Science Team Telecon (20/21 May 2024)

Agenda

- Data Archive Status
- Profile flags coming soon
- O3:HCHO – Prajjwal Rawat
- Surface Temp and BL depth – Katie Travis
- Some high-level brainstorming
- Organizing the Roadmap Ahead

ASIA-AQ Preliminary Data Status

Legend: green = submitted · yellow = partial submission · red = no data collected · white = not submitted

DC-8

DC-8	Philippines 6-Feb	Philippines 7-Feb	Philippines 11-Feb	Philippines 13-Feb	Taiwan 15-Feb	Korea 17-Feb	Korea 26-Feb	Korea 8-Mar	Korea 10-Mar	Korea 11-Mar	Taiwan 13-Mar	Thailand 16-Mar	Thailand 18-Mar	Thailand 21-Mar	Thailand 25-Mar	Taiwan 27-Mar
TOGA	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
NSERC	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
WAS	green	green	green	green	green	green	green	green	green	green	green	green	red	green	green	white
TILDAS	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
CIT-CIMS	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
DACOM	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
DLH	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
NONO2O3	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
MMS	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
CAFS	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
GTCIMS	green	green	green	green	green	green	green	white	green	green	green	red	green	green	green	green
CU-AMS	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
K-CIMS	green	green	green	green	white	green	green	green	green	green	white	green	green	green	green	white
LGR-AAT	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
K-SP2	green	green	green	green	red	green	green	green	green	green	green	white	white	green	green	green
K-AMS	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
K-SP2D	green	green	green	green	red	red	red	red	red	red	red	red	red	red	red	red
K-SMPS	green	green	green	green	red	green	green	white	green	green	green	green	green	green	green	green
Smoke Flag	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
CAESAR	green	green	green	green	white	green	green	green	green	green	white	green	green	green	white	white
LARGE	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
LARGE-SP2	green	green	green	green	green	green	green	white	white	white	white	white	white	white	white	white
MIRO	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	white
ROZE	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
CANOE	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
PTR-MS	yellow	yellow	yellow	yellow	yellow	yellow	yellow	green	green	green	green	green	green	green	green	green
CHARON	white	white	white	white	white	white	white	white	white	white	white	white	white	white	white	white
ISAF	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
K-CCN	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
OPALS	green	green	green	green	green	green	white	white	white	white	white	white	white	white	white	white

G-III

G-III	Philippines 6-Feb	Philippines 7-Feb	Philippines 10-Feb	Philippines 11-Feb	Philippines 13-Feb	Taiwan 15-Feb	Korea 17-Feb	Korea 23-Feb	Korea 26-Feb	Korea 28-Feb	Korea 1-Mar	Korea 2-Mar	Korea 3-Mar	Korea 8-Mar	Korea 10-Mar	Taiwan 13-Mar	Thailand 16-Mar	Thailand 18-Mar	Thailand 19-Mar	Thailand 21-Mar	Thailand 23-Mar	Thailand 25-Mar	Taiwan 27-Mar
HSRL2	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green
GCAS	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	green	red	green	green	green	green	green	green

Other data to be gathered

- Korean aircraft data (1900D, C90GT, etc.)
- Ground-based data (Seoul, Chiang Mai, etc.)
- AQ Monitoring Data for each country (in progress)

We will need to work with partners to get status reports for upcoming telecons.

Profile flags

- **Morgan Silverman is finishing the first cut on data flags for easily filtering for specific DC-8 profiles.**

- **While the aircraft performed frequent sampling, only those profiles reaching below 500 feet associated with low approaches as well as takeoffs and landings have been flagged in this version.**

- **Flags identify each profile based on the country and location as well as whether it was an ascent/descent or takeoff/landing.**

- **While all profiles are valuable, the ascents tend to be of the highest quality (i.e., minimum time and distance covered to complete the profile).**

Ground-based and Airborne Remote Sensing Observations of HCHO for Better Inferring Surface Air Quality

Prajjwal Rawat

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Column HCHO can indicate surface ozone variability

- Observations of column (Ω) HCHO and surface ozone during different field campaigns show ΩHCHO as a valuable indicator of surface air quality.

- However, its responses towards different biogenic/anthropogenic emissions, meteorological conditions still need high-resolution observations.

