

# Climate-mediated coupling of hydrology and biogeochemistry on arctic hillslopes

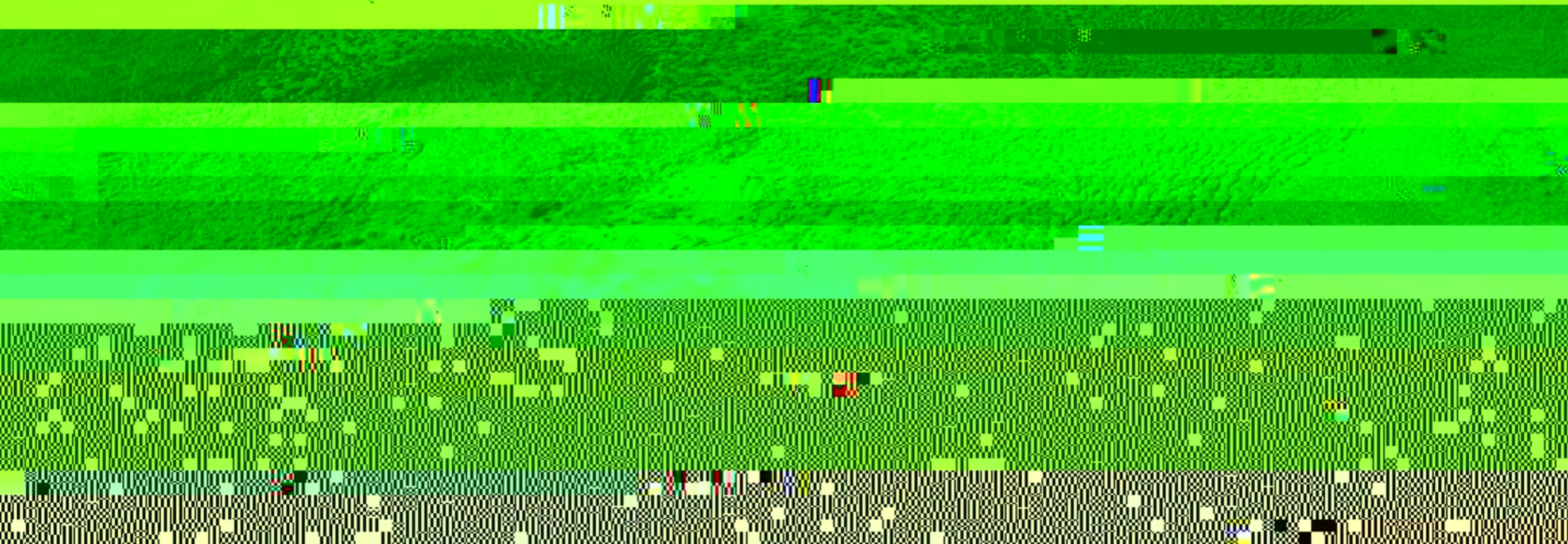
