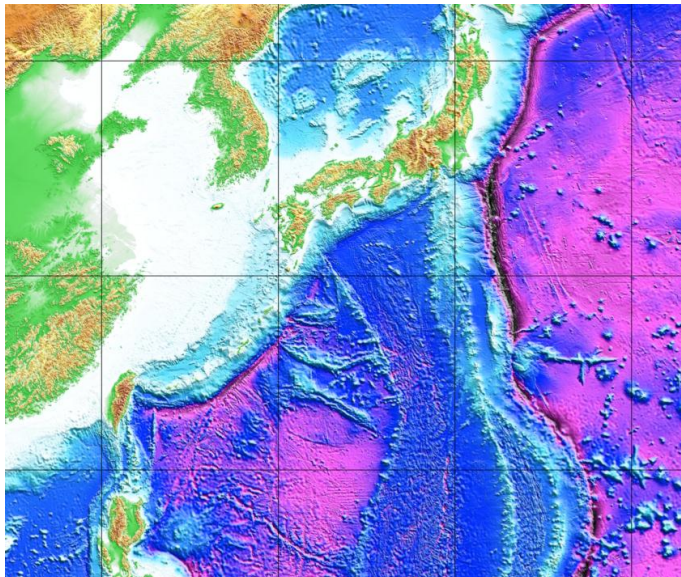


Philippine Sea crustal deformation near arc-continent collision : a comparison between Taiwan and Japan

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Arc-continent collision occurs at both the eastern and western edges of the Philippine Sea Plate which carries active volcanic arcs resulting from the subduction of adjacent plates beneath it. Both arcs belong to a growing plate that subducted (and still subducts) beneath the Eurasia margin for probably most of the Cenozoic time. The term collision is generally used because mountain building occurs in the interaction area between the subducting arc and the continental overriding plate. However, there is a major difference between Taiwan and Central Japan regarding the ingredients that contribute to the orogens. If crustal slivers of the Izu-Bonin arc undoubtedly accreted to Japan during the last million years (Tamura et al., 2010), there were no evidence – until today – that Luzon arc slivers contributed to the Taiwan orogeny. In Taiwan, it is generally accepted that the orogen results from the accretion of crustal slivers offscraped from the Chinese continental margin, not from the Luzon volcanic arc itself which is often considered as a “rigid indenter” pushing a crustal continental wedge (Suppe, 1981; Lu et Malavieille; 1994). Recent seismological experiments provide new insights on the ongoing deformation within the colliding segment of the Luzon volcanic arc that resembles those well-studied at the northern tip of the Izu-Bonin Ridge. In both cases, arc crustal slivering may be facilitated by the rheological behaviour of a volcanic arc, then the geometrical, kinematical and historical characteristics of both arcs may explain the differences between the two collisional contexts.



Topobathymetry of the northern part of the Philippine Sea plate built from GEBCO data. Note the two volcanic arcs at both east and west edges of the Philippine Sea plate.