

# The integrated of Landsat 7 ETM+ and SRTM data for identifying geological structures and faults system in Kolbano Block, West Timor, East Nusa Tenggara

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## ABSTRACT

Timor island is a part of the Banda arc that lies between the Savu Sea and the Timor Sea, it is also part of the collision zone between the northwest edge of the Australian continent that moved north to the Indo-Australian plate and the Banda Sea.

This study aims to explain the geological structures and its fault system developed in the Kolbano Block using remote sensing-based geological structure identification method. The geological structures recorded in the relief and topography of Kolbano Block were expressed from satellite images fusion of Landsat 7-ETM + and SRTM. The measurement of the mainstress is also made to support the interpretation of the fault system in the study area.

Visual image interpretation are able to identify geological structures such as anticline, syncline, thrust fault, wrench fault, and normal fault. Fault system that developed in the study area is identified as imbricated thrust system shown by either younging age trending from the oldest thrust fault to the youngest one, and existance of several folds among the sheet of thrust faults. The main stress of study area is Northeast – Southwestern or preference to NNE – SSW. The results obtained from this study compiled in Geographic Information Systems (GIS) that uses corrected-satellite imagery Landsat 7- ETM+ as base map.

**Keywords:** Landsat 7 ETM+, SRTM, structural geology, faults system, West Timor