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A LATE CRETACEOUS-PALEOGENE OFFSHORE NE-SW MAGMATIC TREND ALONG THE CONTINENTAL MARGIN IN SOUTHEASTERN BRAZIL

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The magmatic pulses that occurred during the Late Cretaceous and Paleogene at the southeastern continental margin in Brazil are already well documented, both onshore and offshore. Onshore, these events are represented by alkaline intrusions observed along a WNW-ESE lineament from Poços de Caldas (MG), to Cabo Frio (RJ). In this work we show a regional perspective of the distribution of such magmatic structures mapped in PSDM 2D seismic data along an offshore NE-SW trend that runs from central Santos Basin, close to the Merluza gas-field, to southern Campos Basin at the Maromba oil-field. The magmatic zone follows the southern half of a regional Upper Cretaceous-Cenozoic fault system that runs from central Santos Basin to northern Campos Basin, roughly parallel to the onshore basement fabric. The magmatic structures observed in seismic data are more expressive in the central part of the magmatic trend, in northern Santos Basin, just to the North of the Buzios and Mero oil-fields. At this position the regional NE-SW fault system, which was previously denominated Cabo Frio Fault Zone, is segmented by NW-SE structures, well defined both in gravimetric data, and in the seismic map of the basement. In the more expressive segment of the magmatic trend, the Upper Cretaceous-Paleogene magmatic structures are concentrated out of the main Cenozoic fault system, over Lower Cretaceous basement lows, alternated on both sides of the fault zone. In detail the architecture of the magmatic system was beautifully imaged by seismic, with sills linked to feeder dikes and to volcanic structures, which can be perfectly compared to outcrop analogues for alkaline magmatic systems. The spatial association of the main magmatic activity along the studied area with the part of the regional NE-SW fault system that is segmented by NW-SE structures is remarkable. A similar situation is observed onshore in the Resende Basin area, where the Upper Cretaceous alkaline intrusions of Passa Quatro-Itatiaia and Morro Redondo are positioned juxtaposed along the NE-SW trend of the basin at points of segmentation by NW-SE structures. Such a pattern suggests that the Late Cretaceous-Paleogene magmatic pulses at the southeastern continental margin in Brazil were probably triggered by decompression caused by events of regional tectonic extension focused at the crossing of deep basement weak trends, both onshore and offshore. On the other hand the studied magmatic center is positioned at the NW projection of the NW-SE Cruzeiro do Sul lineament (Jean Charcot sea-mount chain), suggesting that, besides the NW-SE fabrics, thermal and compositional controls can also have been taking place along such regional structure.