

LATE MESOZOIC ASYMMETRIC ARCHING OF EAST ASIAN CONTINENT, DRIVEN BY INCLINED UPWELLING OF A HOT MANTLE WALL

1YANO, Takao and 2WU, Genyao 1Faculty of Education and Regional Sciences, Tottori University, Tottori, Japan; 2Institute of Geology, Chinese Academy of Sciences, Beijing, China

The late Mesozoic circum-Pacific mobile belt in East Asia had an extraordinary width 2,500 km and occupied not only a contractive continental margin but also an extensional continental interior. Kinematics and dynamics for the mobile belt are investigated from the geometry. 1) Geometry The mobile belt shows a zonal structure parallel to the continental margin, consisting of, from the interior, an intracontinental basin belt (longitudinally-aligned giant half grabens, dipping northwestward), a volcano-plutonic belt (longitudinally-arranged horst and graben provinces, with voluminous intermediate to felsic magmatism), and an olistostrome-flysch belt (hemipelagic slope basins along the continental margin, subsequently folded and thrust). Additional are transverse granitic belts, elongating into continental interior up to 2,000 km along older fold systems. 2) Kinematics Thermally-induced asymmetric arching with a Pacificward vergence produced an extensional field in the back wing and the axial zone, moreover a contractive one on the arch front. Thus the giant half grabens appeared on the back wing, the horsts and grabens on the axial zone, and the contractive slope basins at the arch front. Thermal concentration into the axial zone and the older fold systems caused voluminous magmatism. 3) Dynamics Inclined upwelling of a hot mantle wall to beneath the arch axis seems to have caused the huge asymmetric arching (probably several kilometers high) and the voluminous magmatism, because it can drive the arching against to enormous gravity loading and can produce the voluminous magmatism in the volcano-plutonic belt and the granitic belts.