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SPOTLIGHT 9 | South Chamorro Seamount

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First Paragraph

Sixteen large, active serpentinite mud volcanoes exist in the Mariana forearc, the region of seafloor between the Mariana Trench and the volcanic island arc (Fryer et al., 2006). Up to 50 km in diameter and rising as much as 2.4 km above the surrounding seafloor, these seamounts form as a consequence of subduction processes, which generate deep-seated faults that penetrate the crust and mantle of the overriding Mariana microplate to the depth of the underlying and subducting Pacific Plate (Figure 1). Faults that are observed up to 100 km west of the Mariana trench provide a pathway for the ascent of fluid released from dehydration reactions within the subducting Pacific Plate and for the ascent of ground-up rock fragments. As this fluid upwells, it reacts with the overlying mantle, producing serpentine hydrogen gas, and alkaline fluids (up to pH 12.5).

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