

Geological results from the SAR ERS imagery in geology

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The capacities of ERS SAR imagery in geology are demonstrated by its key role in important thematic discoveries, alone or more generally combined with other data.

Lithological mapping depends on: signal penetration (Sahara); image texture (Côte d'Ivoire); sensibility to slope (Carpathians); coherence images of simple interferometry (Middle East).

In tectonics, the main results are in the mapping of active faults (e.g., Dead Sea Fault zone, Atacama region, Peru, Turkey, Ethiopia). It was possible to estimate displacements (e.g., Turkey), even small with differential interferometry (Ercinzan). Active folding can also be observed (Japan, French Alps, Irian Jaya). Large transcurrent fault zones have been discovered in the Dinarides.

Relationships between volcanism and tectonics have been analysed in Iceland and Turkey. The results have changed fundamental concepts concerning lateral escape tectonics.

In hydrology, efficiency is demonstrated for ancient drainage networks in the Sahara and hydrogeologic studies in France.

Geological hazards are concerned, especially for volcanic activity: mapping of the Pinatubo lahars; relationships between active tectonics and active volcanism; follow-up of volcanic eruptions (Montserrat). The mapping of landslides is significantly improved (Colombia). Radar is also the main data source for the mapping of damages due to flooding (e.g., Vaisons-la-Romaine in France) and hurricanes (the Mitch case).