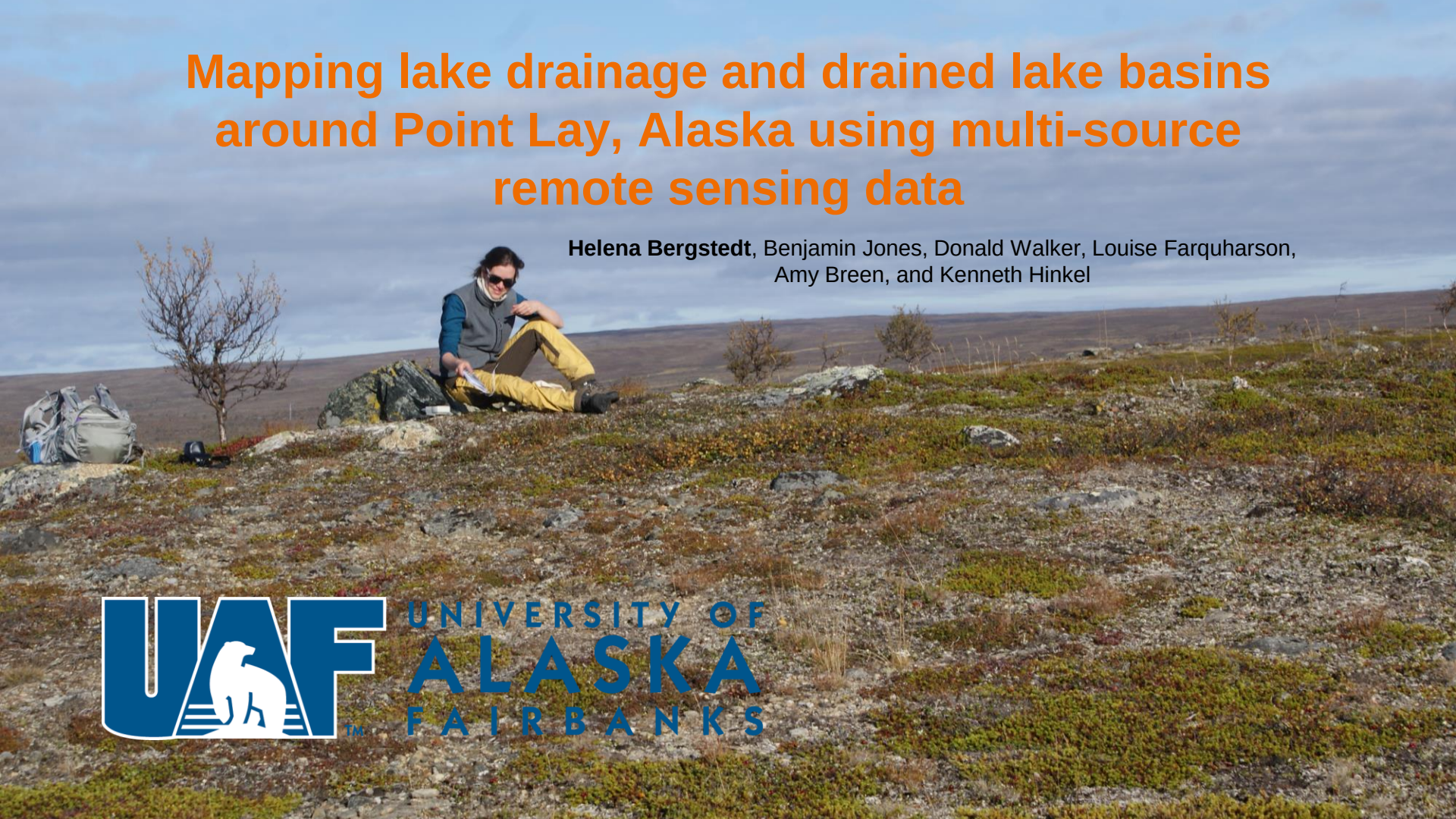
# Mapping lake drainage and drained lake basins around Point Lay, Alaska using multi-source remote sensing data

