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ESS 505: The Cryosphere

**Term Project Topic Selection**

“Please select a topic by the discussion section on Friday October 30th. Turn in half a page with cryospheric topic of interest, an idea or question to investigate, and a few bullets detailing your general approach. We will meet approximately once a week (after Friday lab or at another scheduled time) to discuss progress and/or issues. You are free to change topics as your work progresses.”

**Topic:** For my topic I would like to look at using InSAR to measure SWE.

**Data:** Use Sentinel-1 data in OpenSARlab. Could possibly look at GLISTIN data if needed.

**Location:** Might look around South Cascade Glacier area because of ground truth availability and snow on both glaciated and non-glaciated areas. Could look at Grand Mesa area for calibration. Look at wet vs dry snow, accumulation vs ablation areas.

**Starting place and resources:** Elias Deeb’s dissertation “ESTIMATING SNOW WATER EQUIVALENT (SWE) USING INTERFEROMETRIC SYNTHETIC APERTURE RADAR (INSAR)” from University of Utah in 2012. “SNOW MASS RETRIEVAL BY MEANS OF SAR INTERFEROMETRY” (Rott 2003). “InSAR for estimation of changes in snow water equivalent of dry snow” (T. Guneriussen 2001). “On the estimation of temporal changes of snow water equivalent by spaceborne SAR interferometry: a new application for the Sentinel-1 mission” (Conde 2019).

**Things to consider after talking with Knut:** Wet snow may be a problem on South Cascade Glacier, look at it anyway. Also potential locations could include some Alaska benchmark glaciers.