

# Mapping the drainage pattern of Canadian shield (Baker Creek) with realistic rainfall data

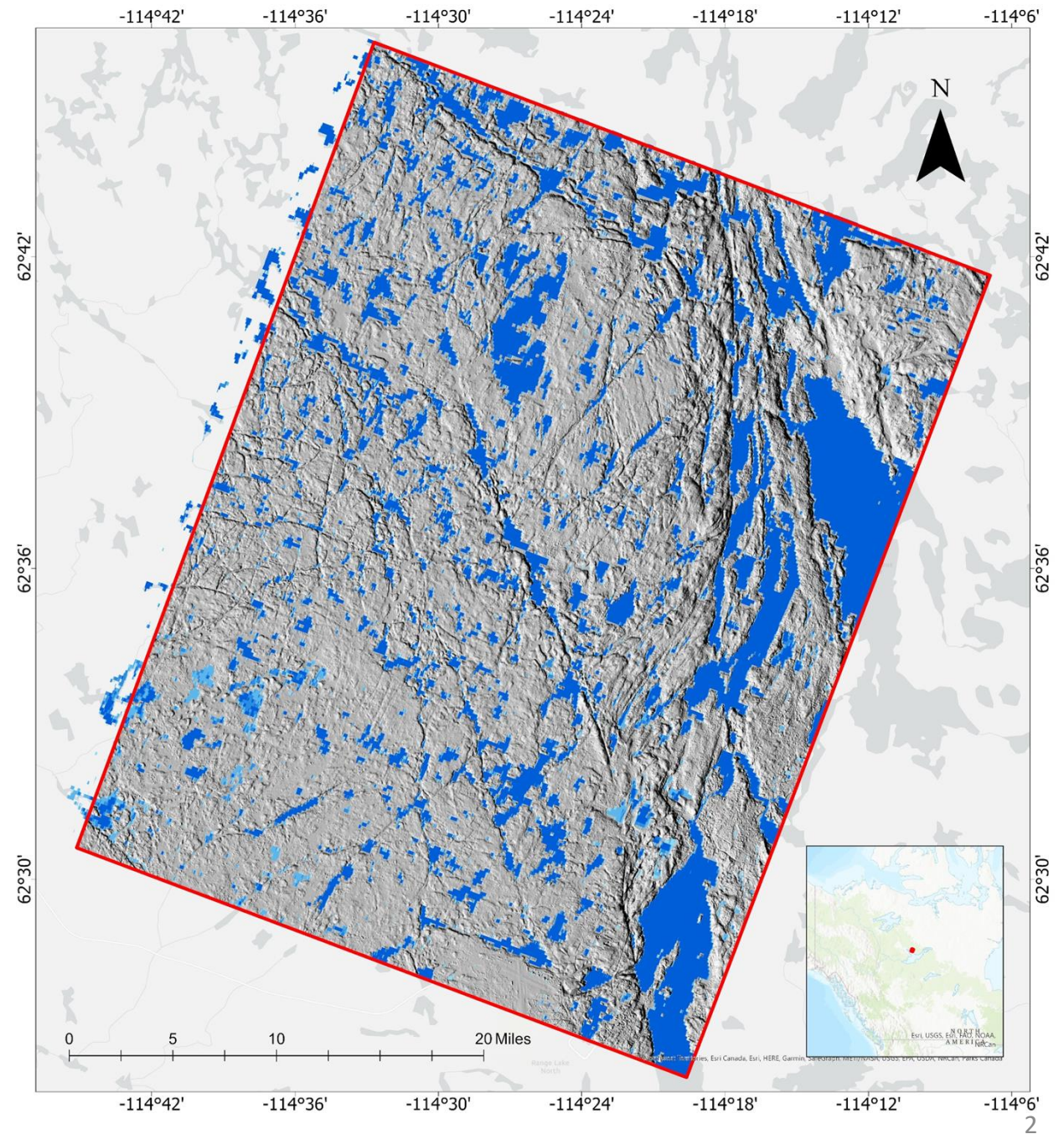
GPM Mentorship Program

Nimisha Wagle

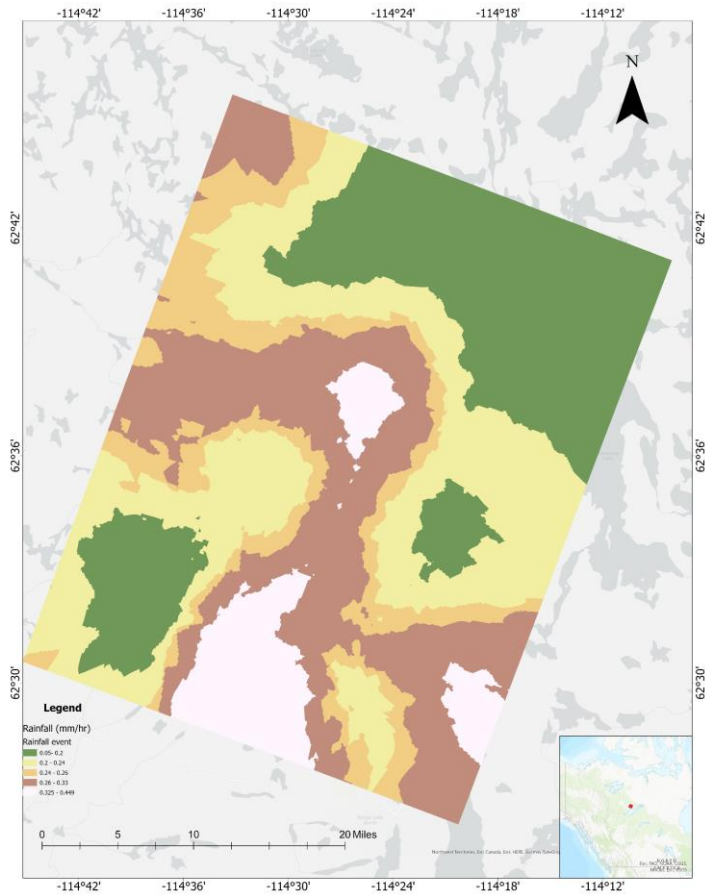
Brown University

