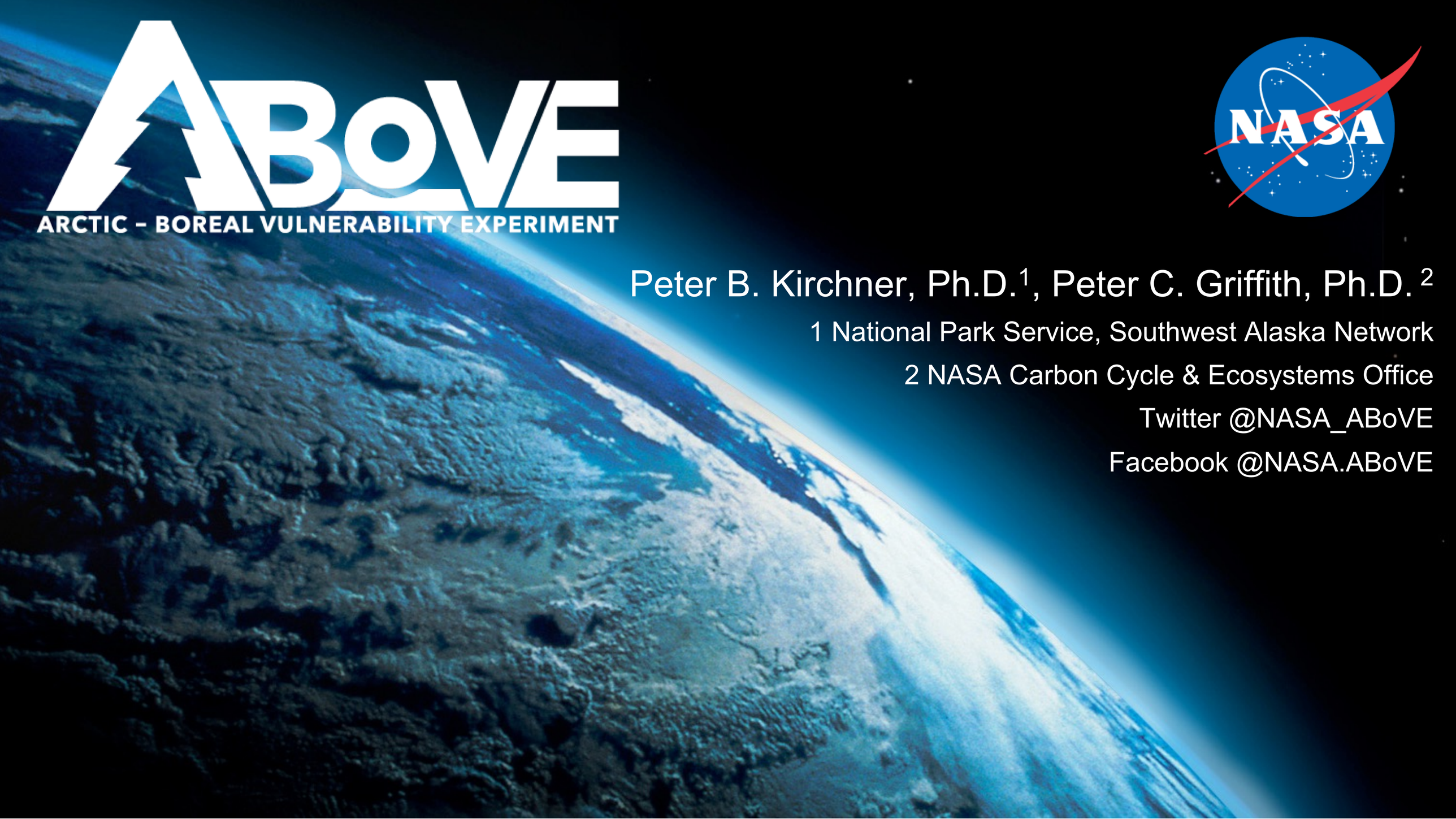

Peter B. Kirchner, Ph.D.[1], Peter C. Griffith, Ph.D. [2]

