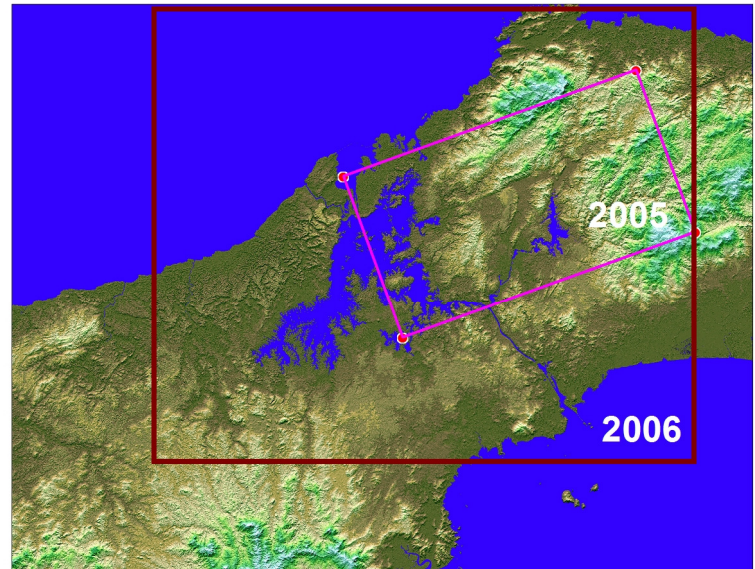




TECTONIC GEOMORPHIC RECONNAISSANCE OF the Pedro Miguel, Azota, Miraflores, and Other Faults Panamá Canal Area and Vicinity, Panamá

PROJECT DESCRIPTION

Following up on our successful paleoseismic studies of the Gatún and Limón faults, the Autoridad del Canal de Panamá (ACP) authorized **Earth Consultants International** to investigate the entire Panamá Canal area for the presence of other active faults. The intent of the study was to identify other potential seismic hazards within the Canal watershed that should be included in the seismic hazard model being developed for the Canal Expansion project. Because of the large area to be studied, a heavy reliance was placed on aerial imagery mapping, terrain model analysis, helicopter reconnaissance, and tectonic geomorphic mapping. These efforts were then supplemented with a targeted field reconnaissance program at sites identified as likely to have the geologic conditions that would allow a determination of whether or not the faults studied have had recent activity.



Digital elevation map of central Panamá showing the initial project (2005) and this project's (2006) study areas.

SOLUTION

The tectonic geomorphic mapping indicated a high probability that the Azota and Pedro Miguel faults are active seismic sources. Both faults sharply deform all streams where they cross the fault indicating they are both right-lateral strike-slip faults, similar to the Limón fault studied earlier. A previously unmapped fault along the east side of Lake Madden also shows clear evidence for recurrent Holocene activity. The mapping also indicated a lower risk of seismic activity on the Miraflores and Caballo faults. In addition to the faults, we also estimated an uplift rate for the Caribbean Coast of Panamá and evaluated the possibility that the Gatún fault continues farther west across Gatún Lake. All results were presented to ACP management and their Geotechnical and Seismic Advisory Boards.



Prominent fault-controlled landscape east of Lake Madden (above).

Ten-meter stream offset across the Azota fault that was revealed during field reconnaissance mapping (right).



Deflected drainage network across the Pedro Miguel fault in Cocli, showing a potential trenching site where we later completed a quantitative study (right).

Pedro Miguel fault south of the locks, looking west

