A STUDY OF LINEAMENTS FROM SRI LANKA

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ABSTRACT

The 35,000 km^2 area in Puttalam, Kalutara, Kumana and Kalkudah was analysed for tectonic lineaments such as joint zones, fracture zones and fault zones. The study was undertaken on multi-spectral scanner (MSS) band 7, black and white Landsat imagery (1:250,000 scale) and on aerial photographs with scales of 1:20,000 and 1:50,000. Field surveys were carried out to confirm the laboratory data.

The analysis showed that the study area is criss-crossed by mainly NNE-SSW, NE-SW, ENE-WSW, NNW-SSE, NW-SE and WNW-ESE trending lineaments forming a large number of polygonal blocks. About 4330 lineaments, the lengths of which vary from 0.25 km to 100 km, were traced from the Landsat imagery. It was estimated that 73% of the lineaments were shorter than 10 km, 25% were 10 to 30 km long, 1% were 30 to 50 km long and less than ½% were 50 to 100 km long. Of the lineaments, 66% were found to be oriented to the east and 32% to the west. The mode of the lineaments oriented to the east occurs in the range of N 55° - 65° E and that of those oriented to the west in the range of N 45° - 55° W.

It was observed that certain lineaments belonging to the NNE-SSW, NE-SW, ENE-WSW, NW-SE and WNW-ESE sets, follow a discontinuous linear pattern. Field surveys showed that the joints and fractures associated with the lineaments were almost vertical, and they seem to have been formed under the brittle conditions of rock failure.

The lineaments in the study area can be classified as "micro-lineaments" (shorter than 10 km), "macro-lineaments" (10 km to 100 km long) and "mega-lineaments" (longer than 100 km).