



The phantom hydrothermal plume at 8°18'S on the MAR

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South of the Ascension Fracture Zone, the axis of the Mid-Atlantic Ridge doglegs 18 km to the west between 8°10'S and 8°20'S. During *Meteor* Cruise 62-5, methane plumes were found on both sides of the offset, at 8°10'S, 13°28'W and at 8°18'S, 13°30.8'W. The former plume (9 nM) was centered at 1900 m depth near the top of a promontory to the west. The latter plume was deeper, about 250 m above a topographic high at 2950 m depth, and more intense with peak methane concentrations of > 100 nM. Several ROV dives were subsequently conducted, but no vents were identified in the area. In addition, a second series of CTD stations that commenced a week later showed that the methane concentration had decreased to the level of about 10 nM or less during this time. Subsequent shorebased analyses show that elevated ³He/⁴He, total dissolvable iron and manganese, and methane ¹³C/¹²C existed in the plume, characteristic of a hydrothermal discharge. The highest δ³He in the plume (10%) was only modestly elevated above its average value in the rift valley (4%), with a high CH₄/³He ratio (360 × 10⁶) similar to that found previously in an intense methane anomaly near ultramafic and gabbro outcrops north of the 15°20'N Fracture Zone. At 8°18'S however, only basaltic rocks were observed by the ROV in a 2 km² area surrounding the anomaly. Thus, it appears that the plume may have been a pulse discharge, probably from a somewhat more remote source. However, the very high methane and total dissolvable iron (>300 nM) suggest that the pulse was relatively new. The source therefore may not have been very far away, probably no more than about 10 km.