

## Evolution of volcanism and magmatism during initial arc stage of the Oman ophiolite

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We present detailed volcanostratigraphy, petrology and geochemistry of juvenile arc tholeiite and subsequent boninite magmatism from the Oman ophiolite. Volcanic sequences of the Oman Ophiolite are divided into a spreading stage V1 (Geotimes, Lasail), a subduction stage V2 (Alley, Cpx–phyric) and a pre–obduction alkaline stage V3 (Salahi) in ascending order (Alabaster et al., 1982, Ernewein et al., 1988, Umino et al., 1990).

The V2 sequence considered to begin <2 Ma after the V1 (e.g. Hacker et al., 1996) is a suitable site to investigate magmatic and volcanic developing processes of an infant arc.

An 1110 m thick V2 sequence is divided into the lower 970 m (LV2) and upper 140 m (UV2) thick subsequences by a 1.0 m thick sedimentary layer. Pahoehoe flows dominate in the lower part of the LV2, while the upper part consists mainly of sheet flows with intervened few pelagic sediments, a fissure vent and a cylindrical plug. In addition to the presence of feeder conduits, the flow–dominant lithofacies with a few thin sedimentary interbeds in the LV2 indicates that the study area was the center of a monogenetic volcano grown in a short period.

The UV2 is composed of sheet flows overlain by a 2.0 m thick subaqueous pyroclastic fall deposit. The LV2 consist of arc tholeiite with orthopyroxene phenocrysts increasing in amount upward. The UV2 lavas are composed of boninite containing olivine and clinopyroxene phenocrysts with plagioclase in the groundmass.

Successive orthopyroxene–bearing arc tholeiitic volcanism in LV2 followed by a relatively small amount of boninite lavas in UV2 overlain by thick pelagic sediments suggests that the infant arc volcanism was short lived and terminated long before the ophiolite obduction.