

Inception, Deployment, Processing and Initial Results of a cGPS Network Across the Lesser Antilles Arc: Implications for Caribbean Plate Geodesy and Volcano Monitoring

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Since 2006, considerable attention has been focused on a seismic initiative to develop a network of cGPS installations on each of the 9 Lesser Antillean islands under the auspices of the Seismic Research Centre (SRC) based in Trinidad. This work has involved collaboration between the SRC, UNAVCO, IPGP, the 5 C's network and Disaster Management personnel from governmental departments of the islands. Each installation is comprised of a Trimble R7 receiver and antenna that is mounted either on a concrete pillar or stable concrete roof with access to continuous power supply and internet link. GPS data is collected at 30 second intervals and relayed automatically back to the SRC on a daily basis from each site. Combined processing of the data is achieved through a GAMIT/GLOBK software package developed at Massachusetts Institute of Technology. Preliminary results for the 2008 to 2010 period (using a site in Kourou, Guyana as the reference station) indicate most of the stations show a general easterly movement of ~20 mm/ year with the exceptions of Antigua and Grenada which have a more north-easterly component. In addition to these geodetic results, individual rapid-static GPS surveys are undertaken on each island using the cGPS site (in 1 second recording mode) to monitor possible volcanic ground deformation. In the case of Dominica (3 stations) and St. Vincent (2 stations), multiple sites have been deployed due to the greater potential for future volcanic activity.