

Radar Satellite Textures and Ages of Outcrops in the Pali Aike Volcanic Field, Southern Patagonia.

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In the southern tip of continental South America, 250 Km to the East of the Andes, the mafic rocks of the Pali Aike field erupted throughout a period of more than three million years along a fracture belt 150 Km long. They lie on Miocene continental sediments and glacial and fluvio glacial deposits belonging to several glacial events affecting the southernmost part of the continent.

Because of the differential weathering intensity and vegetal colonization -as a consequence of the high precipitation gradient existing between the areas adjacent to the Magellan Strait and those more desertic to the North and West side of the belt- age estimation after direct morphological comparison was difficult to establish.

SAR provides high resolution images with information sensitive to soil roughness, detecting different surface textures according to the time and intensity of the weathering, vegetal colonization, and soil development acting upon the outcrops.

The ERS-1 SAR images from de Pali Aike area allowed to perform a classification of the different volcanic surfaces. Areas with different textural response were tentatively assigned to different volcanic ages. Twenty seven absolute $^{40}\text{K}/^{40}\text{Ar}$ and $^{40}\text{Ar}/^{39}\text{Ar}$ radiometric determinations, giving ages between 3.7 and 0.17 Ma, were employed to calibrate each area. The space and time distribution of the basaltic and basanitic rocks, erupted during the last 2.1 million years, does not allow to deduct a regular drift of the volcanic activity in any direction.

This work has shown that textural analysis is a promising methodology to classify volcanic ages.