

NEW ASPECTS OF THE TECTONO-THERMAL EVOLUTION IN THE SOUTHERN PART OF THE BARBERTON GREENSTONE BELT

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The greenstone remnants south of the Barberton greenstone belt have generally been considered to form part of the lowermost formations of the 3500 million years old Onverwacht Group. Recently, some younger Fig Tree Group metasediments were identified in the Schapenburg schist belt, where they structurally underly the Onverwacht volcanics. Both units dip steeply to the east and show an amphibolite facies (circa 625 °C and 6.0 kbar) peak metamorphic mineral assemblage, which has been dated at 3231 million years. Minor retrograde reaction assemblages at Schapenburg are correlated with a post-tectonic granitoid intrusion at 3110 million years. Thus, geochronological and structural data support a major metamorphic event in the Barberton greenstone belt that was synchronous with the main thrusting event at around 3227 million years, which clearly postdates the deposition of the Onverwacht Group by more than 200 million years. To the north, the peak metamorphic mineral assemblages of similar greenstone remnants indicate somewhat higher pressure-temperature conditions, and record both upper amphibolite and lower granulite-facies grade assemblages. These assemblages are correlated with the peak of metamorphism in the Schapenburg schist belt, but appear to have been superimposed on an earlier metamorphic episode which accompanied the emplacement of the 3445 million years trondhjemite plutons south of the Barberton greenstone belt. Field evidence from the southern margin of the greenstone belt indicates that this early metamorphic event was followed by extensive retrogression along major post-intrusive shear zones developed at the contact to the granitoid surroundings.