IASOA ozone WG plans for 2016

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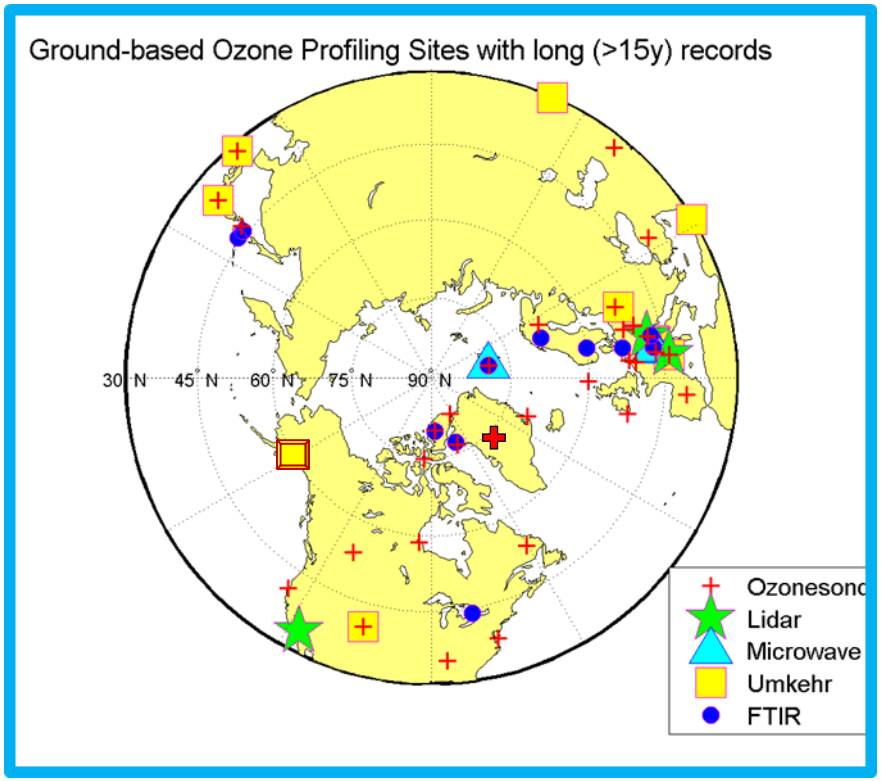
Agenda for Feb 3 2016 telecon

- 1) Focused agenda for Ozone WG (choosing topics for collaborative investigation)
- 2) Comparisons of observations with models (follow aerosol group activity, Henrik Skov, CAM84)
- 3) Continue discussion of the need for a survey to identify unlisted ozone data acquired during various campaigns. NILU is offering to host campaign data on site
- 4) Federate network for ozone data processing - how to move forward with common practices in data processing