GCAS raster over Long Island Sound
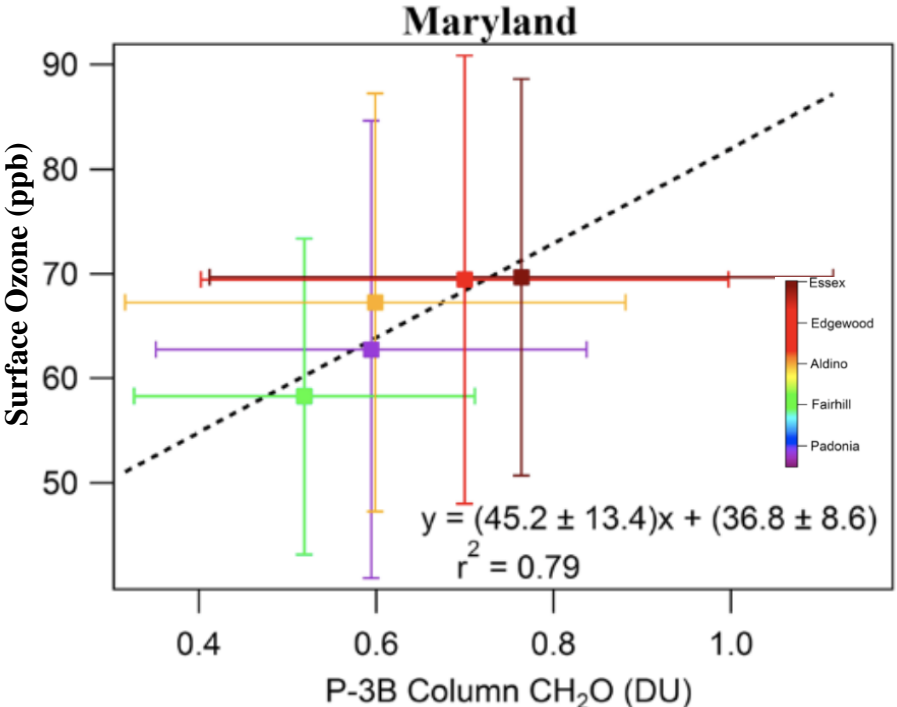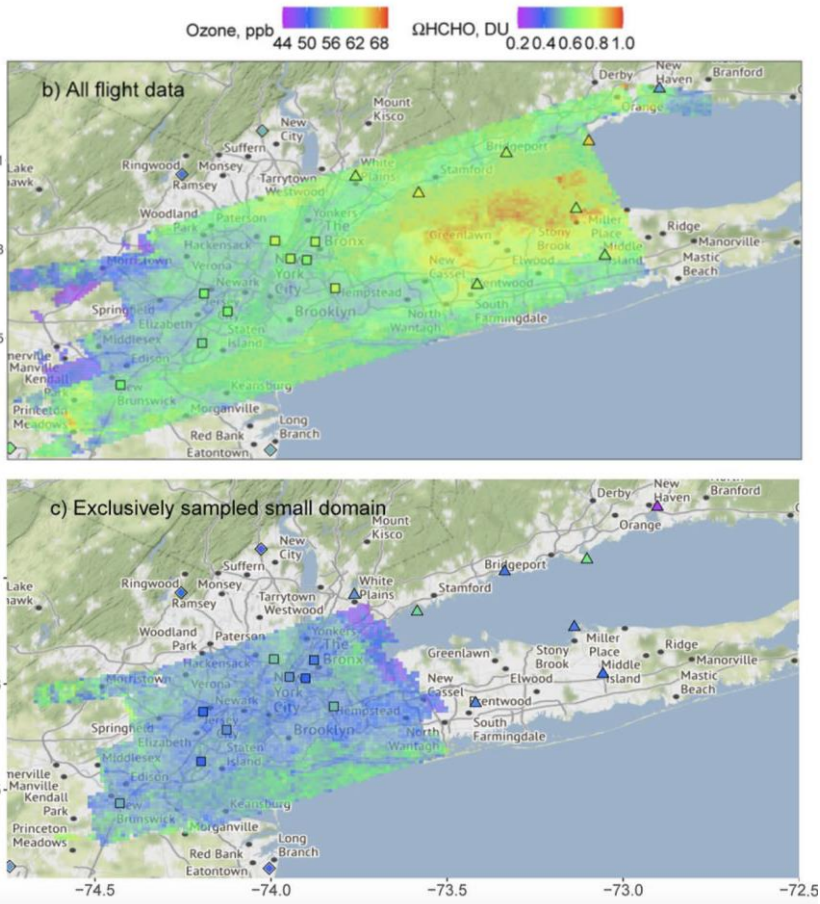
DISCOVER-AQ campaign

