Oral | Symbol H (Human Geosciences) | H-DS Disaster geosciences

[H-DS27_1AM1]Tsunami and its Forecast

Convener:*Yutaka Hayashi(Meteorological Research Institute), Erick Mas(International Research Institute of Disaster Science), Toshitaka Baba(Japan Agency for Marine-Earth Science and Technology), Chair:Erick Mas(International Research Institute of Disaster Science), Masami Okada(Meteorological Research Institute)

Thu. May 1, 2014 9:00 AM - 10:45 AM 418 (4F)

This session discusses issues related to improving real-time and long-term prediction accuracy of tsunami, which include such as a better understanding of tsunami dynamics, new real-time tsunami observing systems deployed in the open ocean and coastal waters, methodologies of more rapid and accurate prediction during tsunami emergencies, more extensive and accurate inundation maps, and long-term tsunami potential forecast.

10:30 AM - 10:45 AM

[HDS27-P05_PG]The 24 September 2013 tsunami in the Makran region, northwestern Indian Ocean

3-min talk in an oral session

Mohammad HEIDARZADEH[1], *Kenji SATAKE[1] (1.Earthquake Research Institute (ERI), The University of Tokyo)

Keywords:Northwestern Indian Ocean, Tsunami, Makran subduction zone, Landslide, Spectral analysis, Numerical modeling

Tsunami waves were observed in the northwestern Indian Ocean following the Mw 7.7 Pakistan inland earthquake on 24 September 2013. We analyze eleven tide gauge records as well as one DART record of this tsunami and perform numerical modeling of tsunami. The tsunami registered a maximum wave height of 109 cm in Qurayat tide gauge station (Oman). Spectral analysis showed that the most governing period of the tsunami waves was around 12 min though wavelet analysis showed that parts of the tsunami energy were partitioned into other period bands of 7 and 16 min. Distribution of aftershocks in the region showed that all of them were located inland indicating that the tsunami was generated by submarine geological phenomena triggered by the earthquake. Tsunami backward ray tracing showed that the tsunami source was possibly located at offshore Jiwani (Pakistan) and the tsunami was most likely generated immediately after the main shock. Tsunami modeling assuming a pile-up structure at the location of the new island was not successful in reproducing the observed sea level records. A landslide source with a length of about 15-20 km, a thickness of 100-150 m located at 61.72^{o}E and 24.60^{o}N seems capable of fairly reproducing the observed sea level records. This event was the second tsunami recorded in the Makran region since 1945, and may be evidence for hazards from landslide-generated waves following seismic activities.