



CEGA

Jura Creek Field Trip: The Drowning Unconformity and Anoxic Sediments at The Devonian-Carboniferous Boundary

Leader: Dr. Pavel Kabanov, Geological Survey of Canada

Date: Saturday, May 13th, 2023, | 10:00am – 4:00pm (MST)

Location: Jura Creek near Exshaw, AB

This field trip is weather dependent. If the weather is not suitable the back-up date for this trip is May 18th, 2023.

Logistics: Registrants will be responsible for transportation to the hike start point and back to Calgary. Carpooling can be arranged amongst group members.

Please bring a bagged lunch and water- lunch will not be provided.

Included: Participants will receive a printed course manual.

Overview



In the front ranges of the SW Rocky Mountains near the village of Exshaw, the hanging wall of the McConnell thrust sheet exhibits stratigraphic successions of the Devonian-Carboniferous boundary interval. Starting from the parking lot, the trail winds along the Jura Creek gravel bed for 3.2 km to see the Devonian/Carboniferous boundary in the so-called middle canyon (on photo), where the Famennian platform carbonates of the Palliser Formation are overlain abruptly by the black

pyritiferous shale of the Exshaw Formation, one of major sourcerocks in the subsurface Alberta.

The two-way trip is 6.4 km. Besides being popular among geoscientists, the Jura Creek hike is loved by Calgarians for easy hiking and dog walking. The nature of drowning surface in top of the Palliser Formation is debatable and referred in the literature to as the hardground, shoreface ravinement, or drowning unconformity. A review of this knowledge will be provided in the field guidebook. There are indications of paleokarst development at this surface in other localities. The surface is phosphatized and contains volcanoclastic material. It is overlapped by thin (1.4 m) black laminated pyritiferous shale of the lower member of the Exshaw Formation. The upper Exshaw Formation is a dark grey laminated siltstone which weathers yellow.

A lot of data has been published on the absolute dating and conodont biostratigraphy of this interval, allowing to pinpoint the Devonian-Carboniferous boundary inside the black shale of the lower Exshaw member. A number of sedimentary features within the upper Palliser Formation, such as stromatolites and various carbonate-platform facies, can be seen in creekside exposures between the creek delta and the type Exshaw section in the middle canyon.

Objectives

Half-day easy hike to explore the Upper Devonian benthic carbonates of the Palliser Formation, the drowning unconformity in its top, and the Devonian-Carboniferous boundary section in the black shale facies.

Who Should Attend?

Geoscientists, managers, petroleum geologists with experience in shale hydrocarbon exploration; academic scientists with interests in sedimentary archives, oceanic anoxic events of the deep geologic Past; stratigraphers; geoscience students.

Biography



Pavel Kabanov graduated from Moscow State University in 1994 and defended his PhD thesis in Alma Mater in 2000. During his early career, Pavel upgraded knowledge (sequence stratigraphy, paleoecology, paleosols) on the Carboniferous strata of Russia and worked for industry. In 2010, Pavel moved to Canada and joined GSC in 2012. His projects are on the Devonian System of NWT and related collaborative studies across the entire WCSB and globally. His achievements are in various aspects of sedimentary geology and Earth-surface processes of the Paleozoic Era, particularly on sedimentary carbonates, black shales, and paleosols. Pavel also contributes

to the minerals-oriented research in northern Canadian Cordillera.

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