

## **EVOLUTIONAL MODEL FOR SOUTH HARRIS COMPLEX, NW SCOTLAND, DEDUCED FROM PALAEOPROTEROZOIC HIGH-GRADE METAMORPHISM.**

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The Lewisian complex in South Harris(South Harris complex) consists of three belts of high-grade metamorphic rocks: the Leverburgh belt, the Langavat belt and South Harris Igneous Complex (SHIC). The presence of metasedimentary rocks, high-pressure granulite-facies metamorphism and igneous activity at c. 2170-1840 Ma, is significantly different from mainland Lewisian.

The possible evolutionary history of South Harris deduced from the sedimentary and igneous precursors based on lithological assemblage and geochemical characteristics of the mafic gneiss, and metamorphic history which trace out an anti-clockwise P-T path, is as follows.

1) The South Harris complex was a Proterozoic magmatic arc on a continental margin or an island arc, which was formed on a continental block above a subducting oceanic plate; the different continental blocks eventually collided along the South Harris granulite belt after a temperature increase at the M1 stage (900 °C, 8-9kbar), due to the emplacement of the SHIC. 2) During the collision, thrusting of continental crust over the South Harris granulites caused the M2 high-pressure metamorphism (800±30 °C, 13-14kbar) at around <sup>3</sup> 1.83 - 1.87Ga. 3) Following the collision, exhumation of overthickened crust occurred as a result of isostatic rebound or extensional uplift (M3 decompression stage). Sooner or later, a second collisional event occurred, and then exhumation and uplift, accompanying shearing, of South Harris complex took place.

This Palaeoproterozoic Lewisian history in South Harris, subduction - magmatism - continent-continent collision, marks as a distinctive Palaeoproterozoic event in Lewisian.