2011 Operations and Maintenance Activities in the Plate Boundary Observatory’s East Region

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ABSTRACT:
2011 marked Year 3 of Operations and Maintenance of the Plate Boundary Observatory (PBO). In the East Region of PBO, it was a year characterized with several major projects on top of scheduled ongoing maintenance activities. The most significant major project was a USGS/ARRA-funded communications upgrade in Yellowstone National Park. This upgrade consisted of bringing 3 existing PBO stations within the Yellowstone volcanic region to near real-time communications. This work will be completed on time and in collaboration with the National Park Service. The upgrade promises to provide much faster latency for valuable data being recorded for one of the most geologically critical regions of the current PBO network.

Another significant ongoing project in the East Region has been supporting the community that continues to use PBO data. In particular, support of Kristine Larson (UI of Utah) both in installing webcams at PBO sites for monitoring snow depth as well as supporting vegetative surveys at current PBO sites. Similarly, responding promptly to the community with requests for data quality issues that are station hardware related, including replacing GPS transceivers and receivers.

Late in 2011, the PBO East region responded to the 23 August magnitude 5.8 earthquake in Louisa, Virginia. PBO engineers permitted and built 2 "Myson" style pillar monuments and power/communications systems in the louisa area. This work was funded through an NSF RAPID grant.

With regards to ongoing operations and maintenance projects, reasons for site visits in 2011 were dominated by two significant situations: battery replacement and COMA modem swaps. 83 site visits were required as part of the Operations and Maintenance strategic battery plan of 5 year battery replacements. This proved to be a considerable challenge due to the scale and geography of the scheduled replacements - the sites were spread throughout the entire network, east to west and north to south. 20 station visits were required due to a Verizon upgrade of the older Altel network purchased by Verizon. These stations are predominantly in the Rocky Mountain region, but often times had limited access to due weather.

Overall, despite record snowfalls throughout the west, state of health in the East Region was consistently over 95% operational, a testament to past network hardening and current vigilance and hard work. The east region looks forward to a successful 2012 campaign.

USGS ARRA Yellowstone Real-time Project
This project upgraded the data rates at seven of the Yellowstone PBO GPS sites from daily files at a 15-second sample rate to real-time 1 Hz data streams.

Virginia RAPID Response
-As a response to the 23 Aug 2011 magnitude 5.8 earthquake near Louisa, Virginia, an NSF RAPID proposal funded 2 pillar-style GPS monuments
-The two stations (VA01 & VA02) were completed in November, 2011
-Many thanks to Dr. Frank Pazzaglia and Claudio Berti (Lehigh), Mark Carter (USGS), BOST Construction and the Louisa landowners