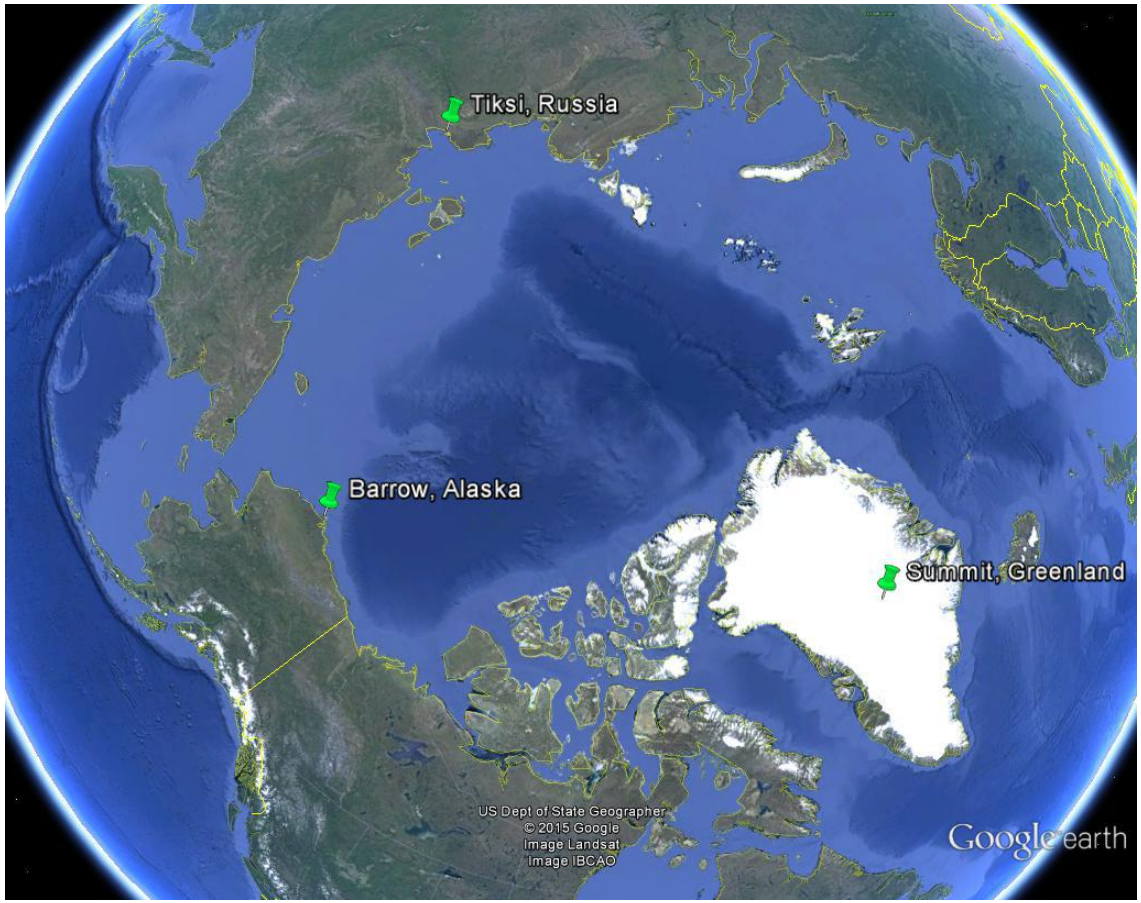
IASOA collaboration for advancement of the ozone science

- GAW guidelines cover issues of cold weather practices and standards for processing observations, but IASOA can make sure that these guidelines are implemented
- IASOA doesn't necessarily deal with campaign data, but will eventually include links/information
- Goal of the group is to investigate/focus on site collaborative findings which will help to make sense of the data to the modeling community, including the formatting of the data

Polar surface ozone and aerosol measurements



- IASOA has cataloged 71 ozone datasets across the observatories at Alert, Barrow, Pallas, Summit and Tiksi.
- Villum has currently no data showing in IASOA (where is it archived?).
- Hopefully surface ozone measurements will be a part of the Cape Baranova measurements in Russia (and IASOA)
- WOUDC archives vertical ozone profiles from ozone-sonde, surface and Dobson measurements
- NDACC archives Dobson/Brewer, lidar, sonde, FTIR, MW and UV/VIS ozone profiles and column

