



Geology of the Columbia River

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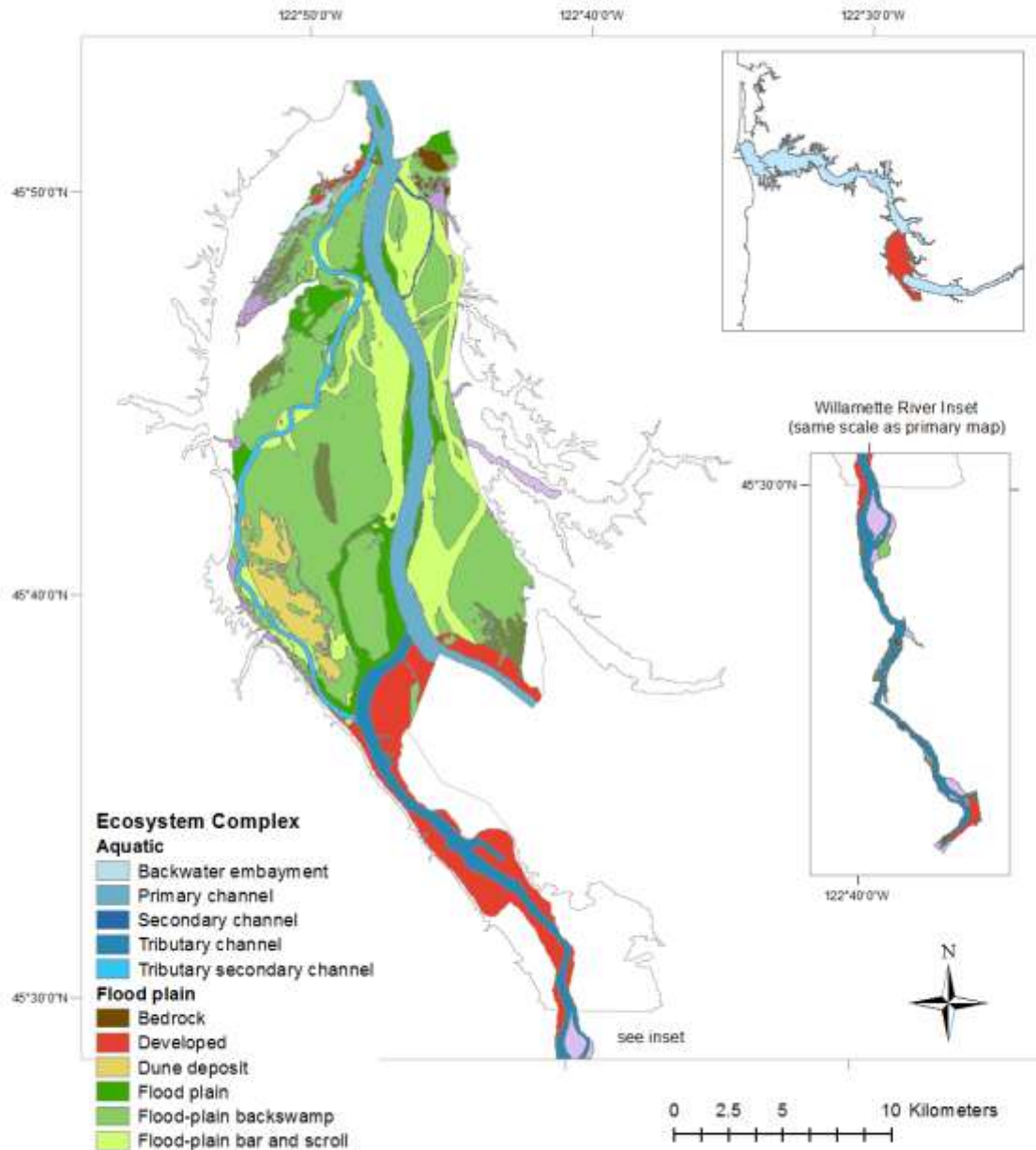
250 million years of mundane; separated by moments of pure geological chaos

- Tides
- Wind
- Floods
- Sediment transport
- Sea-level change
- Channel migration
- Volcanism
- Earthquakes
- Landslides



Ecosystem Complexes

Process Domains



**Columbia River Estuary Ecosystem Classification
Level 4 Ecosystem Complex**

Map created by C. Cannon and J. O'Connor, U.S. Geological Survey;
D.W. Heatwole and C.A. Simenstad, University of Washington,
School of Aquatic & Fishery Sciences



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USGS Photograph taken on May 18, 1980, by Austin Post.

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BONNEVILLE LANDSLIDE, NORTHWEST OF CASCADE LOCKS, OREGON

This image, derived from bare-earth DEM and hillshade lidar data, plus an orthophoto, dramatically highlights the 5.5-square-mile Bonneville landslide. The Bonneville slide is likely part of the Native American story of the Bridge of the Gods, a natural land bridge over the Columbia River. The landslide is shown with a warm color ramp fading from beige at higher elevations to browns at lower elevations. The image contains other landlides that are not enhanced. OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES



Daniel Lee (1844): “The Indians say these falls are not ancient, and that their fathers voyaged without obstruction in their canoes as far as The Dalles. They also assert that the river was dammed up at this place, which caused the waters to rise to a great height far above and that after cutting a passage through the impeding mass down to its present bed, these rapids made their appearance”

D. Lee and J.H. Frost, 1844, Ten Years in Oregon

L.D. Crandall: “The obstruction at the Cascades so angered the Columbia River that it chased the Indians at The Dalles up on the hills, then swept away their villages and stopped the salmon by submerging Celilo Falls”

J.N. Barry, 1935, Washington Historical Quarterly

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SALMON

·PILLAR·
·ROCK·
BRAND

·COLUMBIA·
·RIVER·



SPRING PACK

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