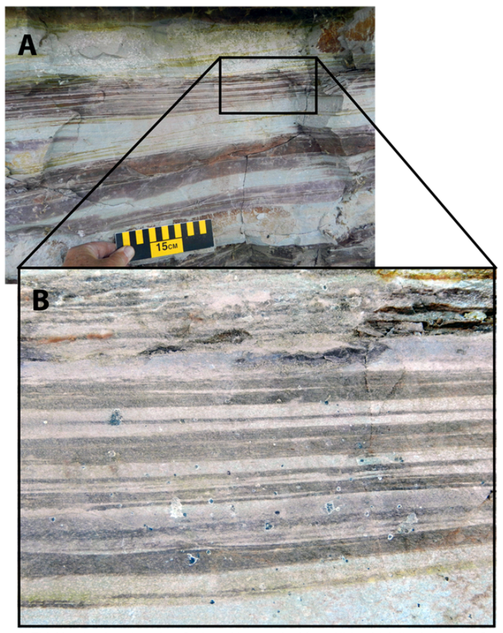
SITE 3: MORONY DAM - BASIN MARGIN SHOREFACE FACIES & INCISED VALLEY



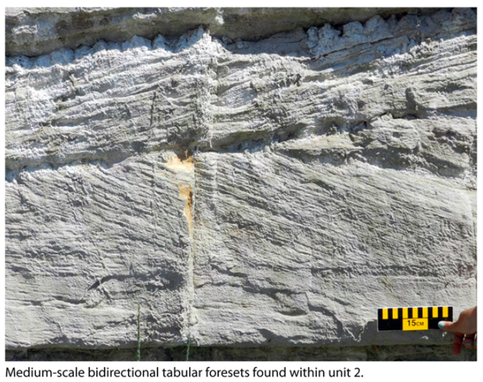
Gigapan photograph of the Sunburst member, which consists of five upward-coarsning tidal shoreface units.



A. Tidal laminations in unit 1. Red mud is reworked from Kk2, which lies below the Sunburst.
B. Close up of tidal laminations in A.

Facies Succession:

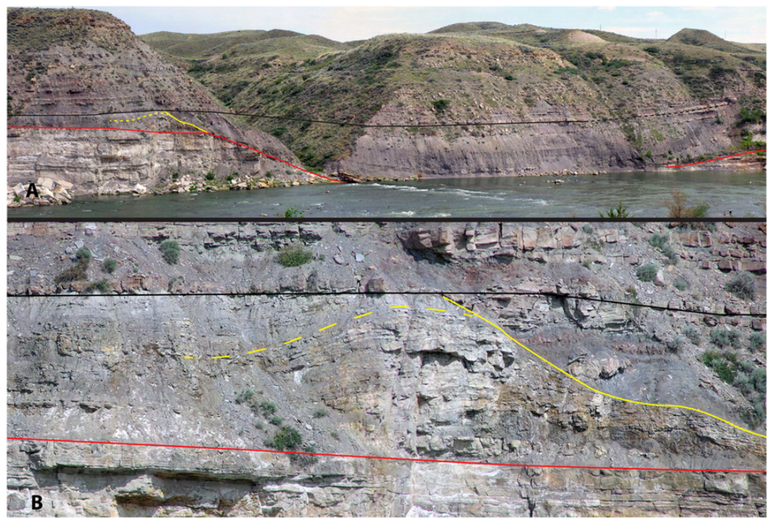
- -Kk4 - fluvial
- -coastal plain
- **-tidal flat** — Sunburst Member
- **-tidal shoreface** — Sunburst Member
- ~~~ disconformity
- -Kkc - fluvial



Medium-scale bidirectional tabular foresets found within unit 2.



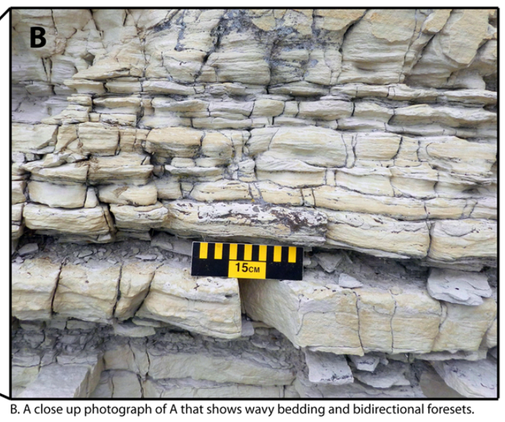
Flaser bedding found within unit 2.



A. Incised paleovalley with estuarine fill truncating the laterally adjacent tidal shoreface facies below Morony Dam. The red line marks an erosional surface along the paleovalley side. The yellow line marks the upper margin of the paleovalley and the dashed yellow line shows the shape of a valley-side levee system. The black line indicates the contact between the tidally influenced Sunburst Member and nonmarine coastal plain facies of the Kk4.
B. Close-up of the valley side and associated levee-splay system.



A. An upward-coarsening and upward-thickening unit within the tidal shoreface.



B. A close up photograph of A that shows wavy bedding and bidirectional foresets.

SITE 4: BELT CREEK - BASIN MARGIN ESTUARY MUDSTONE & BAR

Facies Present:

- **-estuary mudstone**
- **- tidal bar**



A. Tabular foresets within one of the scattered upward coarsening tidal bar units.



B. Close up of the tabular foresets seen in A.



Toward the margin of the basin, the tidal shoreface lithosome undergoes a transition from a tidal shoreface (Site 3: Morony Dam) to gray estuarine mudstone containing scattered upward coarsening tidal bar(?) units.

CONCLUSIONS

- The Sunburst member represents a lobate estuarine complex that lies at the southern end of the pre-Kootenai Whitlash paleovalley system.
- The tide-dominated deposits of the Sunburst member mark the southernmost extent of the Aptian transgression.
- The transect that is perpedicular to the paleovalley and paleobasin axes and defined by the four study areas along the Missour River gorge demonstrate the change from high to low energy tide-dominted settings across an estuary.
- The highest energy facies are located near the middle of the basin (Site 1: Ryan Dam) and undergo a transition to the low energy mud-dominated facies near the margin of the basin (Site 4: Belt Creek).

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REFERENCES

Schwartz, R. K., Vuke, S. M., 2007, Tide-Dominated Facies Complex at Southern Terminus of Sunburst Sea, Cretaceous Kootenai Formation, Great Falls, Montana: http://www.searchanddiscovery.com/documents/2007/07036schwartz (accessed July 2014).