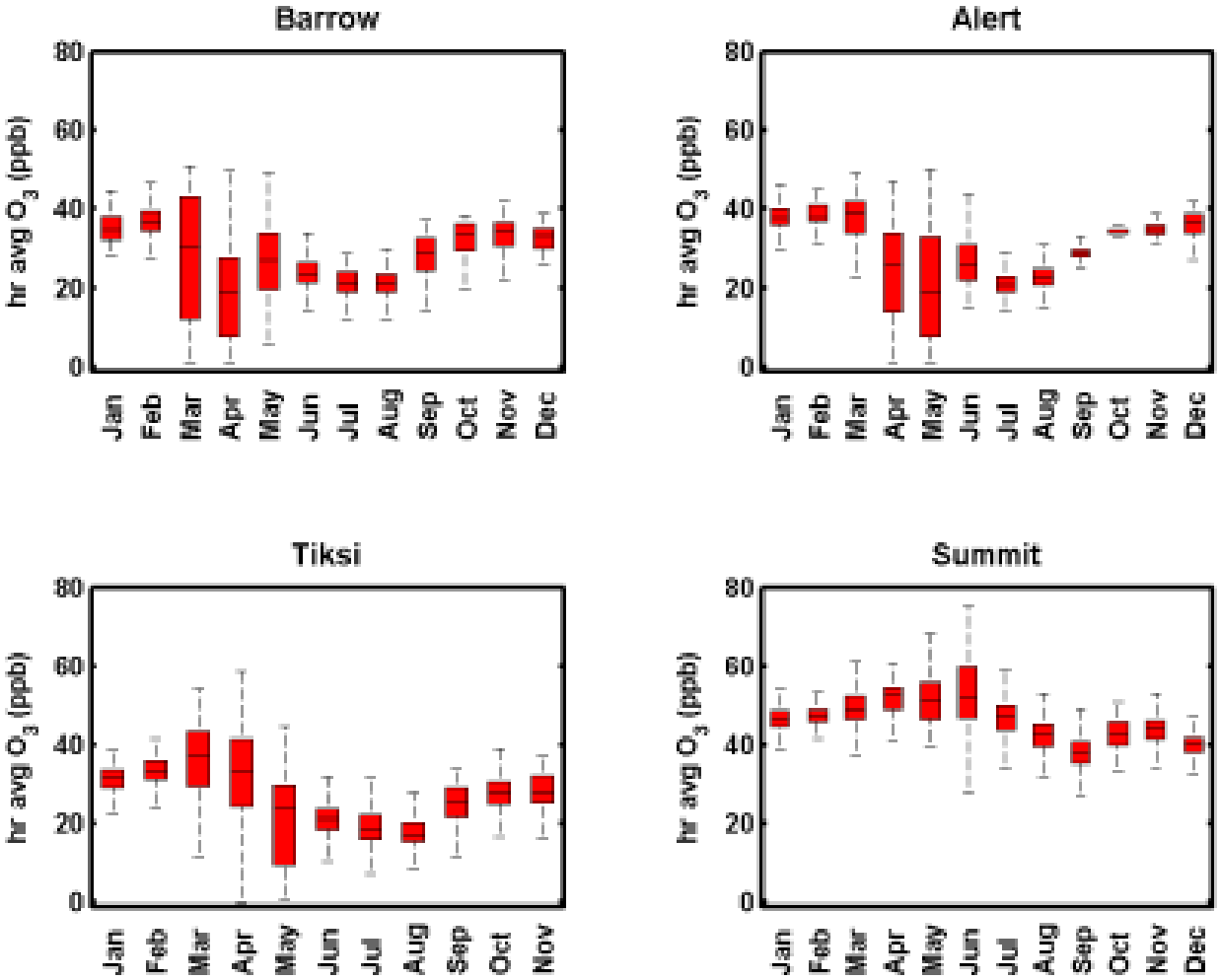


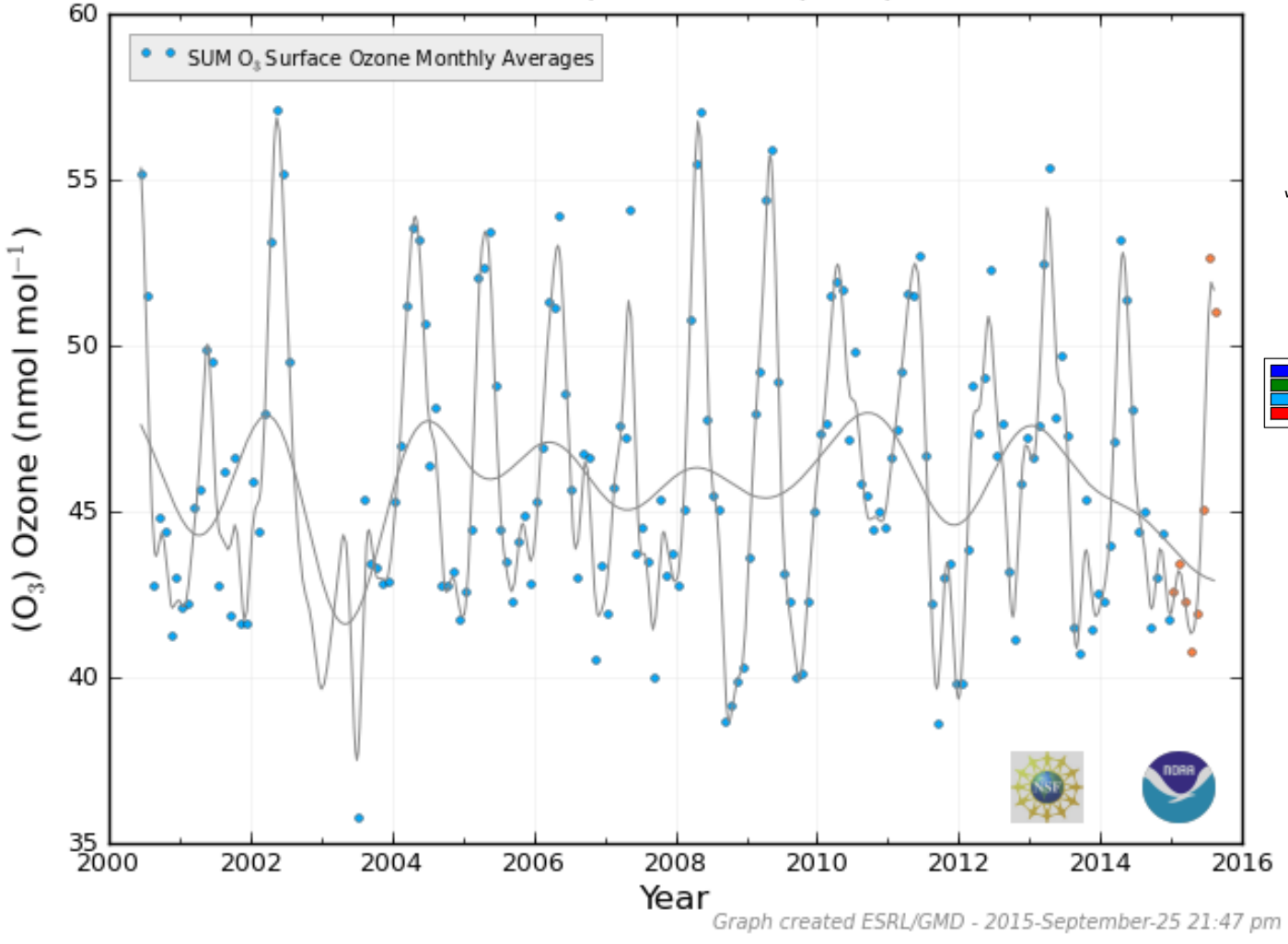
Tiksi, Russia:
NOAA, FMI and Roshydromet
71.597, 128.889 31 MASL

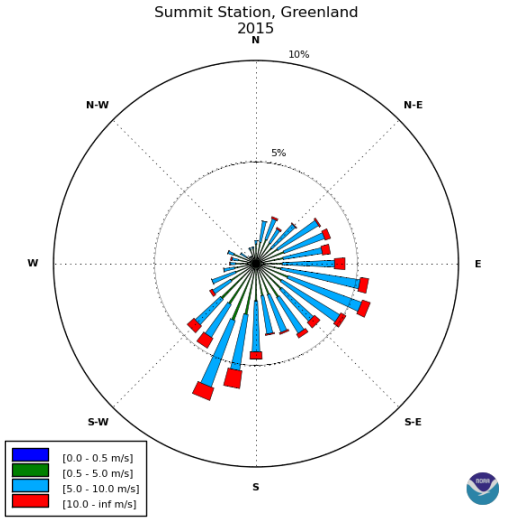
Summit, Greenland:
GEOSummit
72.58, -38.480 3238 MASL

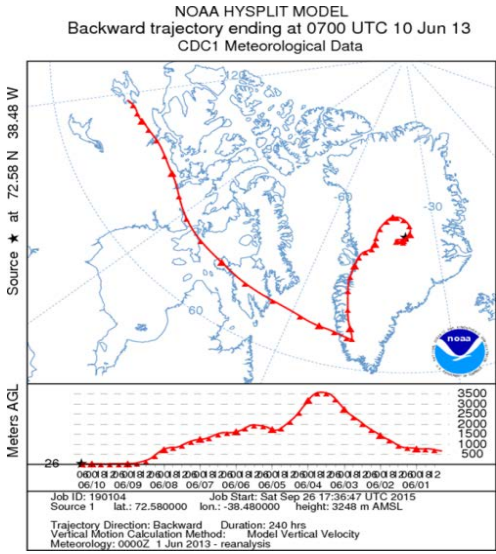
Barrow, Alaska:
NOAA/OAR/ESRL/GMD
71.323, -156.004
1584 MASL

