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| **Lithostratigraphic unit** | **Suggested research** | **Objectives** |
| Western Province | Geochemistry/petrography of Takaka and Buller Terranes | Better characterize possible changes in tectonic setting |
| Brook Street Terrane | U-Pb whole-rock & detrital zircon dating of intermediate/felsic rocks(e.g. Grampian Fm., Nelson area);More Nd isotopic analysis | Test if older Gondwana-derived zircons are present, relevant to tectonic setting;Determine crustal type |
| Dun Mountain Ophiolite | U-Pb dating of e.g. gabbroic rocks;More dating of intrusives | Test if plagiogranite ages arerepresentative |
| Patuki and Croisilles Melanges | Petrographic and chemical studies of mafic and ultramafic rocks;U-Pb detrital dating of ‘matrix’ sediments | Test correlation with Dun Mountain Ophiolite;Compare provenance with Permian of Maitai Group |
| Maitai Group | Sedimentology of pristine Alpine sections (helicopter access needed);U-Pb detrital zircon dating of additional formations (e.g. Wooded Peak Formation);Ramon spectrography of lawsonite | Improved understanding of depositional environments;Test if provenance in Wooded Peak is like Tramway Formation (existing data);Better understanding of local HP-LT metamorphism |
| Murihiku Terrane | Sedimentary logging and facies analysis; more Nd isotopic analysis of clasts and sediments | Refine knowledge of depositional settings & provenance in different areas |
| Caples Terrane | Structural studies focused on key boundaries to assess stratigraphic vs. tectonic nature (e.g. using short bore holes);Further study of mélange units | Test fore-arc vs. accretionary interpretations; check apparent absence of Permian detrital zirconsTest e.g. MORB vs. OIB origins |
| Rakaia Terrane | Rare earth element analysis of clastic sediments; more dating ofmetamorphism where possible. | Closer comparison with Maitai and Caples clastic sediments;Better define timing of collsions |
| Eastern Province generally | Micro-structural analysis; faultanalysis | Better understanding e.g. of accretion vs. strike-slip and Cenozoic deformation |