1 National Park Service, Southwest Alaska Network

2 NASA Carbon Cycle & Ecosystems Office

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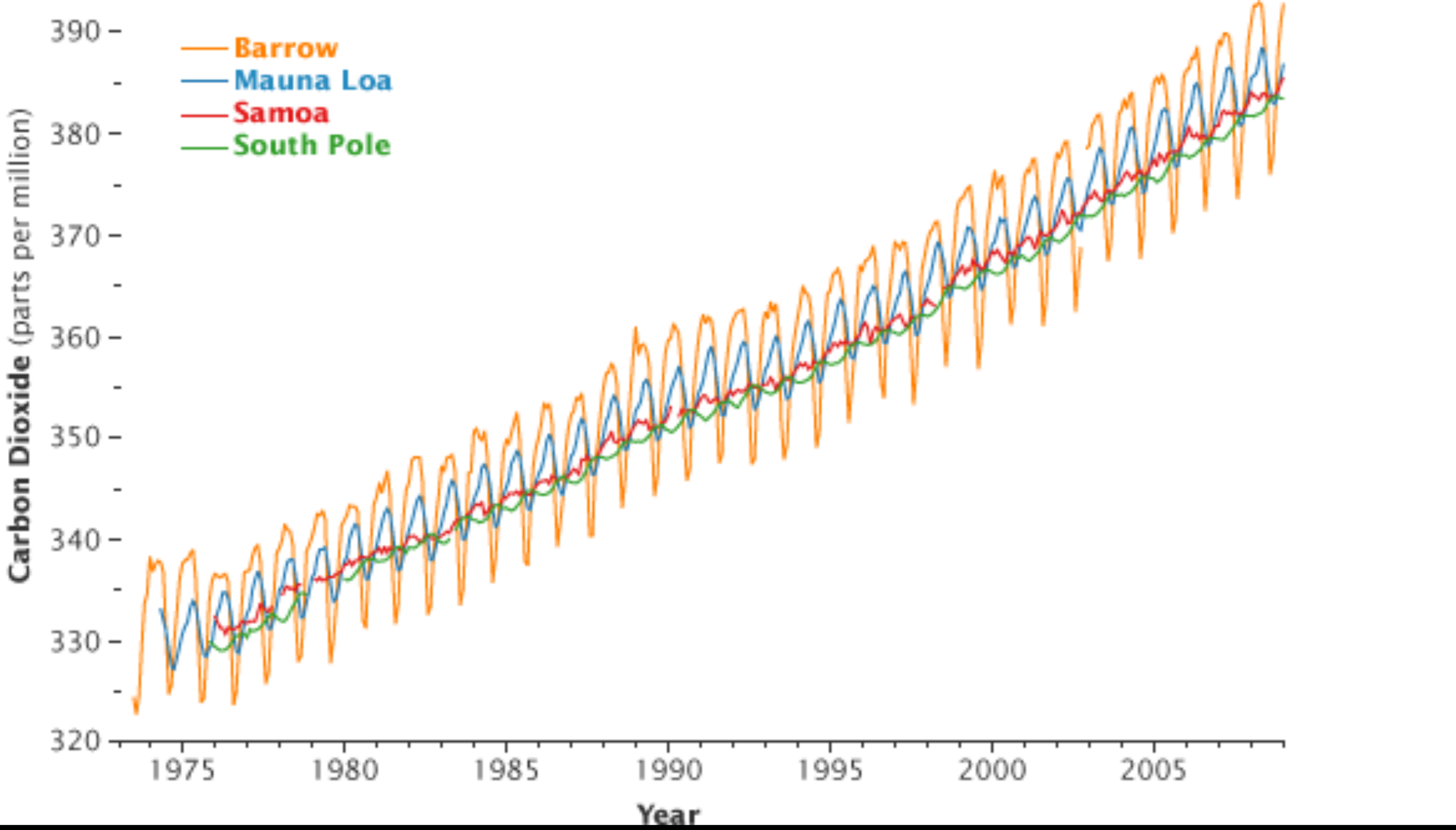
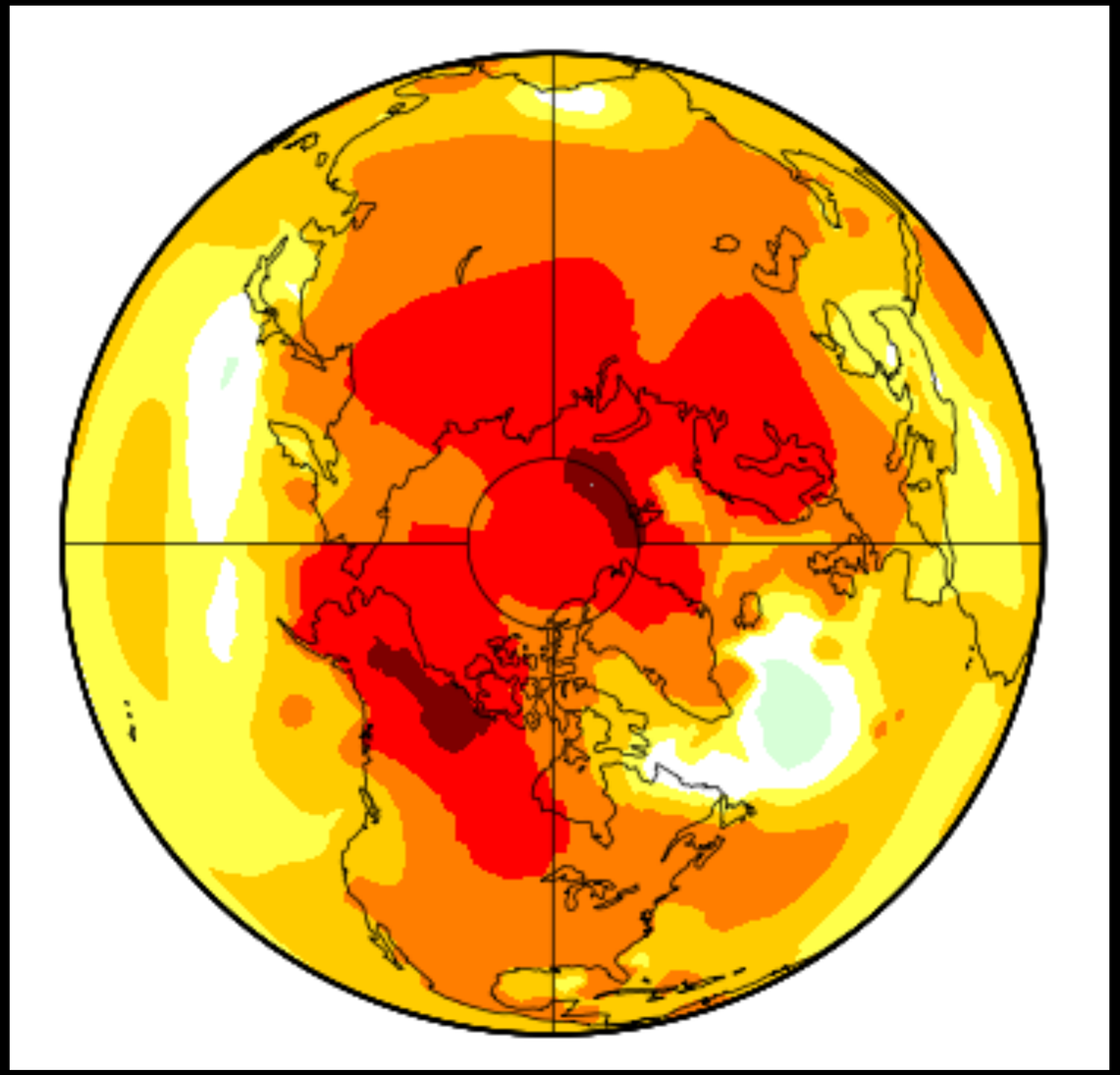
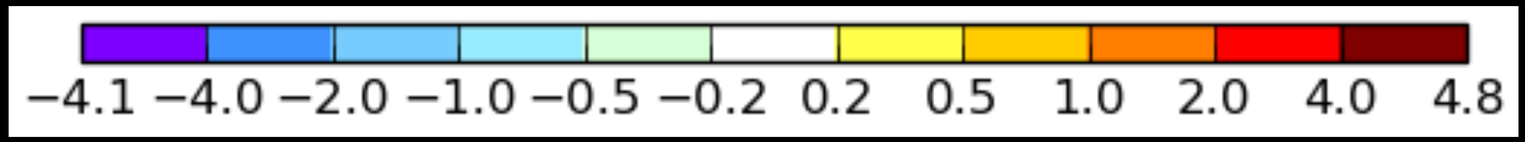

