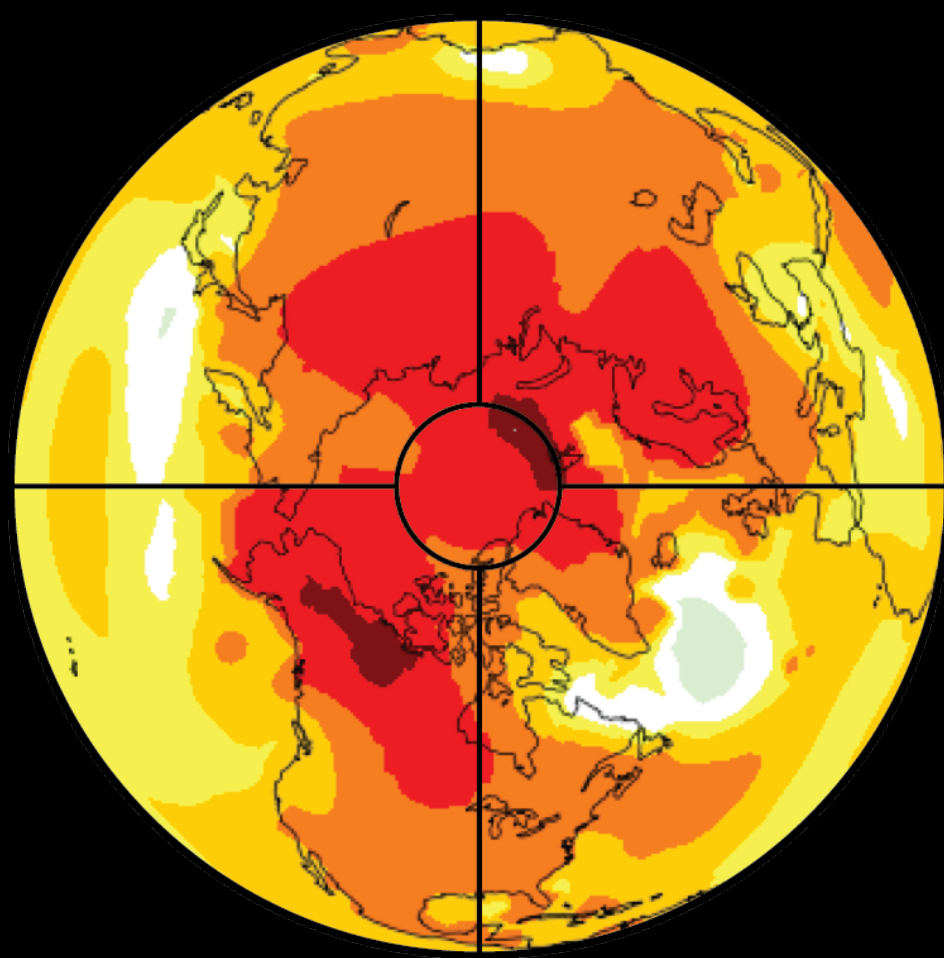


What happens in the North

doesn't stay in the North

Impacts and feedbacks to local, regional, and global systems

Vulnerability-Resilience Framework



Causes of Change



Changes to Ecosystems



Social Systems

