

# Research proposal for the Hadean geoscience in the Eoarchean high-grade orthogneiss, Mount Sones, Enderby Land, Antarctica

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Terrestrial rock records during Hadean era (> 4.0 Ga) are scarcely preserved due to reworking, metamorphism and erosion. Clues about conditions during this time can be deduced from detrital/inherited zircon, as being reported as Hadean zircons from the Jack hills metasedimentary rocks, Australia and the Acasta gneiss complex, Canada. It is quite important whether the Eoarchean/Hadean geological record are present in the Antarctica because most of the Eoarchean rocks are found in the Laurentia and the presence is essential to decode the global evolution of early earth. However, it is still on debate whether the Eoarchean rocks are present and how they preserve the original features. Eoarchean (~3.9 Ga) zircons from gneisses have been reported from Mount Sones, Enderby Land, Antarctica (Black et al., 1986; Harley and Black, 1997). Because the limited area has been examined only as part of a regional study, no detailed geologic map is available for the mountain, and Mount Sones is composed dominantly of strongly layered ortho- and paragneisses (Black et al., 1986). Although Black et al. (1986) report “Four zircon ages from one rock” and propose multiple tectonothermal events, the stratigraphic relationships of the ortho- and paragneisses at Mount Sones are not known because contacts have been obscured by the intense D1 and D2 deformations (Black et al., 1986). Shimojo et al. (2016) report cathodoluminescence (CL) observations and U–Pb ages of zircons from the Eoarchean orthogneisses to constrain the evolution of the Saglek–Hebron Block, northern Labrador, Canada. Making detailed sketch maps of orthogneiss outcrop to establish relative chronological relationships between lithologies, they reveal that at least seven generations of mafic and felsic units were recognized in an outcrop. Detailed recognition of lithology and relationship on ortho- paragneiss from Mount Sones, Enderby Land, Antarctica, is required for the future geological research to shed light on the Hadean-Eoarchean research.

## References

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