

Orbital forcing in the transgressive/regressive high-frequency sequences (Belsué Syncline, Eocene, South-Pyrenean foreland Basin, Spain).

ABSTRACT

The Belsué syncline crops out in an area of ca. 14 km² in the southern margin of the Jaca basin (South-Central Pyrenees) which records the transition from marine to non-marine sedimentation over a period of 5.7 Myr during the Eocene (Bartonian-Priabonian). The studied strata are up to 900 m thick and represent a westwards-prograding delta complex, including prodelta (Margas de Arguis formation), delta front (Belsué-Atarés formation) and fluvial beds (Campodarbe formation). These strata were deposited in between two growing anticlines trending perpendicular to the direction of progradation: the Pico del Águila and Gabardiella anticlines. Throughout the syncline a number of transgressive-regressive cycles are governed by Milankovitch eccentricity cycles (Kodama et al., 2010; Garcés et al, 2014). In this work we aim at assessing the mechanisms driving sedimentary cycles by using forward stratigraphic modeling.

To build the model we have used the DIONISOS OpenFlow (Granjeon & Joseph, 1999) to build a reference model of the Belsué syncline, on which different experiments using the available orbital solutions were tested. We explore the nature of changes in the sedimentary record in response to variations in eustasy, sediment supply, and water discharge. These parameters were modulated at different intensities, and tested independently and in different combinations using a Monte-Carlo approach.

The results have been compared with the Belsué outcrops to find the best match with the transgressive-regressive cycles previously defined. In particular, our work is focused on the analysis of the geometry of the different delta front regressive units. In order to evaluate the solutions, a numerical comparison between a representative sedimentary log in the syncline and a virtual log at the same position in the model was carried out, and also a visual comparison of the outcropping section with the virtual equivalent section.

DECISION

Poster

TOPICS

Shallow-water depositional syst...

PRESENTED BY

Mr. Andreu Vinyoles

Universitat de Barcelona

AUTHORS

1. Mr. Andreu Vinyoles¹
2. Dr. Luis Valero²
3. Prof. Miguel Garcés¹
4. Prof. Miguel López-Blanco³
5. Dr. Elisabet Beamud⁴
6. Mr. Pau Arbués³
7. Dr. Patricia Cabello³

1. Universitat de Barcelona, 2. Earth Sciences Institute Jaume Almera ICTJA-CSIC, 3. University of Barcelona (UB), 4. Paleomagnetic Laboratory CCITUB-ICTJA CSIC

MORE IN THIS SESSION

Poster Session

3.A Interplays of hydrodynamic processes in shallow marine environments

5:00pm - 7:00pm

Tuesday, 10 September 2019

Chaired By

Dr. Romain Vaucher (Simon Fraser University),
Marcello Gugliotta, Dr. Daniel Collins (Shell)



Typhoon Soudelor (2015) induced offshore movement of sand dunes and geomorphological change: Fujian coast, China

» Yunhai Li¹

1. Laboratory of Ocean & Coast Geology, Third Institute of Oceanography, Ministry of Natural Resources

View Presentation



Threshold of motion of bivalve and gastropod shells under oscillatory flow in flume experiments

» Dr. Cristiano Fick¹, Prof. Eduardo Puhl¹, Prof. Elirio E. Toldo Jr¹

1. UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL (UFRGS)

View Presentation