

PNSN Summer 2014 quarterly report to our Regional Advisory Committee

At the 24 June 2014 meeting, the PNSN ANSS Regional Advisory Committee (RAC) requested quarterly briefing on pertinent topics. Topics on which the RAC specifically requested an update were: 1) Developments in eastern Washington, 2) Status of the M9 project, 3) Earthquake Early Warning, and 4) A head's up on upcoming issues.

This is the first report, covering the summer quarter, July through September 2014.

### **I. Eastern Washington.**

The status of seismic monitoring in eastern Washington has become more stable after a summer of turmoil and negotiation. An agreement providing funding for PNSN to operate the network has been reached and as of this writing, the contract is expected to be in place on 1 October. Significantly, the contract provides for 5 years of funding (revisited annually, of course), which gives us a longer-term basis for planning. The funding level is adequate to operate the seismic stations currently in the field and to provide the necessary office, computer, and interpretive support. The installation of any new stations will require additional funding, although the agreed-upon funding should be sufficient to operate them. MSA was able to find funding for the hardware to install three new 6-channel (BB+SM) stations on the Hanford reservation, and they are pursuing site permissions and we are providing site construction plans. The hardware is in hand (Q330s, Trilliums, and Episensors) and we anticipate having these stations on line next spring. The plans still call for spinning off responsibility for, or removing, a eleven analog short-period sites that monitor small earthquakes within a few hundred km of the Hanford site. The MSA/DOE contract will not be supporting these, and a recommendation has gone to ANSS that we should continue to operate a handful of these stations close to the Chelan seismicity zone, the loss of which would otherwise leave the active area with scanty coverage. ANSS has not yet stated a decision. We have also provided MSA with equipment requests to upgrade the entire MSA/DOE eastern Washington network to digital 3-component acquisition over the next 3-5 years as funding permits.

### **II. West Coast Earthquake Early Warning**

EEW implementation is progressing. The 3<sup>rd</sup> International EEW Conference in Berkeley went well. Timely earthquakes (the M6 \$1B Napa earthquake in the Bay Area and an harmless M4 earthquake more recently near Bremerton) have raised public awareness of the increasing maturity and capabilities of EEW plans. Funding sources to build out the current implementation plan are not yet secured, however.

The PNSN has progressed far enough to set a target of delivering a simple prototype form of EEW, ElarmS, to our corporate and State partners in January. Some hurdles remain, but nothing obviously insurmountable. ElarmS, as currently running, would notify recipients of earthquakes up to M6.5 or M7 within 10 or 20 seconds.

The NSF workshop to plan for an "I/UCRC" to formalize corporate sponsorship of technological

development of EEW methods is tentatively planned for winter or spring

### **III. M9**

Our NSF Hazard SEES project to study the effects of an M9 earthquake on the coast and ways to mitigate it continues, but passed no notable benchmarks this quarter. We are mainly bringing new graduate students up to speed, developing software, and embarking on new projects.

### **IV. Upcoming Issues**

The upcoming fall quarter should see the maturation of PNSN's basic operational funding picture for the next 5 years. Unlike recent previous years, the coincidence of funding requests should provide us a rather stable picture of funding for a 5-year period. Three of our major sources of support (MSA/DOE, ANSS and VHP) will all be decided by the end of December. The ANSS EHP proposal has been submitted and the panel met last week, we should find out the result soon (we anticipate some small delays as the effects of having the US government operating under a continuing resolution filters down through the agencies). We are negotiating with CVO and the USGS VHP to establish a similar multi-year contract to focus on volcano seismic monitoring. This process will result in a proposal by the end of October, which should be in time to provide the third major source of federal funding for seismic monitoring in the PacNW. We will continue to watch Washington state funding picture with the usual blend of concern and optimism.

To conclude this report, we include a list of other major PNSN operational projects on which we seek to make progress over the next 5 years. We do this in case readers on the RAC seek to hear details and/or to provide input on particular topics.

- Adoption of SIS (Station Information System, ANSS' station inventory and metadata database)
- Reporting to PDL (Product Development Layer, ANSS' new mechanism for reporting seismic products)
- Continuity of Operations Plan
- Deployment of 24 SM @ GPS sites (Moore Foundation, for EEW)
- Replacement of analog stations/circuits with digital ones (E. Washington and elsewhere)
- Organization of Field Procedures (O&M vs. new-deploys & upgrades, documentation, etc.)
- Relocation of catalog w/station statics and new depth datum
- Special studies of volcano magnitudes and location precision
- Network performance metrics defined and UI built
- Acquisition of Cascadia Array stations)
- "Linux"ifying AQMS
- Double-difference relocations of catalog
- Improvement of AQMS performance
- Mobile platform web products
- EEW system design for Hawaii