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A mega shear zone in the Central Range of Taiwan and it's implication for the Late Mesozoic subduction of the paleo-Pacific plate

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The metamorphic basement "Tananao Complex" exposed in the eastern flank of the Central Range of Taiwan. The ancient Asian continental margin deposited a thick sequence of sandstone, shale, limestone and volcanic rocks that was the protolith of Tananao Complex. In Late Mesozoic Era, the thick sequence of rocks was subjected to several phases of metamorphism and deformation to form the pair metamorphic belts which were the western Tailuko Belt and the eastern Yuli Belt. The Tailuko belt is composed of phyllite, quartzite, quartz-mica schist, meta-conglomerate, gneiss, meta-basite, amphibolite, serpentinite, marble and meta-chert, etc. The Yuli belt is composed of a monotonous assemblage of quartz-mica schist, subordinate meta-basite and serpentinite, etc. It is believed that the boundary of the Tailuko belt and the Yuli belt is a large fault, but the field evidence of the fault has never been found.

In this study, meso-scale field investigation of the lithologies and rock fabrics indicate that a mega shear zone, called "The Daguan shear zone", separated the Tailuko belt from the Yuli belt. The Daguan shear zone is a NNE trending and west dipping mega shear zone which is mainly composed of mylonitic dark gray quartz-mica schist and mica schist, intercalated with 1 to 2 centimeters thick of elongated meta-conglomerate band. The shear zone is composed of numerous meso-scale ductile shear zones. Additionally, the shaer zone is characterized by abundant varied quartz veins that have been refolded to lenticular or pod shape and nearly parallel to S2 cleavage. Compaed to the existing geological information of the Central Range, we believe that the Daguan shear zone played a role as the boundary of the subduction zone which the paleo-Pacific Plate subducted into the Eurasian Plate in Late Mesozoic Era.