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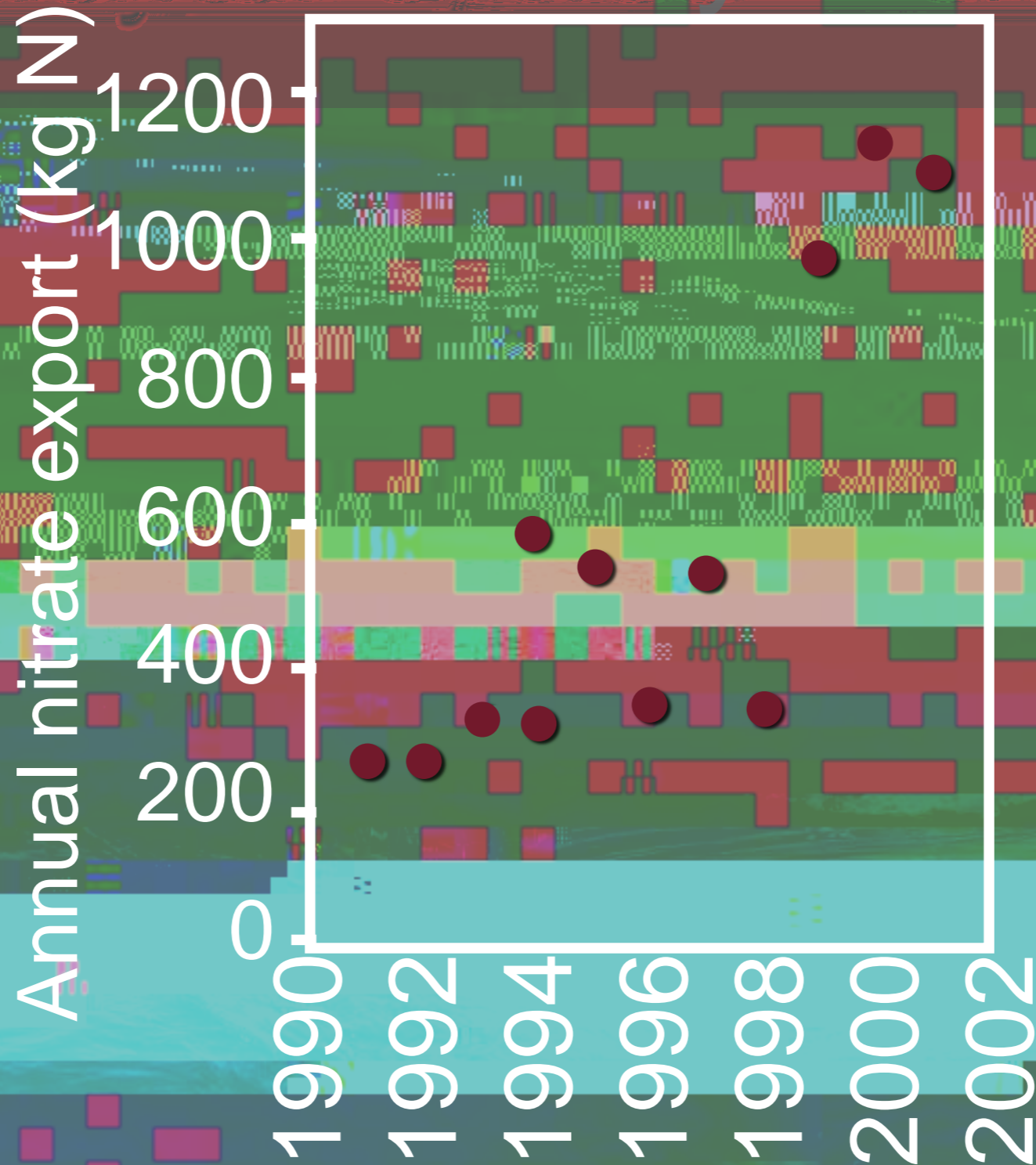
Teacher: Melissa Barker