[Schroeder et al., 2017]
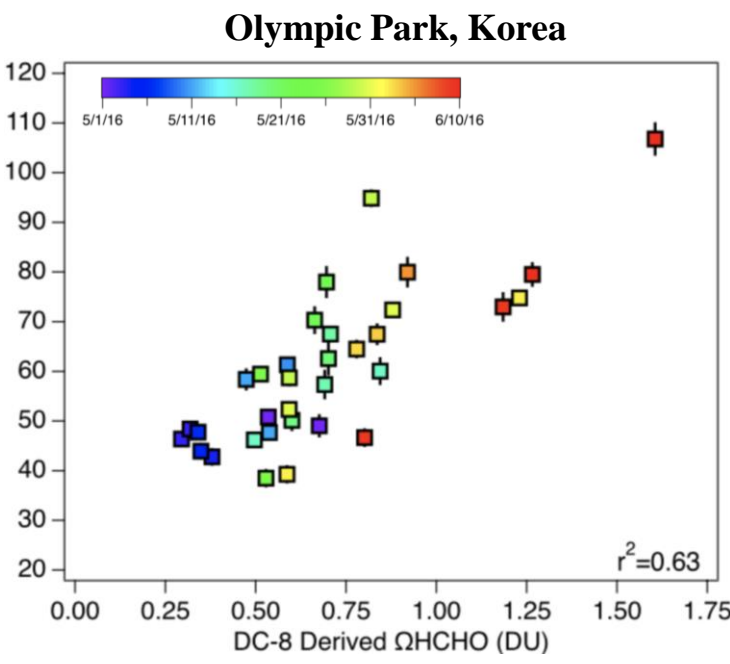
KORUS-AQ campaign

[Travis et al., 2022]

LISTOS campaign

[Travis et al., 2022]

