



## Current kinematics of the Aeolian Islands

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The active volcanic arc of the Aeolian islands is located between the Southern Tyrrhenian Sea back arc basin (Marsili basin) and the Calabrian Arc, an orogenic belt affected by a Late Quaternary extensional tectonics and uplift. This region is undergoing to shallow and deep seismicity up to 550 km and active volcanism due to the subduction extensional strain and heat flow related to the slab detachment beneath the Calabrian Arc.

In this geodynamic framework, the current crustal deformations detected at the ground surface by continuous and episodic GPS data collected in the archipelago and its surroundings in the time span 1996-2012, reflect both the behavior of the single volcanic islands and the regional tectonics of this complex region. Particularly, we focus on the current vertical component of land motion that indicate a diffuse subsidence that is in contrast with uplifting Quaternary geological data. GPS data show that subsiding is increasing toward north between Vulcano and Lipari Islands, but with episodic uplift at Panarea. Particularly, Lipari is rapidly subsiding at mean velocities exceeding 10 mm/yr, which the highest value among the Aeolian island. Instrumental data are in agreement with independent observations that for Lipari Marina Corta indicate a continuous subsidence with rates at at about 8 mm/yr since the last 2200 years B.P., while in Basiluzzo at about 2 mm/yr. Here we show and discuss the current geodetic strain and velocity field for the time span 1996-2012 for the Aeolian archipelago, as well as the GPS data archive. Finally, for Lipari island, the continuous land subsidence will cause a wide submersion of coastal installations by the year 2100 and represent a significant hazard within an urbanized coastal area.