Funding: Office of Polar Programs, National Science Foundation

# Changing hydrology and elemental cycles

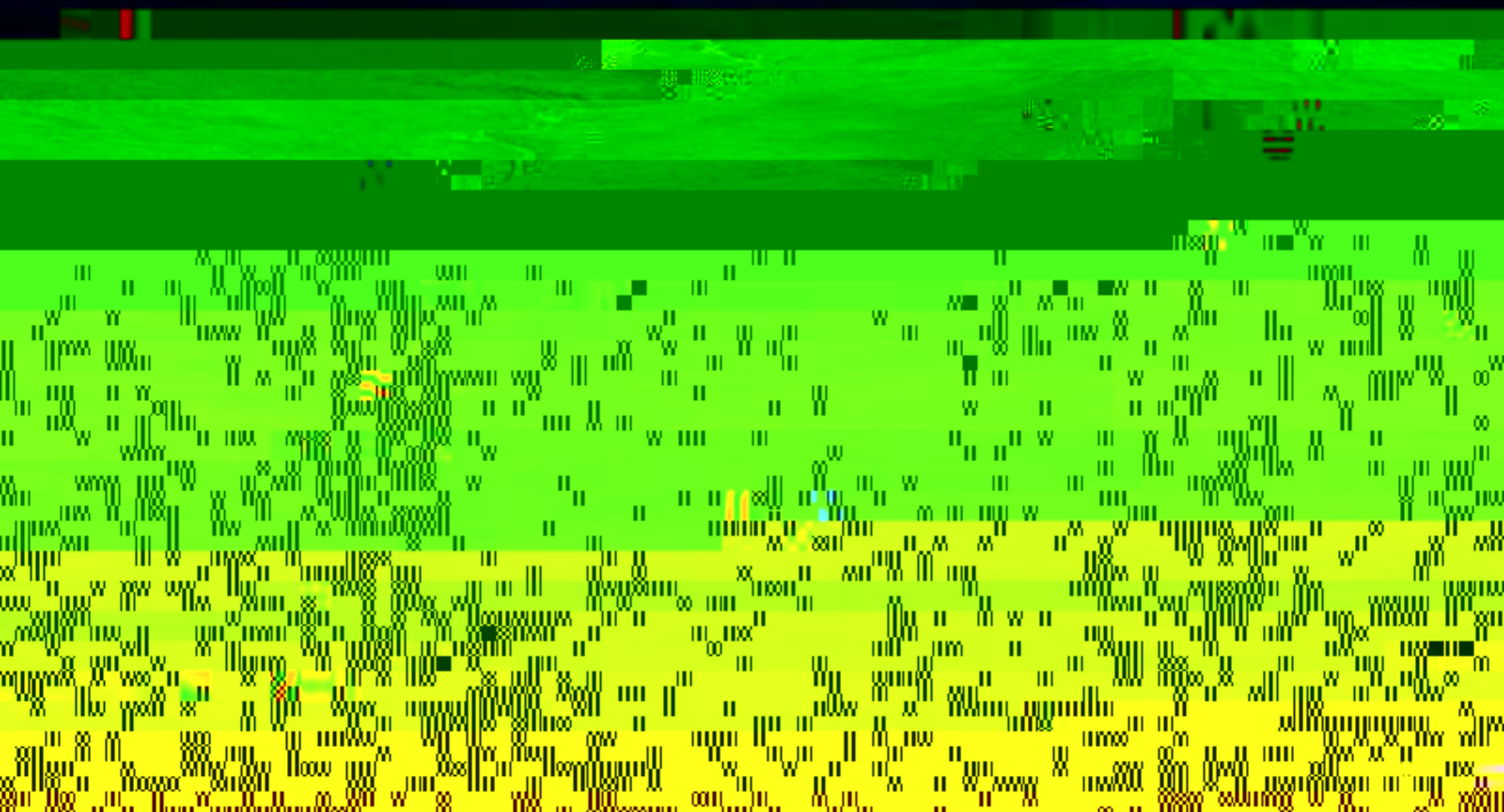


