



Tectonic - volcanism relations in the Santiago rift (Tenerife, Canary Islands, Spain)

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The Santiago rift is the most recent and active volcanic zone in the Tenerife island (Canary Islands). The volcanic activity of Santiago rift has extended from the centre of the island (Teide - Pico Viejo complex) to the end of the rift at the Teno ancient massif at the NW. Three types of tectonic studies of this rift have been carried out in the present work: firstly the measuring of the structural patterns of the volcanic eruption along the rift; secondly the establishment of an eruptive type-sequence in order to deduce the hypothetical activity migration and thirdly the estimation of the average outline of the rift. The final objectives are study the stress field of the Santiago Rift and its relation with the neighbour zones of NW Tenerife.

A specific methodology was used in each study. In order to study the structural patterns of we rift first recognised the surface expression of the eruptive fissures (alignment of eruptive centres from the same eruption, the existence of elongated hydrothermal alteration zones and eruptive reactivations) for their measure in field. The eruptive type - sequence was established from the lava flows and pyroclastics superposition relationships. In order to establish chronological relationships between isolated eruptions (without any spatial contact of their lava flows and pyroclastics) were used relative age criterions (vegetal colonization, cone destruction and superficial alteration) and finally establish the main sequence of the rift. To calculate the average direction of the rift was used the lineal least square fit of the population of the eruptive vents to a straight line; to draw the average line of the rift was ran a 2 Km. circular statistical window (which fits a line with the least square fit method to the vents only contained in the window in each part of the rift) running the statistical window along the previous average straight line.

The structural outline of the Santiago rift (WNW - ESE) transitional from the structural pattern of Cañadas rim at the SE (W - E) to the Teno's massif pattern at the NW (NW-SE) so the Santiago rift isn't an isolated structure in the NW of Tenerife. These neighbouring volcanic zones of the Santiago rift are older than the rift so the control structure of its volcanism is earlier than the Santiago rift itself. The earlier eruptions of the rift are concentrated in its NW limit but there is no clear migration in the volcanic activity or temporal concentration in specific spatial zones because the recent eruptions occurred in all rift zones. The individual eruption tectonic traces are lightly deflected W - E from the main trace and the average outline has an echelon shape to the west, it is caused by a local sinistral deviant stress in the Santiago rift zone.