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Significant breakthroughs in monitoring networks of the volcanological and seismological French observatories

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In the last few years, French West Indies observatories, in collaboration with the Seismic Research Center (University of West Indies-Trinidad), have modernized the Lesser Antilles Arc seismic and deformation monitoring network. 16 new permanent stations have been installed to strengthen and expand its detection capabilities. The global network of the IPGP-SRC consortium is now composed of 21 modernized stations, all equipped with broadband seismometers, strong motion sensors, GNSS sensors and satellite communication for real-time data transfer to the observatories of Trinidad (SRC), Guadeloupe (OVSG), Martinique (OVSM). To improve the sensitivity and reduce ambient noise, special efforts were made to enhance the design of the seismic vault and the original Stuttgart shielding (D. Kurrle R. Widmer-Schnidrig, 2005) of the broadband seismometers (240 and 120 sec). Several months of tests have been performed in order to get the maximum performance level out of the seismometers with different types of shields. This renewed network feeds the Caribbean Tsunami Warning System supported by UNESCO and establishes a monitoring tool that produces high quality data for studying subduction and volcanism interactions in the Lesser Antilles arc.

The project has been an opportunity to migrate the seismic data processing to SeisComP3 with new developed plugins to compute the duration magnitude and locate (modified HYPO71PC) ever small events such as volcanic ones. The new plugins are integrated in Seiscomp3 releases. Several tools for data management and treatment (Earthworm and WebObs [Beauducel et al., 2004]) are also continuously improved. GPS data, real-time and validated seismic data (only broadband) are now available at the IPGP data center.