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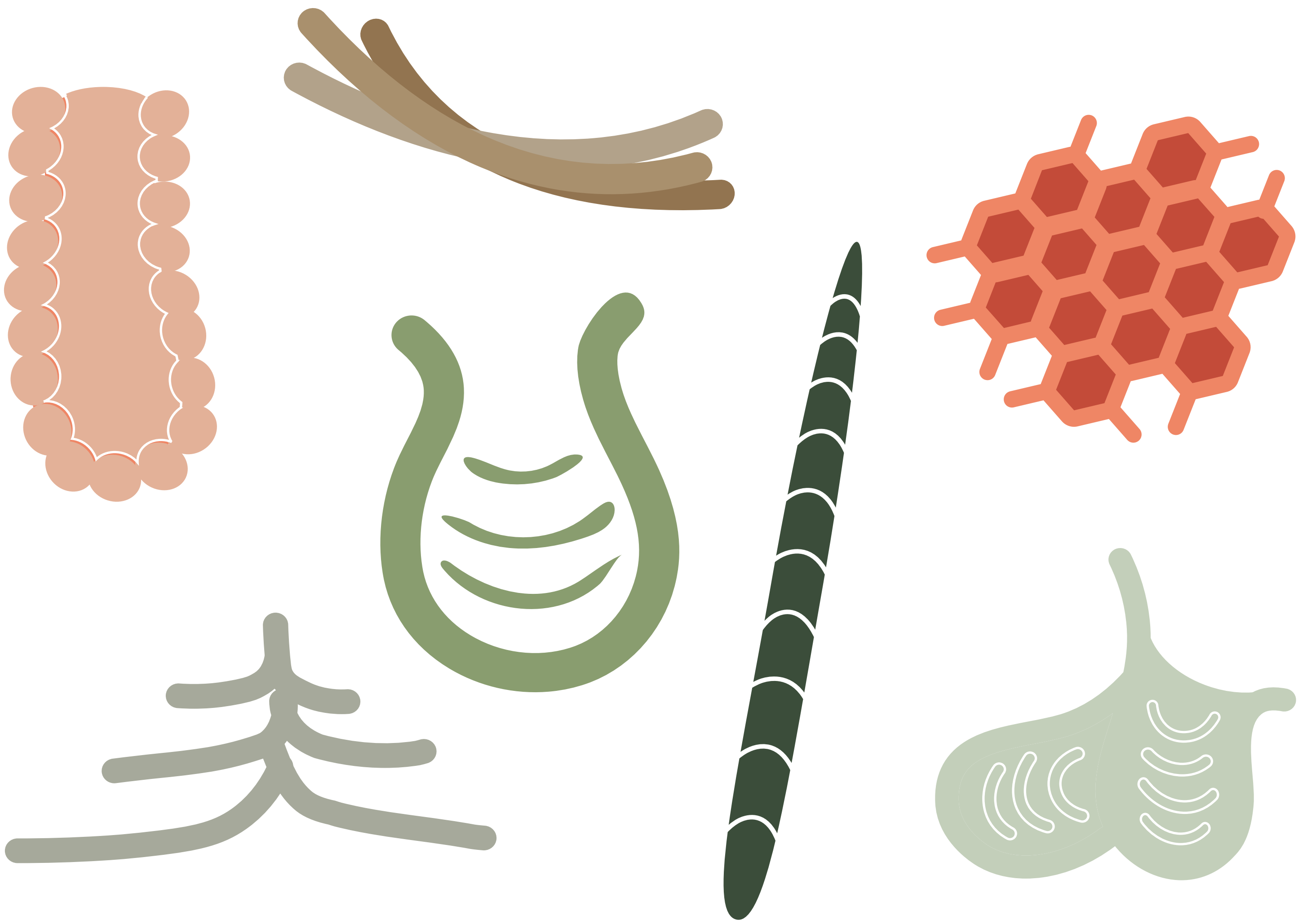

Ichnofabric Analysis Reveals Successive Colonization of Muddy Sediments in Late Bajocian Back arc Basin, Eastern Crimea

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Subduction processes produces an unique geological environments. Especially the rapidly subducting plate margins produces various challenging sub-environment associated with slope failures, Pressure build-ups, hydrothermal activity, etc. The Crimea–Black Sea region was experiencing similar geological environment during the Late Bajocian age. The Middle Jurassic succession of Eastern Crimea is represented by unconformity bounded sequence starting from the Late Bajocian volcanic and volcanoclastic deposits (Karadag Formation, Parkinsoni ammonite Zone) continuing into volcanic-free deepwater Early Bathonian. During Late Bajocian, these sediments were formed directly on the volcanic belt of Back arc basin. The present study on Ichnofabric analysis was carried out on along various exposures of the Karadag Fm along the Eastern Crimean coast between settlements Koktebel' and Ordzhonikidze in 2015-2016. Karadag Formation is >100 meters thick succession consisting of tectonically disrupted alternate sequence of light and dark grey coloured mudstone interrupted by debris flow and sandy turbidite sequences containing volcanoclastic material and pillow lavas. The whole sequence contains intervals, characterized by remarkable cyclic bioturbation. Based on Ichno-diversity and ichnofabric, the studied succession located at eastern margin of Koktebel' can be subdivided into four sub-units, each consisting of asymmetrical cycle of Bioturbation. Each asymmetrical bioturbational cycle consists of Low (BI-0) to high bioturbation (BI-4/5) events. Low bioturbation events are characterized by occasional deep tier *Thalassinoides* or absence of any trace fossils. High Bioturbation events are characterized by Shallow tier *Palaeophycus, Planolites* and *Taenidium*. Trace fossil *Asterosoma* and *Thalassinoides* dominate the middle tier. Deep tier are characterized by *Chondrites, Zoophycos* and *Helminthopsis*. In the lower part of the succession *Thalassinoides* tends to shifts its tier position from deep tier in low bioturbated units to shallow tier in high bioturbatedunits, probably on account of diversification and competition from other bioturbators. In the upper part of the succession *Chondrites* also shifts its tier position to shallowing of tiers with increase in bioturbation, indicating establishment of restricted pore water oxygenation or easy exploitation of preserved organic matter. The youngest part of studied interval shows relatively higher bioturbation (BI-6) and deepening of tiering. Thus, the ichnofabric analysis reveals that the trace fossils including *Chondrites, Helminthopsis, Asterosoma, Palaeophycus, Planolites, Taenidium, Thalassinoides*, and *Zoophycos* commonly occurred in the volcanic belt associated with back arc basin of Late Bajocian age. Further, the data suggest that the persistently changing geological condition was adapted by trace makers by altering the tiering position and successively colonizing the muddy sediment of the back arc basin.

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