

20231204 Wrangell mudslide

It's taken awhile to get around to mapping this one, but curiosity finally led me to my rather limited GIS resources for the fatal Nov-20 landslide south of Pat's Creek. Many similarities to the Chilkat's 20201202 BRLS (*Beach Road Landslide. Awesome UAF [storymap](#) was posted this May.*

Photo on right was taken the day after. Articles claim 450 ft wide at the road, but arc suggests maybe 380. *Very* crude eyeballing on next page indicates top is ~0.7 miles from beach, crowning at ~1,400-foot contour.

[City of Wrangell facebook](#) has a bunch of aerial and ground pics. I played through a nadar drone flight, only to gradually realize it wasn't over this landslide, but a nearby gully sluicing into Pat's Creek. It ran during the same storm, and somebody from Tàan (POW) posted that a lot of paths released there as well. Not

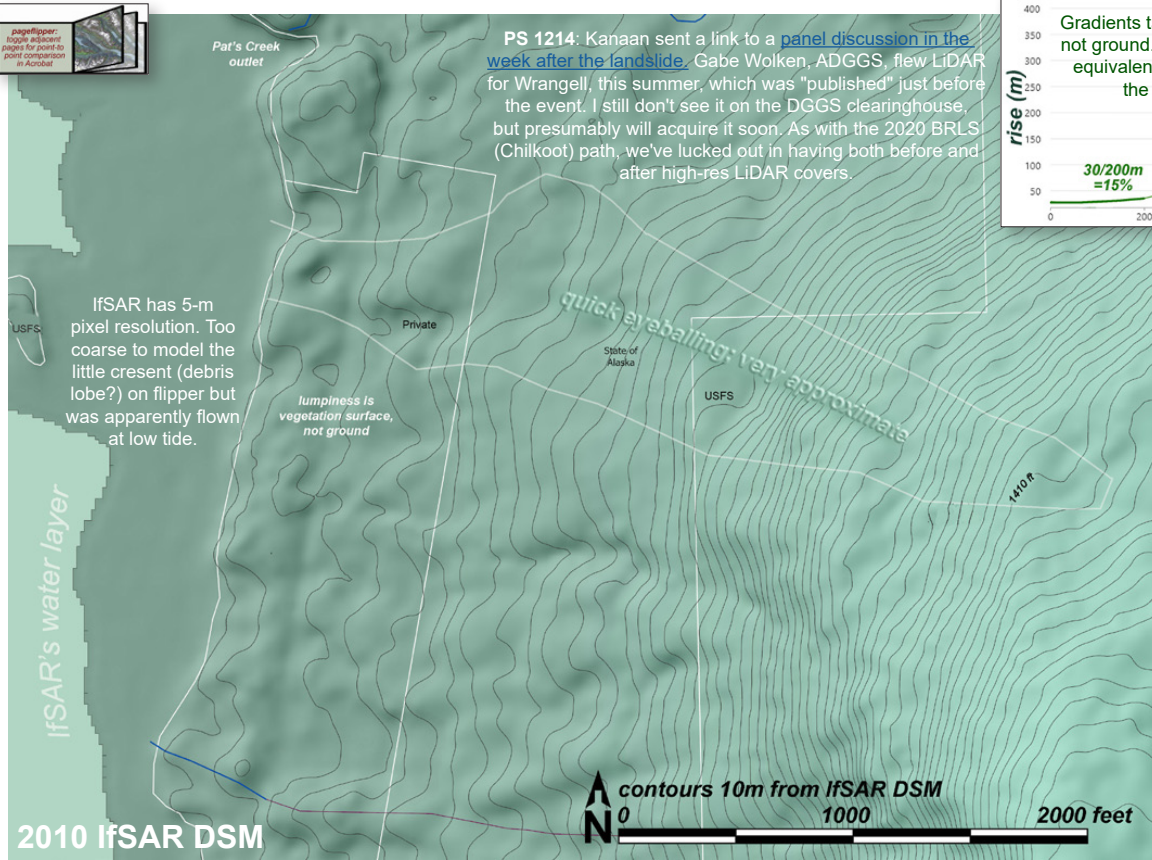
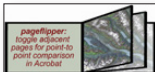


In the late 1960s, USFS's 2-mi² mutilation would've made this entire pink-tinted runout look like the Nov-20 muckfield.

