

# **My Rhyacian Obsession: state shifts in magmatism, metamorphism, and tectonics**

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On the heels of voluminous plume-related magmatism and atmospheric oxygenation, the Rhyacian Period (2300-2050 Mya ago) records several important changes in Earth's lithosphere. For over a decade, this period has been recognized for its dearth of rocks of this age. The scarcity of geologic evidence is often argued as evidence of “lulls” in tectonomagmatic processes. Nevertheless, the few localities that preserve evidence of Rhyacian geologic processes shed light on the irreversible changes that occurred in the Earth system. Numerous state shifts in the geologic record have been previously proposed to have occurred at the end of the Archean Eon. However, upon closer inspection, it is becoming clearer that most if not all of these rapid changes occurred in the early Proterozoic Eon. In this presentation, I will present evidence from the magmatic, metamorphic, and sedimentary records in favour of tumultuous changes from the mantle to the atmosphere that when taken together argue for the initiation of plate tectonics during the Rhyacian Period.