Barrow
Mauna Loa
Samoa
South Pole
Carbon Dioxide (parts per million)
390
380
370
360
350
340
330
320
1975
1980
1985
1990
1995
2000
2005
Year

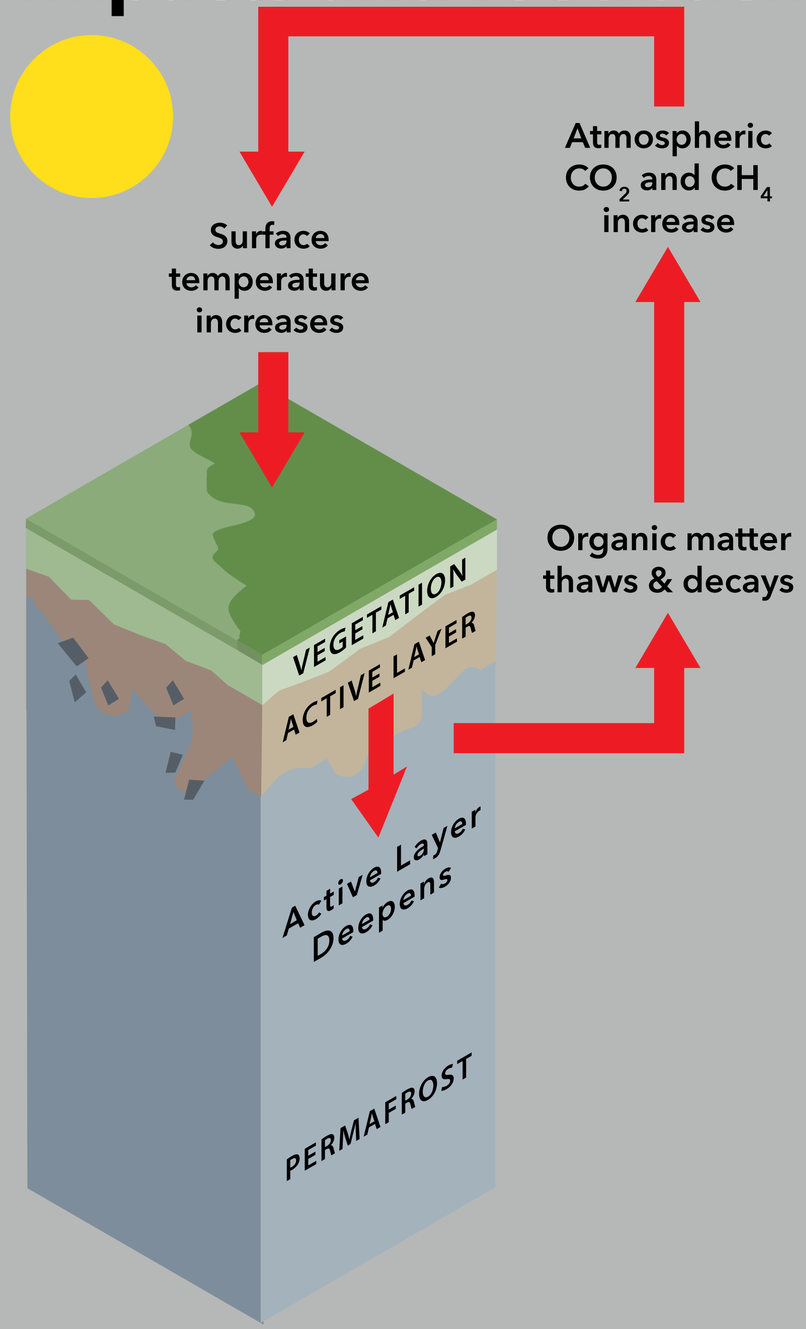
5- year Dec-Jan-Feb Temperature Anomaly vs 1951-1980