# Changing hydrology and elemental cycles



McClelland et al. 2007

# Water tracks



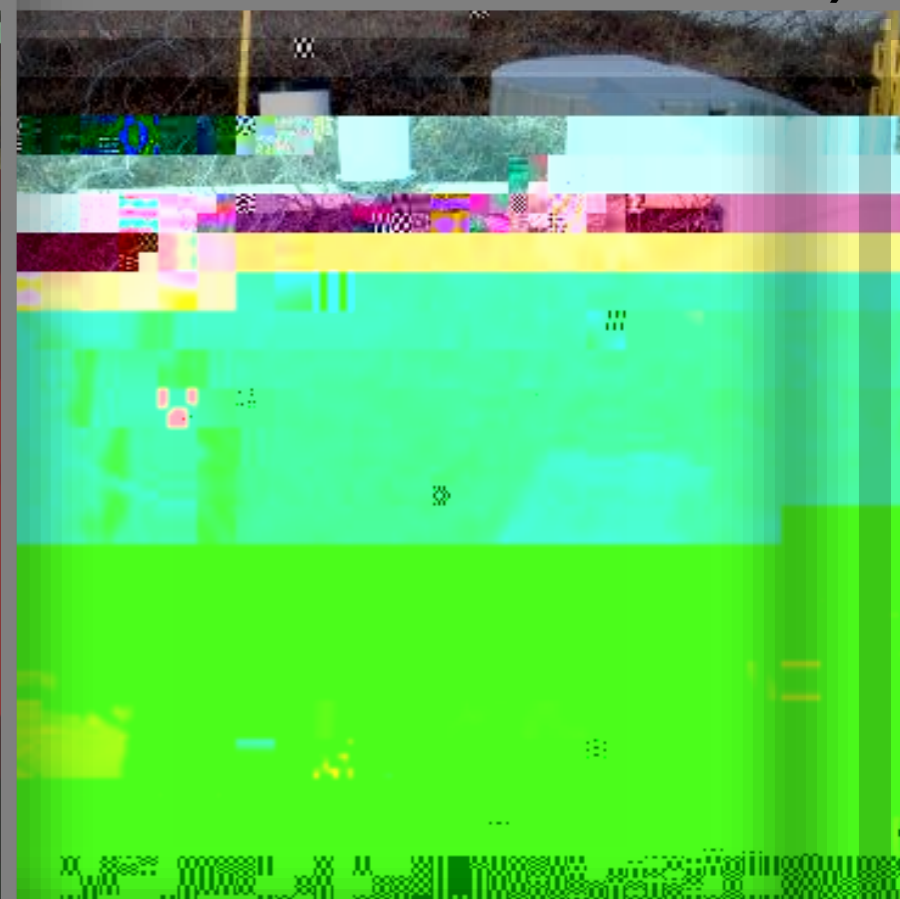