Houston
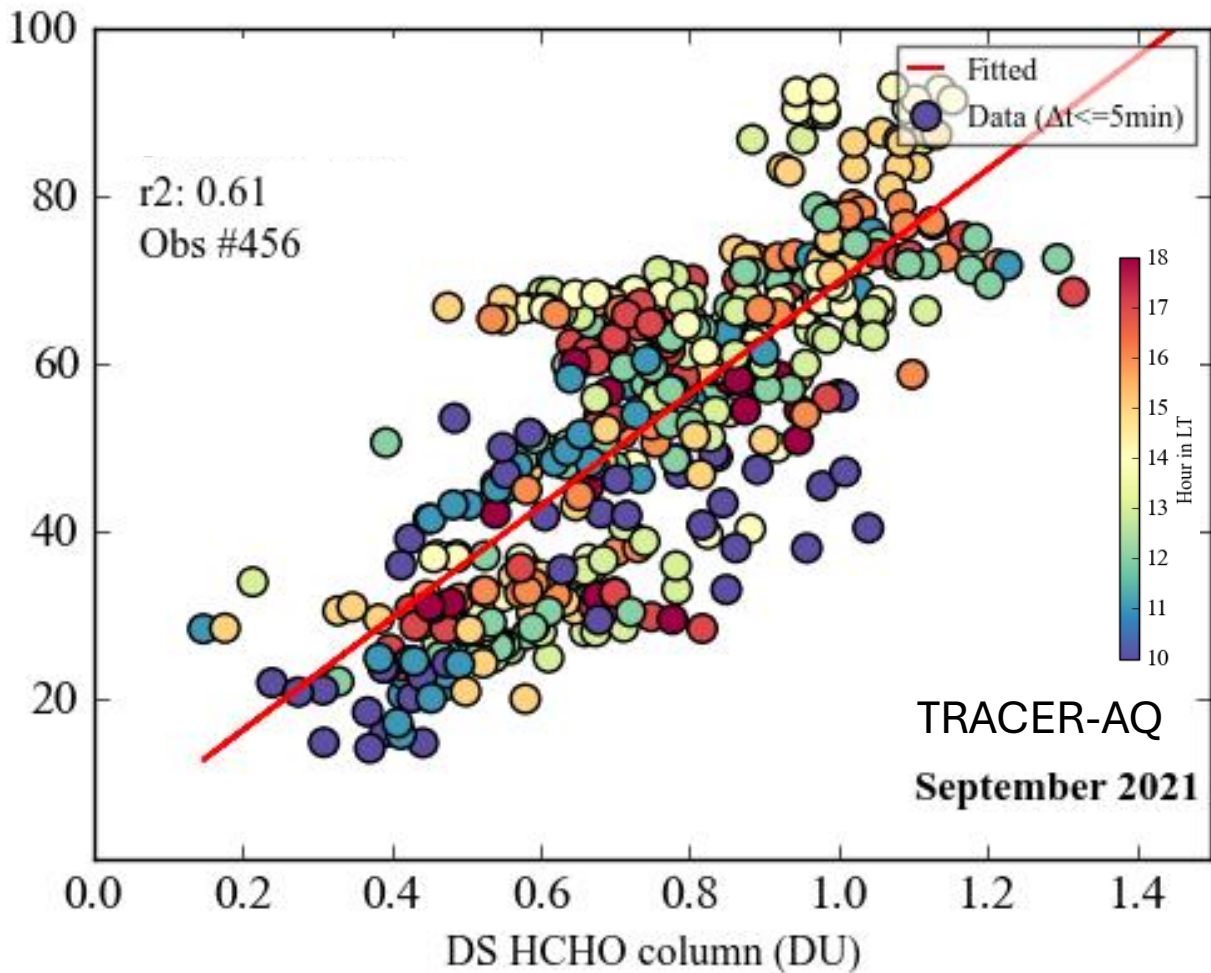
Bangkok
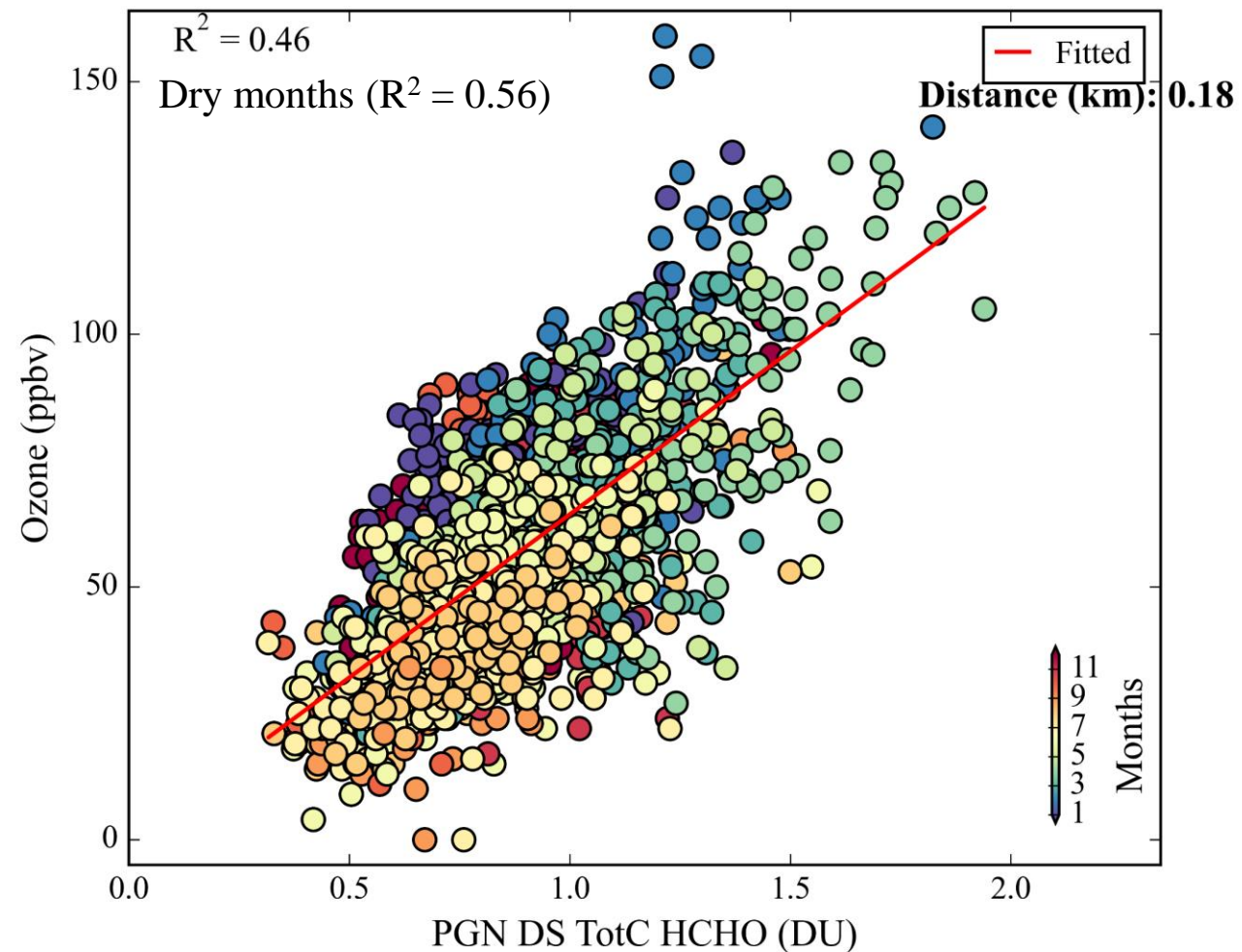
Relationship between land surface temperature and mixed layer height

