



Seafloor crustal deformations revealed by Japanese cabled observatories

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In the Japanese water, eight cabled observatories have been deployed in the past years to monitor megathrust earthquakes. Some of the Japanese observatories deployed by JAMSTEC were designed to include seafloor pressure gauges for monitoring tsunamis caused by offshore earthquakes and for disaster alleviation purposes. One of the observatories was running at the time of the 2003 Tokachi-oki Earthquake (MJMA~8.0), and showed a long-term variations before and after the main shock. These pressure fluctuations are now recognized as a preseismic seafloor subsidence and a postseismic seafloor uplift before and after the earthquake, respectively. Earthquake monitoring requires a set of geophysical measurements and geodetic observations are one of indispensable schemes to help understanding what really takes place in the invisible intratelluric earth. Megathrust earthquakes take place in general in the offshore and it could be said that it still is very difficult to achieve such geodetic measurements until contemporary methodologies will have been well established. This time in the analysis of pressure gauge data, acquired data have shown the effectiveness of pressure measurements in the offshore. The extension of this study for one of the other cabled observatories have shown that pressure gauges would be a good measure to monitor seafloor subsidence and uplift as indicated in some literature although the quality of the measurements. Also, the importance of long term observations to cope with real geodetic phenomena should be mentioned to understand both pre- and post-period of earthquakes taking place with recurrence periods of 100 years.