

# International Arctic Systems for Observing the Atmosphere

## *A Network Analysis on Observing through Collaboration*



*S. Starkweather, T. Uttal*

# What is the IASOA “Observing Strategy”?

Creating a NETWORK from existing observations & experts through pursuing common objectives... (COP)

- Developing & Sharing Interoperable Data Products
- Improving Documentation
- Developing & Sharing Cold Weather Observing Practices
- Doing SCIENCE!

# HOW? Through Working Groups and Funding Collaborative Development

Aerosols

Radiation

Atmos.-  
Surface

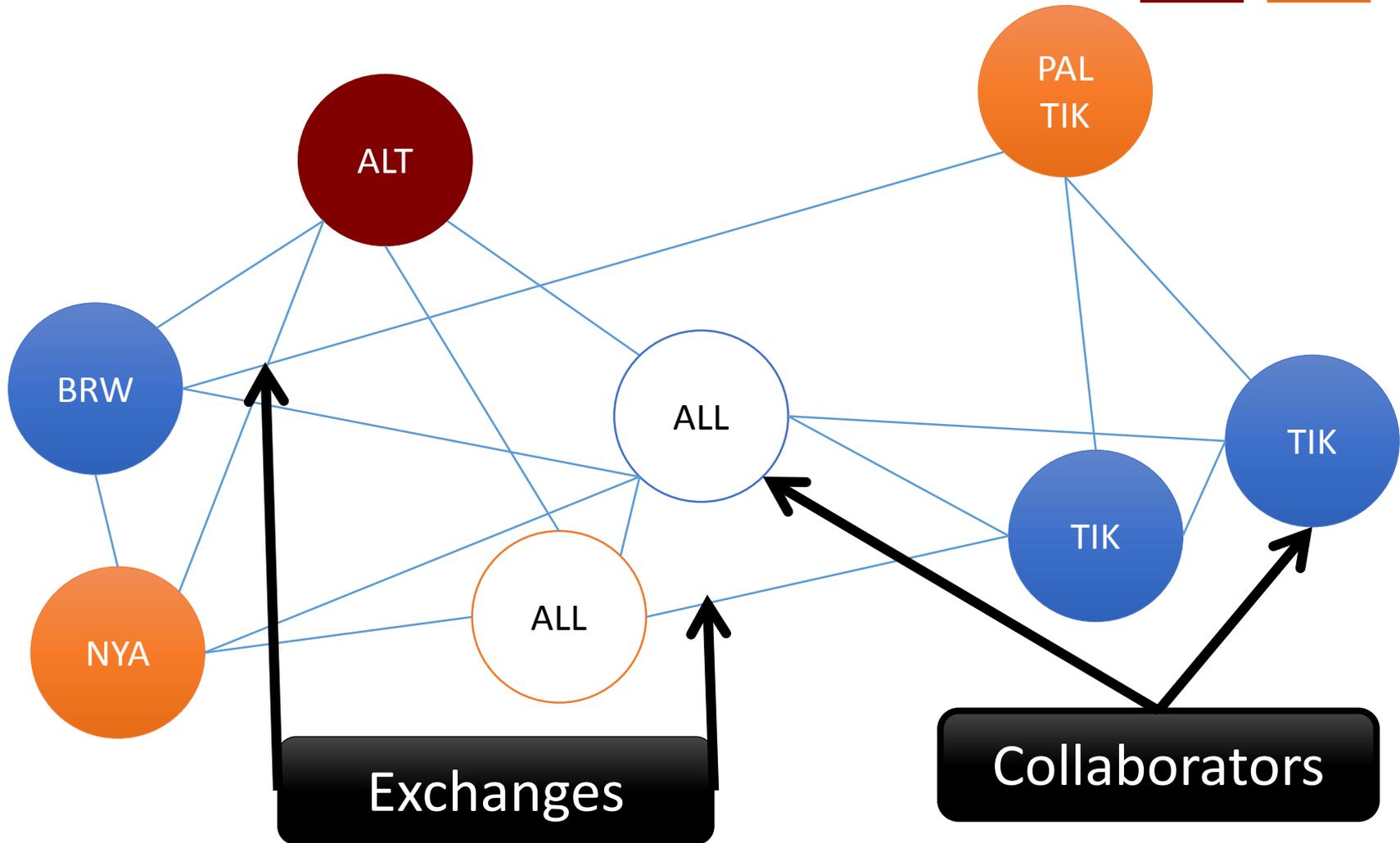
Regional  
Processes

Trace  
Gases

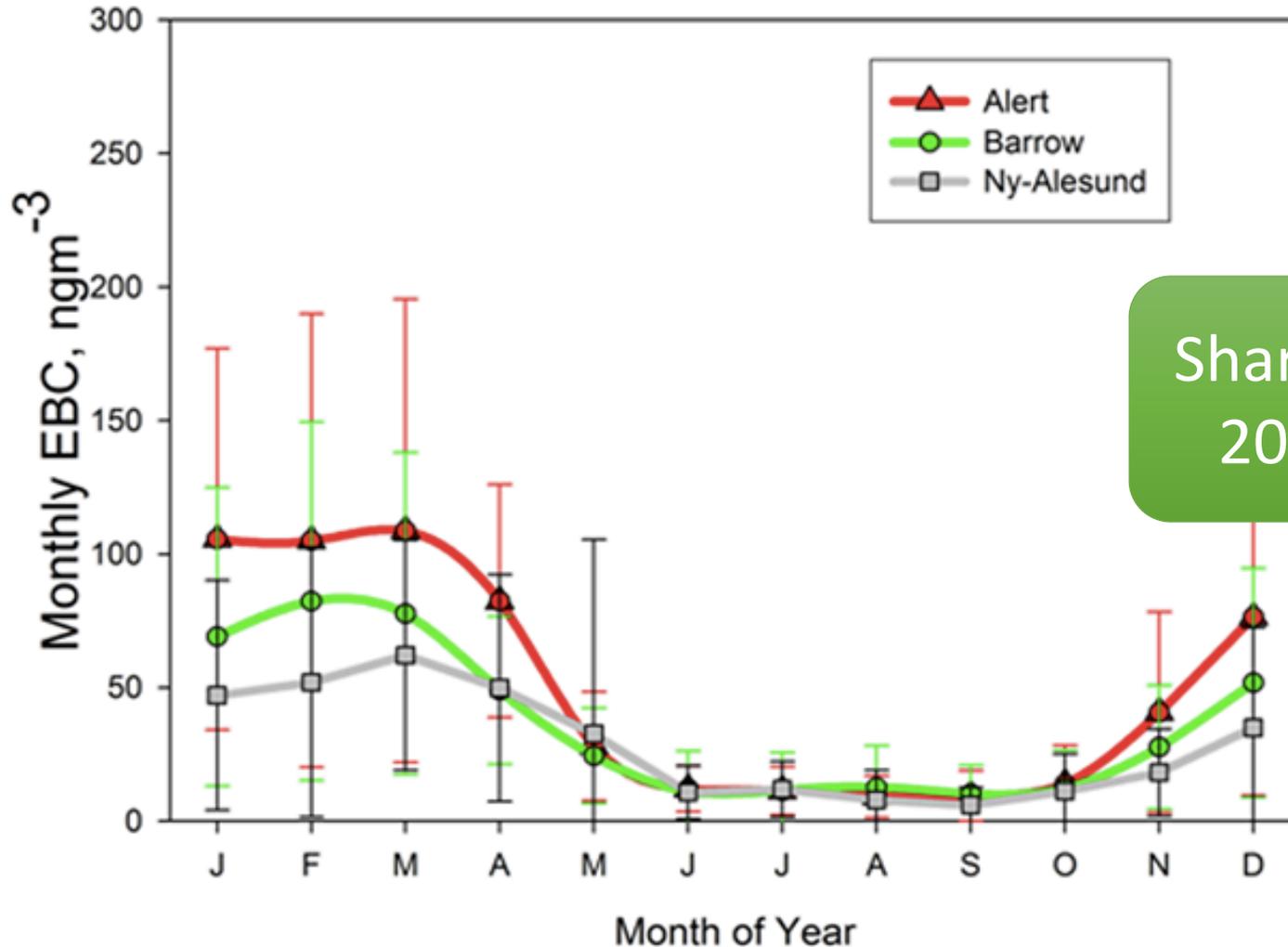
Clouds

# IASOA Aerosol WG - 2013

## 6 sites, 8 Collaborators



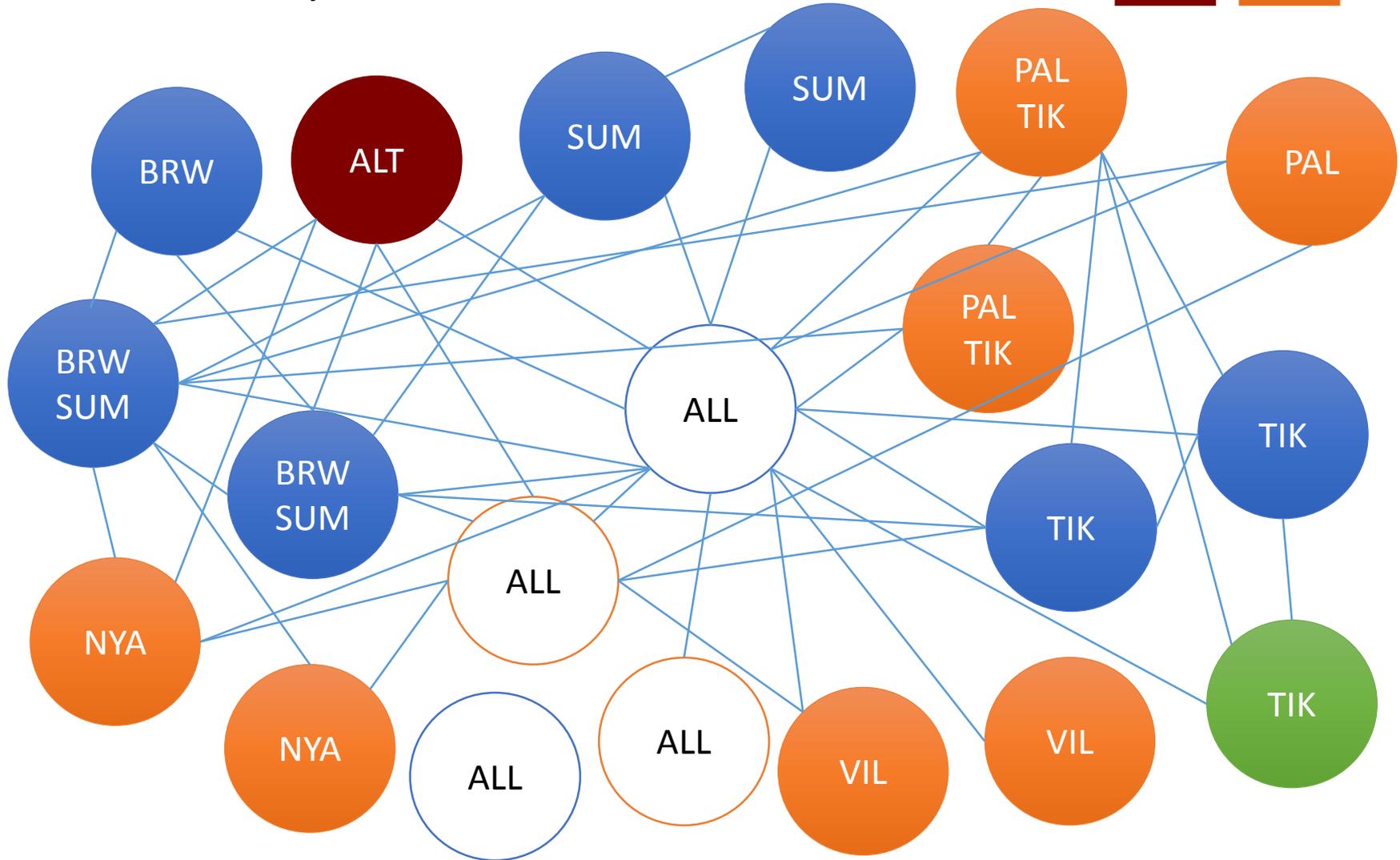
# Contribution – Arctic Report Card, 2013



