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Serpentinization of the Martian crust during Noachian

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We present a model of serpentinization of the Southern Martian crust during Noachian that explains the topographic dichotomy, the absence of an associated free-air gravity anomaly and the presence of strong magnetic anomalies in the Southern hemisphere. Low-density serpentinized rocks are assumed in the Southern crust. Their formation created the topographic dichotomy, but the decrease in density did not imply a relief at the base of the crust between the two hemispheres. Assuming an intense magnetic field (core dynamo), different reactions that form magnetite were able to produce the amount of remanent magnetizations deduced from magnetic anomaly studies. Implications concerning the thermal evolution of Mars, its iron content and the intensity of its ancient dynamo will be addressed.