**Helena Bergstedt**, Benjamin Jones, Donald Walker, Louise Farquharson, Amy Breen, and Kenneth Hinkel



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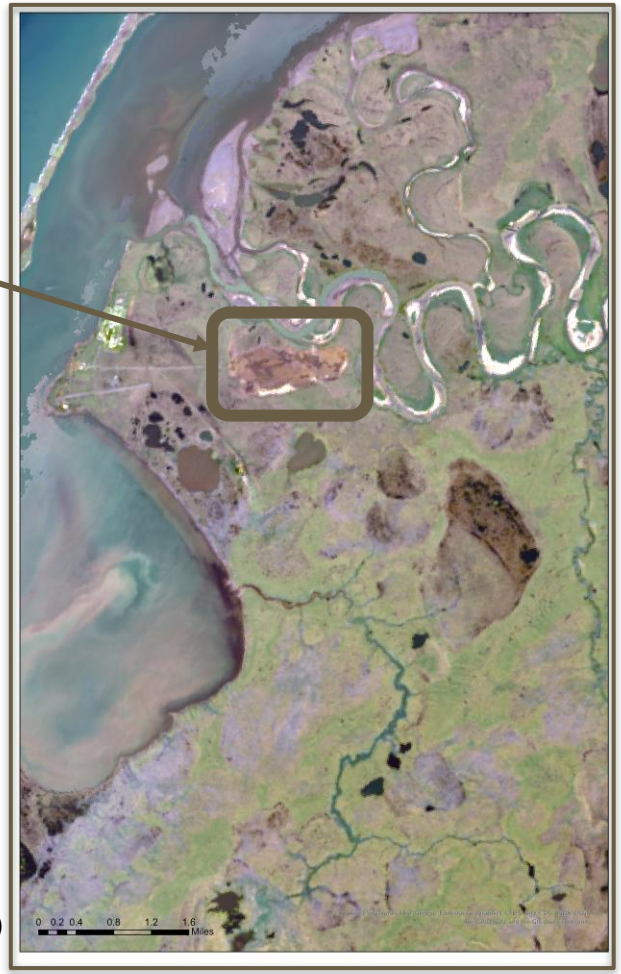
# Study area

- North Slope of Alaska, focussing on Point Lay

# Drained drinking water lake in Point Lay

- August of 2016: drinking water source for Point Lay drained during a period of intense rainfall
- village is seeking alternative sources for a freshwater supply



