

*The Aquitaine Shelf edge (Bay of Biscay): a primary outlet for microbial methane release*

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A few thousand (2612) seeps are releasing microbial methane bubbles from the seafloor at the Aquitaine Shelf edge (Bay of Biscay) at shallow water depths (140-220 m). This methane contributes to the formation of meter-scale subcircular carbonate structures, which are (sub)outcropping over 375 km<sup>2</sup>. Based on in situ flow rate measurements and acoustic data, and assuming steady and continuous fluxes over time, the methane entering the water column is estimated at 144 Mg/yr. Microbial methane circulation has been ongoing for at least a few thousand years. This discovery highlights the importance of microbial methane generation, disconnected from deep thermogenic sources and gas hydrates, at continental shelves. The shelf edge may be viewed as a focus area for methane circulation and release and related diagenesis, all having an impact on the shaping of continental shelves and potentially on the oceanic and atmospheric carbon budget.