http://data.giss.nasa.gov/gistemp/maps/

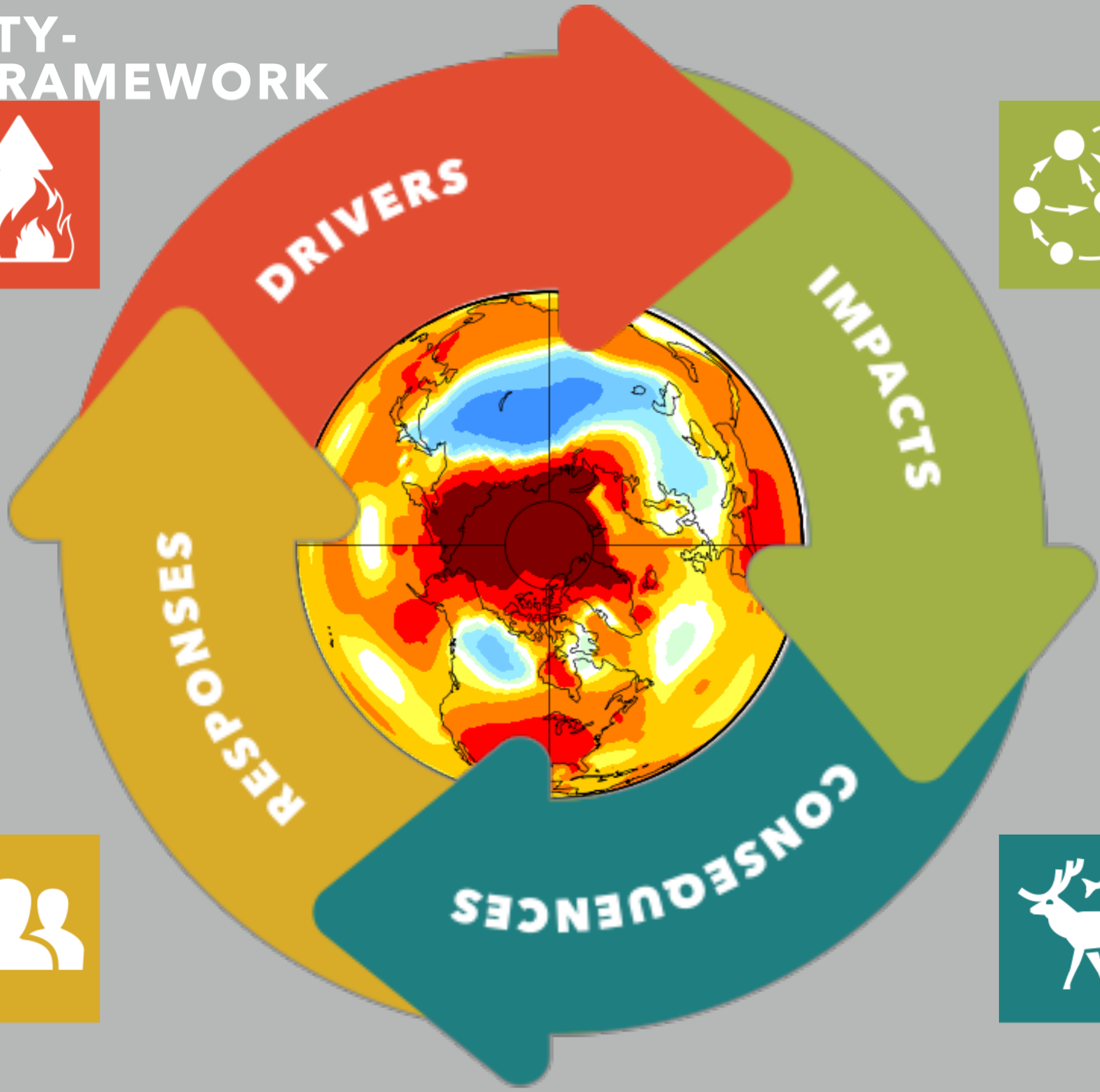
Impacts and feedbacks to local, regional, and global systems