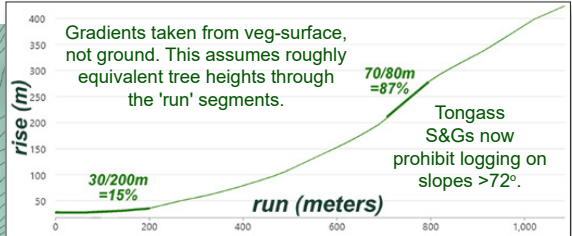
sure why nobody's uploaded flights over the big one.

FS-clearcuts maps a 1965 unit crudely, suggesting top coincides with today's State-to-Fed boundary. It really goes up to where smooth canopy meets the 'frosted' old growth in ADN's photo above. FS had no max unit size in 1965, and in that year alone they nuked a 4-mile-long swath of hillslope forest, from beach & Pat-Creek bottoms up to ~800-ft. Their artificially segregated unit covers 487 acres but I just clicked off 2 square miles without a single buffer.

Is frosting above 800 ft from the sawfly-budworm infestation that swept the Tongass in the past 5 years? Could this already have weakened holding-power of dying rootlets?



PS 1214: Kanaan sent a link to a [panel discussion in the week after the landslide](#). Gabe Wolken, ADGGS, flew LiDAR for Wrangell, this summer, which was "published" just before the event. I still don't see it on the DGGS clearinghouse, but presumably will acquire it soon. As with the 2020 BRLS (Chilkoot) path, we've lucked out in having both before and after high-res LiDAR covers.



IfSAR has 5-m pixel resolution. Too coarse to model the little crescent (debris lobe?) on flipper but was apparently flown at low tide.

lumpiness is vegetation surface, not ground

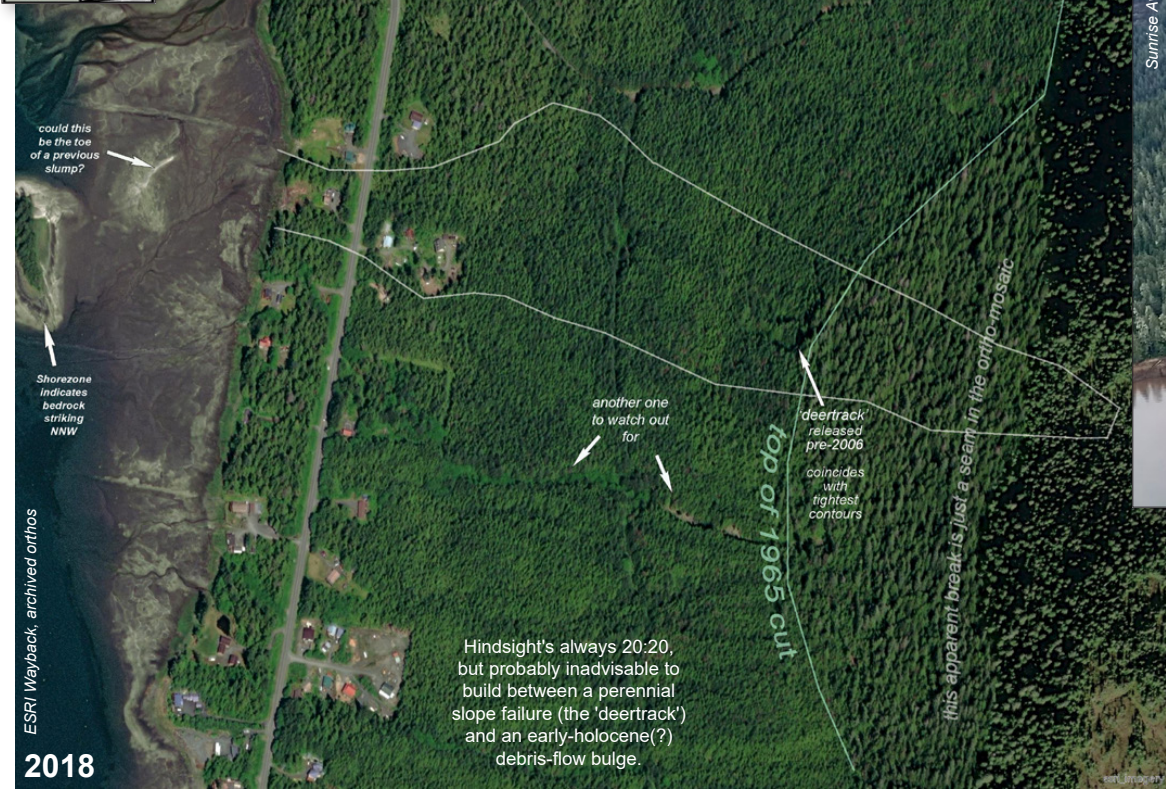
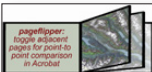
quickly eyeballing; very approximate

