



Basin & Reservoir Lab

Professor Grant Wach & Dr. Ricardo Silva
Editor: Kallen Rutledge

SOURCE ROCK & GEOCHEMISTRY OF THE ATLANTIC MARGINS PROJECT

Fall 2016

Samples and Data



The results of several analyses have recently been returned to the lab, including:

- 74 New [TOC and stable carbon isotope data](#) from the Bathonian-Callovian section of Figueira da Foz, Lusitanian Basin, Portugal. Additionally, view a detailed log of the [Bathonian-Callovian section](#) of Figueira da Foz, as well as a [field photo](#).
- 24 New [TOC, Rock-Eval Pyrolysis, and stable carbon isotope data](#) from the Pliensbachian of the Playa de Vega Section in the Asturias Basin, Spain. View the [detailed log of the Playa de Vega section](#).

Professor L.V. Duarte from the University of Coimbra kindly donated 20 [TOC and Rock-Eval Pyrolysis data](#) from the Lusitanian Basin Pliensbachian Source Rock

Research and Dissemination

There has been considerable research completed and posted to our secure website which has contributed to the following conference presentations and publications:

1. Fluent in Portuguese? (View English abstract on following page) Read David Nuno Póvoas Vaz's (MSc. Candidate, University of Coimbra) recently defended thesis, "Contribution to microfacies study of Jurassic carbonate units of the western sector of the Algarve Basin (Portugal): Palaeoenvironmental interpretation and sequential evolution / [Contribuição para o estudo microfaciológico de unidades carbonatadas do Jurássico do setor ocidental da Bacia do Algarve \(Portugal\)](#)".
2. Do you speak Spanish? (View English abstract on following page) Read the recently published paper with contributions from Dr. Silva: Comas-Rengifo, M.J., Duarte, L.V., Felix, F.F., Goy, A., Paredes, R., Silva, R.L., 2016. [Amaltheidae e Hildoceratidae \(Ammonitina\) del Pliensbachiano Superior \(Cronozona Spinatum\) en las Cuencas Septentrionales de la Península Ibérica](#).
3. Recently submitted for publication in *Geological Magazine*, read Dr. Silva, Charles Carlisle (M.Sc. Candidate), and Prof. Wach's paper, "[A new TOC, Rock-Eval and carbon isotope record of Lower Jurassic source rocks from the Slyne Basin, offshore Ireland](#)".
4. Dr. Ricardo Silva traveled to Portugal late September having contributed to the "[Geologia no outono](#)" (Geology in Autumn) workshop in Penela, on "The Jurassic of the region of Penela: new advances in stratigraphic knowledge".
5. Early November, Dr. Ricardo Silva also traveled to Austin, Texas to attend and present at the SEPM Research Conference on Oceanic Anoxic Events. The topic of the conference was source rock intervals. Silva, R.L., Wach, G.D., Carlisle, C.A.M., (2016). [A new carbon isotope record of Lower Jurassic age from the Slyne Trough, offshore Ireland](#). SEPM Research Conference: Oceanic Anoxic Events (OAEs) Drivers, Feedbacks, Paleooceanographic Conditions and Related Sedimentary Products, Austin, Texas.
6. At the annual Atlantic Ireland Conference in Dublin, Nov 1-2, Charlie Carlisle presented his research, "[A new TOC, Rock-Eval and carbon isotope record of Lower Jurassic source rocks from the Slyne Basin, offshore Ireland](#)", as well as that of Carla Skinner's, who was unable to attend, "Excess pressure & reservoir compartmentalization in the Porcupine Basin & Sable SubBasin, NS".
7. In October, undergraduates Maya Soukup and Philip Sedore presented their research at the annual Atlantic Universities Geoscience Conference, held at Acadia University.
 - Sedore, P., Silva, R.L., Wach, G., 2016. 1D modelling approach to the investigation of Mesozoic source rocks in several offshore Newfoundland basins.
 - Soukup, M., Silva, R.L., Sedore, P., and Wach, G., 2016. ?Early–Middle Jurassic coast sabkha depositional environment variability in Well Mohican I-100 Cores 7 and 8, Scotian Basin.

