

## Geological and geophysical constraints to the arc - continent collision in west central Philippines

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Recent geological and geophysical investigations have been carried out to study the arc-continent convergence between the North Palawan microcontinental block (NPB) and the arc Philippine Mobile Belt (PMB) in west central Philippines. At present, the sites of collision have been reported in southwest Mindoro, and Buruanga peninsula in Panay, with fewer constraints on the Romblon Island Group (RIG). Available data suggests that the suture zone marking the extent of collision between the NPB and the PMB can be traced farther east of the RIG, on the basis of mapped metamorphic complexes and crust-mantle sequences. The presence of these lithologies suggests paleosubduction events in the region. With surface evidence already reported, the addition of seismicity and mantle tomography data hopes to provide new constraints to this arc-continent collision zone.

This study focuses on the results of the latest field and geophysical investigations in the RIG. Subsurface characterization of the collision zone was done by evaluating hypocenter sections and tomography images generated from Philippine seismic intensity data. Evaluation of attenuation structures from the mantle tomography images reveals a generally high attenuation structure (e.g., hot materials) underneath central Philippines. This may be attributed to the very hot and plastic deformation of the subducted slab beneath the collision zone. The aseismic behavior of the plastically deforming slab is observed in the planar and vertical hypocenter sections generated, where very few intermediate to deep earthquakes (e.g., at depths greater than 100km) are noted. Though field data suggests subduction processes, subsurface constraints, however, do not reveal the presence of a possible subducted slab. These characteristics of the collision zone are being attributed to the impingement of a relatively buoyant microcontinent indenter (NPB) against a denser arc terrane (PMB).