

Washington landslide preliminary update on science supporting response

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U.S. Geological Survey
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Magnitude

Age

- Past hour
- Past day
- Past week

Plates

- Boundaries
- ⇨ Convergence



The SR530 landslide: March 22, 2014



Photo: Seattle Times

A landscape of landslides

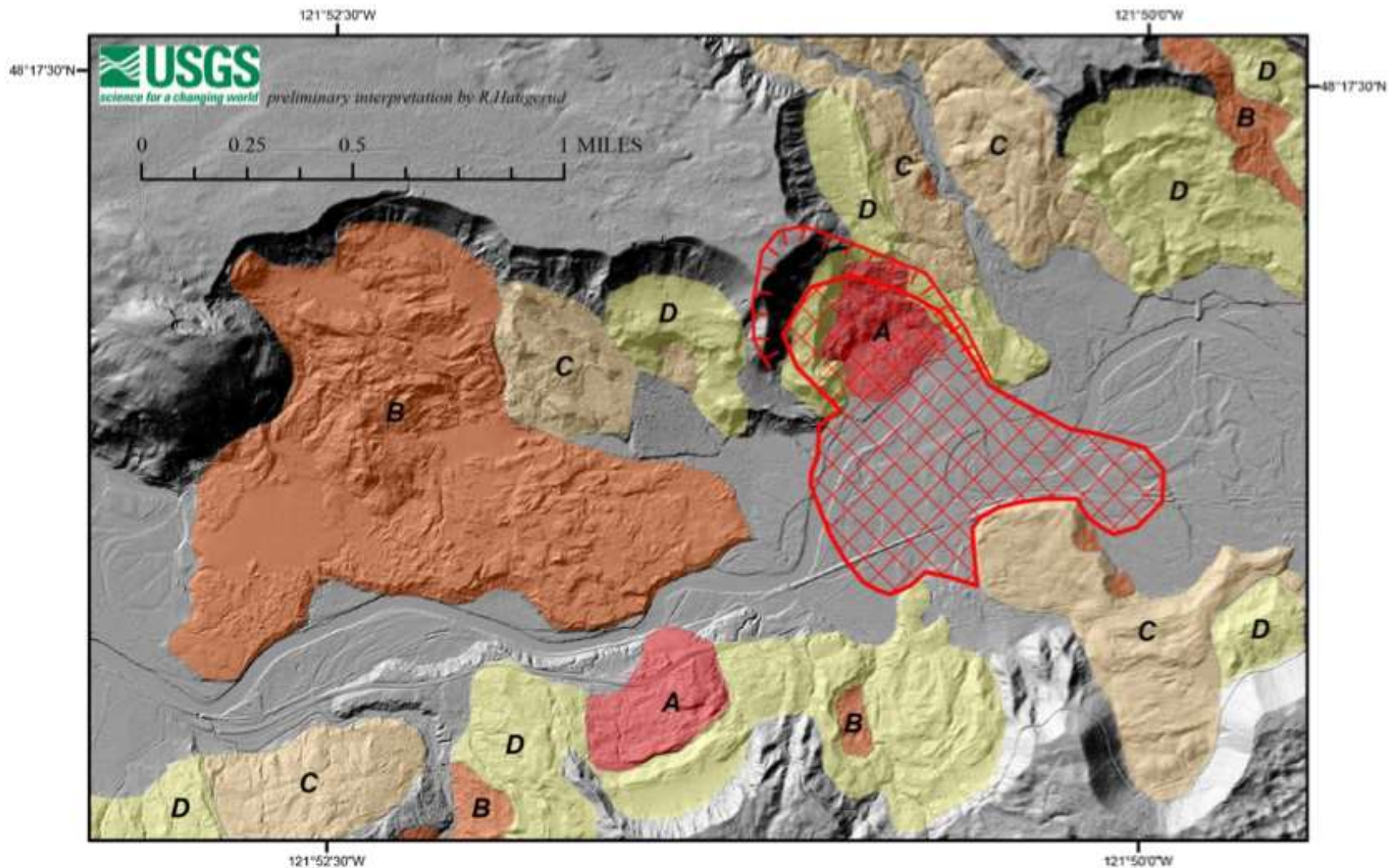
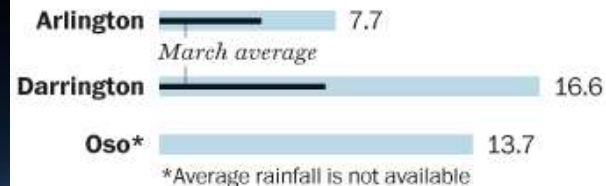


Figure 2. Shaded-relief image calculated from the 2013 lidar survey. Colored areas show older landslide deposits, distinguished by their relative age: A, youngest to D, oldest. The red cross-hatched area marks the approximate extent of deposits from the March 22, 2014, landslide.