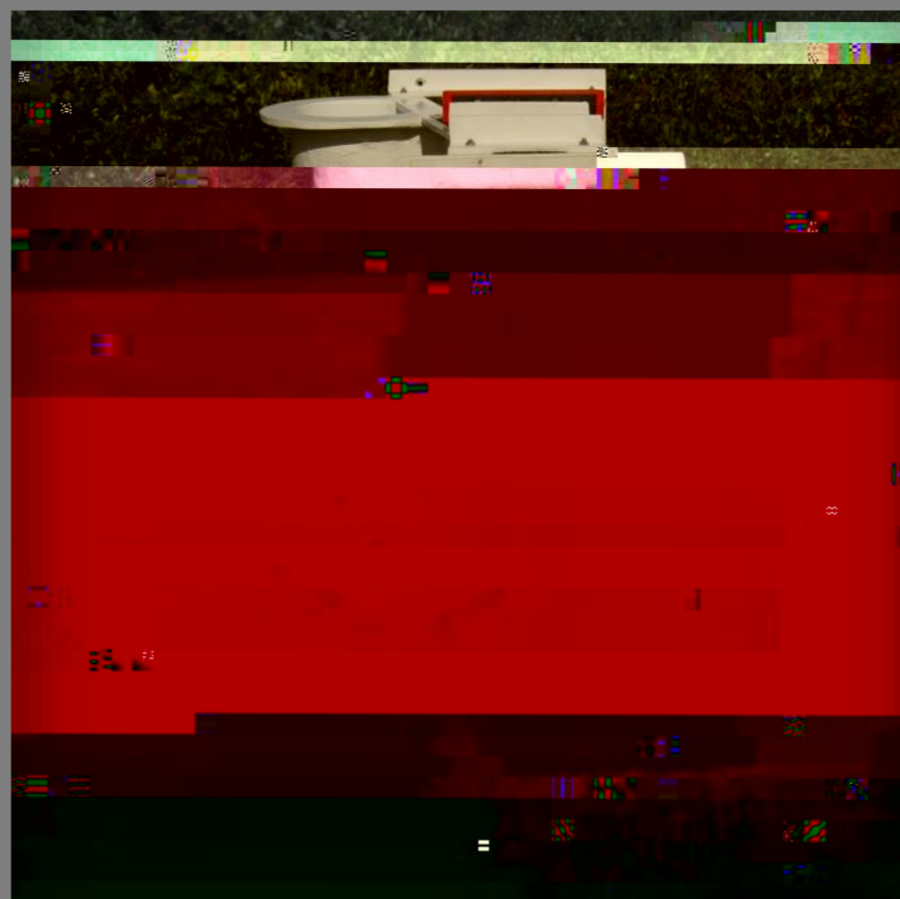
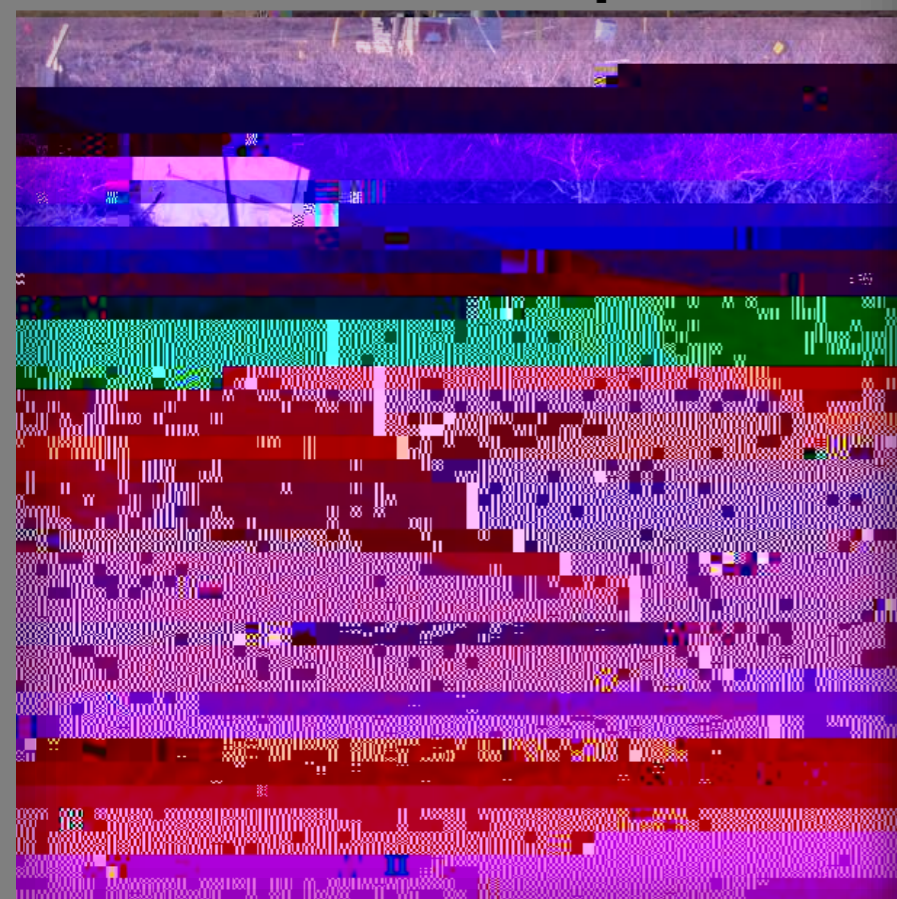
30% of the Upper Kuparuk basin (McNamara et al, 1997)

