For the operation of an efficient Tsunami Early Warning System in Indonesia tide gauges play a major role. Since the 2004 tsunami in Banda Aceh, the existing network of tide gauge stations in Indonesia was extended with new real-time-capable gauges. Today, more than 100 stations are in operation.

In the past five years BAKOSURTANAL (Indonesia) and GFZ Potsdam (Germany) densified the existing tide gauge network with the installation of ten GPS-equipped tide gauges along the Indian Ocean coastline of Indonesia (GITEWS project).

These stations are capable to monitor rapid (e.g. tsunamis) and long-term sea level changes with different tide gauge sensors, and additional meteorological sensors. High-rate continuous GPS either directly mounted on the tide gauge hut or on more stable ground nearby are used to monitor local and tectonic movements as well as earthquake related ground shaking or displacements.

All stations are installed on remote locations and are depending solely on solar power and satellite data transmission. Tide gauge data are sampled every 20 seconds and, in case of a tsunami, transmitted in near real-time. Also meteorological data and GPS data are transmitted routinely to BAKOSURTANAL.

Tide gauge data is evaluated directly at the station with a newly developed detection algorithm. In addition, data from the other existing stations in Indonesia and adjacent countries are analyzed with the same algorithm directly at the warning center. Tsunami onset times and amplitudes can be estimated and are included into the alerting decision process at the tsunami warning center.