# Initial work area: Baker Creek, N.W.T.

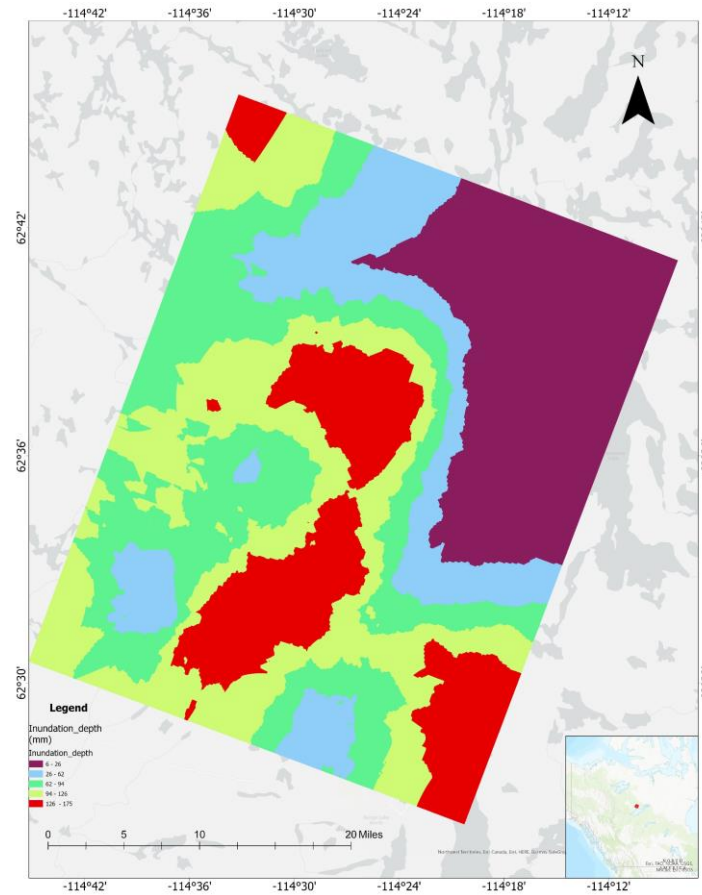
- Located in the sub-Arctic Canadian Shield near Yellowknife, N.W.T.
- Fill-and spill hydrology is well documented (e.g. Spence and Woo, 2003; 2006; Spence, 2018)
- Well-imaged by high resolution DEMs (ArcticDEM)