Wetter-than-normal March

Rainfall in the past month in Oso and nearby towns has been 150 to 200 percent above normal, and as of midday Friday, this has been the second-wettest March on record there, according to the National Weather Service.

RAINFALL THIS MONTH, in inches

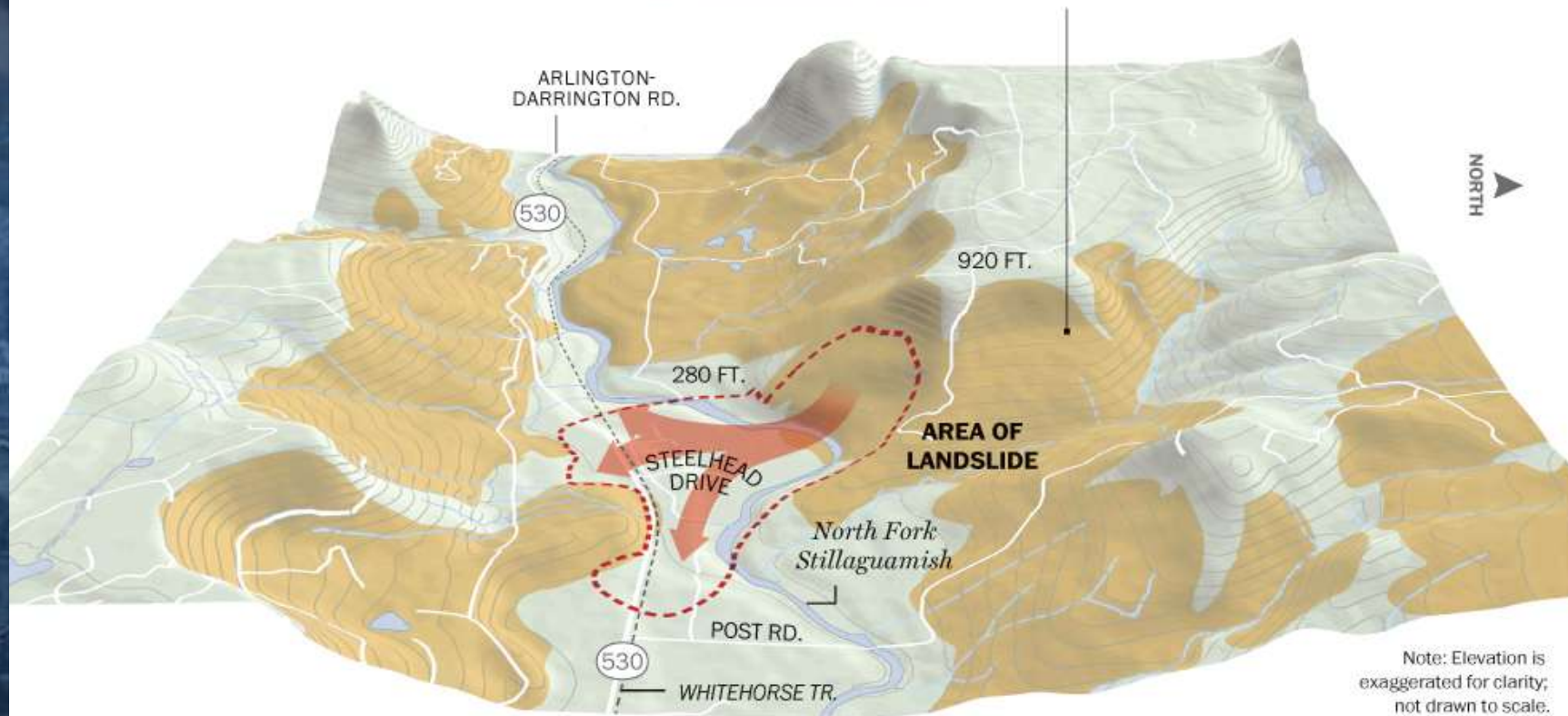


Steep terrain

The ridge where the slide occurred rises more than 600 feet above the river, in the foothills of the Cascades. The river constantly erodes soil along its banks.