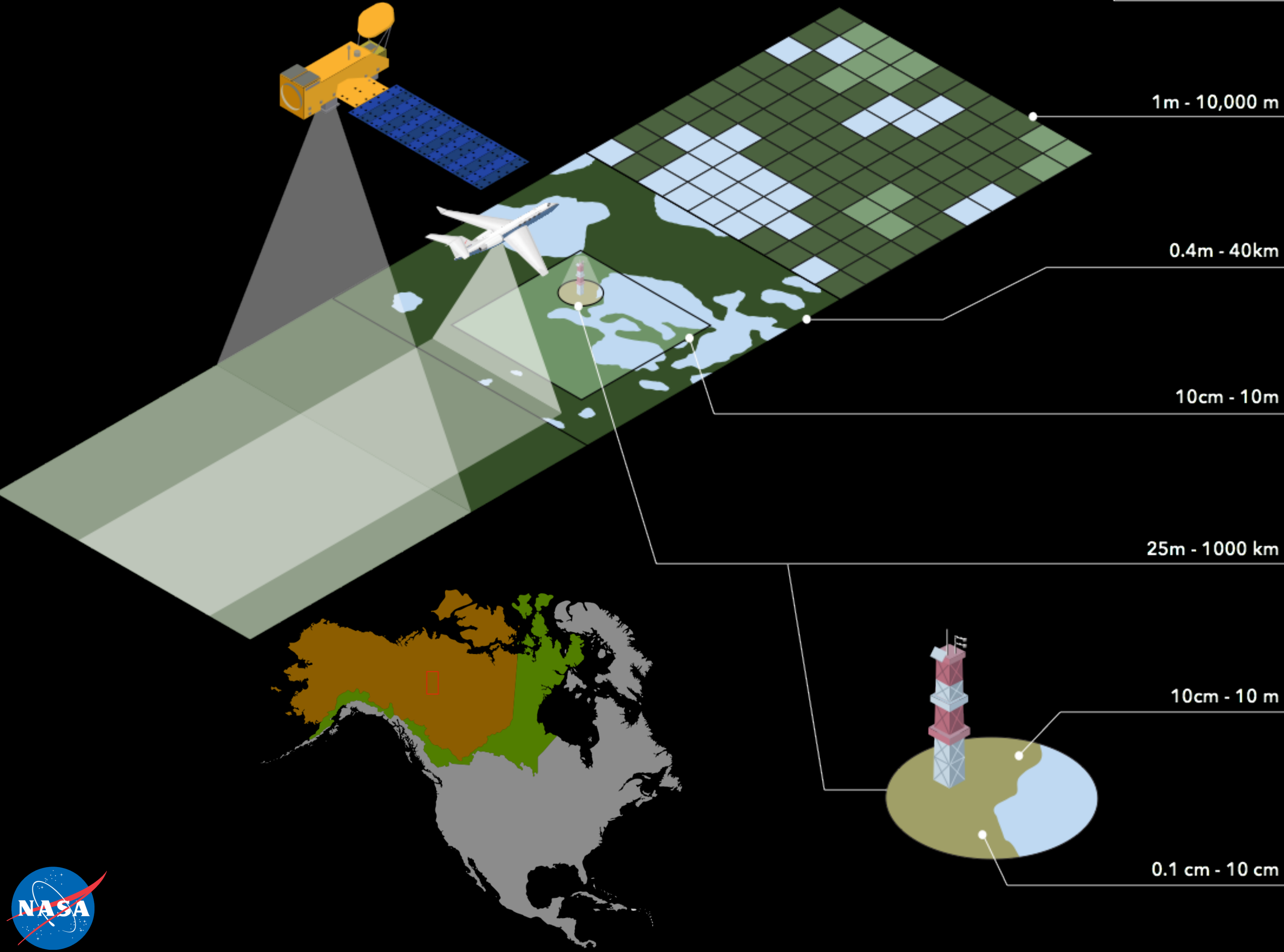
Ecosystem Services



SCALING STRATEGY

RESOLUTION

DISTANCE



1011010100
01001001001
11010101011
11010001110
10010100100
10010010101

MODEL

ORBITAL

~700 km

AIRBORNE

High Altitude: ~10,000 m - 20 km
Mid Altitude: ~2,000 m - 5 km
Low Altitude: ~300 m

