



Mesozoic crustal thinning throughout eastern Asia: new insights from Mongolia

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Mongolia is located in the Central Asian Orogenic Belt, which was built by accretion of several terranes against the southern boundary of the Siberian craton, mainly during Palaeozoic times. Thus, a great part of the geological architecture of Mongolia may be linked to compressive tectonics associated with these accretion mechanisms. On the other hand, many Mesozoic rift basins locally bounding metamorphic core complexes have been recently recognized to the North, in Transbaikalia and to the South, in northern China. This raised the question of the significance of numerous outcrops of basement localised in eastern Mongolia and previously mapped as pre-Palaeozoic in age on the basis of their strong deformation. One of these areas, the Ereendavaa range, appears as a gneissic domal structure where metamorphic conditions reached high-grade amphibolite facies. To the NW, metamorphic units are overlain by the Mesozoic Onon basin. The basin is filled by unmetamorphosed volcanics and minor detrital continental deposits. The upper part of the underlying dome consists of a gently NW-dipping retrogressed mylonitic shear zone, the Onon shear zone. The zone is marked by NW-SE stretching lineations associated with top to the NW motions. The overall structural pattern is that of an extensional metamorphic core complex, comparable to those described in Transbaikalia and north China. Preliminary geochronological data indicate that the Onon shear zone is upper Jurassic to lower Cretaceous in age. This age range is similar to that of the filling of the Onon basin and constrains the age of the extensional event. NE-SW striking normal shear zones also occur in the central

part of eastern Mongolia. These features suggest a geographic continuum of NW-SE extensional Mesozoic deformations throughout the whole region that actually appears as “wide-rift” tectonic system.