

Lu Hf dating of eclogite facies metamorphism in the Sanbagawa belt

Simon Wallis[1]; Robert Anczkiewicz[2]

[1] Dept. Earth and Planetary Sciences, Nagoya Univ.; [2] Sch. Geosci. Monash Uni.

One of the key pieces of information that has been lacking in studies of the subduction type Sanbagawa metamorphism is the age of peak metamorphism. In particular it is important to know the age of the eclogite facies metamorphism, because this represents the stage of deepest recorded subduction and the timing of this stage best constrains exhumation rates and the time scale for the Sanbagawa orogeny.

Our Lu-Hf analyses of garnet and omphacite in the Sanbagawa eclogite give ages of 87.8 +/- 0.5 Ma and 89.1 +/- 0.5 Ma. When combined with previously published cooling ages and P-T paths, these results imply exhumation rates of the order of cm/yr and orogenic time scales of only a few My. In addition, our estimates of the age of eclogite formation are compatible with recent thermal modelling and plate reconstructions that suggest the Sanbagawa metamorphism developed immediately before a spreading ridge arrived at the Sanbagawa subduction zone.