

## Magma channel systems in the Horoman peridotites: Examined from spinels.

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Magma channels generated in the upper mantle have been well observed in the Horoman peridotite complex. Recently, a dunite channel swarm was found in harzburgites of the Lower Zone of the complex. The channel dunites can be distinguished into two types; one is dunites with Cr#=45 spinels, and the other is dunites with Cr#=55-60 spinels. Both the types have been observed in the same wall harzburgites, which contain spinels with Cr#=42-47.

The former spinels are in equilibrium with the wall harzburgites, which is a possible source of the magmas and represents a moderately depleted upper mantle peridotite. Whereas the latter spinels are considered to have been crystallized from an Island-arc tholeiitic magma (IAT) derived from more depleted mantle peridotites than the former ones.

Magma channels generated in the upper mantle have been well observed in the Horoman peridotite complex such as spinel dunite (SDW: Takahashi, 1991, 1992), mafic rock type GB I (Niida, 1984; Shiotani&Niida, 1997; Takazawa et al., 1999), and websterite dyke (Niida &Shiotani, 1997). Recently, a dunite channel swarm was found in harzburgites of the Lower Zone of the Horoman complex (Niida, 2000).

The channel dunites can be distinguished into two types; one is dunites with Cr#=45 spinels, and the other is dunites with Cr#=55-60 spinels. Both the types have been observed in the same wall harzburgites, which contain spinels with Cr#=42-47. The spinels with Cr#=45 in the channels are in equilibrium with those of the wall harzburgites, which is a possible source of the magmas channeled. The harzburgite represents a moderately depleted upper mantle peridotite, which is more depleted than that beneath Mid-Atlantic Ridge (Niida, 1997) and less depleted than that of Hess Deep (Arai&Matsukage, 1996; Allan&Dick, 1996). Whereas the spinels with Cr#=55-60 in the latter dunite channels are considered to have been crystallized from the magmas derived from more depleted mantle peridotites than the former ones. According to Arai (1992) and others, Island-arc tholeiitic magma (IAT) is a reliable candidate of magma-types for the dunite channels with Cr#=55-60 spinels.