

ABSTRACT

The Bouguer and isostatic anomaly maps of Sri Lanka show regions of negative anomalies over the northern Jaffna peninsula and Tabbowa and Andigama sedimentary basins in the northwestern province and over the Highland-Vijayan boundary in the eastern part of the island. The Bouguer anomaly map of the Jaffna peninsula is interpreted in terms of a sedimentary basin filled with outcropping Miocene limestones and underlying Jurassic deposits. This interpretation agrees with seismic results which is an improvement over the previous gravity studies of the peninsula. A detailed three-dimensional interpretation of the isostatic anomaly map of the Andigama sedimentary basin and a two-dimensional interpretation of that of the Tabbowa sedimentary basin are carried out. Both these interpretations agree with the surface geology as well as results of the seismic studies. A contour map of the Andigama basin based on the gravity interpretation is also presented. The Bouguer anomalies over Sri Lanka and free air anomalies over surrounding oceanic regions are interpreted and two models for the crustal structure of the island are presented. The first model attributes the observed anomaly over the Highland-Vijayan boundary to the thickening of crust while in the other model, it is attributed to the density difference between the Highland and the Vijayan rocks.

An interpretation of aeromagnetic anomalies over Panirendawa in NW of Sri Lanka where there is a magnetite

deposit is carried out in terms of several detached magnetite bodies. A possible time sequence of events that may have been taken place during the formation of the deposit is also presented.