



## **PACT – a bottom pressure based, compact deep-ocean tsunameter with acoustic surface coupling**

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The German-Indonesian Tsunami Early Warning System (GITEWS) processes a multitude of information to comprehensively and accurately evaluate the possible risks inherent to seismic events around Indonesia. Within just a few minutes, measurements of the vibration and horizontal movements off the coastal regions of Indonesia provide a clear picture of the location and intensity of a seismic event. However, not every seismic event causes a tsunami, nor is every tsunami caused by a seismic event. To avoid nerve-wrecking and costly false alarms and to protect against tsunamis caused by landslides, the oceanic sea-level must be measured directly. This goal is pursued in the GITEWS work package “ocean instrumentation”, aiming at a highest reliability and redundancy by developing a set of independent instruments, which measure the sea-level both offshore in the deep ocean and at the coast on the islands off Indonesia.

Deep ocean sea-level changes less than a centimetre can be detected by pressure gauges deployed at the sea floor. Based on some of the concepts developed as part of the US DART system, a bottom pressure based, acoustically coupled tsunami detector (PACT) was developed under the auspices of the AWI in collaboration with two German SME and with support of University of Bremen and University of Rhode Island. The PACT system records ocean bottom pressure, performs on-board tsunami detection and acoustically relays the data to the surface buoy. However, employing computational powers and communication technologies of the new millennium, PACT integrates the entire sea-floor package (pressure gauge, data logger and analyzer, acoustic modem, acoustic release and relocation aids) into a single unit, i.e. a standard benthos sphere. PACT thereby reduces costs, minimizes the deployment efforts, while maximizing reliability and maintenance intervals.

Several PACT systems are scheduled for their first deployment off Indonesia during 2009. In this presentation, the technical specifications and results from extensive laboratory and at-sea tests are shown.