

Proper oscillations in the bays on Sanriku coast induced by the tsunami of the Miyagi-Oki earthquake of August 16, 2005

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A small tsunami accompanied with the Miyagiken-Oki earthquake of 11h 46m (JST), August 16, 2005 was observed at several tidal stations on the Sanriku coast and its vicinities. In the recent several years, cities and town such as Onagawa, Kesenuma, Rikuzen-Takata, Yamada newly installed ultra-sonic and pressure typed tide gauges for tsunami detection, and they successfully observed this small tsunami.

Tide gauge record observed at Miyagi-Enoshima tsunami Observatory, ERI, shows that the initial motion was recorded at 12h1.5m (up) and the initial peak of +9cm appeared at 12h 06min, and the sea level recovered to the initial level at 12h14min. Only this initial peak is recognized on the record and the succeeding waves are not clear. At Suginoshita point on the western coast of the mouth of Kesennuma bay the initial motion began to be recorded at 12h08min, and the first peak of +18cm appeared at 12h18min and this peak was the maximum. At the Shinmei-Saki, on the innermost coast of Kesenuma Bay the initial motion was recorded at 12h23min, and the first of 19 cm appeared at 12h33min. At Osabe port in Rikuzen Takata city, the initial motion was recorded at 12h09min, and the first peak was small (about 4cm) and not clear.

Eigen value oscillations induced by the tsunami were observed at Kesenuma, Hirota(Rikuzen-Takata city) and Yamada Bays, and we can detect them up to 12 hours after the initial arrival. There are 5 tidal station in the area of Rikuzen-Takata city, and 3 of them are located on the inner coast of Hirota bay. At Osabe and Ryogae ports, both of which are located on the innermost coast of Hirota bay, the sea level oscillation of period of 38 minutes was eminently appeared, which is the period of the eigen value oscillation of the fundamental mode. The tidal record at Orikasa station on the inner coast of Yamada bay shows eminent peak of 45 minutes.

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