

Submarine Eruption of Bombarda Dome, Milos Island, Greece

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The presence in the Milos volcanic field of a well-exposed succession of submarine volcanoclastic deposits records a long history of explosive monogenetic volcanism. The Bombarda dome represents an example of a shallow water rhyolitic eruption, which produced a 50 m thick volcanoclastic apron and a lava dome. The apron was emplaced on the sea floor by a combination of settling from relatively cold mass flows of pyroclastic debris and suspension. The gravity flows were derived directly from the collapse of a subaqueous/subaerial eruption column and from the contemporaneous redistribution of freshly erupted pyroclastic debris. Afterwards the trigger explosive phase, the activity was characterized the interaction between the growth of a lava dome at the source area and discrete phreatomagmatic events. The progressive building of the volcanoclastic apron and the development of an obsidian carapace permitted the efficient isolation of the dome core from the marine environment. The upward increase in breccia beds not organized in depositional cycles within the volcanoclastic apron sequence may indicate the evolution to partially subaerial conditions.