

Regular talk

EARLY MESOZOIC SEEPS AND THE ADVENT OF MODERN SEEP FAUNAS

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The early Mesozoic hydrocarbon seeps are known from three localities worldwide. The oldest (Norian, Late Triassic) are two carbonate bodies described by Peckmann et al. (2011) from the eastern Oregon and dominated by dimerelloid brachiopod *Halorella*. Additionally rare and poorly preserved bivalves (numerous *Halobia*, some nuculanids, single *Nucinella*-like bivalve, and single permophorid) and single "conical gastropod" are reported. From the same region Peckmann et al. (2013) reported another ancient seep dated as Late Sinemurian, Early Jurassic. This seep is also dominated by a species of a superabundant dimerelloid brachiopod *Sulcirostra*. Apart from the latter only rare and poorly preserved gastropods are reported. The faunistic composition of both sites is strongly reminiscent of the majority (but not all) of the Paleozoic seeps, which are also dominated by dimerelloid brachiopods. A similar situation occurs in several Early Cretaceous seeps which are characterized by mass occurrence by another dimerelloid brachiopod *Peregrinella*, though it usually associated with numerous molluscs. We found an entirely different composition in the Toarcian, Early Jurassic hydrocarbon seep deposits in Argentina. This locality (called La Elina) is known since the report of Gómez-Pérez (2003) who identified very negative $\delta^{13}\text{C}$ values (down to -33‰) and several fabrics typical for seep carbonates. Nevertheless she identified no macrofauna apart from worm tubes. We re-visited the La Elina locality and we were able to collect several fossils from the seep carbonate. The most common are molluscs and worm tubes. We identified several species of gastropods (two cylindrobullinids one pleurotomariid, and the oldest-known species of neomphalids, paskentanids, and hokkaidoconchids). We have also collected lucinids, nuculids, solemyoids, *Otapiria*, numerous *Bositra*, and numerous ammonoids. Unlike the other known early Mesozoic seeps, there are no dimerelloid brachiopods associated with this seep. Therefore, the seep at La Elina is the oldest-known seep with modern aspects such that the fauna is dominated by molluscs and not brachiopods and it also yields the oldest seep occurrences of several mollusc groups (neomphalids, paskentanids, hokkaidoconchids, and lucinids).

References

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