Geophysical Research Abstracts, Vol. 9, 06280, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-06280

Extra-Sciara del Fuoco submarine landslides generating tsunamis in the Stromboli island (Italy)

S. Tinti, **F. Zaniboni**, G. Pagnoni

Università di Bologna, Dipartimento di Fisica, Settore di Geofisica, Bologna, Italy

Stromboli island, located in South-East Tyrrhenian Sea (Italy), is well known for its strong volcanic activity, mainly concentrated in the Sciara del Fuoco zone, located in the north-western flank of the island:mostof the craters ejecta reach the sea through this big scar, entailing continuous mass accumulations that can lead to instability conditions, that can be triggered by volcanic tremors or simply by gravitational load. Thus submarine and subaerial landslides in this sector are not unusual, as was shown by the December 30^{th} 2002 shallow-seated failures that occurred here: the first one was submarine and the second was subaerial, with total volume around $20{\cdot}10^6$ m^3. They generated big tsunami waves all around the island, that reached the height of over 10 meters, and caused severe damage in the water front area, but fortunately no casualties.

Because of the constant danger that it represents and in view of the risk assessment, the Sciara del Fuoco has been widely studied and is constantly monitored. However, this is not the only place of Stromboli where mass failures are to be expected. Bathymetric surveys around the island have evidenced several submarine incisions in the volcanic edifice, also in the very shallow water belt all around the island, that can be interpreted as the result of past sliding events and possibly as preferential places of future occurrences. This justifies the study of tsunami generation from mass sources that are different from the Sciara del Fuoco.

In this work we will consider three different scenarios for landslides around Stromboli flanks, with volume comparable to the December 2002 events: the first will be in Strombolicchio plain, north of the island; the second will be near the southern extreme of the island, at Punta Lena, and the third will be in the Eastern coast, in the area named Forgia Vecchia. The landslide simulations will be carried out through a

Lagrangian block model (UBO-BLOCK1) developed at the University of Bologna. The computation of the tsunami generation and propagation around the island and in the Aeolian Archipelago will be performed through a finite-element tsunami model (UBO-TSUFE), that was developed by the same research group.