

Structural pattern and stress system evolution during neogene - pleistocene times in the central part of the north arm of Sulawesi

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Abstrak

The study area has been subjected to intense fracturing or brittle deformation resulting in five main trends of lineaments and faults, i.e. (1) the Group A (the Perantanaan Fault Group) with a mean of direction N95°E/ N275°E, (2) the Group B (the Gorontalo Fault Group) with a mean of direction N125°E/ N305°E, (3) the Group C (the Paleleh Fault Group) with a mean of direction 165°E /N335°E, (4) the Group D (the Randangan Fault Group) with a mean of direction N25°E/ N205°E and (5) the Group E (the Kuandang Fault Group) having a mean of trend of N55°E/ N235°E. The complexity of structural pattern in the study area has been interpreted to be due to stress system evolution during Neogene - Pleistocene. The changing stress system orientation has reactivated the preexisting faults of the five groups with different sense of movements from the older deformation.

The nearly E-W trending lineaments of Group A or the Perantanaan Fault Group coincide with trend of the long axis of ridges and valleys or depression areas which are covered by volcanic rocks, lake deposits, and alluvium of Quaternary age. This group of structures was presumably developed as reverse or thrust faults during Late Neogene which later on to have been reactivated as normal faults due to extensional tectonics of the North Sulawesi area during Pleistocene.