Katie Travis, NASA LaRC (katherine.travis@nasa.gov)

Surface temperature

Infrared Radiation Thermometer: Heitronics KT 15.85

9.6 to 11.5μm

Taylor Shingler
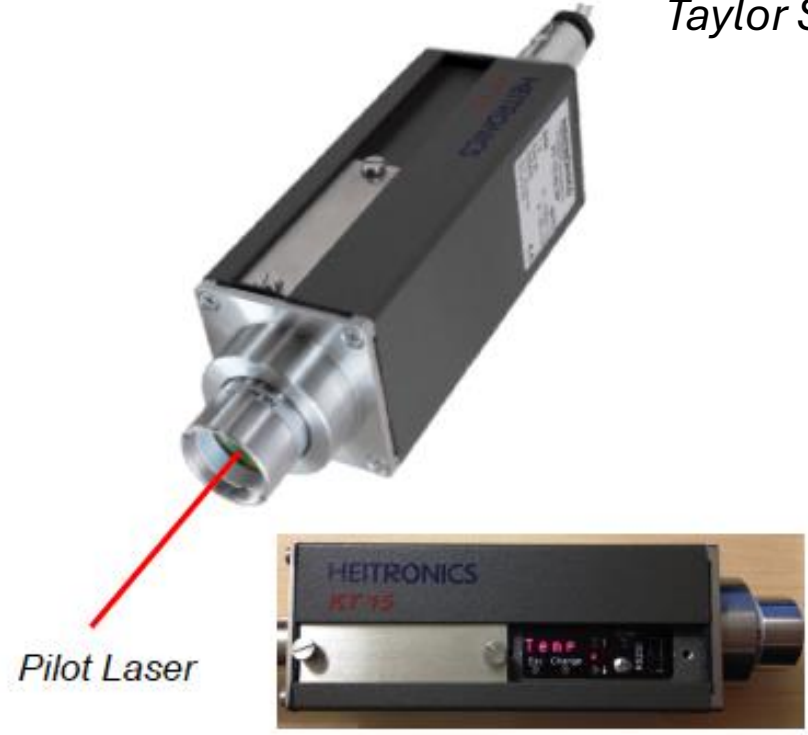
Mixed layer height

Aerosol Lidar: HSRL-2