TOWER

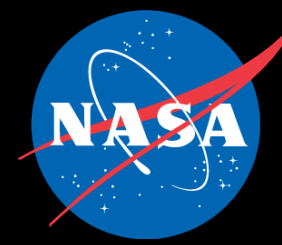
<50 m

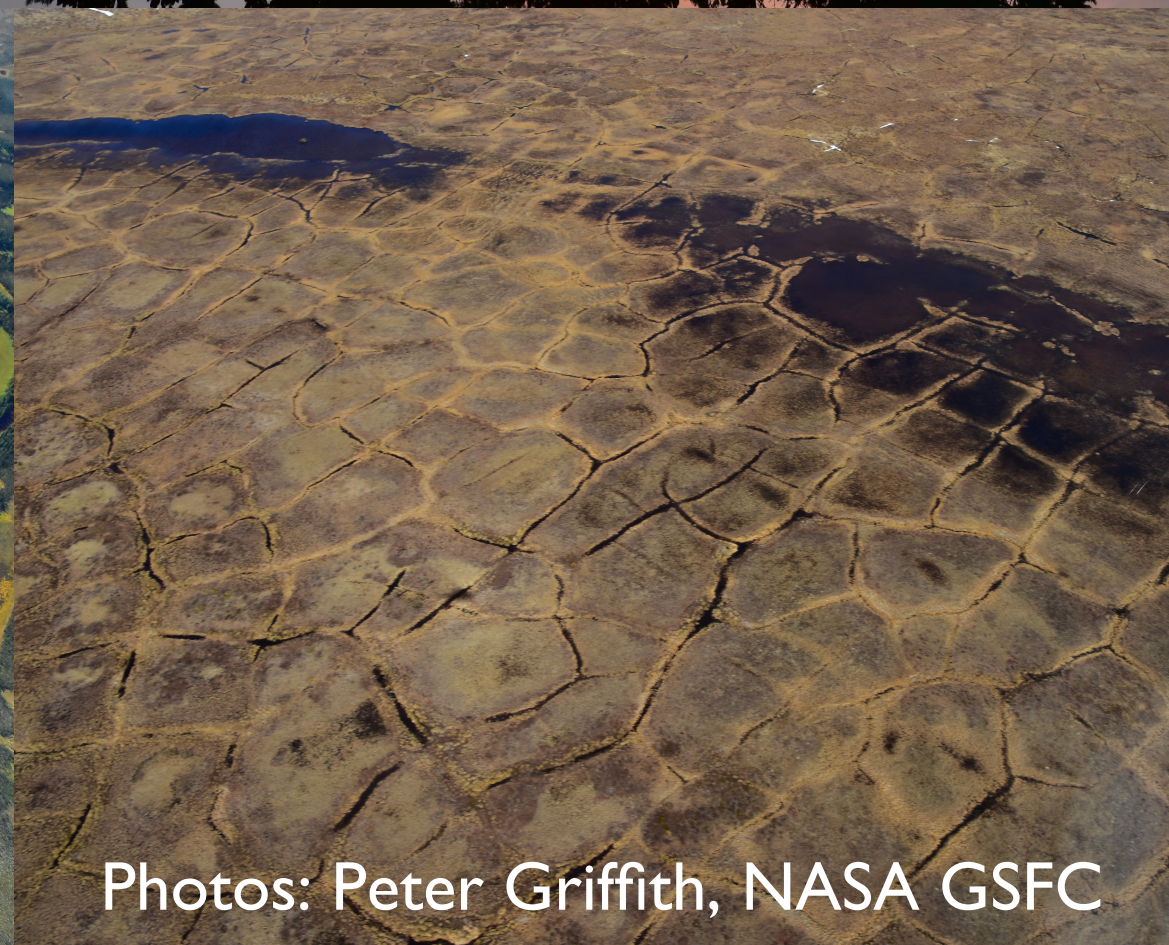
PLOT

<5 m

