The mechanism of forearc basement subduction in eastern Taiwan: Insights from sandbox modeling: Insight from Sandbox

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Please insert your Abstract Text hereIn Taiwan today, the subduction of the Chinese continental margin under the Philippine Sea plate results in the progressive growth of an active orogenic wedge. It is one of the best places to study the complex relationships that occur between the tectono-metamorphic processes controlling deformation (plate rheology and kinematics) and surface processes (erosion and sedimentation). In the Central Range of Taiwan, foliation and lineation traces outline the geometry and kinematics of deformation in both, the foreland and hinterland of the orogenic wedge. The foliation dip and the strain ellipsoids distribution show the fan shape of a large pop-up structure characterizing the effects of oblique plate convergence. On the eastern flank, regionally developed penetrative cleavage dips, isotope data and sedimentary structures demonstrating regional overturned structures. Two mélange units, the Kenting and Lichi mélange are exposed at the south and east of the Central Range respectively. Experiments allow the study of interactions between tectonics and surface processes. Accounting for various boundary conditions and parameters such as sedimentation, erosion, basal friction, and décollement level. We present the results of 2D and 3D sandbox models designed to investigate the complex deformation characterizing the active Taiwan orogenic wedge and to demonstrate the development of those mélanges, overturned structures and mountain frontal thrusts. Models are analyzed using pictures, movies and PIV (Particle Image Velocimetry software). We then characterize the exhumation patterns, the mode of fault propagation and displacement patterns by strain partitioning of those mélanges and overturned structures.