- Inundation depth= Rainfall duration(50 hr) \* Rainfall intensity

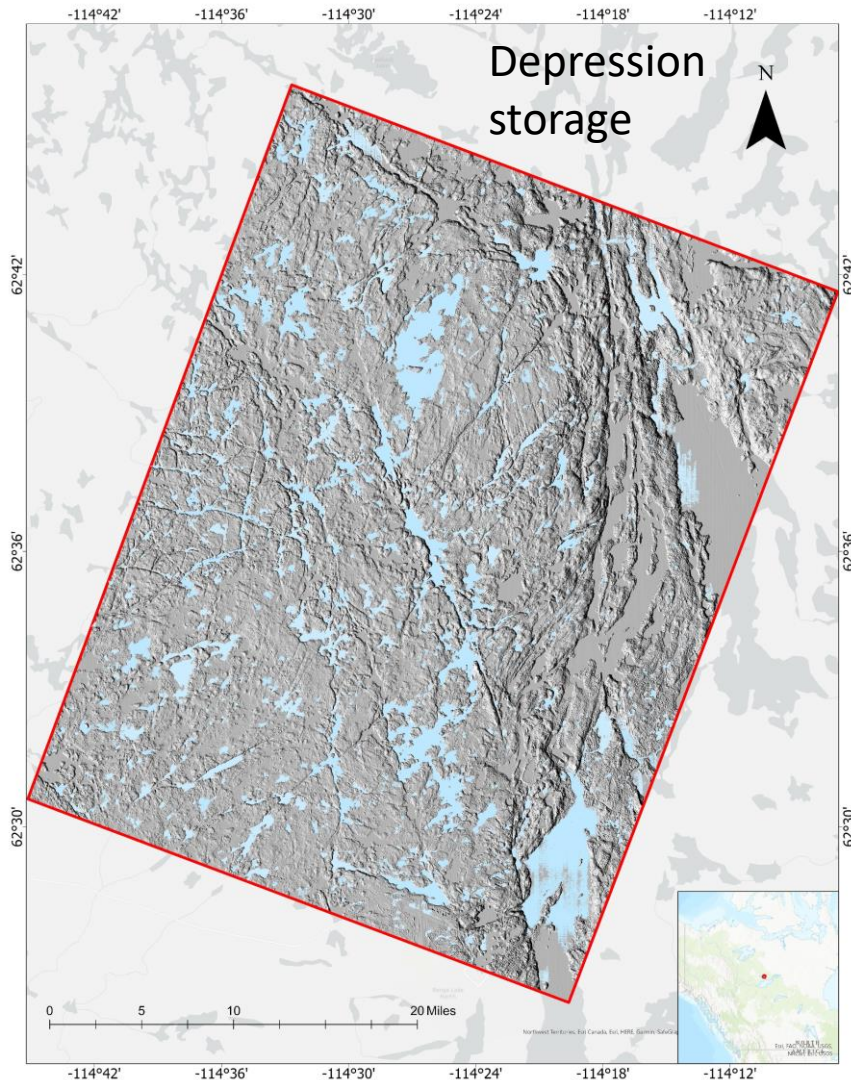


Rainfall intensity map



Inundation depth map

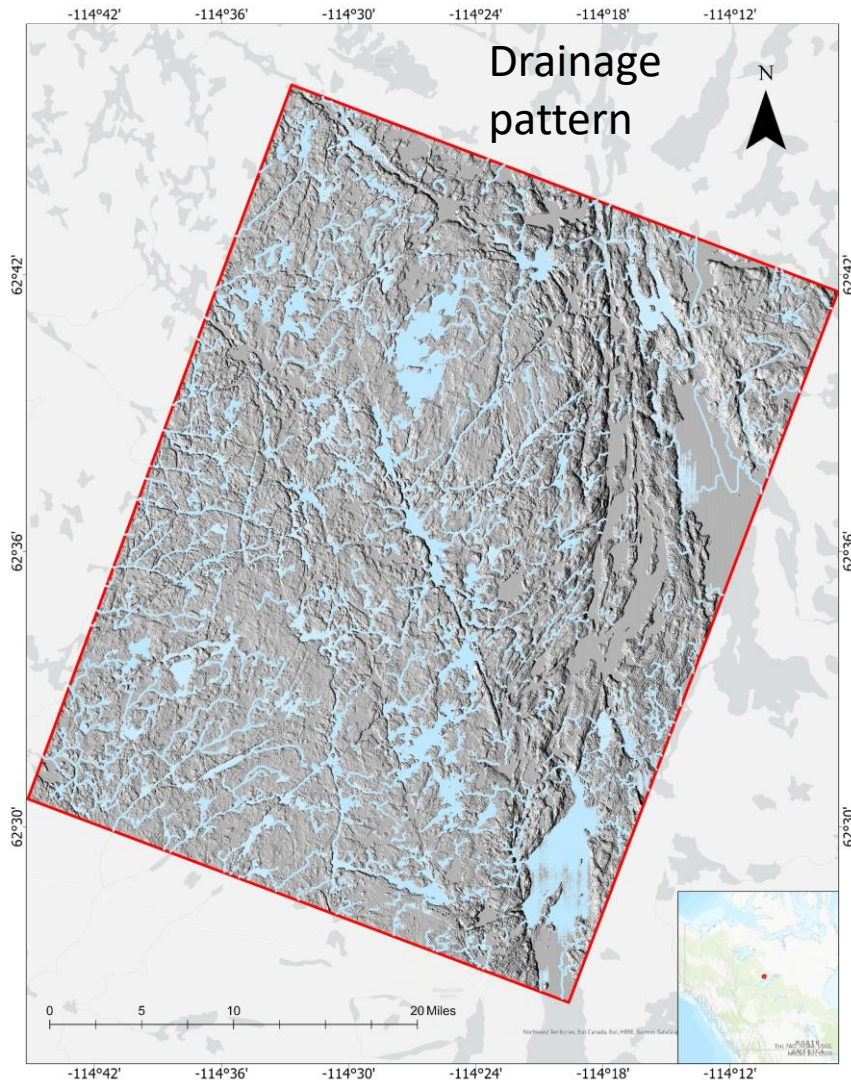
# Methodology and data



## Methods

1. Subtract filled ArcticDEM from Original ArcticDEM for mapping Depressions
2. Map drainage patterns for different inundation depths in different part of Baker Creek region using least cost path

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# Conclusion

- Very few depressions are filled with realistic rainfall event in the baker creek region (45% of total depression storages).
- 900 new streams are formed with the realistic rainfall event with assumed rainfall duration.
- Future work will explore the potential sensitivity of CS drainage patterns to changing future water balance (Precipitation-Evaporation)

Thank you!!!