METEOROLOGICAL TSUNAMIS IN SOUTHERN BRITAIN: AN HISTORICAL REVIEW*

SIMON K. HASLETT and EDWARD A. BRYANT

ABSTRACT. Meteorological tsunamis, or meteo-tsunamis, are long-period waves that possess tsunami characteristics but are meteorological in origin, although they are not storm surges. In this article we investigate the coast of southern Britain—the English Channel, the Bristol Channel, and the Severn Estuary—for the occurrence of tsunami-like waves that, in the absence of associated seismic activity, we recognize as meteo-tsunamis. The passage of squall lines over the sea apparently generated three of these events, and two seem to have been far-traveled, long-period waves from mid–North Atlantic atmospheric low-pressure systems. The remaining three wave events appear to have been associated with storms that, among possible explanations, may have induced large-amplitude standing waves—such as seiches—or created long-period waves through the opposition of onshore gale-force winds and swells with high ebb tidal current velocities. This coastal hazard has resulted in damage and loss of life and should be considered in future coastal defense strategies and in beach-user risk assessments. *Keywords: coastal hazards, meteo-tsunamis, Great Britain, storms, weather.*

Meteorological tsunamis, or meteo-tsunamis, are waves that possess tsunami characteristics but have a meteorological origin (Defant 1961; Rabinovich and Monserrat 1996, 1998; Bryant 2001; González, Farreras, and Ochoa 2001). Tsunamis are characterized by their long wavelength and long-period nature; that is, the distance and time, respectively, between consecutive wave crests, often measured in kilometers and tens of minutes rather than in meters and seconds, as with most wind-generated waves, characteristics that enable shoaling tsunamis to grow in height at the shore and to penetrate relatively far inland. Various local names around the world describe meteorological tsunamis, such as *rissaga* in the Spain's Balearic Islands (Monserrat, Ibbetson, and Thorpe 1991), *abiki* in Japan's Nagasaki Bay (Hibiya and Kajiura 1982), *marrobbio* in Sicily (Candela and others 1999), *Seebär* in the Baltic Sea, and also, perhaps, "freak waves" (White and Fornberg 1998; Wu and Yao 2004).

Meteo-tsunamis have the same periods, spatial scales, physical properties, and destructive impacts as seismically generated tsunamis have when they refract and shoal along coasts (Bryant 2001; Monserrat, Vilibi, and Rabinovich 2006). Rogue waves are large meteorological waves that are infamous for sinking ships in the open sea and thus differ from tsunamis, which are of low amplitude in the open

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DR. HASLETT is a professor of geography at the University of Wales, Newport NP18 3QT, Wales. DR. BRYANT is an associate professor emeritus of geography at the University of Wollongong, Wollongong, New South Wales 2522, Australia.

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