Unstable geology

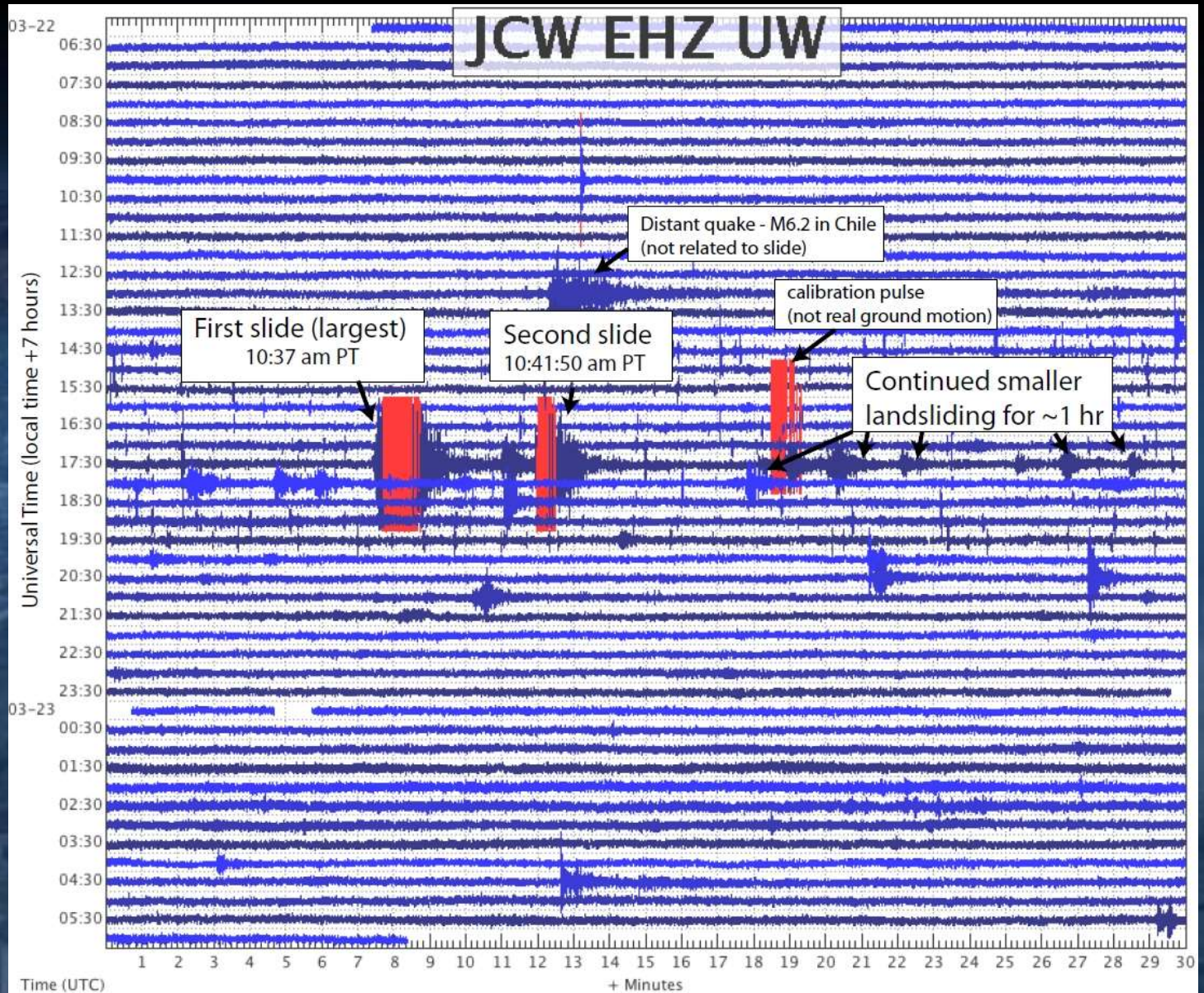
Much of the area rests on deposits from ancient landslides. Layers of sand, silt and clay were stacked and compressed in the Ice Age. Only friction holds them together, and they slide easily.



Note: Elevation is exaggerated for clarity; not drawn to scale.

