



NORTHWEST GEOLOGICAL SOCIETY

A regional association of professionals, students & others interested in geology
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March, 2011 Newsletter

Volume 25, Number 3

March 8 Program Speaker

Speaker: Sian Davies-Vollum, UW Tacoma Environ. Science

Title: Making the mudrock sandwich: fine grained and organic deposits on modern and ancient floodplains

Abstract: Successions of mudrock sandwiched between beds of coal or carbonaceous shale are common in rocks formed from sediments deposited on ancient floodplains. The cyclic nature of these deposits indicates that they were formed from recurring processes that provided some control on the preservation of the organic material that forms coal and carbonaceous shale. Fluvial avulsions are major changes in the course of a river that occur repeatedly over the lifetime of a river system. During an avulsion a river breaks out of its banks and forms multiple courses across the floodplain. At this time deposition is rapid and environments of the floodplain are unstable. Eventually the river re-establishes a main course and the floodplain stabilizes. To consider the effect of avulsions on the accumulation of organic deposits on floodplains, fine-grained deposits from the modern avulsion belt of the Saskatchewan River were studied. It was found that the total organic content (TOC) of fine-grained deposits depends on the amount of siliciclastic sediment received by the floodbasins, with avulsion stage the most important control. The avulsion on the Saskatchewan River is waning, and the avulsion belt stabilizing, resulting in decreased floodplain sedimentation and a corresponding increase in the TOC of floodplain mud. Increased TOC of mud suggests a return to conditions of floodplain sedimentation prior to the current avulsion, when organic mud and peat accumulated. If preserved in the geological record, the fine-grained deposits of the Saskatchewan River avulsion belt would be recognized as mudrock sandwiched between thin beds of coal or carbonaceous shale. Similar successions of mudrock and carbonaceous shale from the geological record are found in the Lower Eocene Willwood Formation of the Bighorn Basin, Wyoming. The modern example appears to confirm that packages of mudrock sandwiched between layers of carbonaceous shale or coal may be thought of as hiatus-avulsion-hiatus deposits in which organic deposits form during hiatuses in sedimentation between avulsion events and mud-rich deposits form during avulsion. Examples of mudrock sandwiches from the East Midlands of the UK are currently being studied to consider whether an avulsion model can be applied to other sequences of sedimentary rocks containing coals and carbonaceous shale.

5:30pm: No-host social hour
6:30pm: Buffet dinner
7:30pm: Speaker program
All are welcome to attend –
**reservations are required
if coming for dinner.**

PROGRAM DINNER RESERVATIONS: NWGS members: **\$35**; Non-members: **\$40**; Full-time students : **\$15**. Add \$5 for LATE REGISTRATION. Reservations may be made on-line at NWGS or mail check to Dan Smith, 10203 40th Ave SW, Seattle, WA. 98146 (must be received by Thursday prior to meeting). Contact him at 206-937-5313 or nwgeo@yahoo.com. If attending the speaker program only, a \$5 voluntary donation to help defray the meeting room cost is "required." Location: Pacific Dining Hall at the Talaris Conference Center, 4000 NE 41st St., Seattle, WA. Ph 206-268-7000. Directions: See on-line directions with map, or: from I-5 northbound or southbound in Seattle, take Exit 168B (NE 45th St.). Drive east on NE 45th St. past UW down the hill and past University Village. Turn south (right) onto Mary Gates Memorial Drive at the 5-way intersection. MGM Drive will curve east (left) and become NE 41st St. Continue several blocks to the Talaris Conference Center entrance on the north (left) side.

Upcoming Speakers and Field Trips

April 12: Trenton Cladouhos, AltaRock Energy Inc., The Future of Geothermal Energy

May 17: John Dilles, Oregon State University, The Demise of Economic Geology (please note May meeting date is the 3rd Tuesday, since the Talaris Conference Center was not available on May 10.)

Spring, 2011 FT: TBA

Fall, 2011 FT: TBA

Please see the NWGS website for detailed announcements.

Contact webmaster Julie Masura if you have any announcements to post on the website.

Announcements

- 2011 dues are due! Please send your dues to Dan Smith (see [About NWGS](#) below).
- The May meeting is on the 3rd Tuesday, May 17, since Talaris was not available on the 10th.
- Dinner reservations may now be made on the NWGS website, but you still need to mail your check to the Treasurer as before, for now. On-line payment is coming soon!
- Congratulations to Greg Ferris, winner of the 2010 Tool of Geology Award (TOGA) for his outstanding service to NWGS this last year!
- This year's poster session will be held at the May 17 meeting. Contact new Poster Coordinator [Brittany Brand](#) if you'd like to enter a poster in the competition.
- NWGS needs your suggestions for 2011 field trips! Please contact Field Trip Coordinator [Greg Ferris](#) with your suggestions.
- Next Board Meeting is 4:30pm, Tues. March 8, 2011, [Talaris Conference Center](#).
- NWGS Historian [Donn Charnley](#) requests any pre-1980s NWGS information. Contact him at donncharnley@verizon.net or 206.546.3868.
YOU would like to be involved!

Photo Spotlight



The avulsion belt of the Saskatchewan River (photo submitted by Sian Davies-Vollum).

Your geology photo submissions with brief captions are appreciated. Please email to Newsletter Editor [Tom Bush](#)

About NWGS

[NWGS](#), a regional association of professionals, students & other persons interested in geology, provides a forum for the presentation and discussion of a wide range of geologic topics, emphasizing those of the Pacific Northwest of fundamental scientific interest. *YOU would like to be involved!*

Program meetings: 2nd Tuesdays, October through May in the Pacific Dining Hall at the [Talaris Conference Center](#) in Seattle (see 1st page). Anyone may attend the speaker program, but a reservation is necessary for those wanting dinner (see 1st page). **Field trips (members only):** one in late spring/early summer and one in late summer/early fall, usually of 1-3 days in length. **Membership** is open to anybody with a professional or amateur interest in geology. **Annual dues:** Professional: \$30; Student: \$5. **To join or pay annual dues:** send a check payable to NWGS to Secretary [Dan Smith](#), 10203 40th Ave SW, Seattle, WA. 98146. Please include your name, address, home phone, email, and employer/affiliation (if any).
YOU would like to be involved!

Recommended Readings

Davies-Vollum, K.S. and Smith, N.D., 2008, Factors affecting the accumulation of organic-rich deposits in a modern avulsive floodplain: examples from the Cumberland Marshes, Saskatchewan, Canada, *Journal of Sedimentary Research* v. 78, p. 683-692.

Kraus, M.J., and Davies-Vollum, K.S., 2004, Heterolithic channel fills formed during avulsions: examples from the Willwood Formation, Wyoming. *Sedimentology* 51: 1127-1144

Davies-Vollum, K.S. and Kraus, M.J., 2001, The relationship between alluvial backswamps and avulsion cycles: An example from the Willwood Formation of the Big-horn Basin, Wyoming. *Sedimentary Geology*, 140 (3-4): 235-249

Davies-Vollum, K.S., 1999, The formation of beds underlying carbonaceous shales as aquic paleosols: examples from the Big Horn Basin of Wyoming. *International Journal of Coal Geology* 41: 239-255.

Please send your reading recommendations to Newsletter Editor [Tom Bush](#).

To report a change of email or postal address or request to be removed from mailings, notify Secretary [Dan Smith](#) at 206.937.5313. Questions or comments? Contact President [Julie Masura](#).

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