VULNERABILITY-RESILIENCE FRAMEWORK

Causes of Change

Changes to Ecosystems



Social Systems

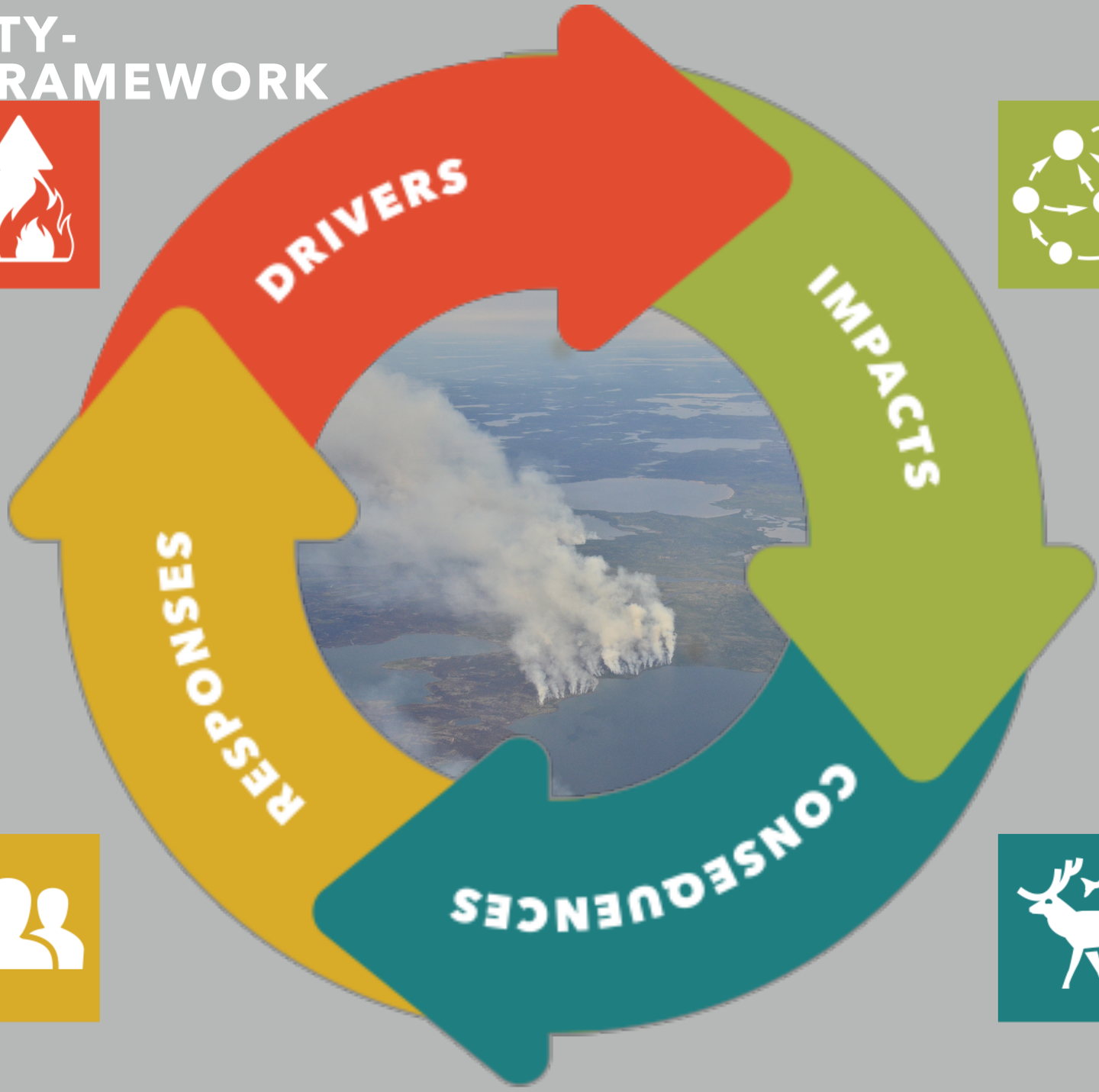
Ecosystem Services

Photos: Peter Griffith, NASA GSFC

VULNERABILITY-RESILIENCE FRAMEWORK

Causes of Change

Changes to Ecosystems



Social Systems

Ecosystem Services

Photos: Peter Griffith, NASA GSFC

VULNERABILITY-RESILIENCE FRAMEWORK

Causes of Change

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VULNERABILITY-RESILIENCE FRAMEWORK

