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Tectonic evolution of the Philippine Sea: Magnetic data collected during the Japanese continental shelf survey

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Marine magnetic anomalies have been used to date the seafloor, characterize the oceanic crust and reconstruct the evolution process of ocean basins. Japanese continental shelf survey project has collected high-quality, dense magnetic data in the Philippine Sea and the adjacent areas for two decades. The compiled and processed magnetic anomaly data improve our understanding of the tectonic history of the area. Clear magnetic lineation patterns in the Shikoku, Parece Vela basins allow us to elaborate the spreading history of these basins, including the initiation and cessation process of the backarc opening. The anomalies associated with the Kyushu-Palau Ridge also record the transitional phase from arc volcanism to backarc rifting-opening. The West Philippine Basin, Daito Ridges and its intervening small basins, that was formed before the formation of the paleo-IBM arc, show their specific magnetic characteristics. These areas are considered to have moved northward and rotated after their formation. The skewness analysis of magnetic data can provide us some insights about paleo-latitude and/or rotation.

Keywords: tectonics, Philippine Sea, magnetic anomaly, backarc basin, arc