John Hair
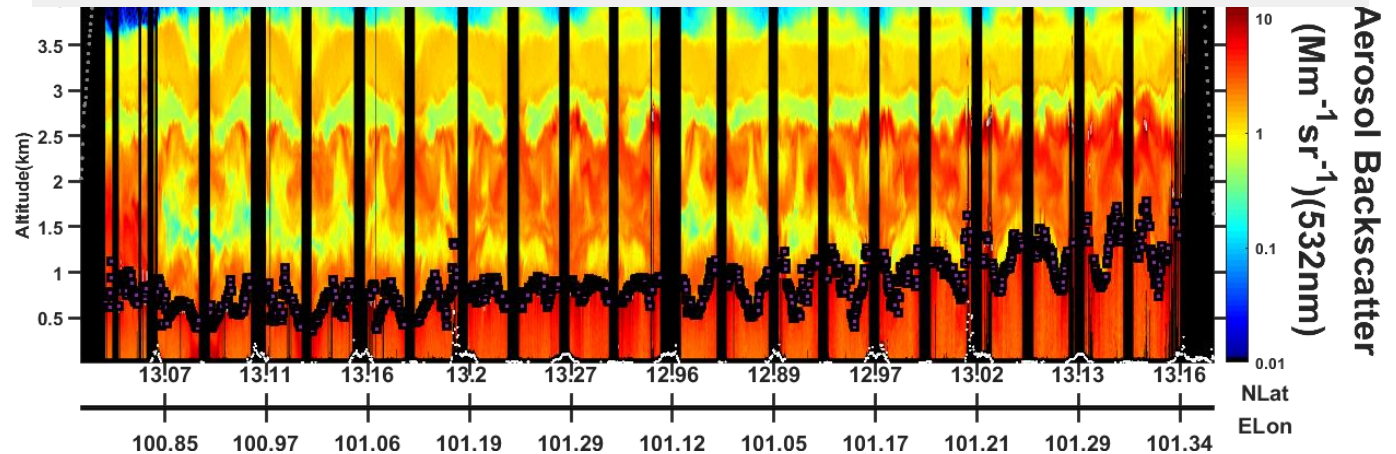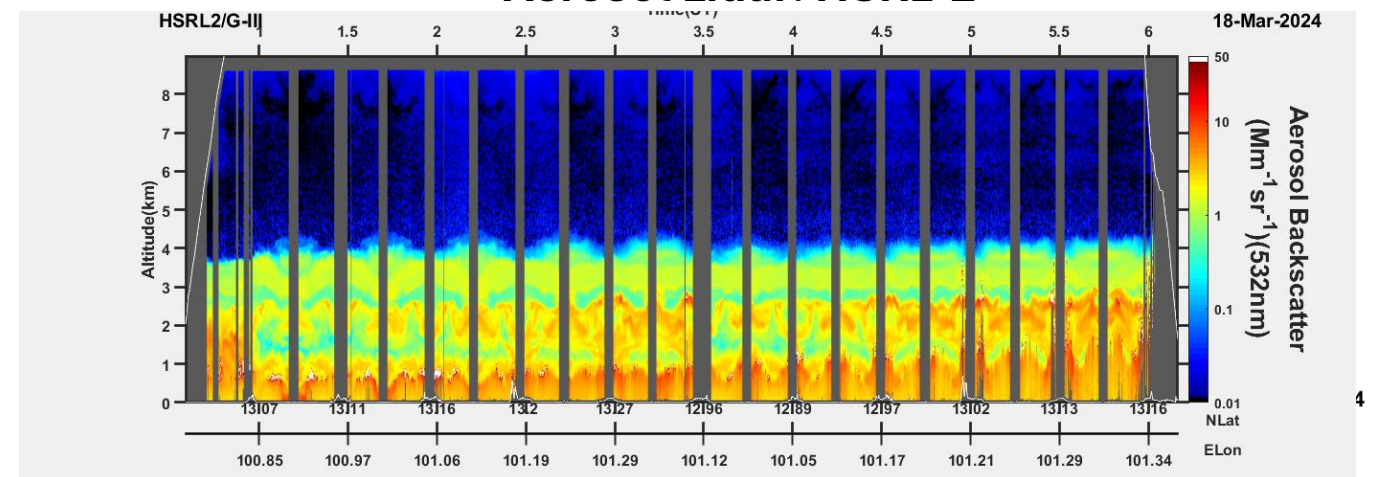
Relationship observed in Thailand between mixed layer depth and surface temperature
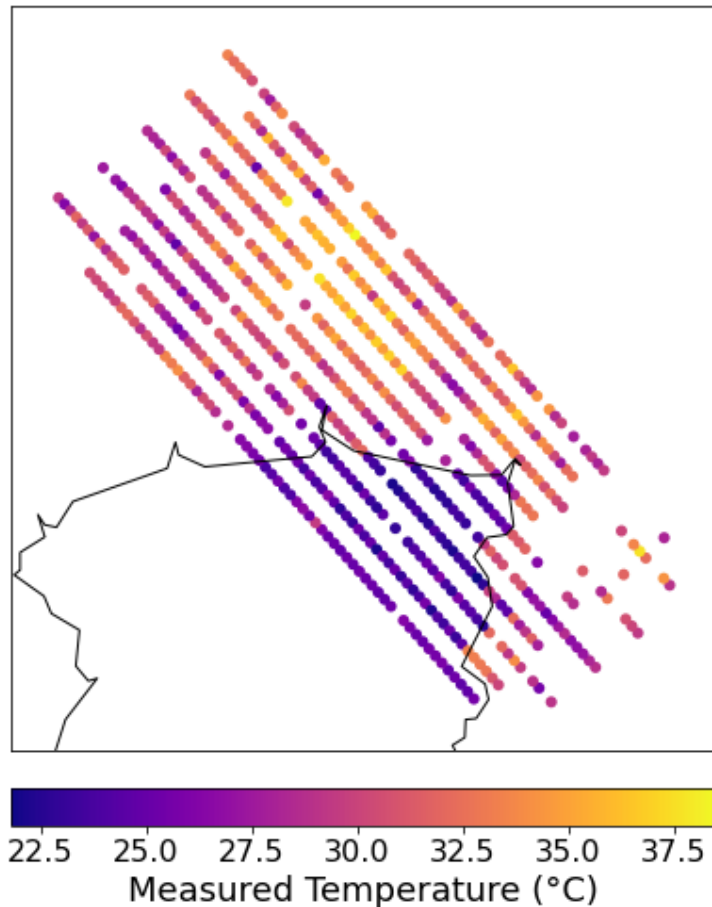