So far, no vertical aeriels of path, so everything is 'eyeballed' from obliques. Best elevation model is IfSAR DSM (DTM is 'smushed' & useless.) ¹ Creek on bottom edge *appears* to run down a bulge, only cause this is a **canopy** model from high-hits on foliage; trees are taller there. Steepest part of path is 87%, and runoff averages just 15% slope.

No doubt ADOT has already flown post-slide LiDAR, as they did at Haines. When it's posted to DGGS clearinghouse, I'll upgrade this map.

I'd never have predicted a mud slide on this 'shoulder' or convexity; seems like funneling swales & concavities should run sooner.

¹ [DGGS](#) has one strip of coastal LiDAR on Wrangell Island but it's well south of Pat's Creek.

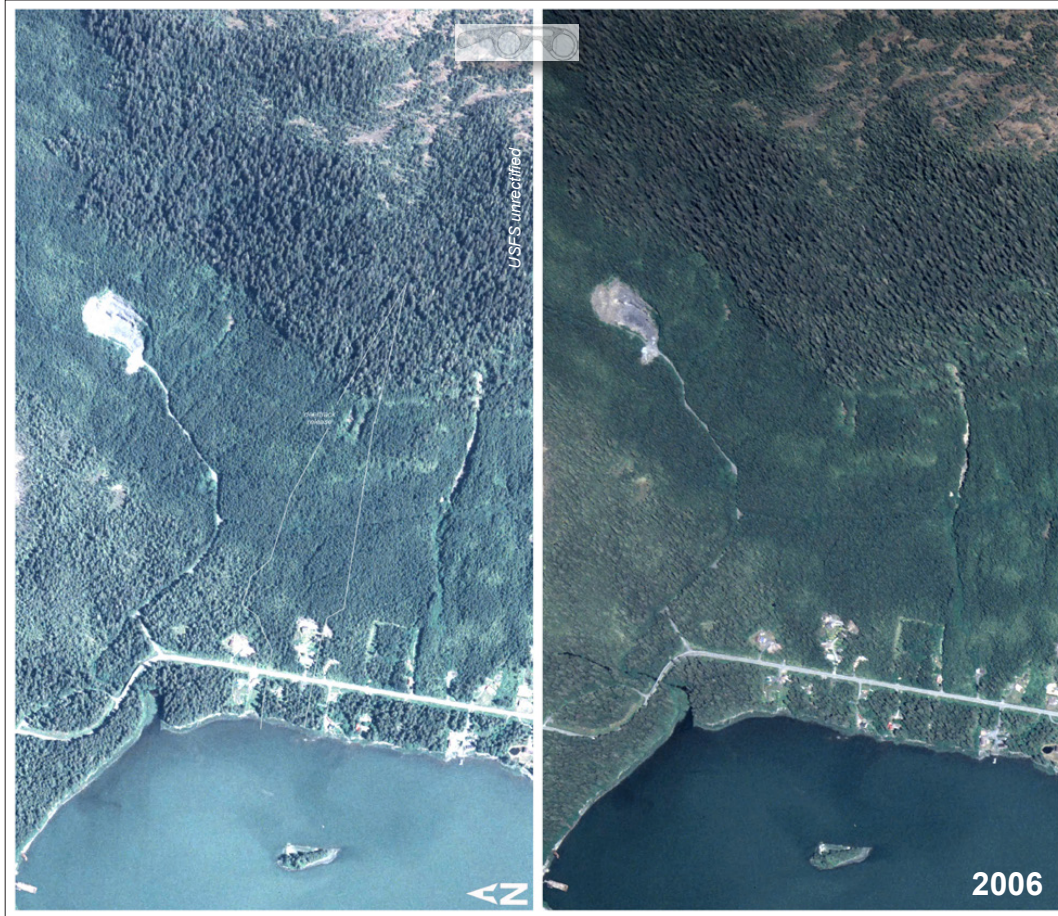


One more reason not to reside under a 2mi² contiguous clearcut. I lived on this wounded island in 1977, when most Wrangellites revered their timber baron forefathers for heartily converting decadent old growth to vibrant 'teenaged' forests. But maybe they should've left a few senior soil-anchors in their own backyards.