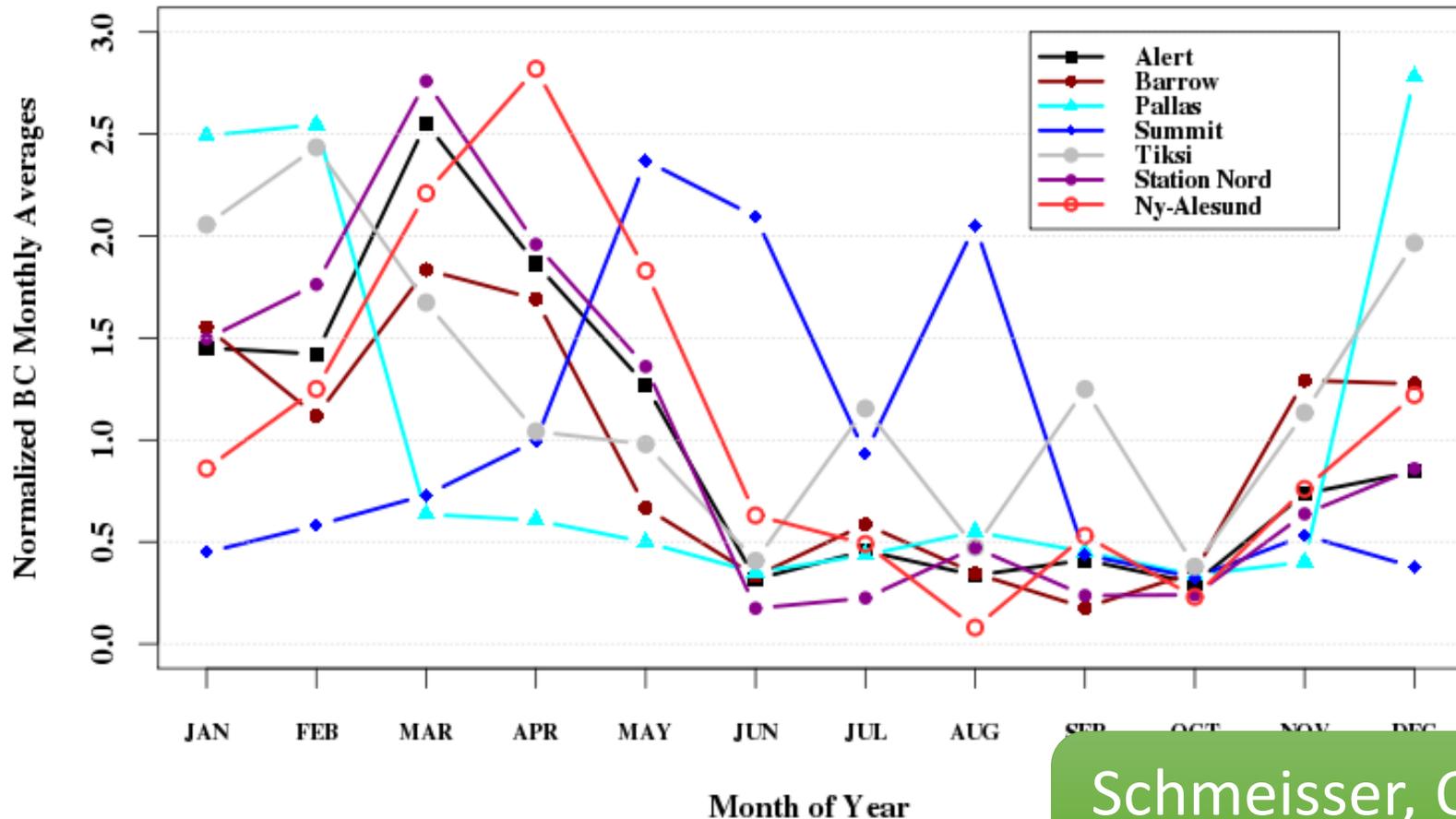
Sharma et. Al  
2013, ARC

# IASOA Aerosol WG - 2015

## 7 sites, 19 Collaborators

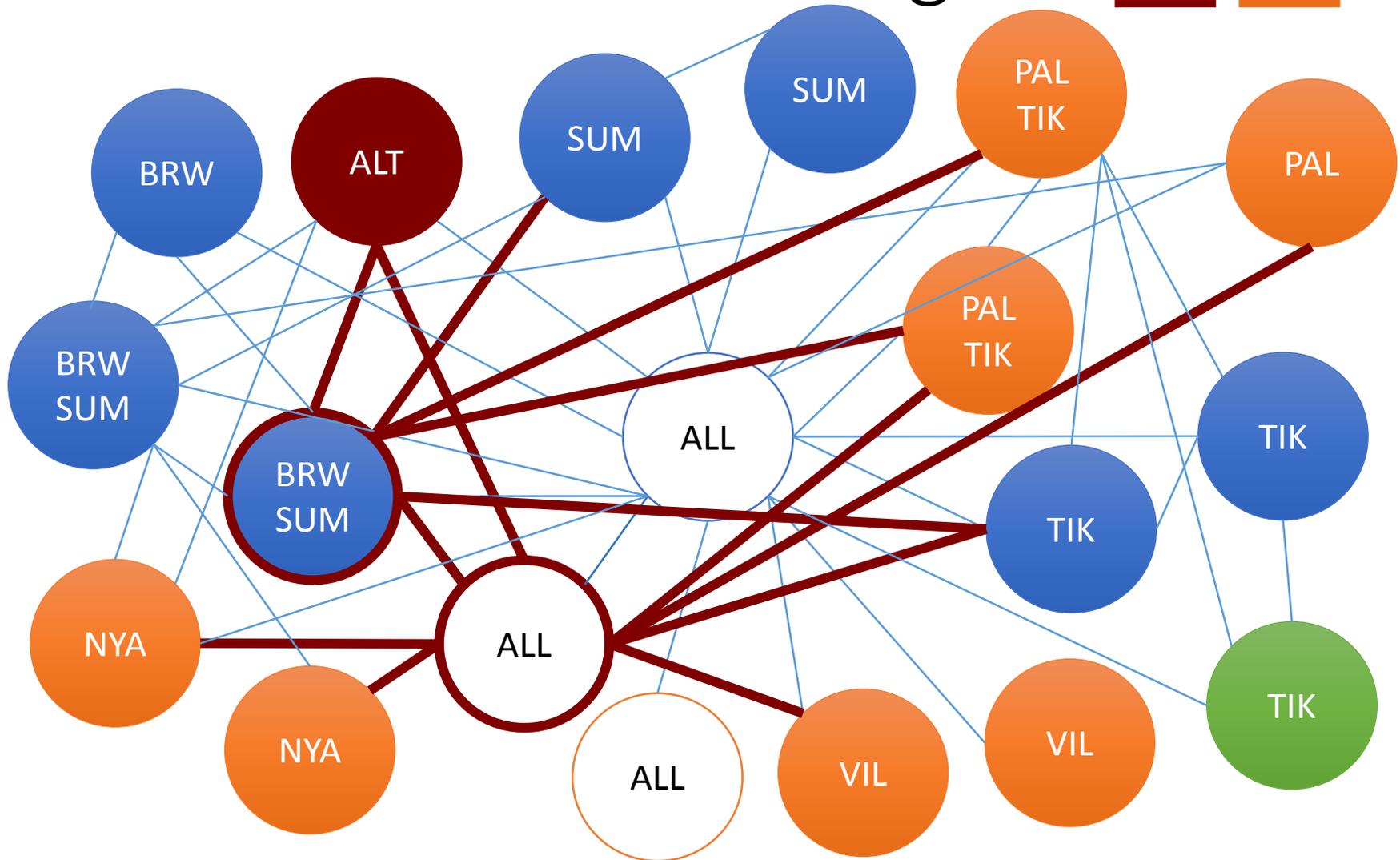


# Level 0 EBC Comparisons – 6 new datasets added