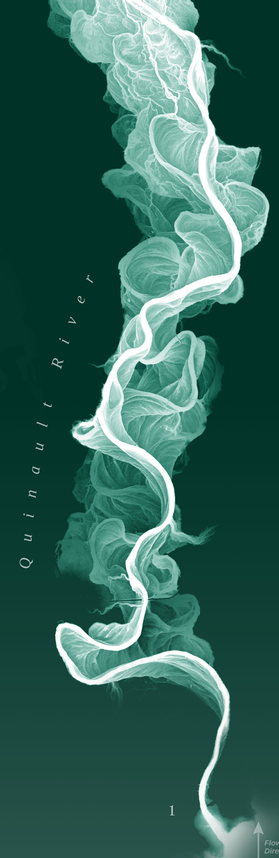
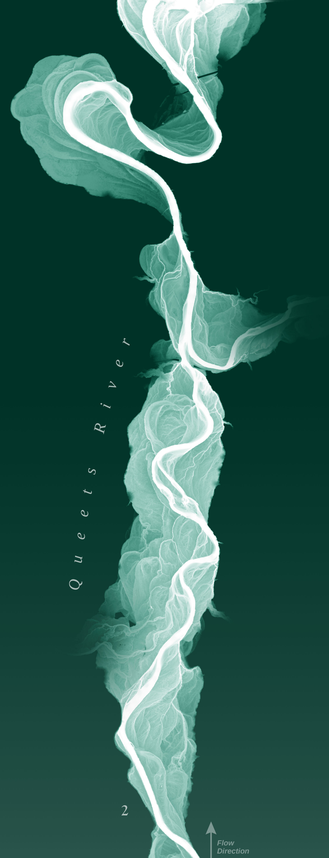
Rainforest Rivers of the Outer Olympic Coast

A Visual History of Channel Migration

WASHINGTON STATE
Natural Resources





This imagery shows floodplain details from five rivers on the outer Olympic Peninsula–the Quinault, Queets, Hoh, Bogachiel/Quillayute, and Sol Duc. The headwaters of these rivers begin in melting snowfields and glaciers of the Olympic Mountains. They then flow through a region of dense temperate rainforest and westward to the Pacific Ocean.

The floodplain images were derived from lidar data. Lidar (light detection and ranging) is a remotesensing technique that uses light pulses to rapidly collect massive amounts of elevation points across large areas. These data were collected from airplanes and represent a mosaic of multiple lidar collection flights. Lidar point data can be classified in a way that allows the viewer to discern only the points that reach the ground. These points can be interpolated to represent a three-dimensional model of the earth with all of the surface features (trees and structures) removed. This is referred to as a "bare earth" model. Bare earth models are extremely useful to geoscientists because they provide a clearer view of the Earth's surface, especially in areas such as the Olympic Peninsula, where extreme vegetation can make geologic or geomorphic investigations difficult.

The brightest white areas represent the river elevation (set to 0 feet), and as elevations increase in the floodplains, the white progressively changes from light green to dark green. This type of model shows where river channels have migrated in the past by vividly displaying floodplain features such as terraces, meander scars, and oxbow lakes.

Channel migration can be affected by a number of factors including topography, geology, land use, and land cover, such as forest. Large woody debris from the western Olympic Peninsula's mature rainforest stabilizes floodplains and reduces channel migration by restricting flow and keeping sediment in place. Historic removal of large trees from riparian zones in the lower reaches of these rivers has increased sediment transport and channel movement.

http://www.dnr.wa.gov/geology
http://file.dnr.wa.gov/publications/ger_presentations_coe_olympic_coast_rivers.pdf