On Taashuyee we find the rockweed-barnacle-mussel community only on surfaces with scattered rocks for holdfast & byssal-thread attachment; not on pure sands or muds. Do these beds cap an ancient runout deposit?



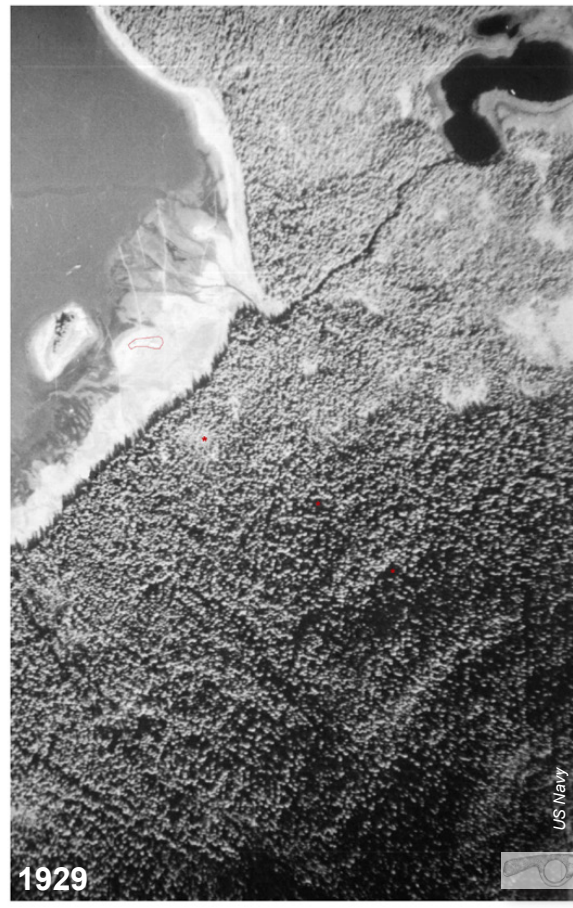
2008



3D context FS Geometronics gave me the raw, pre-rectified .jp2 collections for 2006, 07 & 08, higher res than the disappointing orthomosaic tiles released a few years later. They're handy for assembling these stereopairs.

I used to have a pretty complete collection of 1970s as well, which would show the megacut before canopy closure. It'd be nice, for example, to know if the 'deertrack' scar developed immediately after or during logging. But this stretch of beach didn't turn up in the few "*resource-photography*" missions I still possess. Jacob Hoffman's wonderful collection of pre-logging 1960s by FS and the mills has parts of Wrangell Island, but again, no dice for this area. Next-best, for a time-machine visit to pre-logging, pre-coast-road yesteryear, is the Navy's 1929 aerials on next page.

Even dialing back to these 2006 aerials, succession in the 'deertrack' looks fairly advanced. I'll bet it dissolved a little every time we got a 2-day gully-washer, enough to retard healing indefinitely. We may never sleuth out which part of the November-20 slump triggered first. But one scenario is that the deertrack collapsed, which in turn allowed insect-weakened old-growth root systems to unzip, all the way up to the pointed 'crown.'



Century ago Lucked out here! Our mudslide falls entirely in the central, nadir portion of the Navy's 'butterfly-bandage' tri-lens aerials, so distortion and illusory tree-lean is minimized.

However, there aren't enough reference points to attempt an outline of our 2023 path, as on the 2006 pair. We can only start at that red-circled postulated debris-lobe, and trace the fall-line upslope from there.

Climbing, we pass first through a bench with open peatland (red asterisk), probably on marine-terrace fines. Hard to reconcile that with the debris lobe, unless the slump happened at higher sea level, before bench-fines finished building. That pushes back both debris lobe and bog to early Holocene. Any landslide the magnitude of 20231120 would've erased that bog. So this slope has been stabilized for >10,000 years.

Upslope, asterisks mark a few small gaps, maybe 3 canopies wide, in the future mudslide path. But nothing trenched or linear, as seen farther southward. Maybe that geriatric old growth wasn't so doddering after all.