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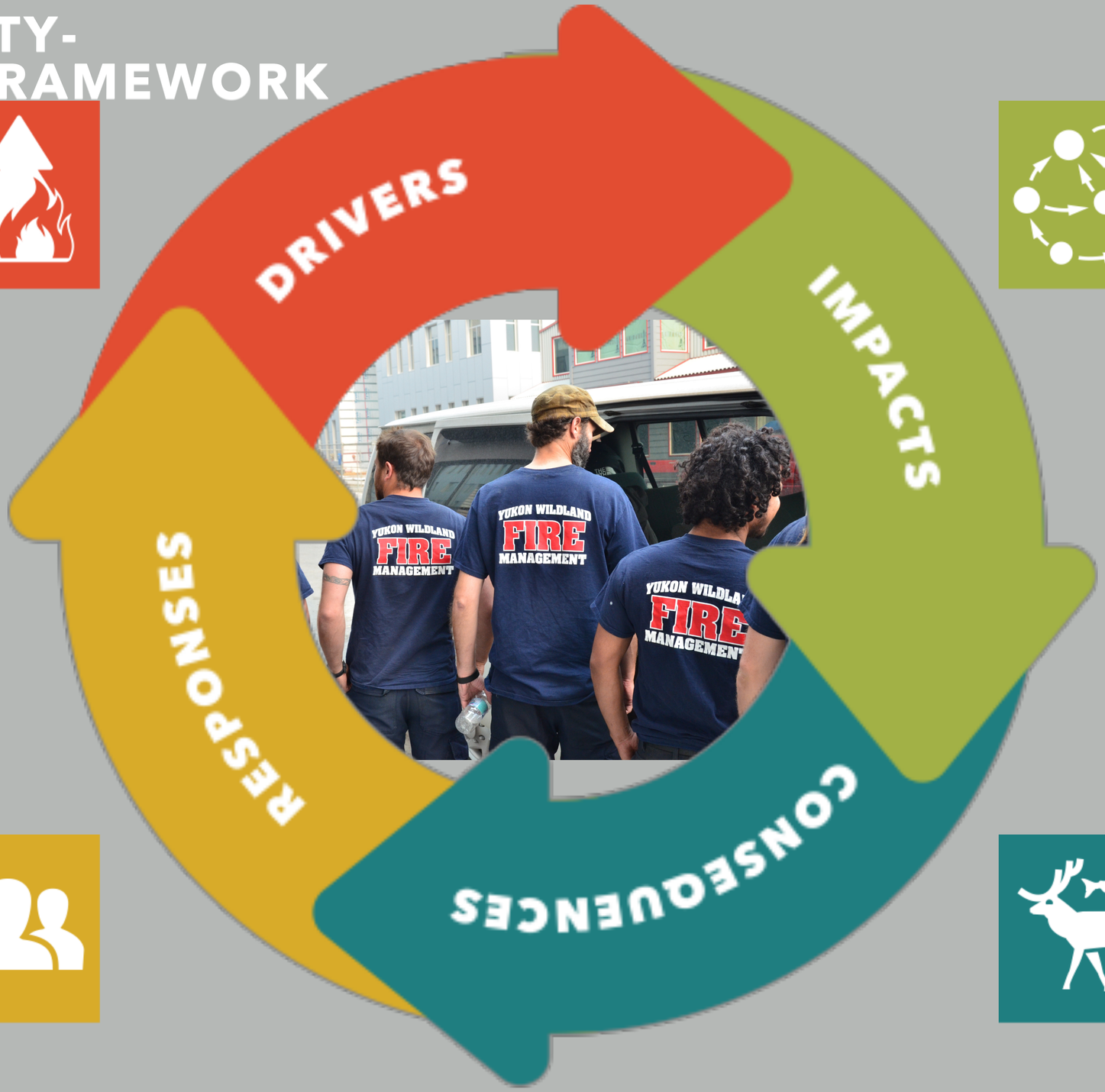
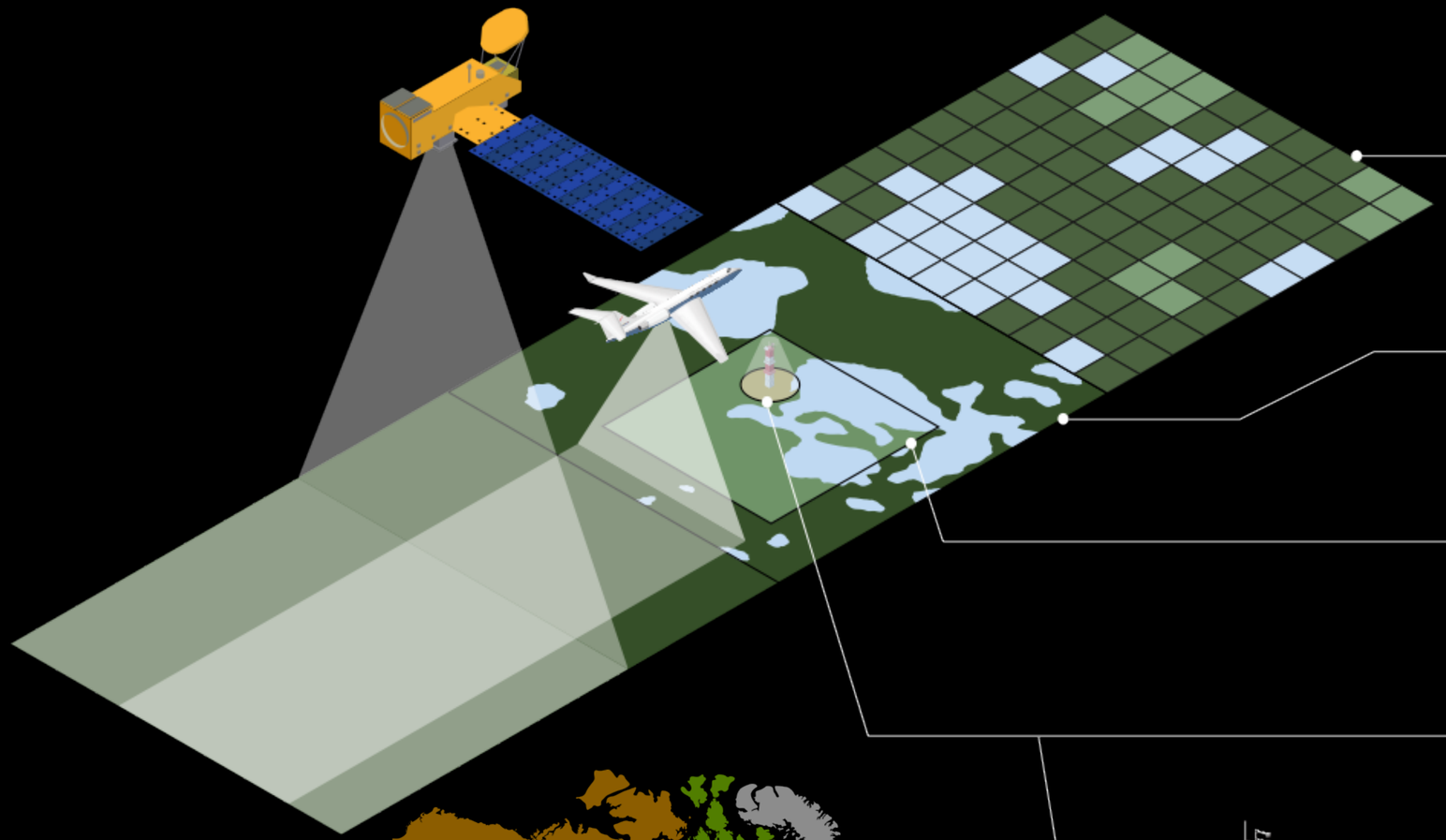


