

## **Tide Gauge and Buoy Network of Ecuador**

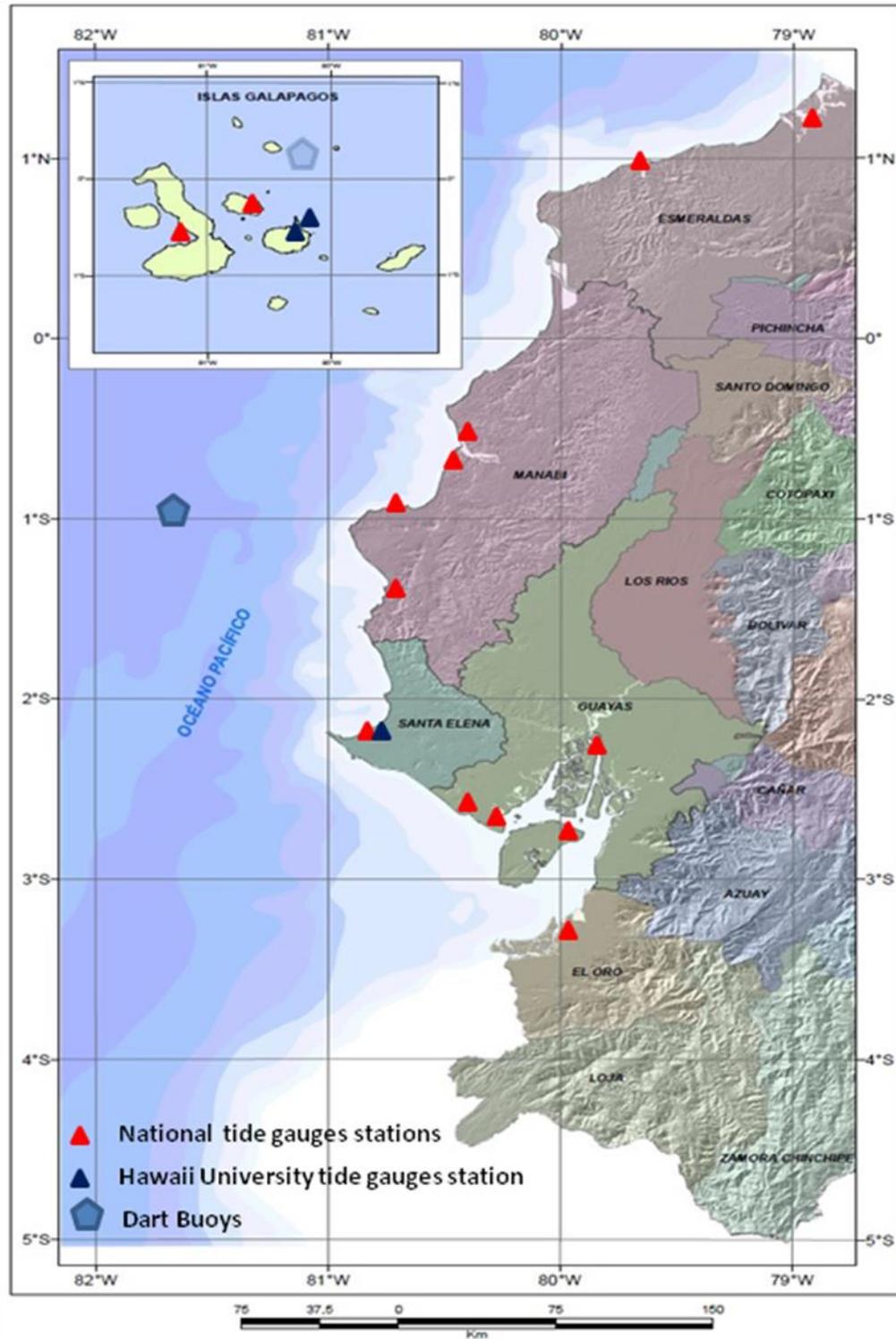
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### **1. Role of the Institute of Oceanography, Navy, Ecuador (INOCAR)**

- 1) To improve its capacity to predict and monitor tsunamis and its affected coastlines in order to issue proper advisory to Risk Management Agency (Risk Management Secretary, SGR) and Authorities.
- 2) To deepen the comprehensive knowledge on tsunamis (tsunamis are threats that require further study its characteristics and statistical frequency).
- 3) In order to identify necessary procedure and organization for local and distant Tsunamis (there is a procedure developed by INOCAR, however it is very important to correct mentioned protocols after getting knowledge from Japan government to transmit excellent and important information to Ecuador to improve current methods).
- 4) To establish a local tsunami prediction method by using information on seismic magnitudes and focal distances; the technical institutions (INOCAR and Seismological Institute of Escuela Politecnica Nacional, IGEPN) must be in agreement with a tested method for local conditions which allow a short and rapid response.
- 5) To enhance the capacity of INOCAR to predict and monitor tsunami affected coastlines with modeling (The local authorities must have an implement to make urgent decisions in agile and accurate way).

### **2. Tide Gauge and Buoy Network**

INOCAR has 17 tide gauges station and two Dart buoys (Figure 1). Tide gauges are along the coastal Ecuadorian, but Dart buoys are located 60 and 70 miles offshore at 1600m, 2900 m deep respectively. Besides INOCAR, the Pacific Tsunami Warning System (PTWS) and the U.S. Geological Survey (USGS) seismic networks are used. All information comes to Monitoring Center (24/7) to be disseminated to Risk Management Agency (SGR).



**Figure 1.** National tide gauge and buoy network with 17 tide gauges and two buoys.

### **3. Tsunami countermeasures (tsunami early warning system, tsunami observation system, etc.)**

The Tsunami Early Warning System in Guayaquil, Ecuador, serves as the National Tsunami Warning Center (NTWC) for Ecuador and as a National Focal Point. This National effort became a formal arrangement in 2007 when NTWC assumed the national warning responsibilities of the Pacific Tsunami Warning System (PTWS). The NTWS is composed of three national institutions, they are: Seismological Institute, Risk Management Secretary and Oceanography Institute.

NTWC has the responsibility for the dissemination of messages and the provision of interpretive information to emergency managers and other officials, news media, and the public.

Tide gauge is a very important part for PTWS. If a significant tsunami is detected by sea-level monitoring instrumentation, the national tsunami warning center is extended to the entire Pacific Basin included Ecuador. Sea-level (or tidal) information is provided by NOAA's National Ocean Service, ATWC, university monitoring networks and other participating nations of the PTWS. Ecuador has three (03) tide gauges of University of Hawaii, they are in La Libertad, Santa Cruz and Baltra (Galápagos Island), seven (07) new tide gauges and seven (07) tide gauges of the old network, and also two Buoys DART (32066, 32067) of INOCAR. The important function is monitoring, collecting, analyzing and evaluating data collection (Figure 1).