

Luncheon Abstract

November Meeting of the Alaska Geological Society, Inc.



High-Relief Slope Clinof orm Development: An Outcrop Analog for the Cretaceous Brookian Foreland Succession From Patagonia, Chile

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Note: AGS meetings will be at the BP Energy Center for 2009-2010.

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*This newsletter promotes the November luncheon talk of the Alaska Geological Society,
to be held Thursday, November 19th, at the BP Energy Center.*

The Cretaceous–Paleogene Tres Pasos and Dorotea formations of the Magallanes Basin, Chile record the filling of a deep-water foreland setting. Slope clinof orms with at least 700–900 m relief accreted southward along the foredeep axis, which was oriented parallel to the adjacent Patagonian Andes. Fluvial- and wave-influenced deltaic deposits of the Dorotea Formation represent the upper, flat portions of the sigmoidal slope profiles (topset strata). Mudstone, siltstone, and a notable paucity of sandstone characterize upper slope strata. Further down-slope, conduits are evidenced by sedimentary bodies associated with mudstone rip-up clasts and/or cross-stratified or normally graded sandy conglomerate, indication that considerable sediment bypassed the slope. Turbiditic sandstones and mass-transport deposits of the Tres Pasos Formation characterize the lower to base of slope setting (toeset strata).

Numerous examples of slope clinof orms have been recognized in the rock record, with the majority characterized by 200–500 m of estimated paleo-relief.

Alaska Geological Society Luncheon

Date & Time: Thursday, Nov. 19th, 11:30 am – 1:00 pm

Program: High Relief Clinof orm Development

Speaker: Stephen M. Hubbard

Place: BP Energy Center

Reservations: Please make your reservation before noon Tuesday, Nov. 17th, 2009.

Cost: Seminar only, no meal: Free
Reserve a box lunch: \$13
Nonmember: \$15

Reserve a hot lunch: \$20
Nonmember: \$22

No reservation: add \$5 to the above
(on an “as-available” basis only)

E-mail reservations: vp@alaskageology.org
Or phone (907) 269-8673
(Ken Helmold, AGS VP)

For more information: visit the AGS website:

www.alaskageology.org

Higher relief examples include those mapped in outcrop from the Magallanes Basin, Chile documented here, and comparable clinoforms from the subsurface, Cretaceous Brookian succession of the North Slope, Alaska. The development of high-relief slope clinoforms is facilitated when the rate of sediment input onto the slope is higher than the rate of topographic development, generated from mass wasting or substrata remobilization. In the Magallanes Basin, numerous factors contributed to the development of high-relief clinoforms, including generation of substantial basin margin relief, the absence of mobile substrata, high sediment supply, and the elongate basin shape. The slope that built and maintained the relatively smooth clinoform profile was narrow, and thus the high volume of sediment that passed over the shelf was focused as it passed into deeper water and topographic rugosity that developed on the slope was healed.

About the Author:

Education

2006 – Ph.D, Stanford University

Thesis on deep-water foreland basin axial channel belts, supervised by Steve Graham

1999 – M.Sc., University of Alberta

Thesis on shallow marine sedimentology and ichnology, supervised by George Pemberton

1997 – B.Sc., University of Alberta

Professional Experience

2006-2009 – Assistant Professor, University of Calgary

1999-2001 – Development Geologist, Shell Canada Ltd.

Current Positions Held

- Associate Editor, Journal of Sedimentary Research
- Canadian Society of Petroleum Geologists Executive, Communications Director

Research Interests

General: Marine clastic sedimentology and stratigraphy; petroleum geology

Current Research Themes:

- Stratigraphic architecture and sedimentology of deep-water depositional systems, including high-relief shelf-margin clinoform systems
- Early paleogeographic evolution of foreland settings, with a particular focus on Jurassic strata of the Western Canada Sedimentary Basin
- Sedimentology and stratigraphic architecture of fluvial and estuarine point bars, focused on the McMurray Formation of Alberta (reservoir of the Athabasca Oil Sands) as well as the analysis of modern analogs