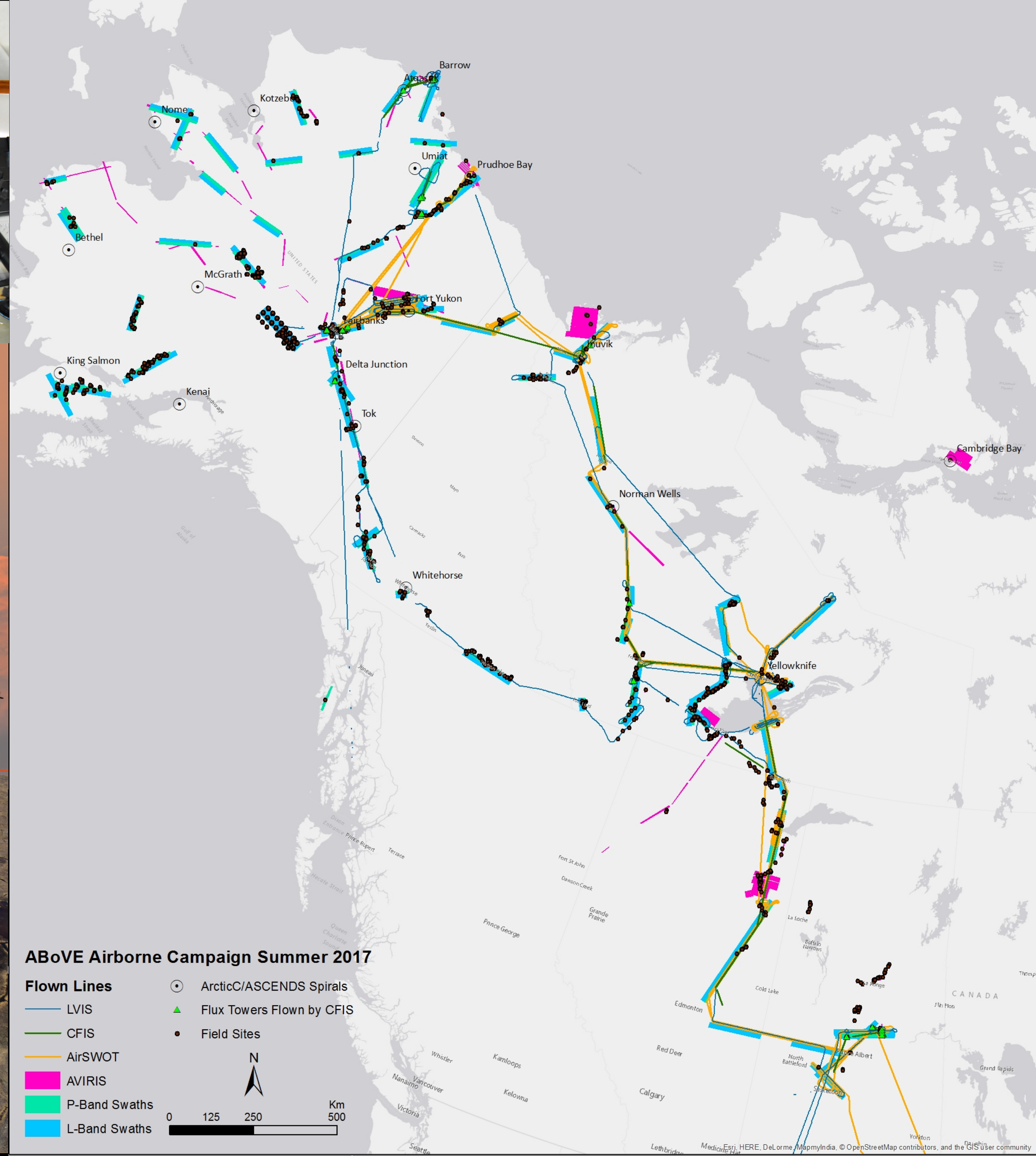
LEAF LEVEL

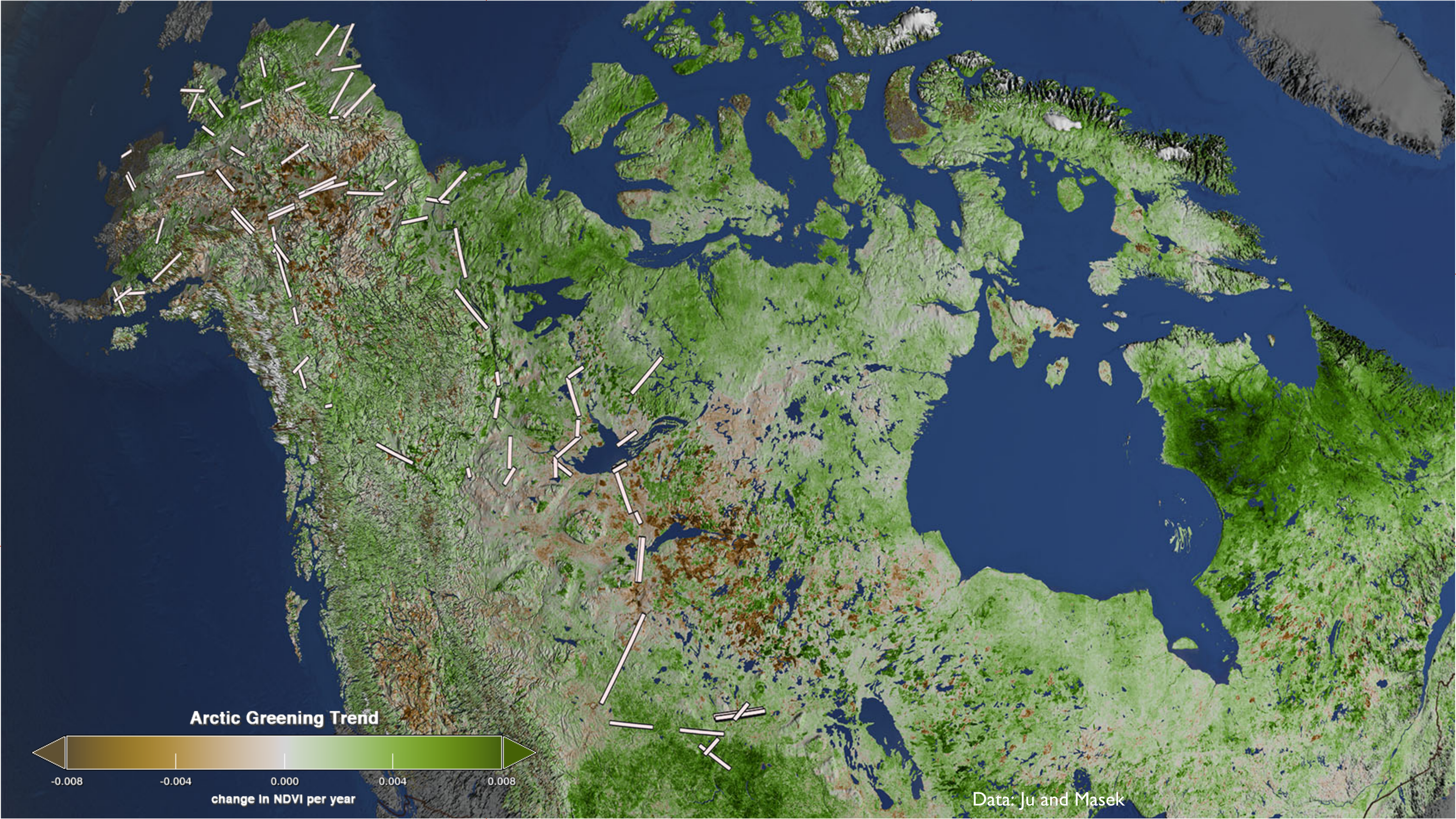
<<1 m





