

**SAR ERS IMAGERY FOR THE STUDY  
OF RELATIONSHIPS BETWEEN TECTONICS AND VOLCANISM:  
EXEMPLES IN ICELAND AND ANATOLIA**

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A new approach to the study of geometric relationships between tectonic features and volcanic vents is presented. It is based on the mapping of tectonic and volcanic structures using high resolution imagery, mainly SAR ERS images. We show that most of the volcanic edifices are located on tension fractures responsible for fissure eruptions, volcanic linear clusters and elongate volcanoes. This relationships is studied first in Iceland where the geodynamics is well known, using SAR ERS-1 imagery. It is then applied to Anatolia, using multisource data, including SAR ERS scenes, Digital Elevation Models (DEMs), gravimetric data and field structural analysis. These studies have permitted a new understanding of the geometric relationships between tectonics and volcanism in the Anatolia region since the late Miocene. Distribution and shape of volcanoes evidence different types of volcanic emplacement such as tension fracture, tail-crack or horse-tail features. Caldera complexes of Cappadocia seem to be associated to horse-tail type fault termination. Emplacement of volcanoes also benefits from larger scale tectonic structures such as releasing bend basin along the strike-slip faults. Deformation can be determined from the tension fractures - which are at right angle to the direction of extension - and from field structural analysis. At regional scale, the tectonic regime responsible for distribution of volcanic vents in the studied area where occurs convergence and lateral extrusion, is extension. Movements trend west in the Tuz Gölü area, influenced by the active back-arc Aegean extension in the west. More to the south, they turn southwest and south, due to opening of the Adana-Cilicia basin. Several facts concur to show that extension in the Anatolia plateau is not of lithospheric scale but rather due to crustal blocks moving above sub-horizontal detachment surfaces which are located in the lower crust.

Keywords: ESA European Space Agency - Agence spatiale européenne, observation de la terre, earth observation, satellite remote sensing, teledetection, geophysique, altimétrie, radar, chimie atmosphérique, geophysics, altimetry, radar, atmospheric chemistry