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Bottom Current Activity and Sediment Redistribution During Ocean Anoxic Event 1d Revealed Using Late-Albian Black Shales and Carbonates

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107-7 Bottom Current Activity and Sediment Redistribution During Ocean Anoxic Event 1d Revealed Using Late-Albian Black Shales and Carbonates

Session: Sedimentary Geology Division/SEPM Student Research Poster Competition: Dynamics of Stratigraphy and Sedimentation

Poster Booth No.: 150

Presenting Author:

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Authors:

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Abstract:

This study is based on understanding the potential role of bottom currents in sediment redistribution during the late Albian Ocean Anoxic Event 1d (OAE1d). The current knowledge on the influence of bottom currents during this event remains poorly understood due to limited research. During our study, field samples from the Pialli Level black shales and interbedded carbonates (Scaglia Bianca Formation- Umbria Marche Basin, Central Italy) were studied under scanning electron microscopy (SEM), revealing evidence of reworked sediments by bottom currents with dipping cross laminations, transported intraclasts, and micro-scale truncations among thin beds. Petrographic microscopy further identified texturally variable

laminations, fine truncations, bioturbation and abundant detrital lithics suggesting shifts in the depositional regime, possibly triggered due to changes in sediment sources, and/or sediment flow dynamics. An energy dispersive X-ray spectroscopy (SEM-EDS) analysis indicated that the redox boundary during the black shale deposition was shallow, lying beneath the sediment-water interface rather than at the surface of the substrate. Mineralogically, the presence of zinc sulfide (ZnS) along with barite (BaSO₄) possibly indicates switching between slower sediment accumulations under stable low-energy conditions and occasional influxes of relatively oxygenated, rapid bottom currents disrupt dysoxia. Thus, our sediment analysis indicates the prevalence of bottom-current sediment transport as a significant and vital process in addition to suspension settling within the pelagic-hemipelagic Northwestern Tethys Ocean during OAE1d. The knowledge on bottom currents and active sediment transport from this study will broaden understanding of organic matter burial, ocean circulation of nutrients, and geochemical modifications during ocean anoxic conditions in past oceans.

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**Bottom Current
Activity and Sediment
Redistribution During
Ocean Anoxic Event
1d Revealed Using
Late-Albian Black
Shales and
Carbonates**

Category

Topical Sessions

Description

Session Format:

Poster

Presentation Date:

10/20/2025

Presentation Room:

HBGCC, Hall 1

Poster Booth No.: 150

Author Availability:

9:00–11:00 a.m.

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