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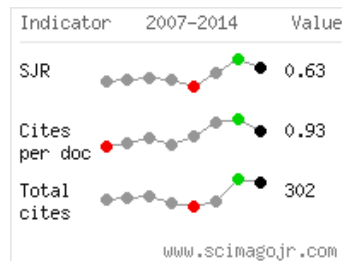
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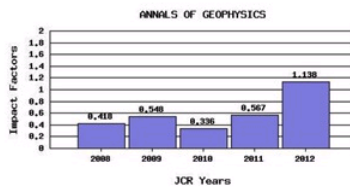
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Seismic reflection data processing in active volcanic areas: an application to Campi Flegrei and Somma Vesuvius offshore (Southern Italy)

P. P. G. Bruno, V. Di Fiore, A. Rapolla

Abstract

The Campanian volcanism develops near the sea. Therefore, the geophysical study of the marine environment is a key to a better understanding of the tectonic evolution and the origin of volcanism in the area. An abundance of high quality seismic data in the marine sector, where little direct information is available, is critical to the study of Campanian volcanism. This paper concerns the reprocessing of a seismic reflection dataset acquired in Naples Bay and processed during 1973. Even though the overall data quality was high for that time, of course their acquisition technological limits have been overcome by the new processing. Our reprocessing aimed at: 1) reduction of random noise in the data; 2) removal of unwanted coherent events; 3) reduction of spatial aliasing by means of trace interpolation on Common Shot Point (CSP) gathering; 4) improvement of resolution of the seismic wavelet with spiking deconvolution algorithms and finally 5) reposition of reflectors in their correct locations in the space-TWT domain by means of dip moveout and post-stack time migration. A comparison between the new and old data shows that the new sections are characterized by a much higher S/N ratio. Diffraction hyperbole has been collapsed. Reverberations, ghosts and multiples have been removed or greatly attenuated, especially between the reflectors of interest, allowing us to follow them with more detail and with greater continuity. Furthermore, data resolution has been boosted by the reprocessing, allowing the interpreter to evaluate reflector position and continuity in greater detail. The reinterpretation phase of such lines, that is already in an advanced stage, will therefore allow us to gain new insights into the structural setting of the bay, with the aim of exploring the connection between tectonics and volcanism.

Keywords

marine geophysics; seismic reflection

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