

## GEOSCIENTIFIC ANALYSIS OF SEISMIC EVENTS SOUTH OF 17°N LATITUDE

*[The following is an extract from AMSE NEWS (GSI), vol. 10, nos. 1 & 2, 1994, p. 12. which presents briefly geoscientific analysis of seismic events in a major part of South India - Ed].*

The peninsular India, earlier not considered to be a part of the recognised seismic zone, has experienced both in the past and recent times a number of seismic events of differing magnitudes mostly assessed from meagre instrumental records.

Since mid-sixties, after installation of seismic array stations at Gauribidanur and Hyderabad, numerous seismic events have been recorded in this region. As part of Project Vasundhara, the published information on seismic events were collected from various sources and a data bank was established with a view to study the probable relationship of these events with the geological set up and recognised weak zones of the area. There are 436 epicentres wherein 855 incidences have occurred. The major cluster of epicentres occur in an east-west zone between Mandya and Vellore, and near Bellary, Chickmagalur and Ongole areas.

The statistical analysis of epicentres with the aid of computer has brought out the following significant information : About 10% of total epicentres occur in the Pandyan Mobile Belt and the rest fall in the Dharwar craton. The highest recurrence factors observed are 2.73 between 13° and 14°N Lat. and 3.1 between 15° and 16°N Lat. Maximum incidences have been observed during December. There are four incidences with magnitude 5.5, about 30 incidences with magnitude range of 3.5-4.5 and about 645 incidences with magnitude <3.4. Incidences with magnitude <3.4 have recurrence factor of 2.29 while incidences of higher magnitude have recurrence factor of 1.25.

A conjunctive study of epicentres, faults, lineaments, magnetic discontinuities and gravity gradients have brought out significant information such as the cluster of epicentres in the east-west track between Mandya and Vellore in the transition zone between Pandyan Mobile Belt and Dharwar Craton, probably related to the system of NE-SW trending faults such as Mettur East Fault, Mettur Main Fault, Amirdi Fault, Javadi Hills Fault, Pambar River Fault, Palar River Fault, etc. and NW-SE trending Arkavati River Fault. Many epicentres fall in the vicinity of crystalline-sedimentary boundary fault, Periar fault, Dharma-Tungabhadra lineament, Hunsur lineament, Cuddapah Eastern Margin Thrust, and a host of other lineaments and faults. Some of these lineaments and faults are also marked by magnetic discontinuities and gravity gradients.

This study has also revealed that there are about 220 epicentres which are significant as per the American National Standards for classification of capable faults with many faults/lineaments tentatively identified as 'active faults' as per this standard.

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