to WDCA

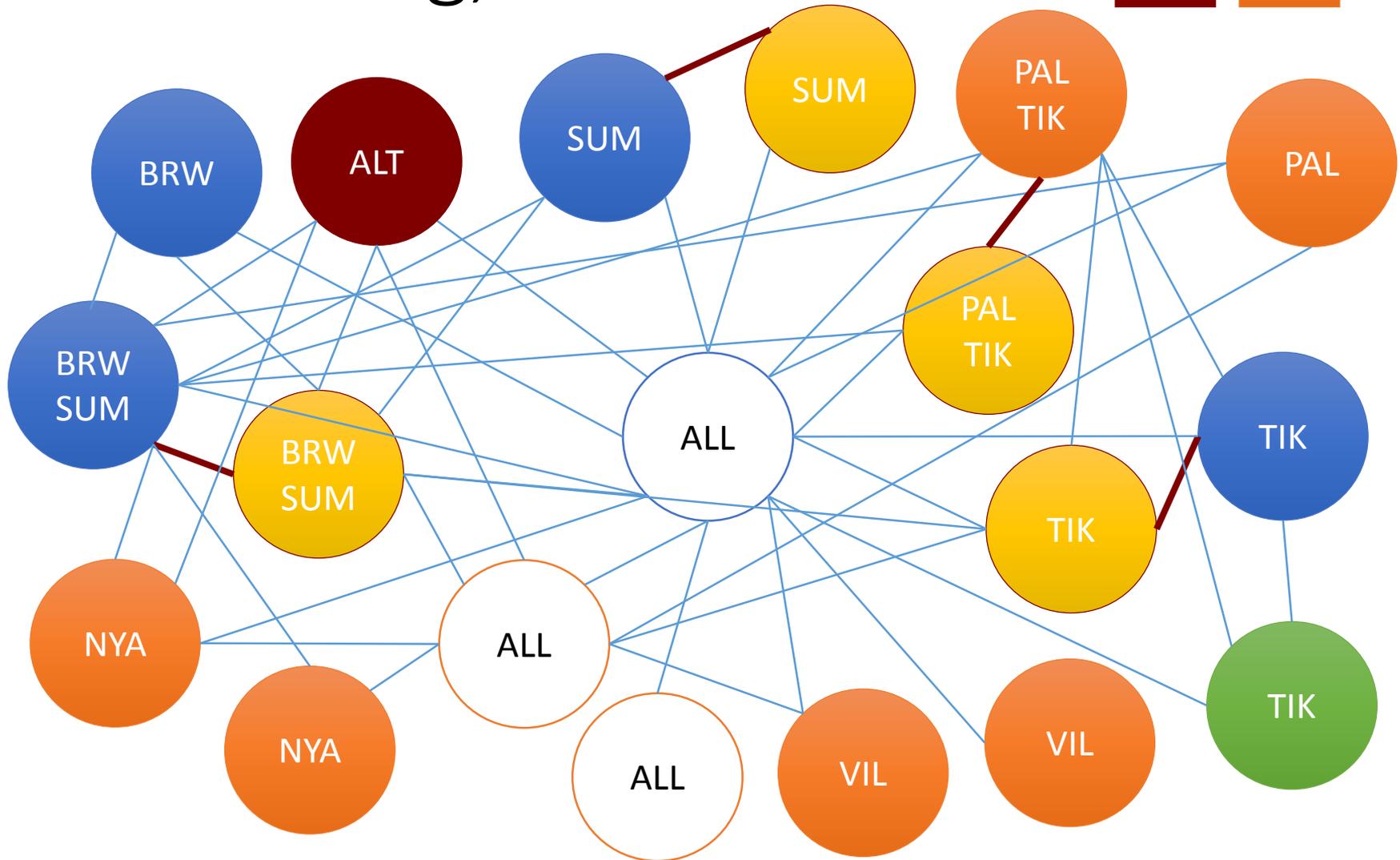


Schmeisser, Ogren,  
Sharma et al.

# Aerosol Working Group Shared Data Processing



# Aerosol Working Group Mentoring, 4 ECs



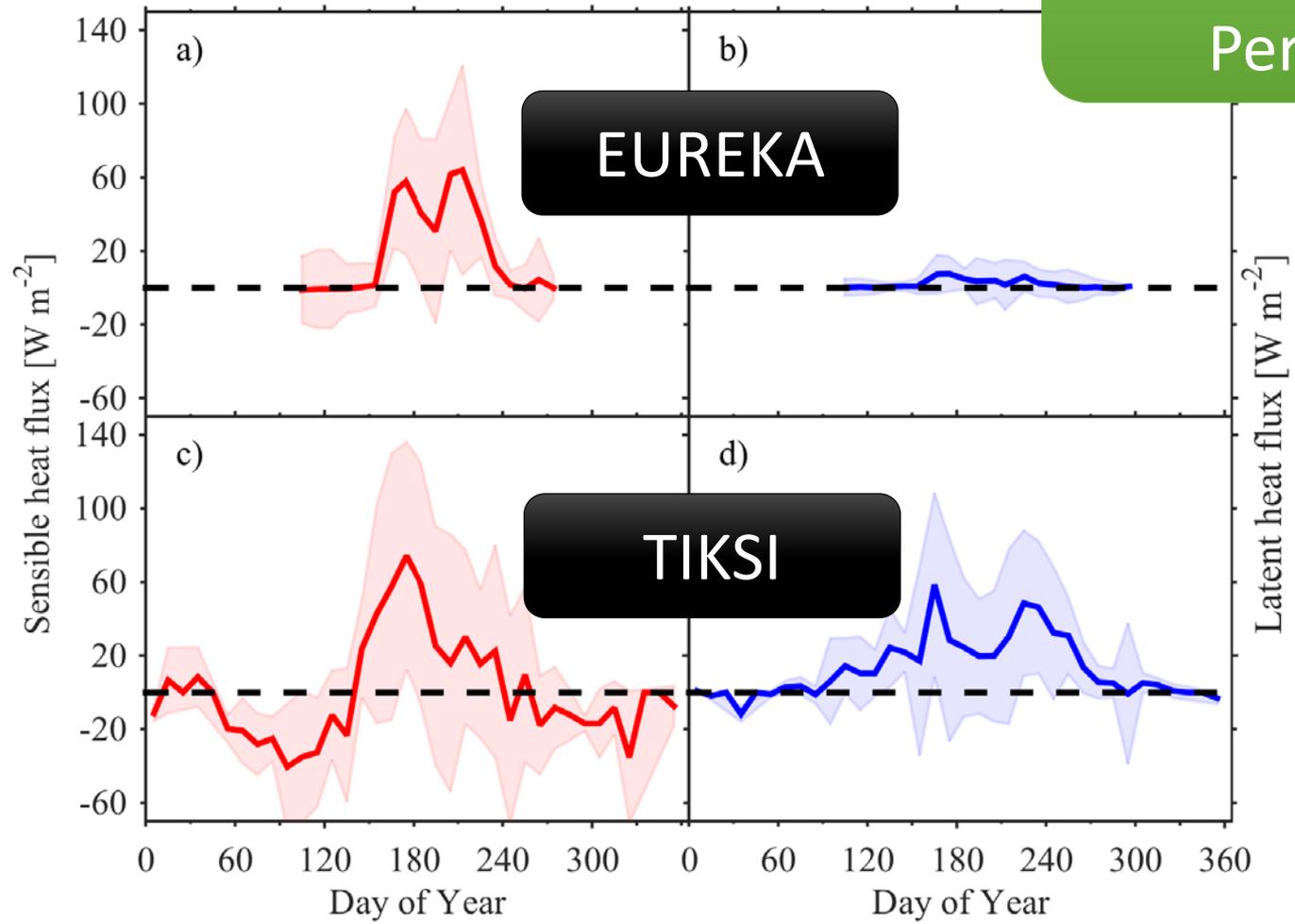
# IASOA's Working Group Role



- Develop consistent flux processing routines; closure experiments
- Address consistent land surface, sub surface character. schemes
- Develop and test scaling approaches