Photos: Peter Griffith, NASA GSFC





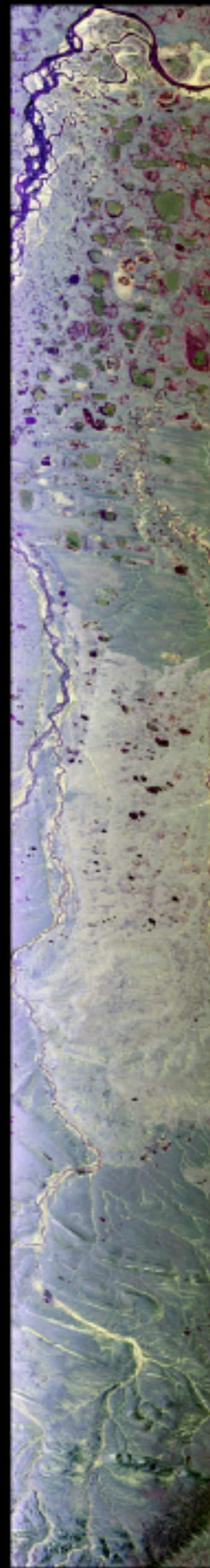
Arctic Greening Trend



Data: Ju and Masek



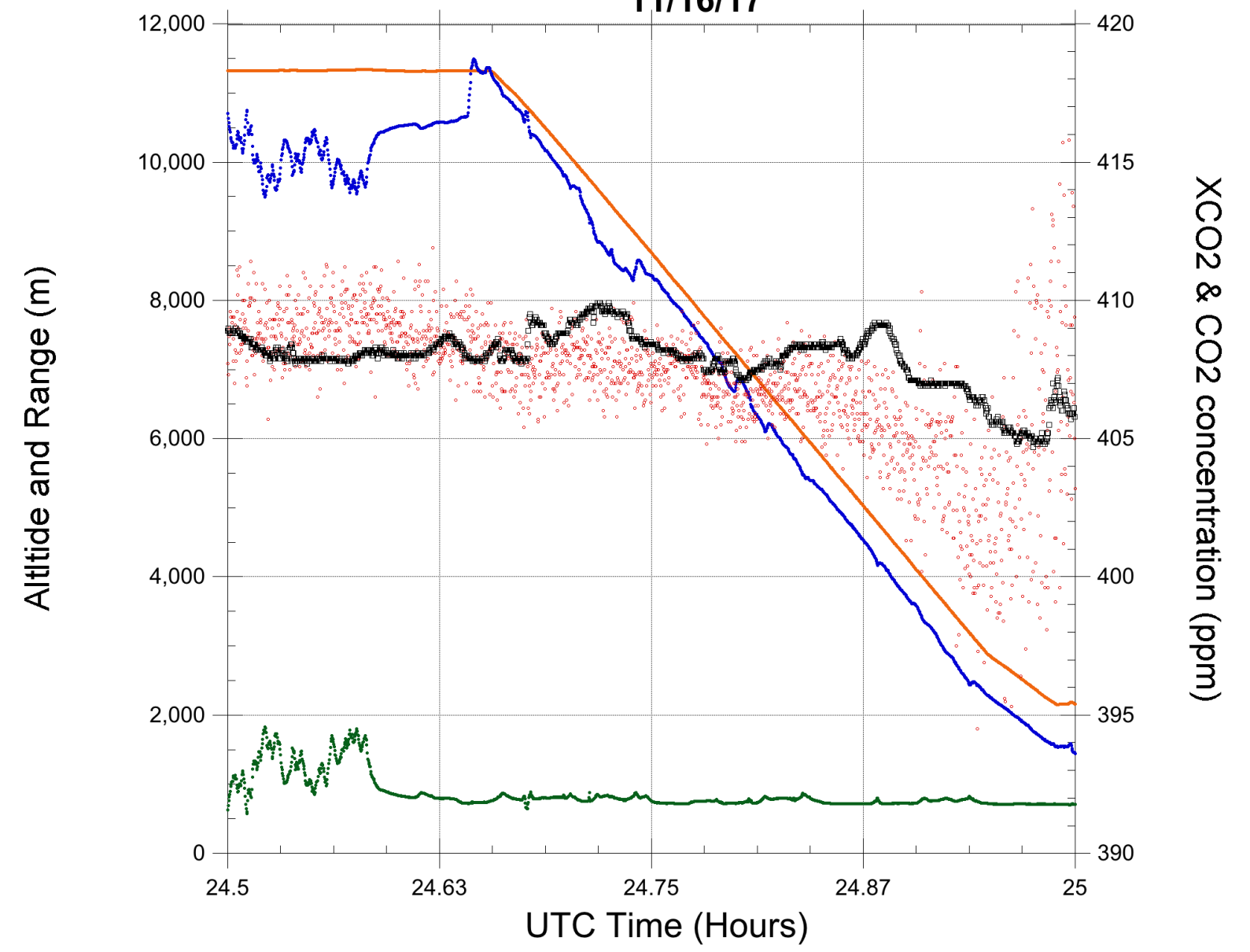
Anaktuvuk Tundra Fire Scar



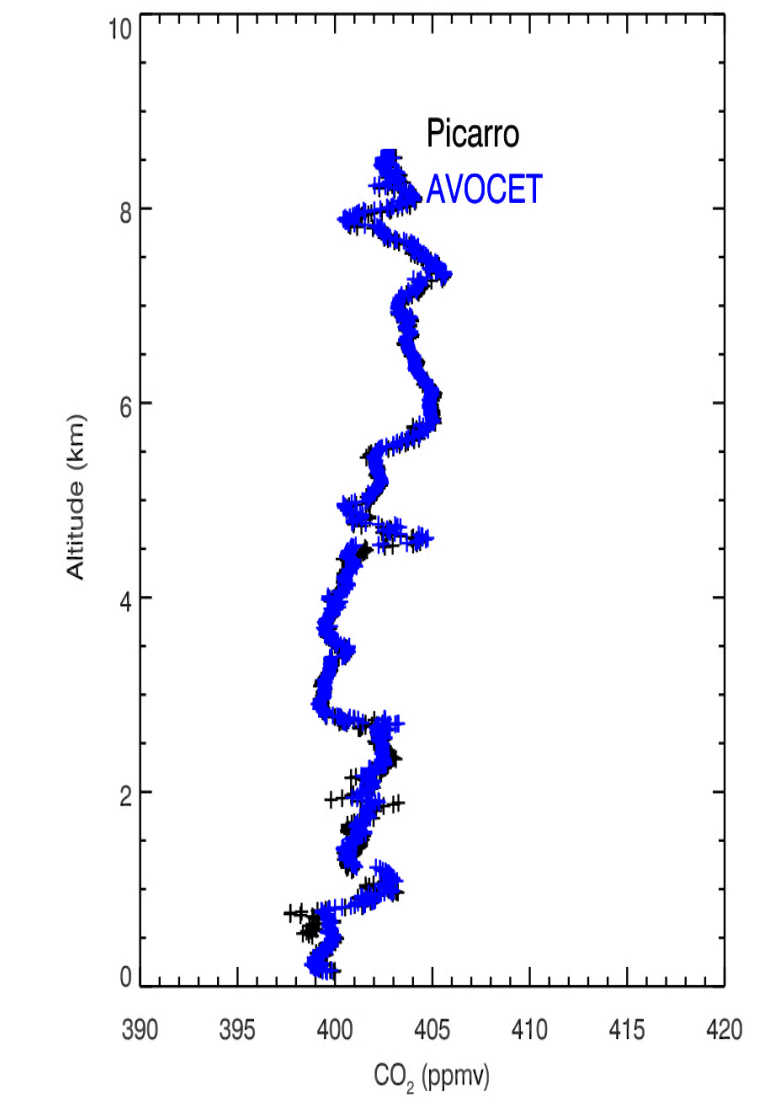
