

Early stages of Philippine Sea Plate birth, growth and migration : a tribute to Anne Deschamps

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The early stages of the Philippine Sea Plate (PSP) are debated among the scientific community. At least one fourth of the PSP area has disappeared by subduction along the Ryukyu and Philippine trenches, obliterating the relics of its northern and western boundaries, and by subduction erosion along the eastern Izu-Bonin-Mariana (IBM) margin. Furthermore, small parts might have also disappeared by intraplate local thrusting and/or subduction along the Gagaa or Daito ridges. Another intriguing observation concerns the origin of the "proto-PSP" as seen in the Daito area, the southernmost West Philippine Basin, the Huatung Basin or even within the internal structure of the Izu-Bonin Arc. Indeed, Early Cretaceous ages have been discovered in most of these regions, i.e., much older than the commonly accepted ages of the PSP entrapment ranging from Early to Late Eocene. The so-called "forearc basalts" or "boninites" are often supposed to represent typical magmatism marking subduction initiation along a transform fault. A detailed examination of the geodynamic context of their emplacement allows to suggest another origin for these rocks. Even the kinematic evolution of the PSP does not make any consensus.

Based on the tremendous work that has been done by many teams since the 80's, providing key data inserting into the PSP puzzle, and including the important contribution of Anne Deschamps in the late 90's and early 20's, we can deliver an updated picture of the early stages of the PSP tectonic evolution.

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