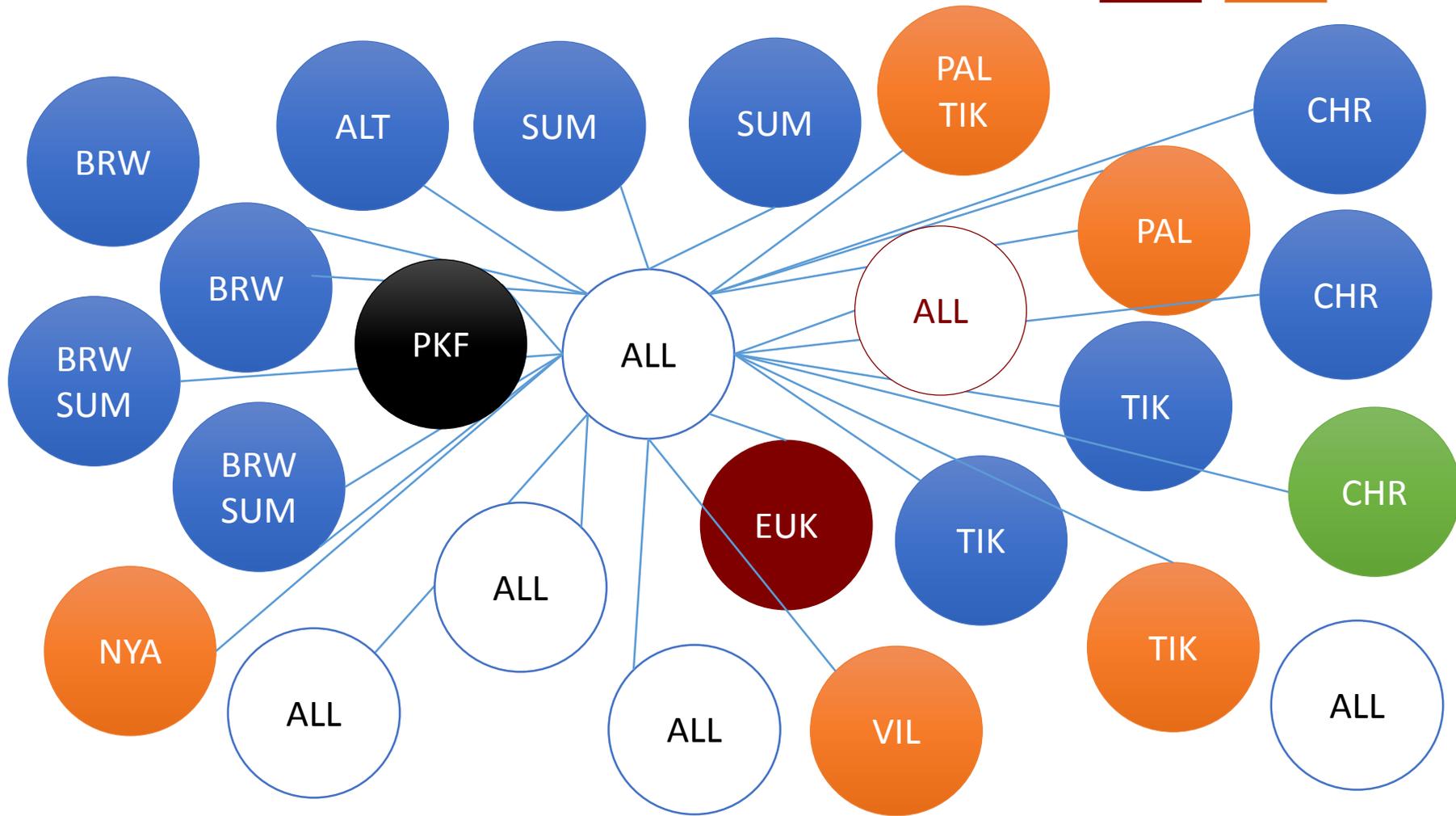
# Flux Comparisons Underway – Gold Files

Grachev,  
Konopleva,  
Persson



# “Flux” Working Group

## 12 sites, 27 Collaborators



# Proposed Workshop: Fairbanks ASSW MAR-2016



Partner organizations that have begun to get involved

Why? Because our questions are coupled but our experts usually are not.

Atmosphere	<ul style="list-style-type: none"><li>• How do large scale processes force local fluxes?</li><li>• How do local fluxes impact large scale processes?</li><li>• How does the seasonal and interannual variability in Arctic boundary layer structure influence coupling?</li></ul>
Land Surface	<ul style="list-style-type: none"><li>• What is the carbon sink strength of Arctic ecosystems?</li><li>• How does this vary inter-annually?</li><li>• What are the environmental variables influencing inter-annual variability?</li></ul>
Sub Surface	<ul style="list-style-type: none"><li>• What is the quantity and quality of soil carbon in Arctic landscapes?</li><li>• What factors control its release into the atmosphere?</li><li>• How does (seasonally) frozen ground impact hydrology and latent energy fluxes in the Arctic?</li></ul>

