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Unusual Miocene hydrocarbon-seep faunas from the Brisighella area in northern Italy: embedded in clastics and first records of the lucinid bivalves *Megaxinus* and *Miltha*

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Ancient hydrocarbon-seep sites known as “Calcari a *Lucina*” are common in Miocene strata of northern Italy and typically consist of carbonate deposits dominated by large lucinid, bathymodiolin, and vesicomyid bivalves. Here we report two new sites found in Upper Miocene strata at Monte Mauro near Brisighella in the Emilia-Romagna province. One is unusual by being embedded in unconsolidated siltstone without any carbonate, but yet, consisting of the typical, seep-restricted bivalves *Bathymodiolus moroniae* and *Archivesica aharoni* vesicomyid clams and bathymodiolin mussels. The second deposit is dominated by the lucinid *Megaxinus bellardianus*, which has never been reported from a Miocene seep deposit in this region, despite being common in coeval siliciclastic sediments nearby. This species emphasizes biogeographic relationships between Upper Miocene seep faunas in the Mediterranean region and the tropic Indo-West Pacific Ocean.

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