22 km



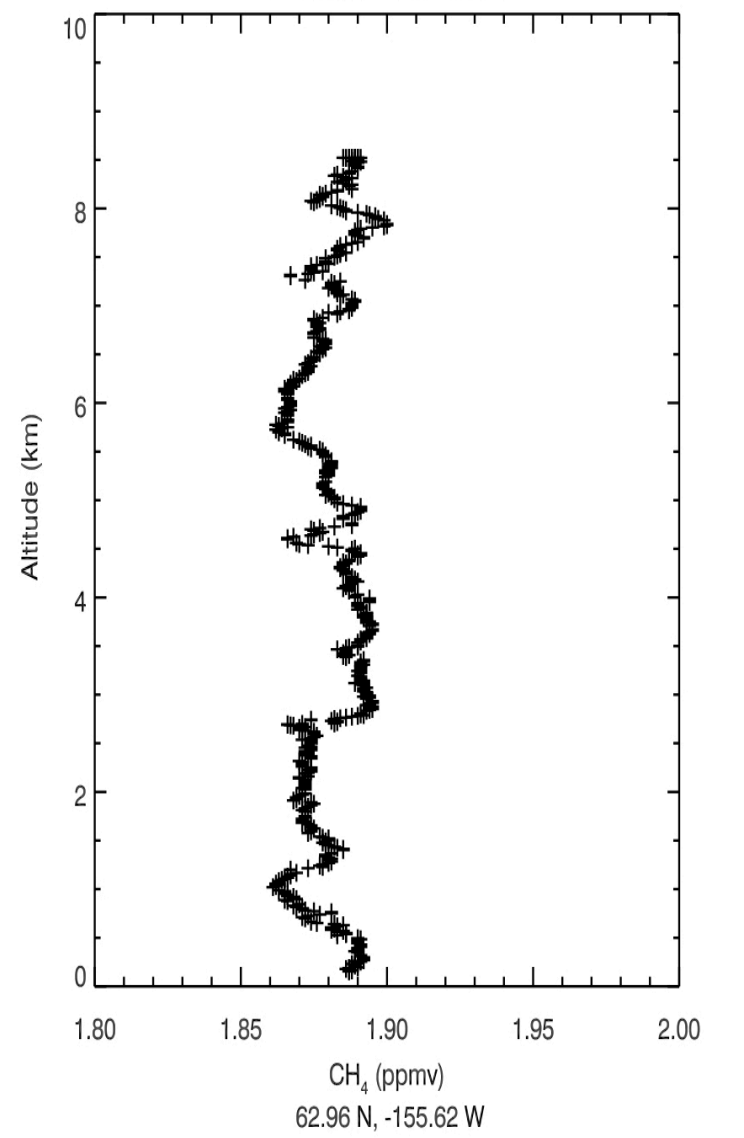
20170720 Engineering Flight Edwards Spiral
11/16/17