# Climate-mediated coupling of hydrology and biogeochemistry on arctic hillslopes

- How do storage and transport of water influence temporal patterns in fluxes of water and solutes from water tracks?

# Water tracks

- Continuously measure discharge (flumes fitted with pressure transducers)
- Monitor thaw and snow dynamics (thermocouples, manual surveys)
- Daily water chemistry (automated samplers)
- Storm chemistry (precipitation gauge triggered)
- Nutrient uptake experiments (surface and subsurface)

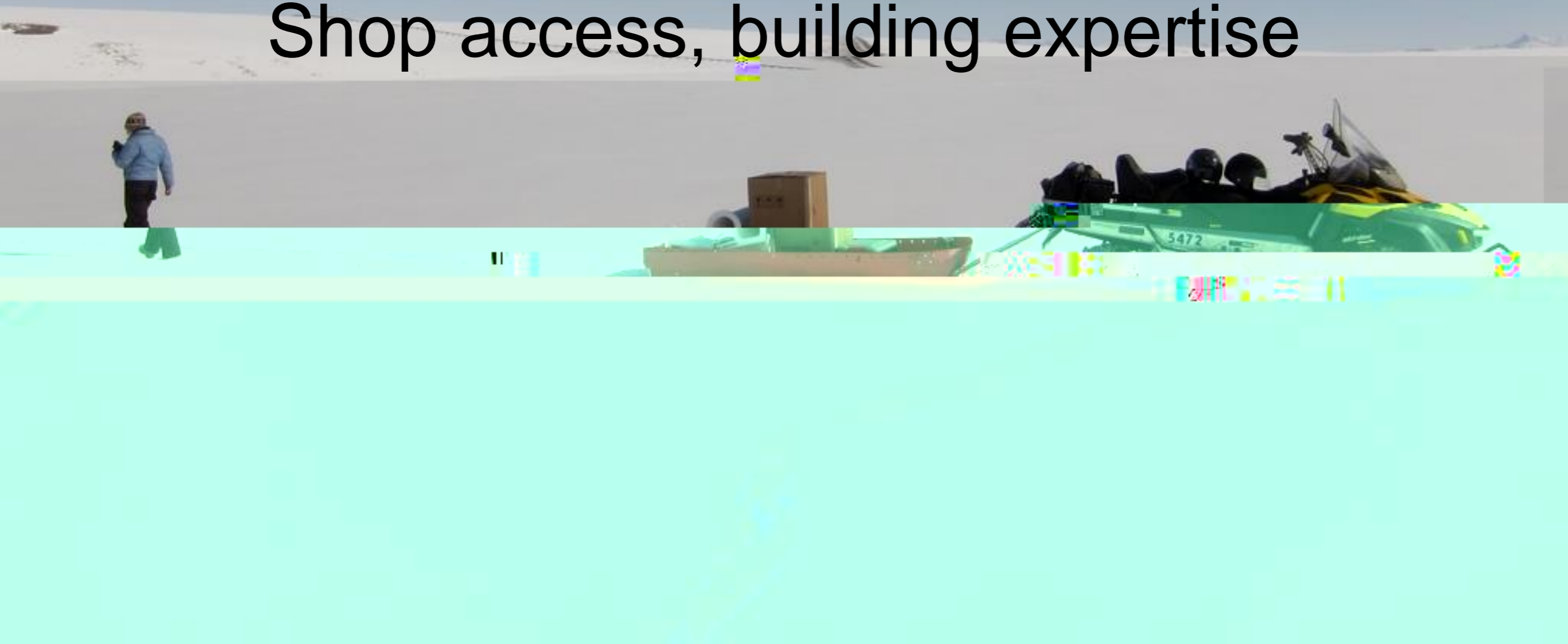


# Support to date

CPS: snowmachines, boardwalks

Fairbanks expeditor

Shop access, building expertise



# Support to date

Lab space:

water,

“wet” side/”dry” side

Office space (up to 5 people)

Key to have clear space assignments in advance, including sample storage



# Gear and personnel transport

- truck available for use in Fairbanks
- email notification when items arrive in Toolik or Fairbanks
- additional trucks FAI-Toolik and Toolik-SCC

# Science support

- refrigerator/freezer/space designated for natural abundance isotope work
- early (May) and late season (Sept) helo support
- support or streamlined permitting process