1. [Thesis] Vaz, D.N.P. (2016). [Contribuição para o estudo microfaciológico de unidades carbonatadas do Jurássico do setor ocidental da Bacia do Algarve \(Portugal\)](#) / Contribution to microfacies study of Jurassic carbonate units of the western sector of the Algarve Basin (Portugal): Palaeoenvironmental interpretation and sequential evolution. Unpublished, Universidade de Coimbra.

Abstract

In this work are presented the results of the microfacies analysis developed across the Pliensbachian – Kimmeridgian carbonate succession of occidental sector of the Algarve Basin. Based on the Belixe Beach, Armação Nova Bay, Ponta dos Altos, Mareta Beach, Cilheta-Tonel Beach and Benaçoitão Mouth studied sections, 42 samples were selected to mineralogical (x-ray diffraction) and microfacies analysis. This study allowed to show and discuss the evolution of depositional environments recorded in the stratigraphic successions, and based on these to propose, for the first time, a sequential analysis for the western sector of Algarve Basin. Microfacies analysis performed on thin sections allowed the recognition of nine microfacies types (A – I), belonging to a specific carbonate platform portion, based on two generic depositional models here ascribed to Algarve Basin: non-reef platform on Lower Jurassic; reef platform on Middle and Upper Jurassic. Through the sedimentary vertical evolution and depositional environments variability was possible to recognize transgressive and regressive phases, which culminate on the identification of six sequences bounded by major discontinuities during the Pliensbachian – Kimmeridgian interval of the Algarve Basin. This sequential exercise allowed to establish correlations with major tectono-eustatic events recognized on other basins of Tethys domain (Betic Cordillera, High Atlas, Rif) and Atlantic domain (Lusitanian Basin).

2. [Book Chapter] Comas-Rengifo, M.J., Duarte, L.V., Felix, F.F., Goy, A., Paredes, R., Silva, R.L., 2016. [Amaltheidae e Hildoceratidae \(Ammonitina\) del Pliensbachiense Superior \(Cronozona Spinatum\) en las Cuencas Septentrionales de la Península Ibérica](#) / Amaltheidae and Hildoceratidae (Ammonitina) of the Upper Pliensbachian (Spinatum Chronozone) in the bordering basins of the Iberian Peninsula. In: G. Meléndez, A. Núñez y M. Tomás (eds.). Actas de las XXXII Jornadas de la Sociedad Española de Paleontología. Cuadernos del Museo Geominero, nº 20. Instituto Geológico y Minero de España, Madrid, 2016. ISBN 978-84-9138-016-0, pp. pp. 47-52.

Abstract

In the northern Iberian Peninsula, the Spinatum Chronozone begins with the first record of the genus *Pleuroceras*, just above the last levels of the Margaritatus Chronozone (*Gibbosus* Subchronozone), the index fossils being: *P. cf. salebrosum* and *P. transiens* in the sections of Rodiles and Camino, in the Iberian Range (Almonacid de la Cuba), the species *P. transiens* marks the boundary and in the section of Peniche (Portugal) the key species is *P. solare*. The Apyrenum Subchronozone is marked by the common occurrence of *Am. margaritatus*, *P. solare*, *P. spinatum* associated to *P. apyrenum*, the representatives of Hildoceratidae being markedly scarce, with the exception of the Lusitanian Basin. The Hawskerense Subchronozone begins with the first record of *P. hawskerense*, in association with the last records of *P. solare* and *P. yeovilense*; and to *P. spinatum*. Above these levels, the representatives of family Amaltheidae are replaced by the subfamilies Arieticeratinae and Harpoceratinae. Before the first record of *D. (Eodactylites) simplex* which should mark the base of the Toarcian stage, no specimens of *Pleuroceras* are found, the genera *Canavaria* and *Tauromeniceras*, being in turn dominant.