



Submarine Sedimentation Transport Processes in the South-Eastern Terceira Rift / São Miguel Region (Azores)

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The south-eastern Terceira Rift comprises a rift basin, igneous ridges, seamounts and São Miguel, the main island of the volcanic Azores Archipelago. It is located ~1500 km west of continental Portugal within the convergence zone of the American, African and Eurasian plate. Due to submarine and subaerial volcanism, the sedimentation rate is higher than usually assumed in such a segregated submarine region.

Multi-beam and high-resolution multi-channel seismic data reveal a wide variety of sediment transport processes. Volcanic fall-out sediments are abundant in the entire area. Along the northern slope of São Miguel terrestrial volcanic sediments are drained by rain water gullies which connect to submarine channels. Turbidity currents created some 10 km long erosional channels which transported the sediments more than 40 km downslope. Several regional accumulations of talus and/or pyroclastic material get instable resulting in gravitational gliding, creeping or slide events. Volcanic ridges partly collapse due to tectonic stress and/or gravity spreading. Oceanic currents remobilize sediments and form drift deposits. Infilling drifts developed on top of hangingwall blocks of step faults.

Therefore, the São Miguel region is a good example of a sedimentary system with strong time-variant and locally defined sediment support. Sedimentation is controlled by volcanism and tectonics, since these processes affect sedimentation pathways and oceanographic conditions.