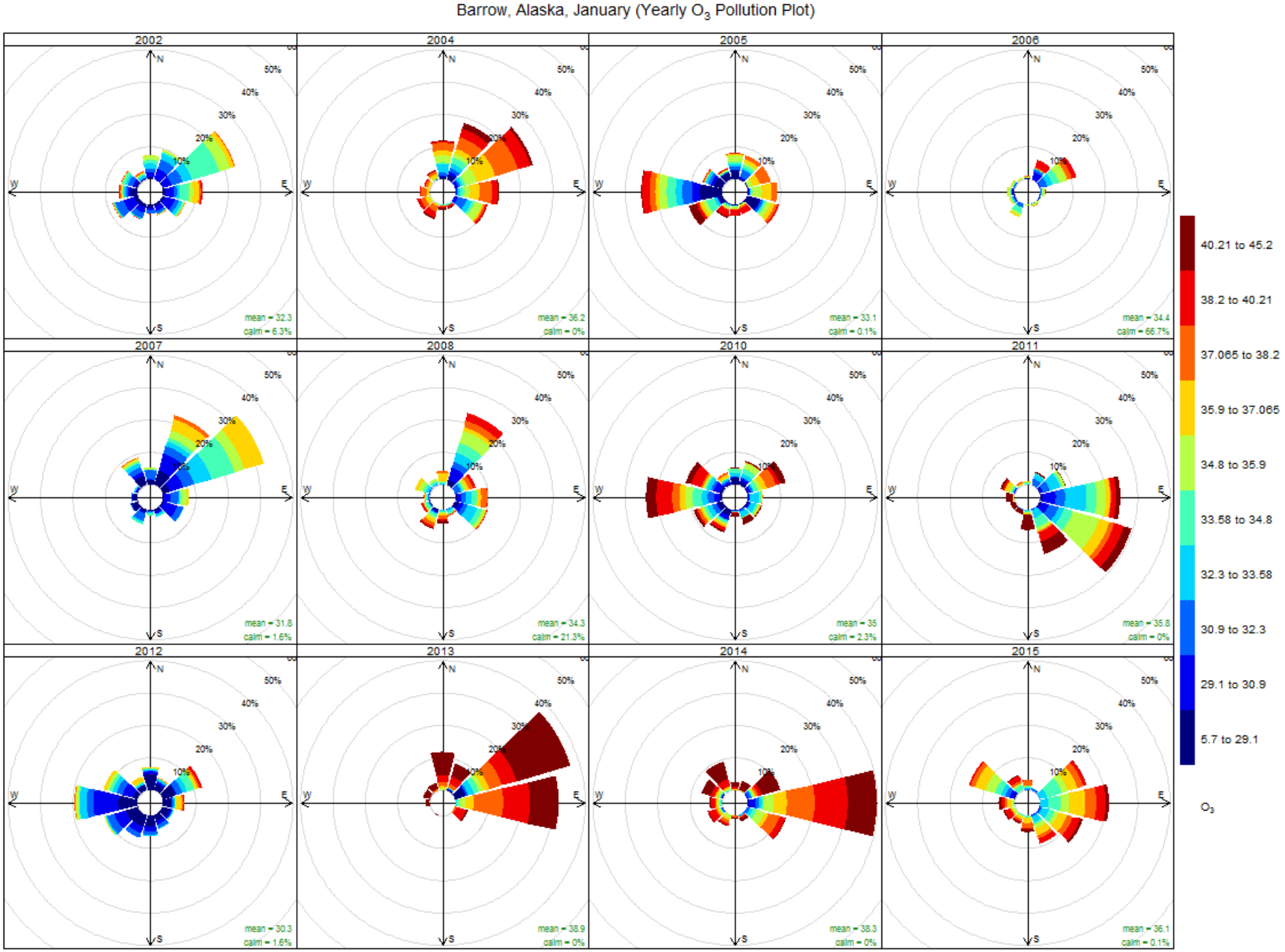
Surface ozone climatology




Summit, Greenland (SUM)
SUM O_3 Surface Ozone Monthly Averages
(O_3) Ozone (nmol mol^{-1})
Year
60
55
50
45
40
35
2000
2002
2004
2006
2008
2010
2012
2014
2016
Graph created ESRL/GMD - 2015-September-25 21:47 pm


Summit Station, Greenland
2015
N
N-E
E
S-E
S
S-W
W
N-W
10%
5%
[0.0 - 0.5 m/s]
[0.5 - 5.0 m/s]
[5.0 - 10.0 m/s]
[10.0 - inf m/s]


NOAA HYSPLIT MODEL
Backward trajectory ending at 0700 UTC 10 Jun 13
CDC1 Meteorological Data
Source ★ at 72.58 N 38.48 W
Meters AGL
3500
3000
2500
2000
1500
1000
500
Job ID: 190104
Job Start: Sat Sep 26 17:36:47 UTC 2015
Source 1 lat.: 72.580000 lon.: -38.480000 height: 3248 m AMSL
Trajectory Direction: Backward Duration: 240 hrs
Vertical Motion Calculation Method: Model Vertical Velocity
Meteorology: 0000Z 1 Jun 2013 - reanalysis


Barrow, Alaska, January (Yearly O3 Pollution Plot)
2002
mean = 32.3
calm = 6.3%
2004
mean = 36.2
calm = 0%
2005
mean = 33.1
calm = 0.1%
2006
mean = 34.4
calm = 66.7%
2007
mean = 31.8
calm = 1.6%
2008
mean = 34.3
calm = 21.3%
2010
mean = 35
calm = 2.3%
2011
mean = 35.8
calm = 0%
2012
mean = 30.3
calm = 1.6%
2013
mean = 38.9
calm = 0%
2014
mean = 38.3
calm = 0%
2015
mean = 36.1
calm = 0.1%
N
E
S
W
10%
20%
30%
40%
50%
40.21 to 45.2
38.2 to 40.21
37.065 to 38.2
35.9 to 37.065
34.8 to 35.9
33.58 to 34.8
32.3 to 33.58
30.9 to 32.3
29.1 to 30.9
5.7 to 29.1
O3
Ozone Mixing Ratio (ppb)

Common interests for the group

- Ozone monitoring in the Arctic – long term
- Share practices of data collection and QA/QC
- Co-location of measurements with other WGs (aerosols, radiation, transport, clouds, fluxes and carbon/methane measurements)
