



## Global tectonic patterns of the Moon

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We developed a general stress and tectonics model that can consider multiple stress generating mechanisms simultaneously. The model is applicable to (1) mass loading with arbitrary size or geometry, (2) arbitrary (but uniform) elastic lithosphere thicknesses, and (3) rotational and orbital perturbations (e.g. despinning, orbital recession, and true polar wander). The model was applied to the Moon, which exhibits a global scale thrust faulting pattern [1]. The global presence of thrust faults suggests that isotropic contraction plays a dominant role. However, the non-random distribution of the orientation of the faults requires additional stress generating mechanisms that are not isotropic. We consider the tectonic patterns generated by isotropic contraction, orbit recession [1], true polar wander [2, 3], South Pole-Aitken (SPA) loading, and mascon loading [4]. The stresses generated by the combination of isotropic contraction and orbit recession [1], or isotropic contraction and SPA loading generate a tectonic pattern that better replicates the observed thrust faulting pattern.

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