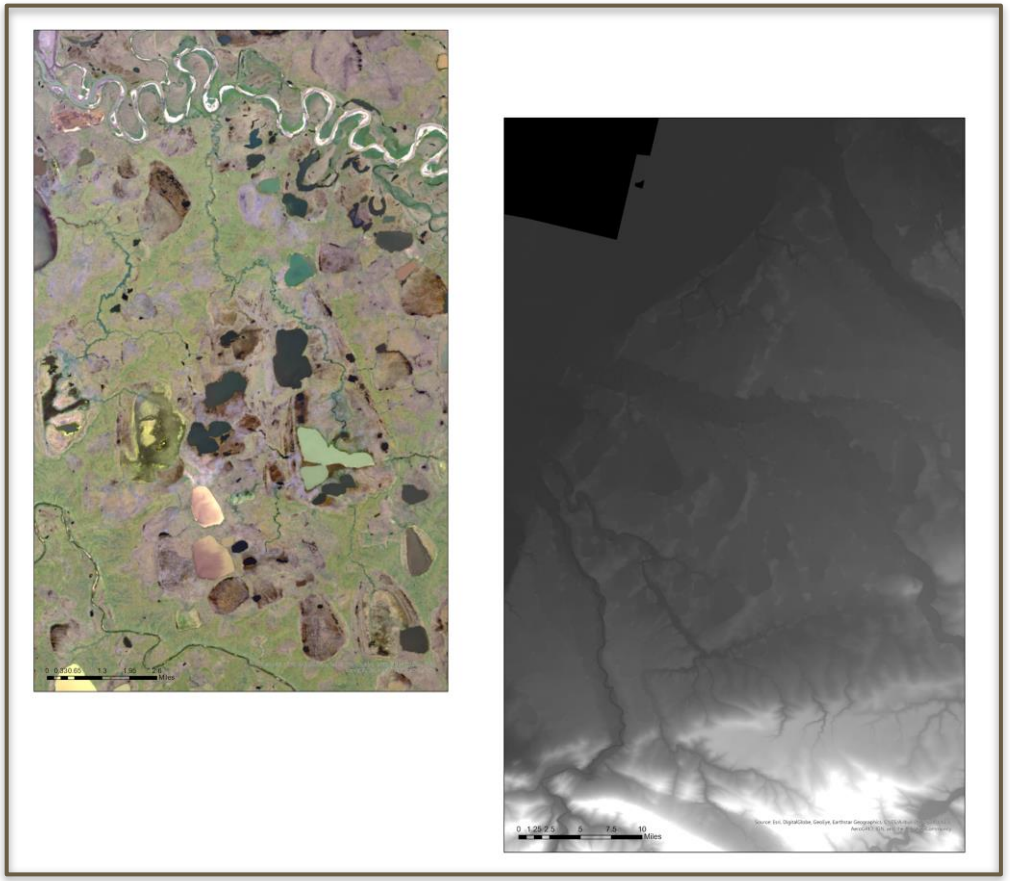

Landsat 8 mosaic
(2019 July-August acquisitions)

# Plan before COVID19

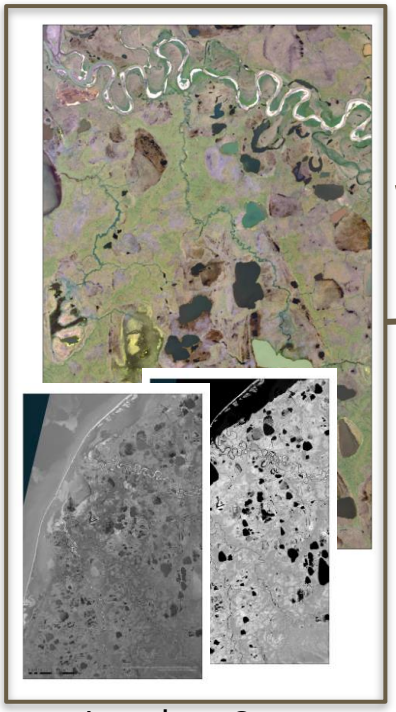
- Fieldwork + visiting Point Lay was planned for April 2020
- Presenting preliminary results to the community and the school
- Gathering input from the community on the preliminary results and the way forward

# Data sources at this stage

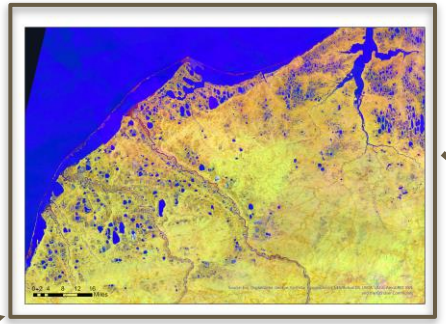
- Landsat 8
  - Processed on Google Earth Engine
- Arctic DEM
  - 10m resolution



# Workflow



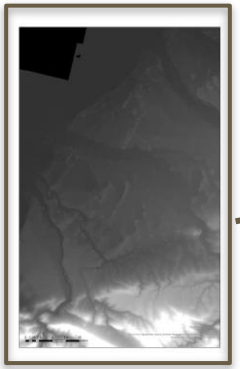
Landsat 8



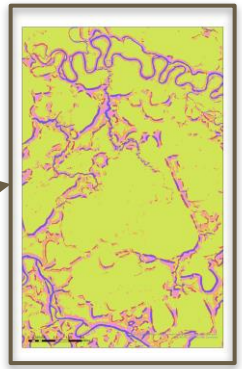
Tasseled Cap Index
(Greenness, Brightness, Wetness)