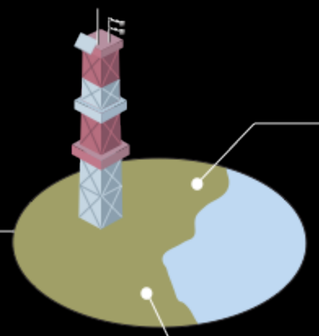
Social Systems

Ecosystem Services

Photos: Peter Griffith, NASA GSFC

SCALING STRATEGY

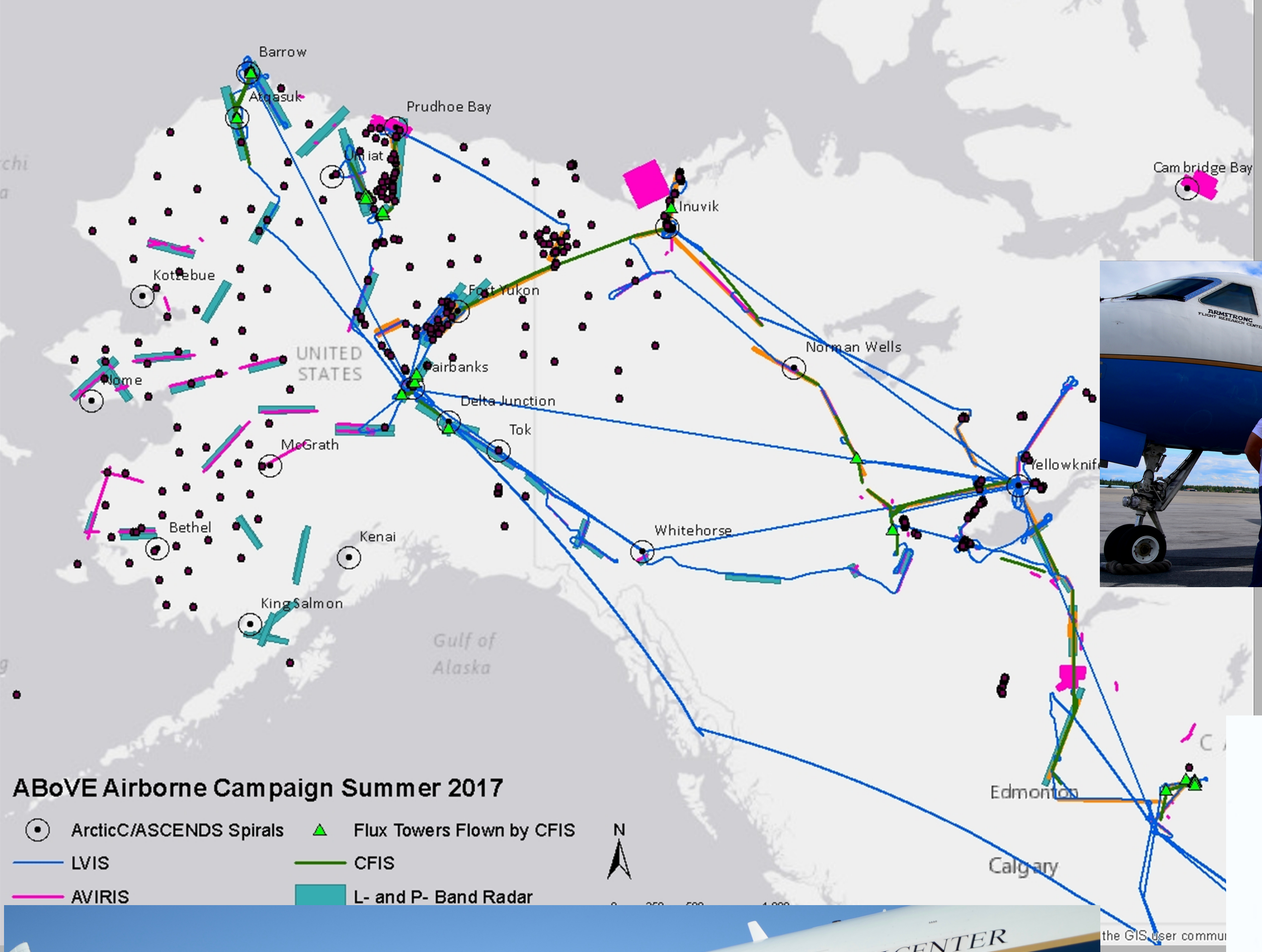


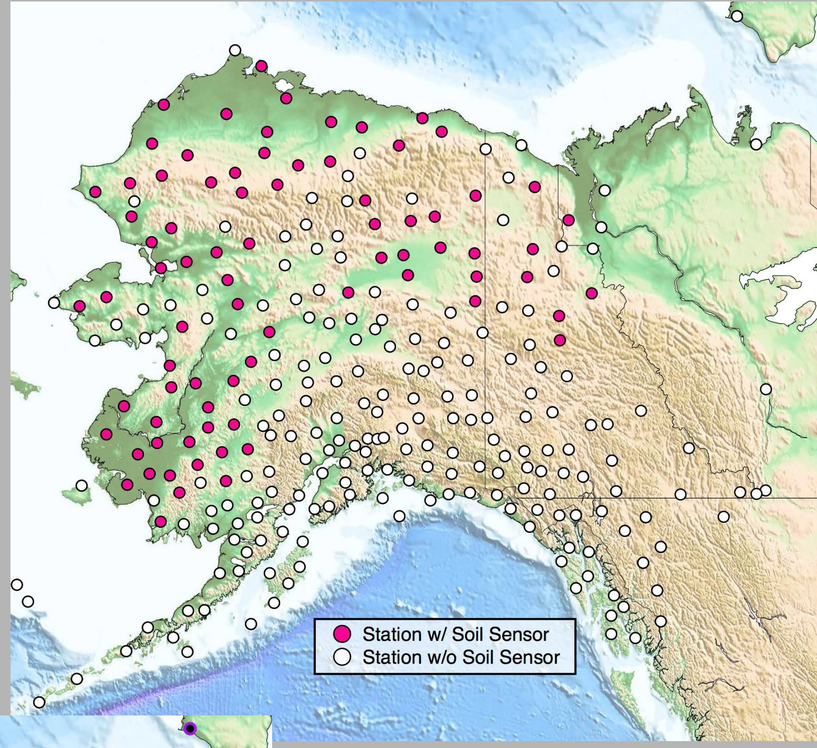


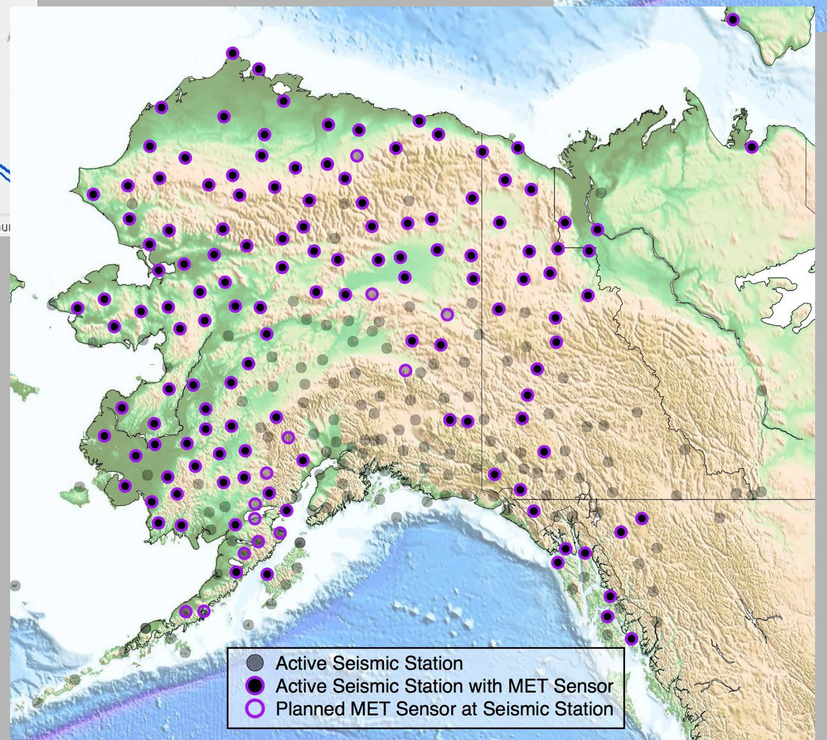
RESOLUTION	DISTANCE
1m - 10,000 m	MODEL
0.4m - 40km	ORBITAL ~700 km
10cm - 10m	AIRBORNE High Altitude: ~10,000 m - 20 km Mid Altitude: ~2,000 m - 5 km Low Altitude: ~300 m
25m - 1000 km	TOWER <50 m
10cm - 10 m	PLOT <5 m
0.1 cm - 10 cm	LEAF LEVEL <<1 m

ABoVE
ARCTIC BOREAL VULNERABILITY EXPERIMENT

Photo: Jeff Masek, Junchang Ju, Cindy Starr NASA GSFC







Alaska Transportable Array meteorologic and soil sensors supported by NASA ABoVE

US and Canadian 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

Photos: Peter Griffith, NASA GSFC