

E1-22: A gravity model for the subsurface of Jaffna Peninsula

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According to the Bouguer gravity anomaly map of Sri Lanka, there is a region of negative anomalies over the Jaffna peninsula. Hatherion and others interpreted a NW-SE profile of the Jaffna Bouguer anomaly in a few different models for the subsurface structure of the basin. But these models do not agree with the results of seismic studies. According to seismic studies there is an unknown sedimentary layer in between the basement and the Miocene limestone. In this study, an attempt has been made to produce a gravity model that incorporates this second sedimentary layer.

In this model, the thickness of the limestone was 0.25 km in the South East Peninsula and the maximum depth was 1.2 km at the west coast of the Peninsula. The densities of limestones and the basement were $2,300 \text{ kgm}^{-3}$ and $2,670 \text{ kgm}^{-3}$ respectively and the maximum depth to the basement below sea level was 2.84 km near Msnipay. It was assumed that the unknown

sedimentary layer deposited in between the basement and the Miocene limestone was Gondwana rocks of density $2,400 \text{ kgm}^{-3}$

The conventional trial and error method was used in this study and the gravity anomaly due to each trial model was calculated using the polygonal methods of Talwani *et al*, (1959).