

Tsunami warning signs on the Enshu Coast of Japan

By

Hubert Chanson

Professor, School of Civil Engineering,

The University of Queensland, Brisbane QLD 4072, Australia

Email : h.chanson@uq.edu.au • URL : <http://www.uq.edu.au/~e2hchans>

The Enshu coast is located on the southern side of Honshu Island (Japan) (Fig. 1) (Chanson and Aoki 2004). The western part of the coast, so-called Omotehama, spans from Irago Cape to the mouth of the Tenryu River. The shoreline has been subjected to significant erosion, at a rate close to 1 m per year for past centuries. In recent years, some coastal protection works were built to slow the erosion rate. At the same time, the natural supplies of sediment materials at the Tenryu River mouth has drastically diminished because of dam construction along the Tenryu River and their reservoir sedimentation (Shinjo and Fujita 2004). The coastline has also had a history of rapid changes in shoreline. For example, a bifurcation of the Kuroshio current off the Enshu coast caused unusually high sea levels from mid September to late November 1999 that led to a serious shoreline retreat at Terasawa and Kojima of up to 20 m (Aoki 2002).

Japan is a densely populated country located at the juncture of three tectonic plates. The Enshu coast has been adversely affected by severe tsunamis. For example, the mouth of the Hamanako Lake was drastically altered by a tsunami in AD 1498 (magnitude of 8.6 on the Richter scale). The estuary mouth shifted by about 3.5 km and the previously freshwater lake became a saltwater system. The Japanese community is well-educated about earthquakes and associated natural hazards, including tsunamis. Along the Japanese shorelines, the tsunami warning signs are reminders of the natural hazards together with a network of warning sirens, typically at the top of the cliff of surroundings hills (Fig. 2B & 2D).

Figure 2 presents a variety of tsunami warning signs along the Enshu coast.

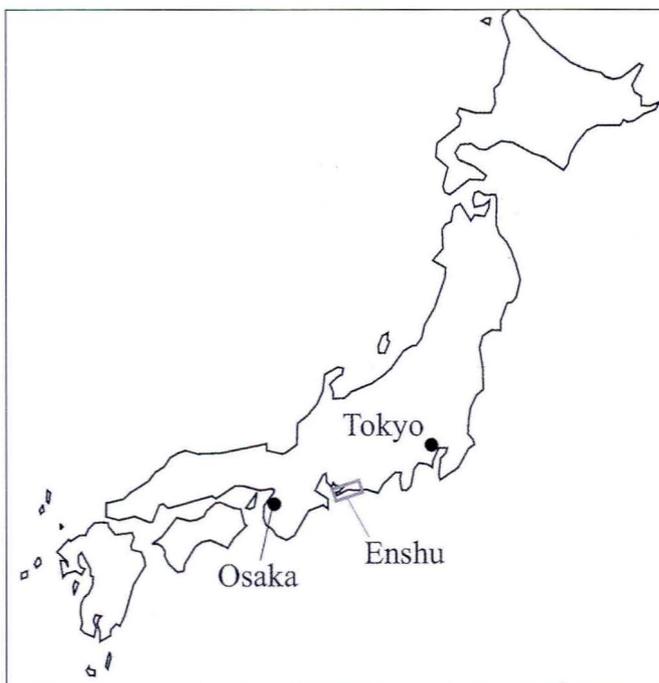


Figure 1. Map of Japan and highlight of the Enshu coastline.

The diversity of the warning signs is interesting. All signs have explicative graphics and a number have warning texts in Japanese, English, and Portuguese, because there is a relatively large Brazilian community in the nearby Aichi Prefecture.

Figures 3 and 4 show further a number of unusual road signs along the main road <42> between Hamamatsu city and Irago Cape, running parallel to the Enshu coastline. Figure 3 highlighted a famous surfing place (Pacific Long Beach). Figure 4 was located in front of a coffee shop, just behind a tsunami warning sign !

ACKNOWLEDGEMENTS

The author acknowledges the financial support of the Japan Society for the Promotion of Science (JSPS) and the assistance of Professor Shin-ichi Aoki during his stay at Toyohashi University of Technology.

REFERENCES

- Aoki, S. 2002. "Influence of High Sea Level on Short-term Variations of Shorelines." *Proc. Intl Conf. Coastal Engineering*, Cardiff, UK, Book of abstracts, 2 pages.
- Chanson, H., and Aoki, S. 2004. "Coastal Observations: the Enshu Coast (Japan)." *Shore & Beach*, Vol. 72, No. 1, pp. 19-20.
- Shinjo, T., and Fujita, Y. 2004. "Studies of Sedimentation in a Large-Scale Reservoir for Power Generation." *Proc. River Flow 2004*, M. Greco, Caravatta and Della Morte Eds, Balkema Publ., Taylor & Francis, p. 731.

INTERNET REFERENCES

- Coastal Engineering Lab, Toyohashi University of Technology: <http://enshu.tutrp.tut.ac.jp/lab/>
- Omotehama Network: <http://www.omotehama.org/omotehamanw/index.html>
- Tahara City: <http://www.city.tahara.aichi.jp/en/resort/index.html>
- Toyohashi City: <http://www.city.toyohashi.aichi.jp/en/index.html>
- Hamamatsu City: <http://nw01.city.hamamatsu.shizuoka.jp/foreign/english/>
- Enhunada-kaigan: http://www.sizenken.biodic.go.jp/pc/wet_en/240/240.html
- Open access research publications in hydraulic and coastal engineering: http://espace.library.uq.edu.au/list/author_id/193/
- UQeSpace: <http://espace.library.uq.edu.au/>



Figure 2 (above). (E) Tsunami warning sign at the Tenryu River mouth on 27 November 2008. (F) Tsunami warning sign at the Magome River mouth (left bank) on 27 November 2008.



Figure 4. Coffee shop sign post along the road <42> at the boundary between Tahara City and Toyohashi City, and at the turnoff to Shiroshita, on 23 November 2008. Just behind there was an old tsunami warning sign at the start of the road to Shiroshita beach.



Figure 3. Road sign above the road <42> on 29 November 2008; general view and detail (below).

