ABSTRACTS

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Edited by Matias N. Ritter, Fernando Erthal, Rodrigo S. Horodyski

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ORGANIZING COMITTEE

Prof. Matias Ritter

Departamento Interdisciplinar, Campus Litoral Norte, UFRGS

Prof. Fernando Erthal

Departamento de Paleontologia e Estratigrafia, Instituto de Geociências, UFRGS

Prof. Rodrigo Scalise Horodyski

Programa de Pós-Graduação em Geologia da Universidade do Vale do Rio dos Sinos, UNISINOS

COLLABORATORS

Anna Assumpção, Julia Ribeiro, Laura Porto Hornung, Luísa Crauss, Valentina Santos

SCIENTIFIC REFEREES

Claudio G. de Francesco

Fernando Erthal

Gabriela Hassan

Matias N. Ritter

Rodrigo S. Horodyski

Sabrina C. Rodrigues

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Sociedade Brasileira de Paleontologia

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MODERN TO PENNSYLVANIAN FJORDS: TAPHOFACIES AND SUBTLE VARIATIONS IN CIRCULATION AT THE LATE PALEOZOIC ICE AGE

João Pedro Saldanha[1], Lucas Del Mouro[2], Rodrigo Scalise Horodyski[1] & Matias do Nascimento Ritter[3]

[1]Universidade do Vale do Rio dos Sinos; [2]Instituto de Geociências, Universidade de São Paulo; [3]Centro de Estudos Costeiros, Limnológicos e Marinhos, Campus Litoral Norte, Universidade Federal do Rio Grande do Sul

saldanhajpedro@gmail.com, lucas.delmouro@gmail.com, rshorodyski@gmail.com, matias.ritter@ufrgs.br

Over the centuries, uniformitarianism has been widely used to understand sedimentary paleoenvironments, helping to diagnose complex circulation and deposition patterns as well as taphonomic processes. Recent studies have yielded the importance of understanding current fjords, like Puyuhuapi Fjord, Chile, to reconstruct and identified mid-latitude paleofjords as the Pennsylvanian Lontras Fjordbay. This worldwide known site, located at Mafra, Santa Catarina State, Brazil, is a relevant fossil site (being suggest as Lagerstätte) from the Itararé Group, Paraná Basin. The Lontras Shale Macrofossiliferous Interval comprises a 1.1 m black shale related to the final deglaciation moment and formed by a well-preserved and diverse fauna. Considering the sedimentological and geochemical data, and its complex patterns, we sought to identify and describe taphofacies for LSMI, to shed light on possible subtle variations in depositional settings. Then, we have selected holometabolous larval cases and sponges, the two most abundant benthic fossils, to recognize autochthony and different fragmentation grades. Classified as complete and fragmented fossils, sponge's root tufts, loose spicules, and free insects silk stripes, the association of these through the shale layers have led to four different taphofacies (T1-T4): T1) formed by rare free spicules; T2) which comprises more intact cases and free spicules, probably a good moment for the holometabolous; T3) fragmented taphofacies with loose spicules, strips and fragmented sponge bodies, possible evidence of untraceable bottom streams; and T4) less fragmented moment with sponge bodies, root tufts and also complete and fragmented cases, setting best moment for Porifera. Furthermore, using the sublevel division applied on LSMI, we have observed that the taphofacies alternate upward as T1-T1-T2-T3-T2-T4-T2-T4-T2-T4-T3. Comparing our results with the current fjords circulation patterns, we may suggest a cyclicity on LSMI water circulation and different sources of streams. Thus, in a moment with continental inflows, we may have a better environment for insects (T2), while in other times a non-clear but relevant bottom current led to T3, and in the paralic system have improved the sponge proliferation (T4). Despite further approach that should be applied on the deciphering paleodepositional settings of LSMI, these taphophacies can help to shed light on subtle paleoenvironmental changes, once modern fjords have strong stratification, seasonality and rapid evolution.