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Is a set of overlapping Surtseyan volcanoes a polygenetic volcano?

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Since the eruption of Surtsey (1963-1965) multiple studies have been made of the resulting island. The pre-emergent base of the volcano, however; remains submarine and unincised and as a result limited studies of this section have been conducted.
Approximately 70% of the magma that erupted during the eruption of Surtsey generated tephra, with lava flows representing the remaining 30%. Only 9% of the tephra was deposited above sea level and the pre-emergent base remains submarine, un-incised and effectively unstudied except for several scuba dives and analysis of a single drill-core. An alternative to studying the submarine portion of Surtsey is to study volcanic deposits with a similar magma type that were erupted in a submarine environment but are now exposed subaerially. A number of such deposits are exposed along the north-eastern coastline of the Otago region, South Island, New Zealand, which hosts numerous intraplate basaltic volcanoes that erupted in Surtseyan style onto a submerged continental shelf at between 35 and 30 Ma.
Currently thought to be part of a monogenetic volcanic field, the stratigraphy of exposed volcanic edifices of north east Otago suggest that they comprise multiple volcanoes built by eruptions at effectively the same sites, but separated by millions of years. Geological mapping, lithofacies analysis and petrology, here represented by the Oamaru volcano, reveal discordant to locally concordant boundaries separating deposits from different construction episodes. Individual volcanoes that overlap in this edifice exhibit complex erosion features formed during a single eruption, such as slumping and other sedimentary structures, which are distinct from the inter-volcano contacts marked by biogenic accumulations or other slow-formed features.
The edifice overall was constructed over millions of years as volcanoes formed and were subsequently partially degraded prior to an adjacent vent opening and adding another volcano to the edifice. Though no central vent or long-active volcano ever formed, this repeated growth of 'monogenetic' volcanoes at a single site can be seen as a novel style of polygenetic volcanism. Absence of a magma chamber based on a significant lack of magma fractionation indicates a mantle-sourced magma. Consequently a mechanism for building a stack of volcanoes at one site is unclear.