What triggered the slide? Not an earthquake

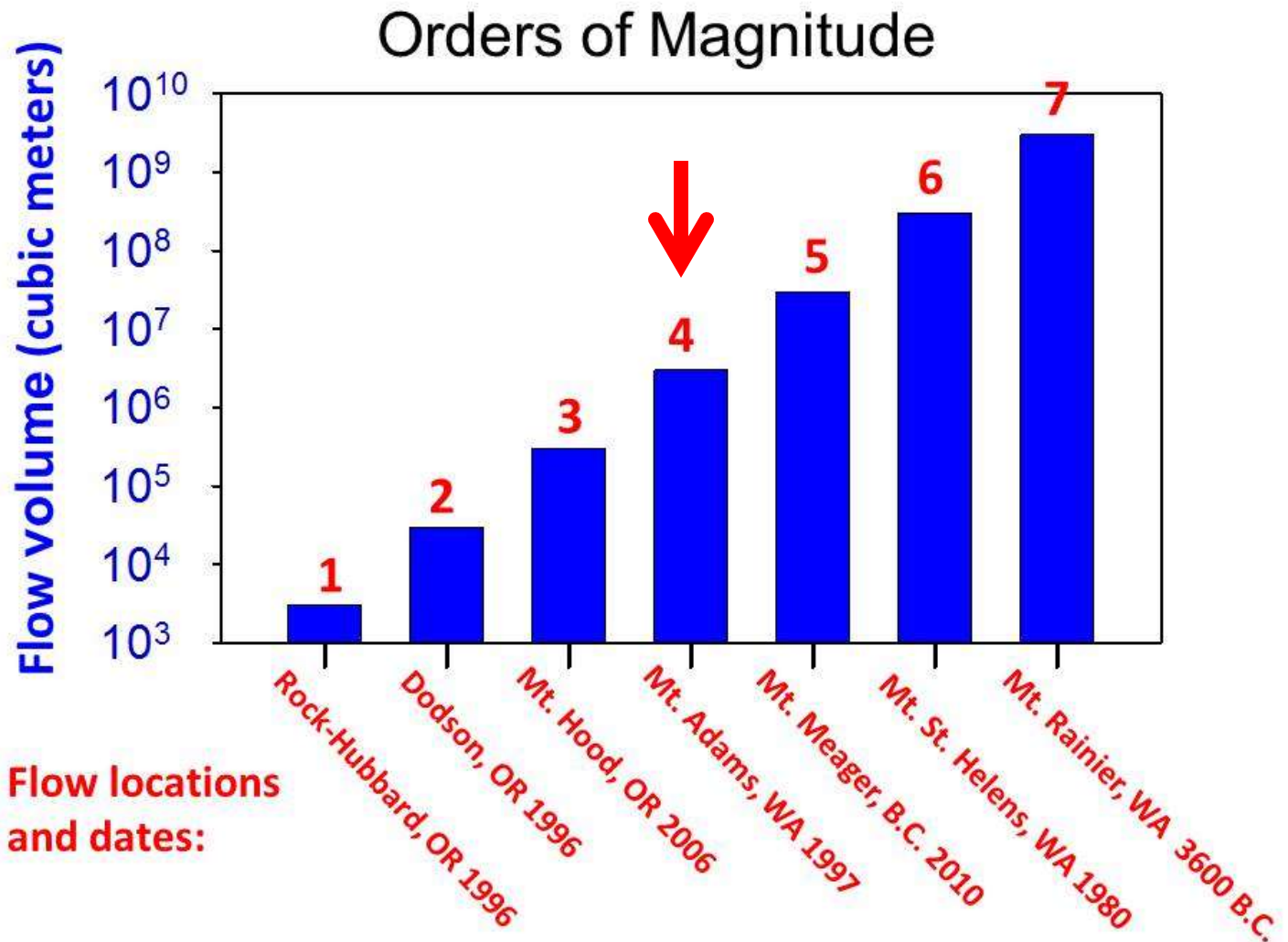
Nearest station in Pacific Northwest Seismic Network