# Scaling Out Collaboration & Scaling Up Understanding

Aerosols

Radiation

Atmos.-  
Surface

Regional  
Processes

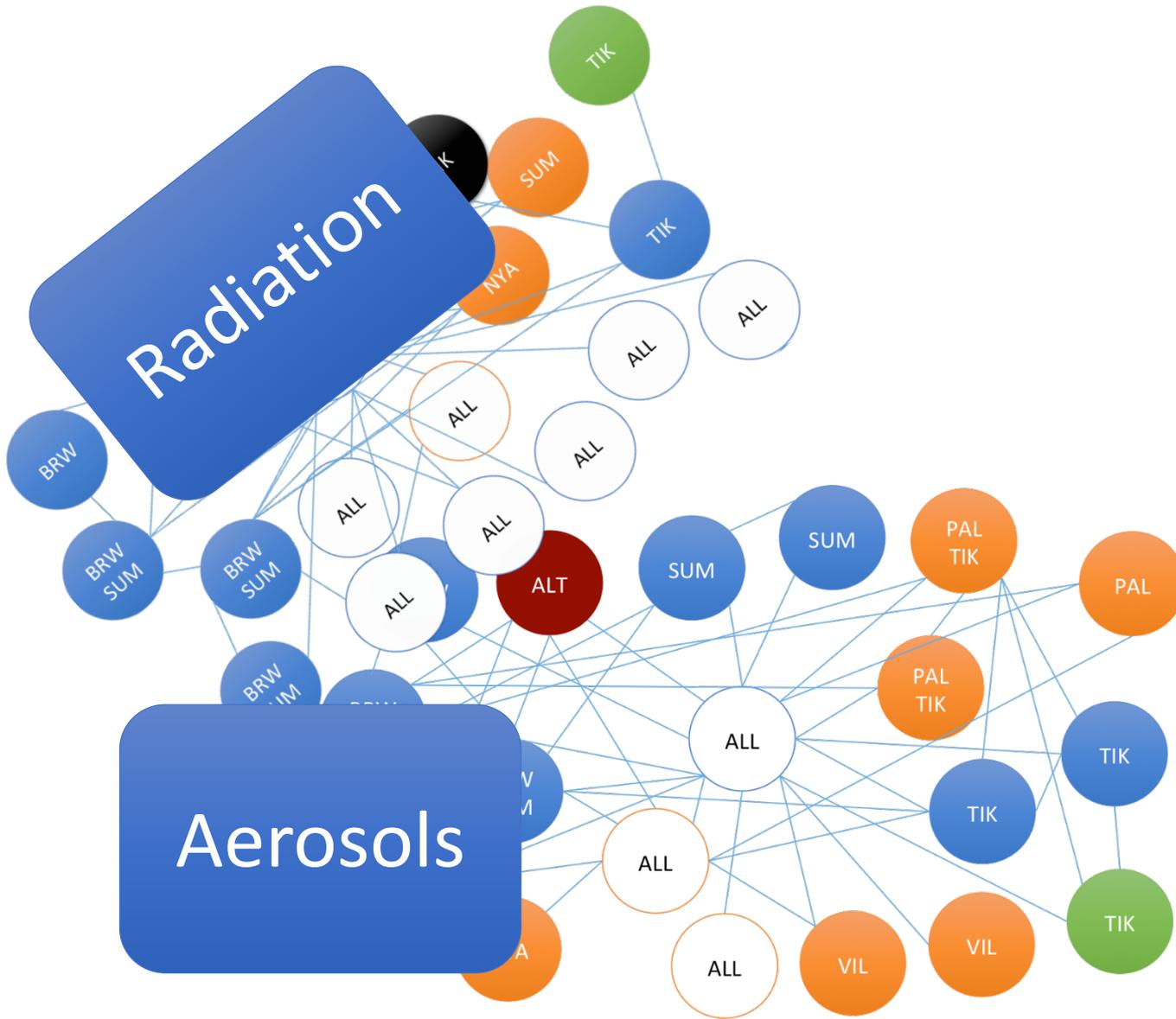
Trace  
Gases

Clouds

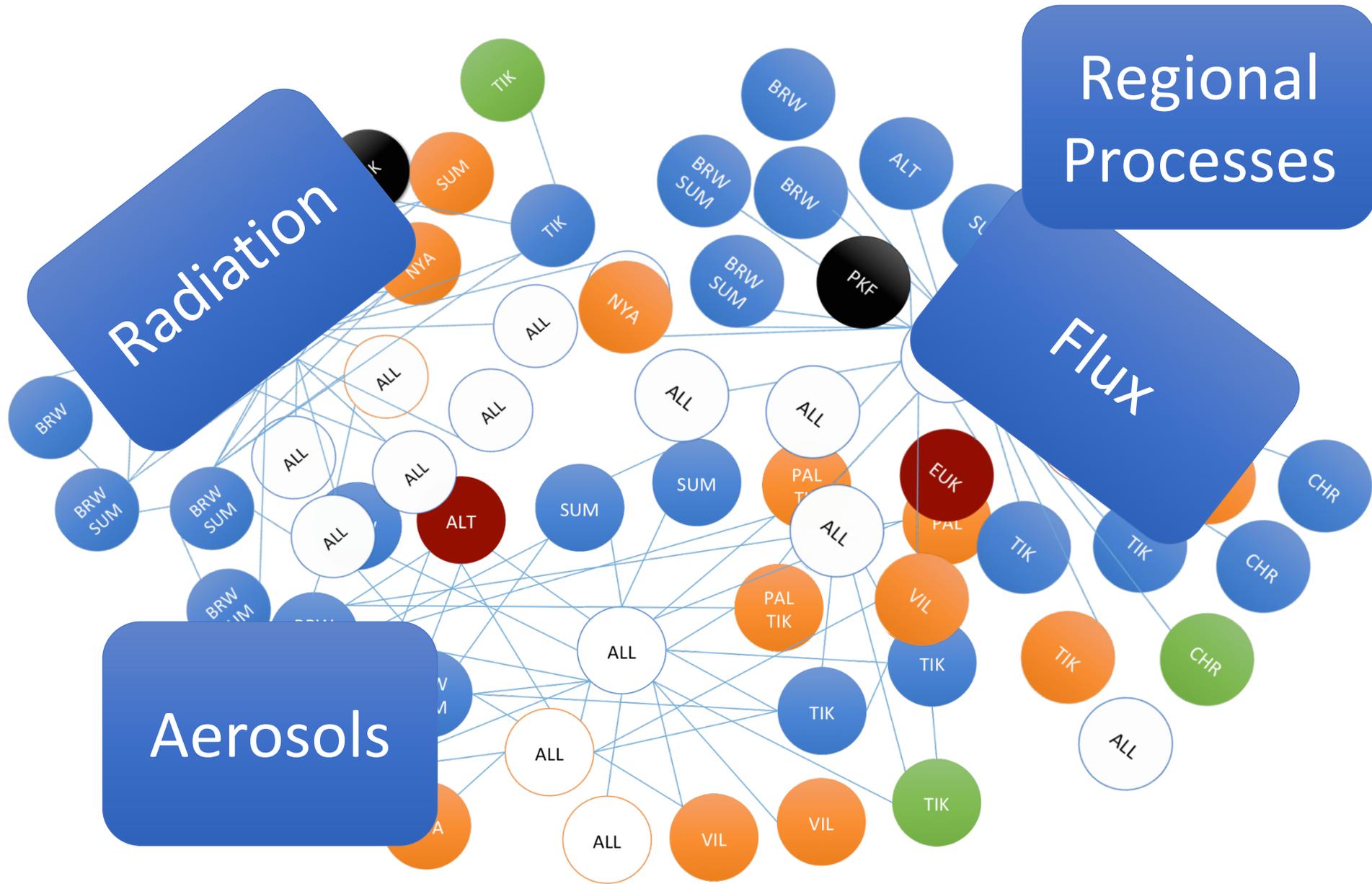


# IASOA Process Understanding

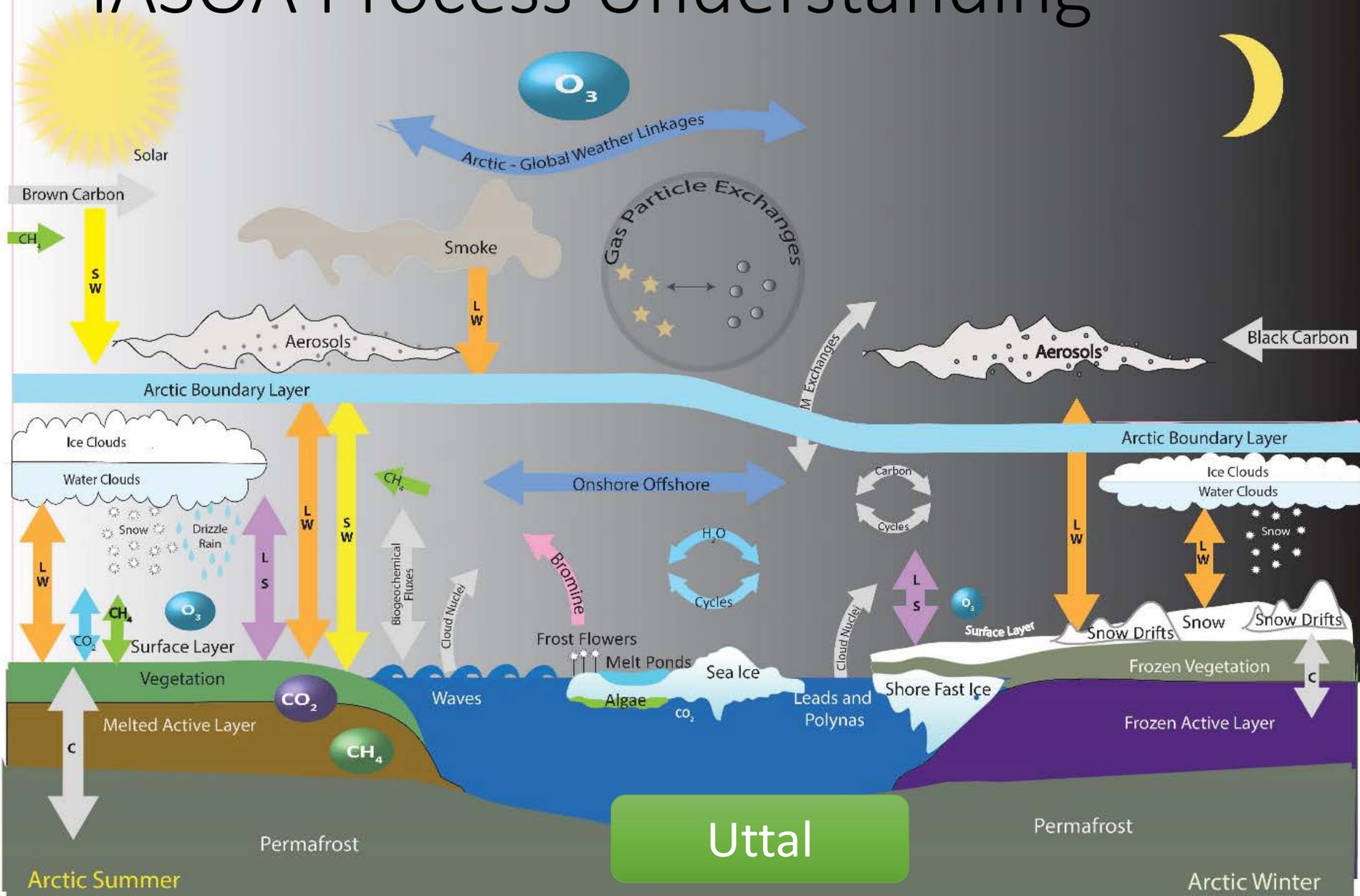
Regional Processes



# IASOA Process Understanding



# IASOA Process Understanding



# Summary – “Observing Strategy” creating a NETWORK from existing observations & experts

- Sustained Investment in Weaving the Network
  - Build CORE to meet attainable goals
  - Introduce INNOVATION to expand frontiers
- Investigator-Driven Research Focus
- NEED: Investments in Sharable Resources
  - Data Management
  - Data Processing (EC's)
- NEED: Growth in Russian, Asian participation

# Summary – Legacy?

- NETWORK-izes existing activities across breadth, length & depth
- Clarifies gaps/needs
- Platform for scaling out (network growth) and scaling up (system science & services)
- It works – data products, publications, mentoring, fitness