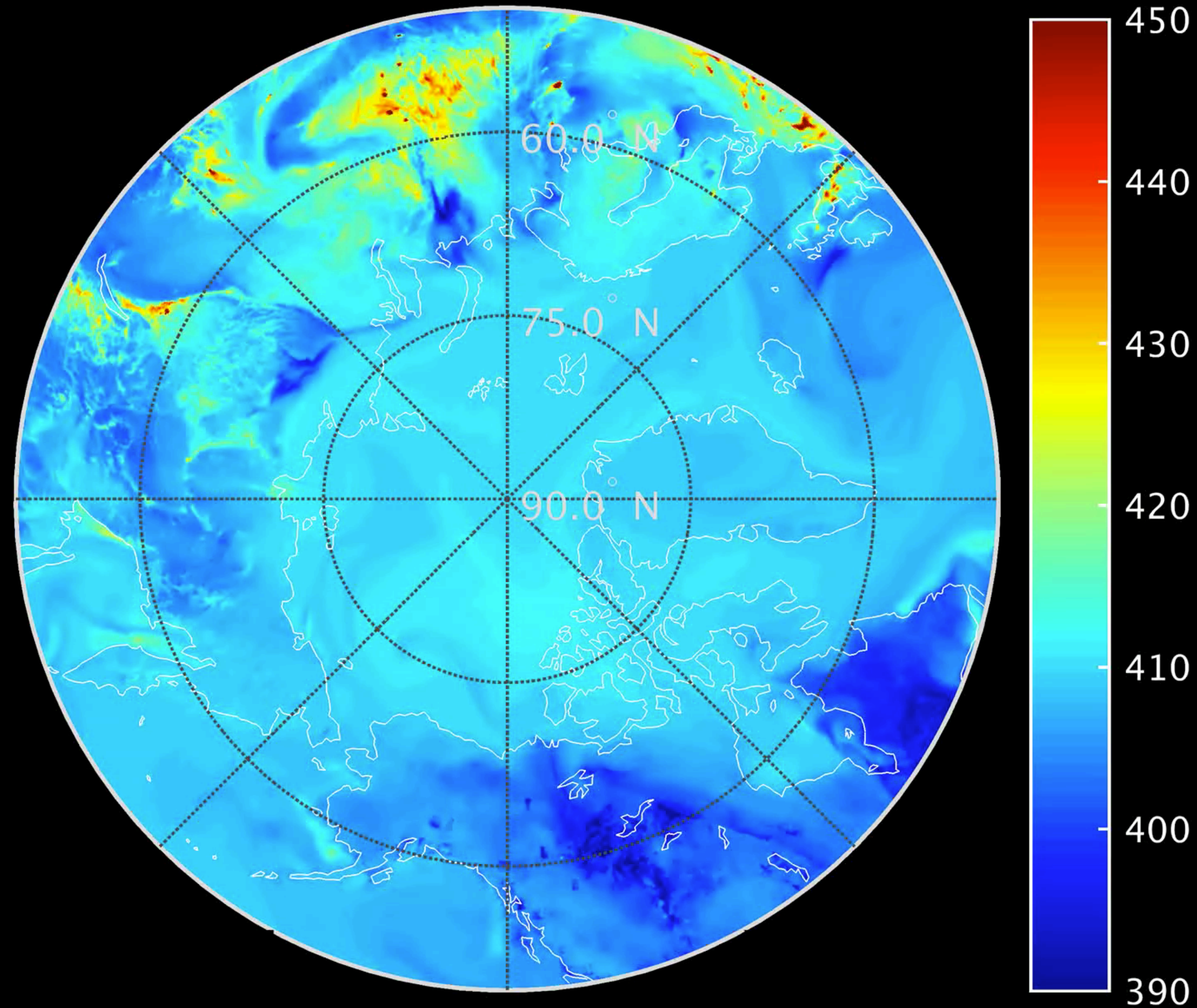
20170806



73400.0 - 74662.0 s

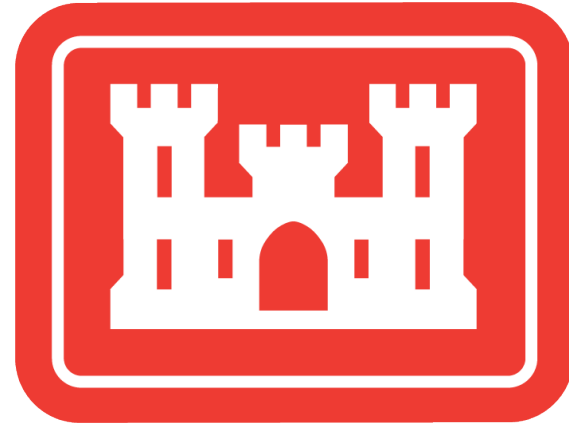
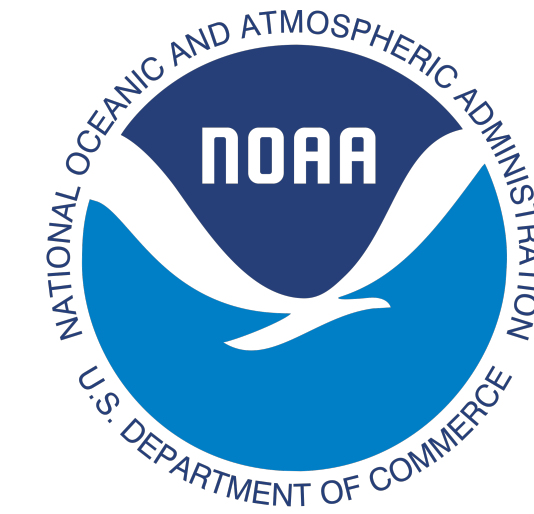


2017/06/01 00Z
GEOS surface CO₂ (dry-air ppmv)



Brad Weir and Abhishek Chatterjee (NASA GMAO)

US Partners are Essential to ABoVE's Success



56 US Universities/ Research Institutes
9 Federal Agencies
2 State/ Provincial/ Territorial
10 Private
1 Native/ Aboriginal Organizations

379. US Science Team Members
58 NASA Funded Projects
6 US Non- NASA Funded Projects

Canadian Partners are Essential to ABoVE's Success

Polar Knowledge Canada
Environment and Climate Change Canada
Natural Resources Canada
Canadian Centre for Mapping & Earth Observation
Canadian Space Agency
Parks Canada



Government of
Northwest Territories
Gouvernement des
Territoires du Nord-Ouest



19 Canadian Universities

10 Canadian-funded Projects

Over 100 Scientists





Photo: Peter Griffith, NASA GSFC