods (GLOF), of which signs may already be visible by an increase in the number of lakes formed in the area in the recent years. (Koher T, and D Maselli , ed 2009)

There could be a number of impacts due to climate change and may need to be studied in greater depth to understand the actual impact that may exist. This may include changing yield of tea bushes in the area, reduced availability of water for irrigation and hydropower and possible floods due to GLOF, impacting local infrastructure. All together this could have quite an impact on the local economy of the region.

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