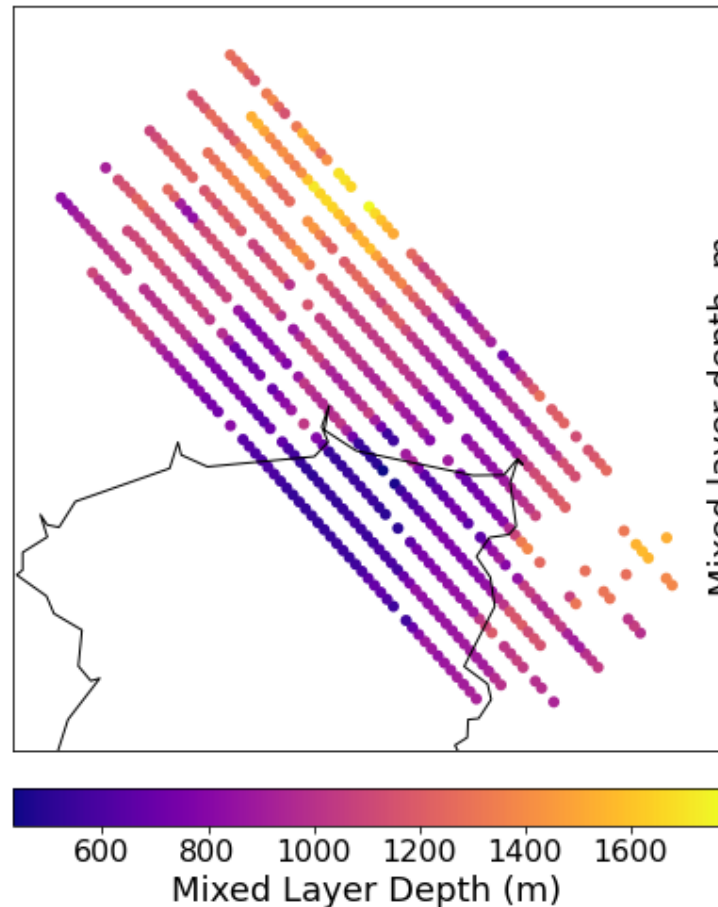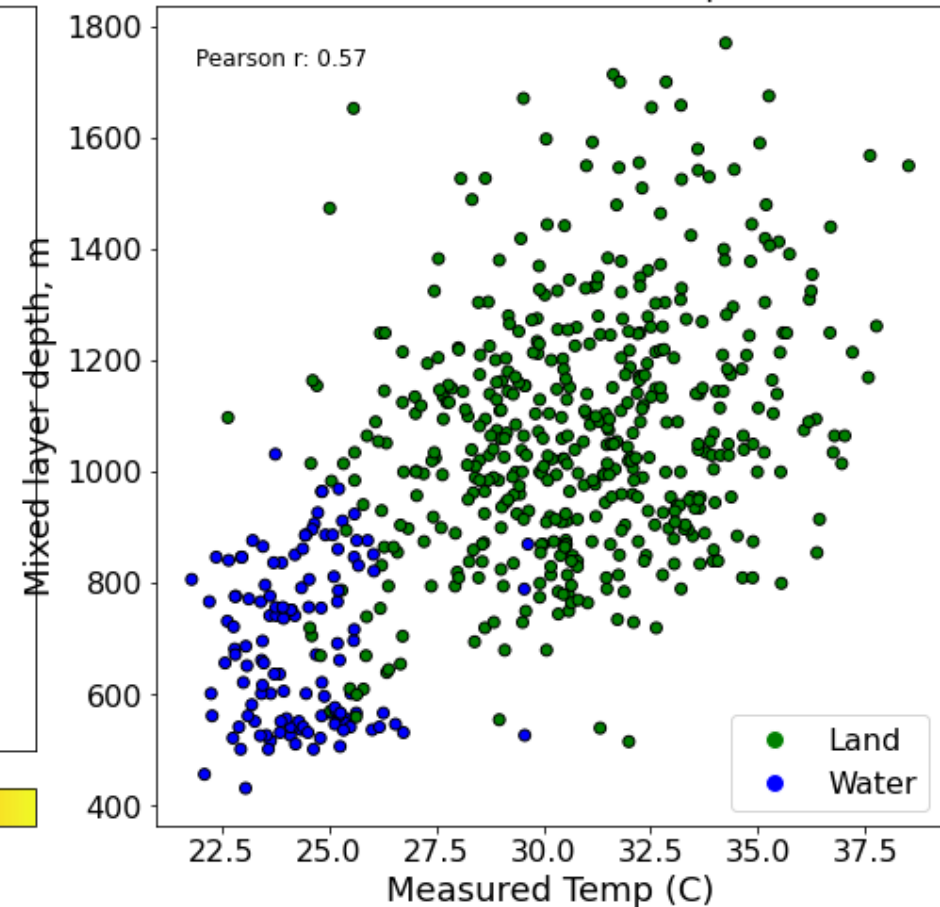
Relationship is similarly strong just over land
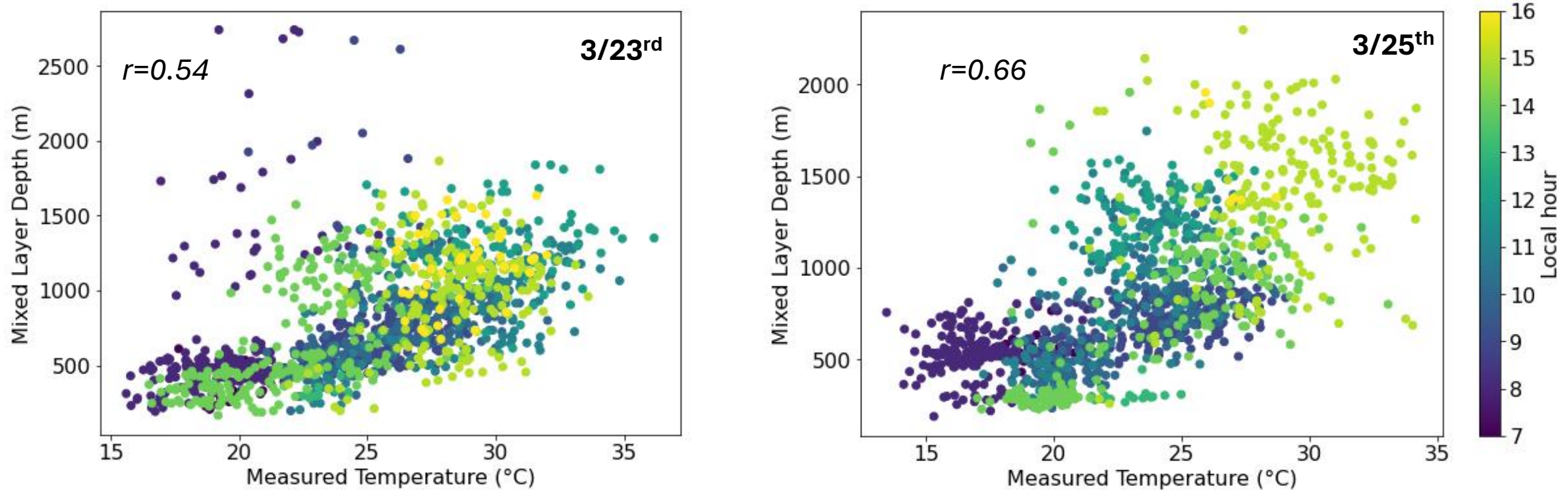
--> Could we use this to test model meteorological (and other?) parameterizations?