Classification of drained lake basins using eCognition

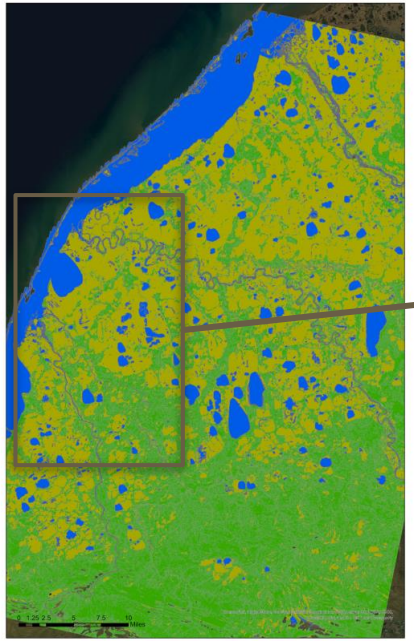
Arctic DEM



Topographic positioning index



# Preliminary results

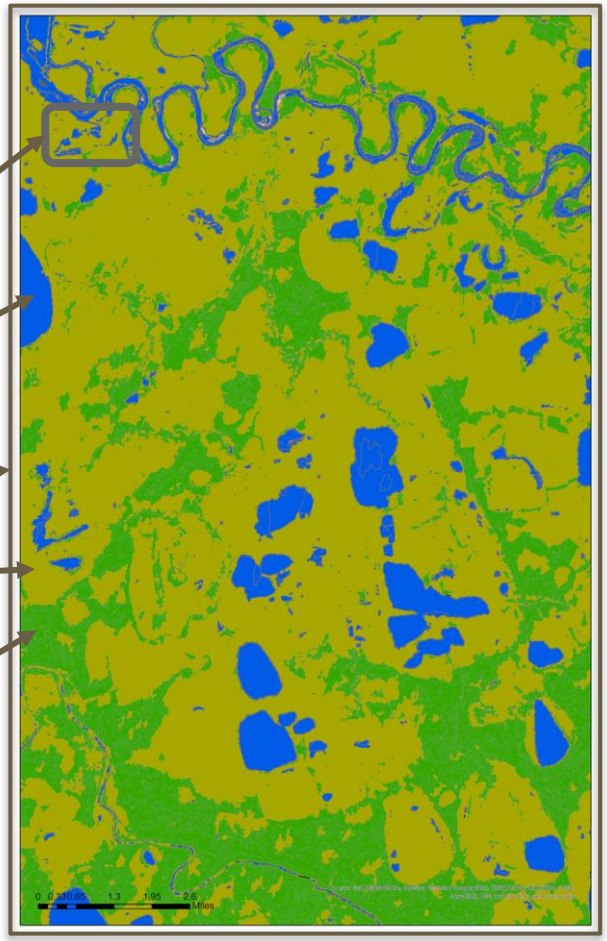


Recently drained lake basin

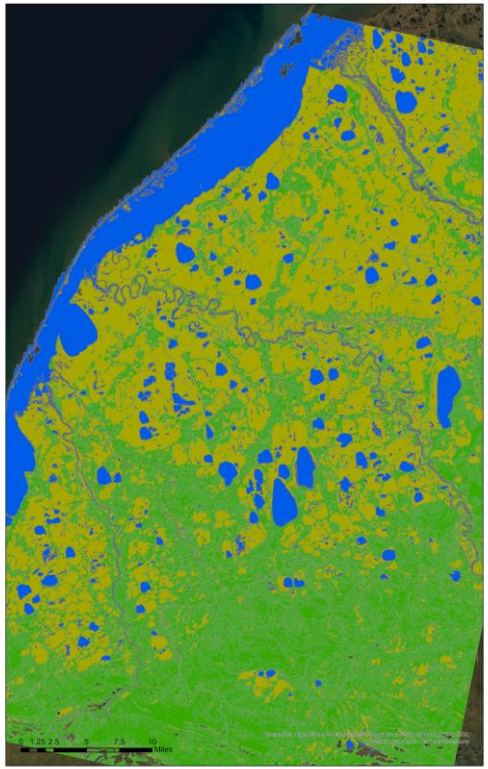
Surface water

Drained lake basins

Residual surfaces



# Next steps and plan considering COVID19



- Working on engaging with the community remotely
- Expanding this workflow to the North Slope using Google Earth Engine
- Including high resolution imagery for selected sites
- Exploring time series analysis of drained lake basins for selected sites

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Helena Bergstedt[1], Benjamin Jones[1], Donald Walker[2], Louise Farquharson[3], Amy Breen[4], and Kenneth Hinkel[5]

1: Institute of Northern Engineering, Water and Environmental Research Center, University of Alaska Fairbanks, Fairbanks, Alaska, USA (hbergstedt@alaska.edu); 2: Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, AK, USA; 3: Geophysical Institute Permafrost Laboratory, University of Alaska Fairbanks, Fairbanks, AK, USA; 4: International Arctic Research Center, University of Alaska, Fairbanks, AK, USA; 5: Michigan Technological University Houghton, MI United States