

Dynamic of the Japan subduction system

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The geometry of the Mariana-Izu-Bonin (IBM)-Japan slab consists of a large cusp where the undulation of the trench is accompanied by a corresponding variation in slab dip, varying from sub-vertical beneath the Marianas to shallow dipping beneath Japan. The origin and the cause of these variations are still poorly understood. We reconstruct the backarc extensional system of the Philippine plate, showing that the triple junction between the IBM, Ryuku, and Japan migrated northward during the last 40 Ma reaching its present-day position. We balance back the subduction system on time, starting from recent tomographic models and using an absolute reference frame plate reconstruction model. Our kinematic model suggests that the evolution and the geometry of the Japan slab is controlled by the interaction with the surrounding slabs. We test this hypothesis with simple laboratory experiments. Our preliminary results suggest that the slab geometry is influenced by local and plate-scale mantle flow.

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