



Seismic stratigraphy of volcanic events: examples from Naples Bay (Eastern Tyrrhenian Sea margin)

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In siliciclastic terrains sediment supply is limited by rates of weathering and erosion in the source area, volcanism can provide virtually instantaneous volumes of sediment several order of magnitude greater. Due to episodic and catastrophic nature of sediment supply volcanic terrains are the most complex environments on Earth and especially the monogenetic volcanic fields are difficult to interpret. Volcanism generates local unconformities that together with abrupt lateral changes of volcanic and sedimentary facies are responsible of complex geometrical relationships.

The interpretation of seismic reflection profiles collected in Naples Bay reveals the seismic stratigraphy and associated sedimentary processes of the volcanic area located offshore Campi Flegrei. This area corresponds to a site of almost persistent volcanic activity over the last 157 ka. Based on seismic facies it was possible to recognize: (A) areas of sub-parallel reflectors with good continuity corresponding to a basal sedimentary succession partially filling the Naples Bay intraslope basin (B) areas of chaotic seismic facies corresponding to a succession of volcanic units made up of syn-eruptive products, (C) many prograding reflection configurations corresponding to inter-eruptive clastic successions arranged to form prograding wedges overlapping the volcanoes. Numerous unconformities associated to the volcanic activity were recognized. Locally V shaped unconformities form in correspondance of shallow magmatic intrusions, whereas a widespread unconformity in the intraslope basin formed contemporaneously to the emplacement of the oldest volcanic complex. In the northern part of Naples Bay, the stratigraphic analysis reveals the shallowing upward of the stratigraphic succession since the 157 ka displaying a physiographic change from basin to shelf originated by volcanic islands.