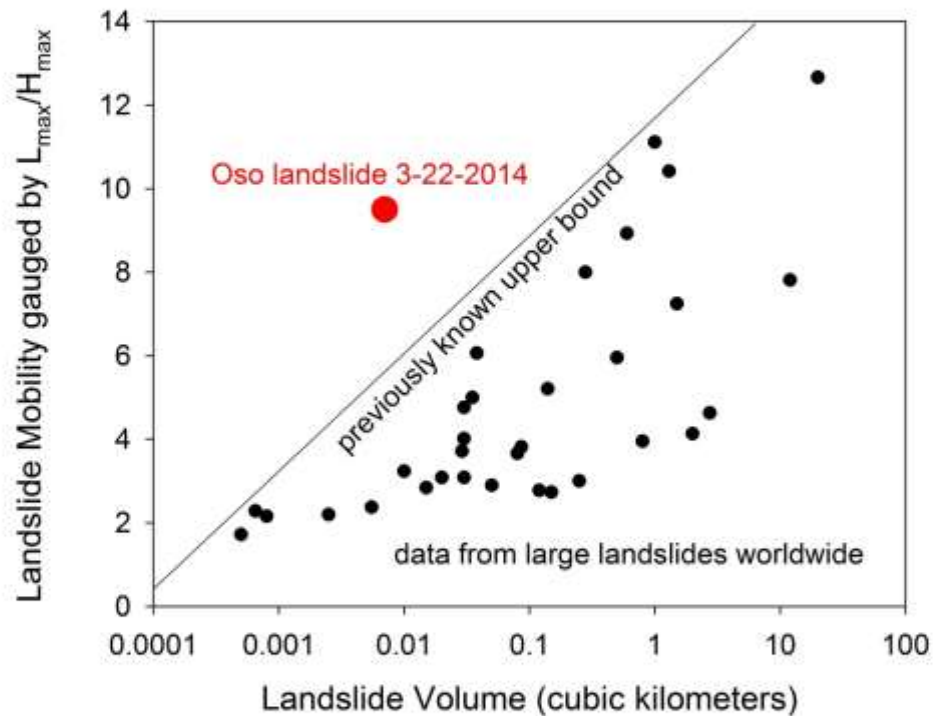
Photos: King County Sheriff's Office

Size of the slide

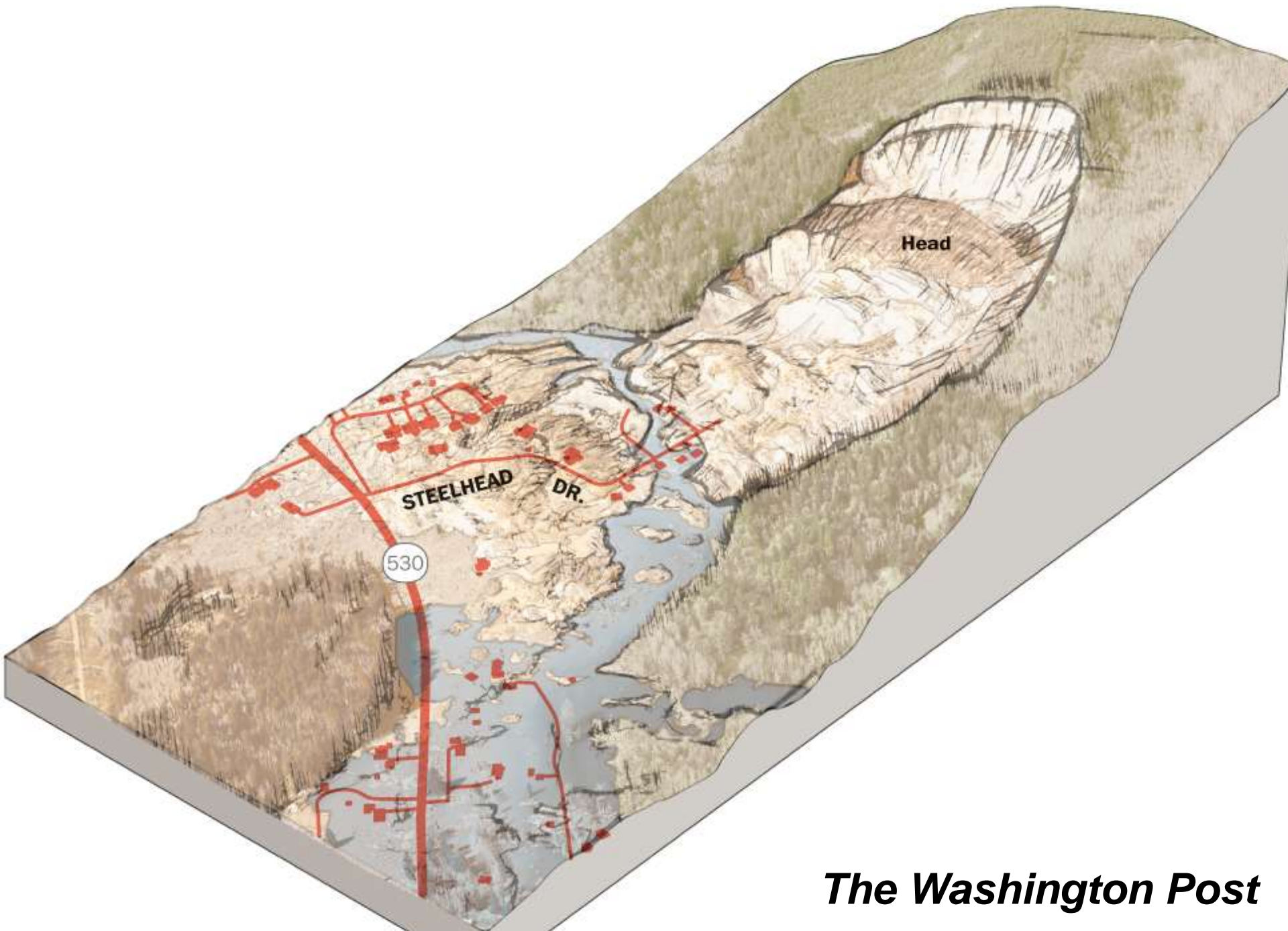


An exceptionally mobile slide – fast and far

The exceptional mobility of the Oso landslide compared to worldwide data for non-volcanic landslides tabulated by F. Legros, Eng. Geol. 2002 (R.M. Iverson, USGS, 3-30-2014)

