

Zircon and monazite U-Th-Pb geochronology of gneiss complexes, Westland, New Zealand

Joe Hiess^{1,2*}, Trevor Ireland² and Mark Rattenbury³

¹ Geochronology Team, Korea Basic Science Institute (joehiess@kbsi.re.kr)

² Research School of Earth Sciences, The Australian National University

³ GNS Science, New Zealand

Zircon and monazite U-Th-Pb geochronology was performed with SHRIMP on amphibolite-facies orthogneiss and paragneiss units from the Fraser Complex and Granite Hill Complex of Westland, New Zealand to constrain protolith rocks and metamorphic overprint. Located immediately west of the Alpine Fault (the present day Australian-Pacific plate boundary) and enveloped by mylonites, the gneiss complexes have yet to be conclusively linked with either: basement terranes of the Western Province, basement terranes of the Eastern Province, regional plutonic batholiths, or an exotic accreted source.

Orthogneiss units (n=9) record intense Mid-Cretaceous (110-120 Ma) and Late-Devonian (360-380 Ma) thermal pulses causing magmatism and metamorphism. These periods of magmatic and metamorphic activity are well recognized within other units of the Western Province (Muir et al. 1994). Paragneiss units (n=6) contain detrital zircons extending back into the Proterozoic although their depositional age is likely to be early Paleozoic. Similar age components are recognized in Ordovician meta-sedimentary rocks in the Western Province, indicative of eastern Australian Gondwana margin provenance (Ireland 1992). These results indicate the Fraser and Granite Hill Complexes are likely part of the Western Province Buller terrane.

References

Muir et al., 1994, Chem. Geol. (IGS) 113: 171-189.

Ireland, 1992, GCA 56: 911-920.