- Merged datasets to combine meteorological and other data – valuable information for analysis
- Identifying campaign-generated datasets of atmospheric composition that have broader range of measurements than long-term stations
- Collaboration with modelers to interpret data

Goals for ozone WG

- Consistent standardization of data management
- Share cold weather observing practices
- Data quality control procedures, shared data processing, shared resources
- Understand what modelers and other scientist need in relation to ozone data and other parameters – generate merged data set
- Involving data center facilitators for ease of communication
- Develop science questions
- Publications of methods, science questions, and data management (i.e. DOI, redundant archives, metadata)

Telecons

- November 3, 2015
- December 10, 2015
- February 3, 2016
- March 16, 2016– coming next

Representative background data

Selection criteria:

- Wind speed and direction
- Wind speed and direction and particle number concentration
- Radon concentration
- Air trajectories from numerical weather prediction
- Mole fractions of other trace species, notably CO
- Tracer/tracer mole fraction ratios, such as NOy/CO
- Criteria based on statistical time series analyses.

GMD aerosol/ozone software and data processing flow

- Betsy Andrews and Audra McClure gave presentations to outline the basic principles of data collection used in GMD aerosol and ozone groups
- Common software allows for standardization of calibration and data editing procedures
- How to involve other Arctic stations in the common practices of data collection and processing
- Expanding observational network in the Arctic