



Nature and scale of bulk rock variations in the Friningen peridotite body

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The peridotite body near lake Friningen (Jämtland/Sweden) contains various mafic and ultramafic rocks with a long lasting and complex history which includes Caledonian metamorphism at ultra-high-pressure conditions (e.g. Janak et al., 2013; Giglio et al., 2014). The main compositional variations are supposed to be related to Proterozoic mantle metasomatism (e.g. Brueckner et al. 2004). We use thin section observations, XRF-bulk-rock-, micro-XRF-, EMS-, and HSE- data to study nature and scale of compositional variations in harzburgites, garnet peridotites, pyroxenites, and eclogites. Ultramafic domains enriched with respect to major and trace elements occur at layering at the sub-centimeter to centimeter scale. Hand-specimen-size samples typically average to depleted major element compositions hardly distinguishable from the harzburgites. HSE concentrations in peridotites and pyroxenites/eclogite layers range from 0.001-3 times those of the Primitive Upper Mantle. Three different HSE profiles (i.e. depleted in incompatible HSE, concave and positively sloped) are distinguished on the basis of the HSE fractionations ($PdN/IrN=0.46-0.56$; $1.25-2.8$; $3.8-7.4$ and $ReN/PdN= 1.8-2.0$; $2-3.5$). Also, the chemical and mineralogical composition within a mafic body interpreted as a dyke vary considerably, especially with respect to HSEs.

Brueckner et al. (2004), *Journal of Petrology* 45, 415-437.

Giglio et al. (2015), *Lithos* 230, 1-16.

Janak et al. (2013), *Gondwana Research* 23, 865-879.