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## Assessing pre- and post-deformation in the southern Arava Valley segment of the Dead Sea Transform, Israel by differential interferometry

Francesco Sarti<sup>a,\*</sup>, Yaacov Arkin<sup>b</sup>, Jean Chorowicz<sup>c</sup>, Arnon Karnieli<sup>d</sup>, Teresa Cunha<sup>e</sup>

<sup>a</sup>ESA/ESRIN, Earth Observation Program, V. Galileo Galilei, Casella Postale 64, Frascati 00044, Italy

<sup>b</sup>Geological Survey of Israel, Jerusalem, Israel

<sup>c</sup>Laboratoire de Tectonique, Case 129, Université Paris 6, France

<sup>d</sup>The Remote Sensing Laboratory, Jacob Blaustein Institute for Desert Research, Ben Gurion University of the Negev, Beersheba, Israel

<sup>e</sup>Geology Department, Instituto Geologico e Mineiro, Alfragide, Portugal

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### The Full Article

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#### Abstract

Differential radar interferometry, using archived ERS data over the region of the Dead Sea Transform, allows to detect ground movement (subsidence or uplift) in playas within the southern Arava Valley segment of the Dead Sea Rift. These measurements are consistent with a mean displacement rate of about 0.4 cm/month, in the direction of the radar beam, during the 8-month period preceding the Nuweiba earthquake of 22 November 1995. In the 3 years following the earthquake, the measured rate was smaller by a factor of 10. These movements are not related to salt diapirs or water pumping activities in the area. The exact location, along faults, suggests a possible correlation with pre-seismic and post-seismic fault deformation.

A simple fault model consistent with the observed phenomena associates the observed subsidence/uplift to right and left stepping *en-echelon* fault patterns related to inter-seismic tensional accumulation along the faults. Further observations are necessary on this site and similar fault areas to corroborate the correlation between seismic activity and the observed phenomena. Monitoring of these sites should continue with differential Global positioning system (GPS) measurements and radar interferometric analysis using Envisat and Radarsat as well as archived data (including J-ERS).

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*Keywords:* Interferometry; *En-echelon* fault; Dead Sea Transform; Dead Sea Rift; Digital elevation model; Global positioning system; Hue intensity saturation

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