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Paleoproterozoic evolution of the Guiana Shield in Suriname: A revised model

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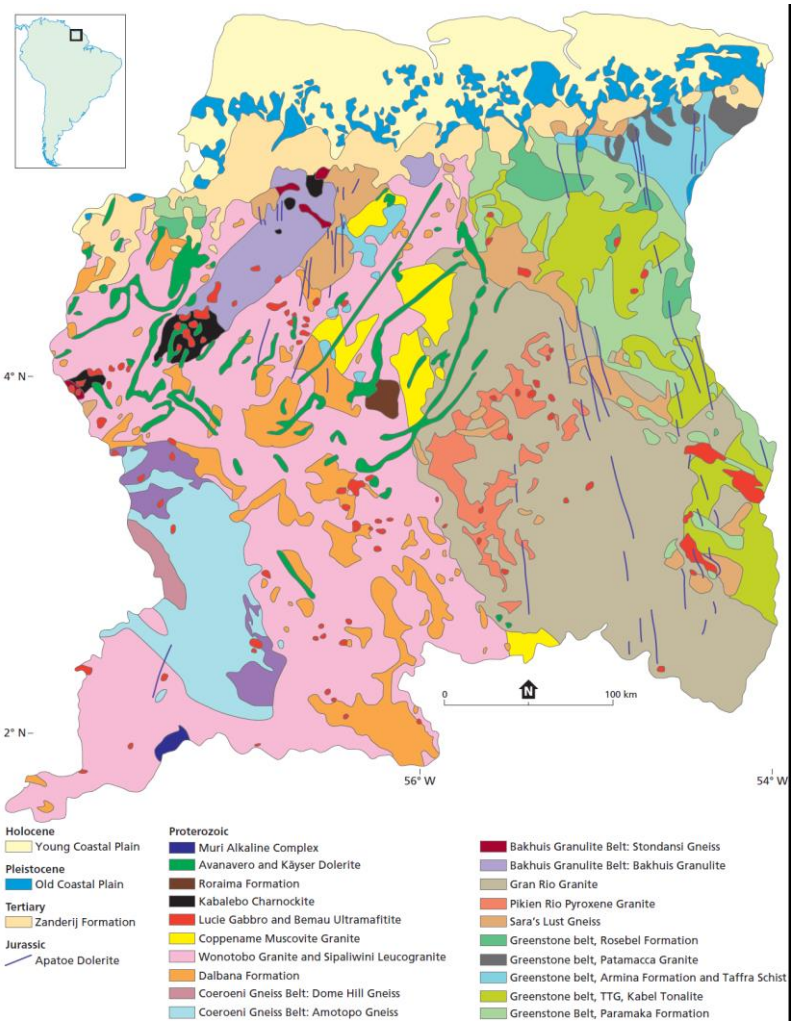
The Proterozoic basement of Suriname consists of a greenstone-TTG belt in the NE of the country, two high-grade belts in the NW and SW respectively, and a large granitoid - felsic volcanic terrain in the central part of the country, punctuated by numerous gabbroic intrusions. The basement is overlain by the subhorizontal Proterozoic Roraima sandstone formation and transected by two Proterozoic and one Jurassic dolerite dyke swarms. Late Proterozoic mylonitization affected large parts of the basement. The ages of the rocks portrayed on the geological map of 1977 and in the last review in 1983 were based essentially on Rb-Sr isochrons. Since then almost 50 new U-Pb and Pb-Pb zircon ages and geochemical data have been obtained in Suriname, and many new data are also available from the neighbouring countries. This has led to a considerable revision of the geological evolution of the basement.



The main orogenic event is the Trans-Amazonian Orogeny, resulting from southwards subduction and later collision between the Guiana Shield and the West-African Craton. The first phase between 2.18-2.09 Ga shows ocean floor magmatism, volcanic arc development , sedimentation, metamorphism, anatexis and plutonism in the Marowijne Greenstone Belt and the adjacent older granites and gneisses . The second phase encompasses the evolution of the Bakhuis Granulite Belt and Coeroeni Gneiss Belt through rift-type basin formation, volcanism, sedimentation and, between 2.07-2.05 Ga, high-grade metamorphism. The third phase between 1.99-1.95 Ga

is characterised by renewed high-grade metamorphism in the Bakhuis and Coeroeni belts at higher pressures than in Phase II, and ignimbritic volcanism and extensive and varied intrusive magmatism in the western half of the country. An alternative scenario implying orogeny triggered from the south is also discussed. The Grenvillian collision between Laurentia and Amazonia around 1.2-1.0 Ga caused widespread mylonitization and mica age resetting in the basement.