THE IGNIMBRITES OF TERCEIRA, AZORES

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ABSTRACT

On the oceanic islands of the Atlantic ignimbrites are known to occur on Iceland, Gran Canaria, Tenerife and on two of the Azores islands, Terceira and São Miguel. Ignimbrite may form a larger proportion of the total volume of rock on the island of Terceira than it does on any of the other islands, yet the individual eruption volumes are small ($\leq 1\ km^3$). There have been at least 6 major ignimbrite forming eruptions during the islands' history, and older ash-fall sequences may provide evidence of several others.

The two youngest ignimbrites, the Lajes (23,000yBP) and the Angra (19,000yBP) resulted from caldera-forming eruptions of Pico Alto volcano, a «parasitic» caldera on the north flanks of the older Guilherme Moniz volcano. Both pyroclastic flows reached the edge of the island and much of the deposition was probably submarine. The cooling units are relatively thin (1-20 m), but the Lajes is densely welded, a feature typical of highly alkaline ignimbrites.

The transport mechanism of the two young ignimbrites has been investigated using grain-size relationships between the various layers. Ground surge, ash-cloud surge and co-ignimbrite ash-fall deposits are associated with the main ignimbrite bodies. Nearly all the pyroclastic flows have been constrained by topography to flow along valleys between the main composite volcanoes, and have all reached the sea in the same regions. Sequences exposing to older ignimbrites are hence restricted to these narrow coastal regions and little is known of their and sources.