Brainstorming

- Korea: offshore pollution demonstrating what can be potentially transported. Origin, age, fire contribution?

- All: Demonstrate that missed approaches are a viable sampling strategy and show much greater variability than expected.

- Thailand: Examine the shift in GEMS HCHO. Is it real? Fires vs biogenics.

- All: Examine differences in constituent profile shapes and perturbation depths.

- Thailand: Examine similarities and differences in emission ratios for Thai smoke versus crop fires and wildfires during FIREX-AQ.

- Thailand: Examine relationship between O3 and HCHO in GEMS and Pandora observations

- All: Evaluate the effectiveness of the air quality monitoring network

- Philippines and Thailand: Examine the role of black carbon.

- Thailand: Characterize north-south gradients in aerosol composition…extent of fire influence

- Philippines: What's up with ozone? Why is it not higher over Manila.

- Philippines: How important is the sea salt contribution to PM2.5?

- Taiwan: Characterize VOC mixtures and toxics in Kaohsiung.

- All: Compare footprint of ascents and descents compared to spiral profiling (and duration and location)

- All: Evaluate whether the surface temperature measurement offers any insight into PBLH and urban heat island effects.

Organizing the Roadmap Ahead

Rough timeline and milestones:

1 October 2024 - Final Data Submission and Public Release

   (develop questions and outlines for synthesis reports by this date)

Mid-January 2025 - Science Team Meeting - tentative suggestion is for UKM in Malaysia to host

   (5 days – one day dedicated to each country with talks, posters, and breakouts to further develop draft synthesis reports)

Mid-February to mid-March 2025 - Deliver and publicize synthesis reports in each country