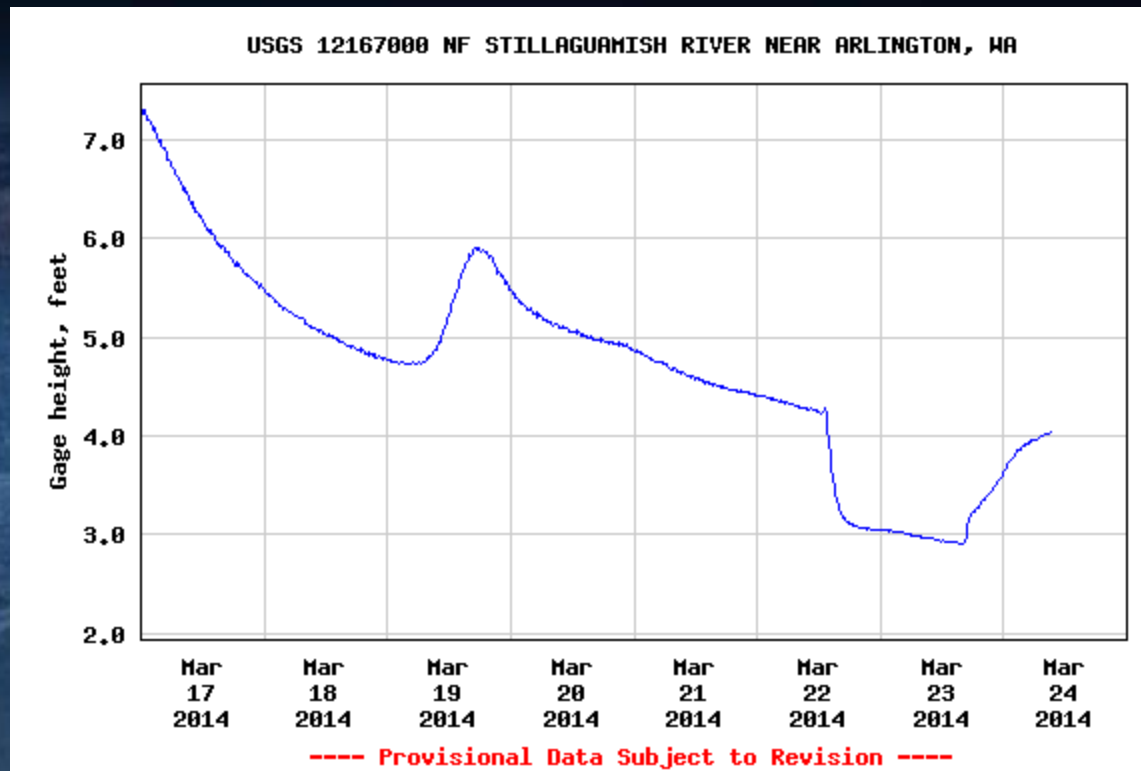


R. Iverson, personal communication



The Washington Post

Slide blockage reflected in downstream flow



Deploying “spiders” to monitor the slide



More information

<http://wa.water.usgs.gov/data/oso.html>

<http://landslides.usgs.gov/>

