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The Saharides: Turkic-Type Orogeny in Afro-Arabia

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We describe a major new Neoproterozoic orogenic system belonging to the larger Pan-African deformational realm, the Saharides, in North Africa, by using various tools such as magnetic maps and our own remote-sensing based structural interpretation to aid us in following the orogenic trend-lines in addition to a large compilation of geochronological data. The Saharides, a Turkic-type orogenic complex similar to the Altaids of central and northwestern Asia, involved major subduction accretion complexes occupying almost the entire Arabian Shield and much of Egypt and Sudan and the small inliers of such complexes farther west to and including the Ahaggar mountains. These complexes are formed at least by half from juvenile material representing at least 5 million km2 new continental crust formed during the Neoproterozoic from about 900 to 500 Ma ago. Contrary to conventional wisdom in the areas they occupy, the Saharides involved no continental collisions until the very end of their history, but evolved by subduction and strike-slip stacking of arc material mainly by pre-collisional coast-wise transport of arc fragments shaved off the Congo/Tanzania cratonic nucleus in a manner very similar to the development of the Nipponides in east Asia, parts of the North American Cordillera and the Altaids. The entire Sahara is shown to be underlain by a double orocline much like the Hercynian double orocline in western Europe and northwestern Africa and not by an hypothetical ‘Saharan Metacraton’. The method here followed may be a fruitful procedure to untangle the structure of some of the Precambrian orogenic belts before life evolved sufficiently to make biostratigraphy feasible.