Early Triassic rifting of West Siberia

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The Early Triassic West Siberian continental rift system is buried under thick Jurassic, Cretaceous and Cenozoic sedimentary rocks.

The paleorift system is represented by the Urengoi-Koltogor, Khudutei, Agan, Yamal, Ust-Tym, Khudosei graben-rifts. From deep well (Nikolskaya, Riftovaya, Tagrinskaya, Tyumenskaya superdeep-6, etc.) data the grabens are filled with basalt, tuff with red terrigenous members. Flora shows the strata to be of the Lower-Middle (Anisian) Triassic age. Rifts are of knee-shaped structure in plan and have triple junctions. The junction zones display the highest Mesozoic and Cenozoic thicknesses. The system extends for about 1,800 km, its area exceeds 1 million km^2, penetrated effusive thickness in rifts is 1,200 m in wells.The graben-rifts are revealed as linear positive anomalies in magnetic and gravitational fields. A rift "cushion" with formation velocity of 6.93-7.5 km/s and upper mantle diapir with boundary velocity of 7.95-8.03 km/s at M-boundary have been fixed at the crust base from deep seismic sounding.

Seismic and drilling data show the effusive magmatism to cover the area of more than 1 million km^2. The total volume of erupted igneous rocks is about 2 million km^3.

Postrift thermal decline of mantle diapir resulted in continuous crust downwarping over 200 Ma and formation of the West Siberian petroleum megabasin.