Science Team Telecon (18/19 December 2023)

Agenda

- Presentation from The Seoul Institute
- Status of overflight negotiations
- ASIA-AQ Data Archive/Registration of DataIDs
- Mission Tools Suite (MTS) and Flight Tracking
- Local Assistance with Meteorological Forecasting
- Names of visitors and prioritized list of fliers

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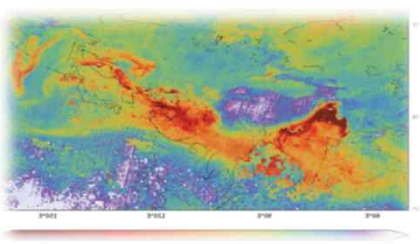
Introduction to the Seoul Institute

Sung-Kyun SHIN

Division of Urban Environment Research




CONTENTS

01. Who we are

서울연구원
The Seoul Institute

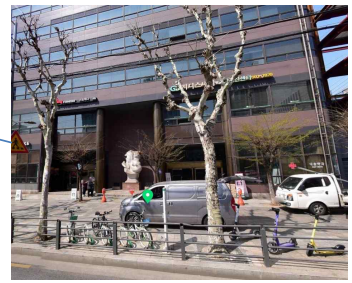
01. Who we are

The Seoul Institute

Caring for Seoul
Shaping a Brighter Future
The Seoul Institute 1992 ~ 2022

- Location :

그림 3-1. 구별 인구현황 2010
Figure 3-1. Current Population by District(gu), 2010



01. Who we are

Overview of the Seoul Institute

Caring for Seoul
Shaping a Brighter Future
The Seoul Institute 1992 ~ 2022

- **Objective of Foundation :**
  - The Seoul Development Institute was established by the Seoul Metropolitan Government (SMG) in 1992
  - was renamed as the Seoul Institute (SI) on 2021.
  - SI's Primary goal : improve municipal administration, enhance the quality of life of Seoul citizens, vision of the SMG

We suggest urban polices on welfare, culture, education, urban management, city planning, transportation, **and the Environment on a basis of scientific research**

- **Main Task :**
  - Support the policy-making processes of the Seoul Metropolitan Government (SMG)
  - Conduct intensive research for municipal administration on a variety of policy issues
  - Do joint research and exchange information with relevant and international research group

01. Who we are

Vision & Main Value

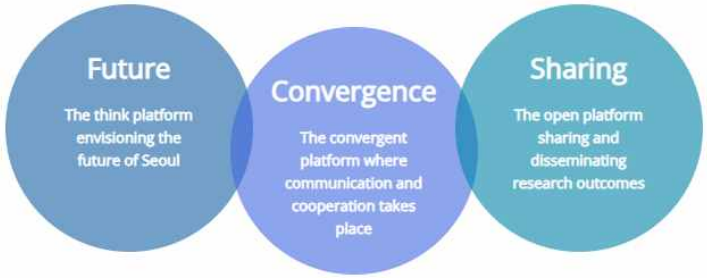
Caring for Seoul
Shaping a Brighter Future
The Seoul Institute 1992 ~ 2022

Vision & Main Value

Vision

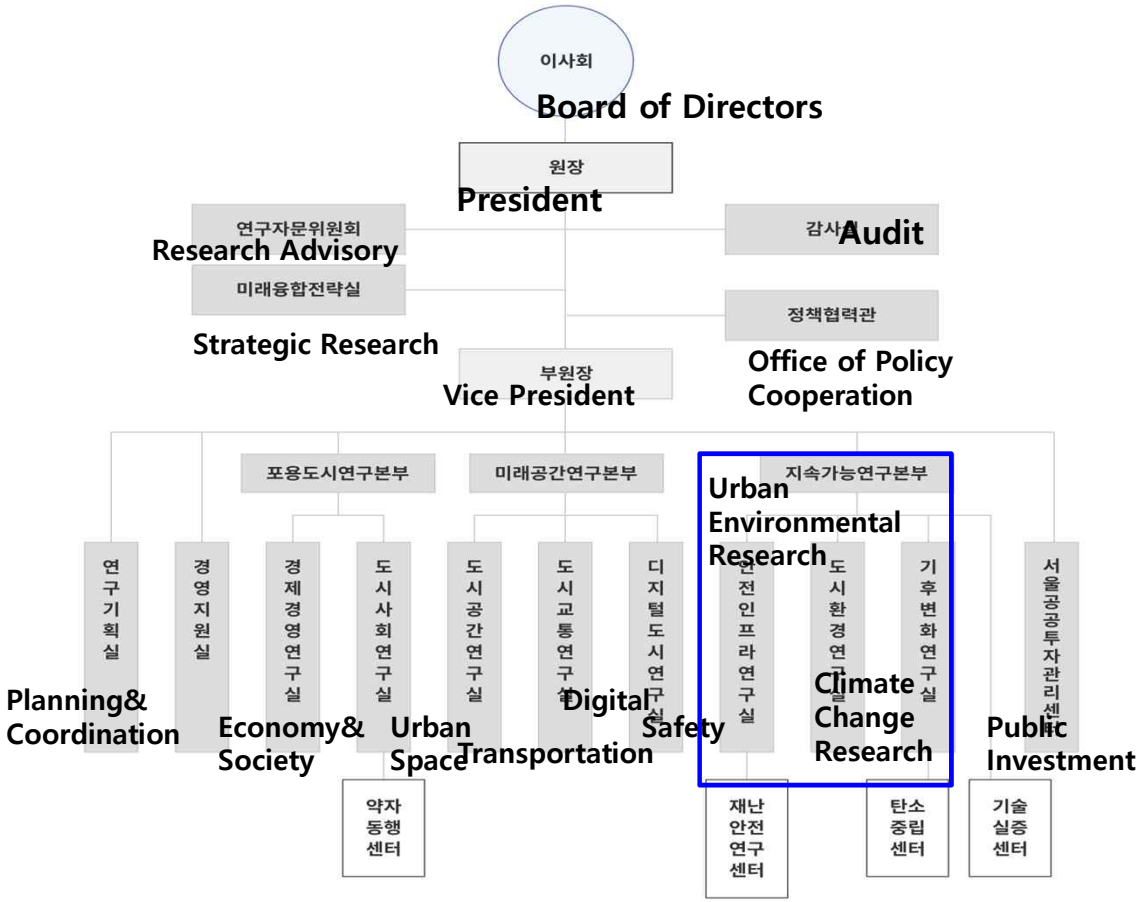
The think platform leading innovation of values of Seoul

Main Value



01. Who we are

Organization Structure



Researchers (215) + Staff (89)

Division of Urban Environmental Research

Research Filed	Main Topic
Air Quality / Atmospheric Env.	AQ monitoring, analysis Pollution Reduction management Policies for AQ
Recycling Landfill	Waste recycling, Sustainable Development
Green Infrastructure	Landscape, Ecological research
Public Health	Hazardous substance exposure assessment

Researchers (17)

02. What we did

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02. What we did

Seasonal Particulate Matter Management

- introduced in December 2019
- Aims to reduce the frequency and intensity of PM
  during the four-month period from December to March (when high concent. of PM often occur)

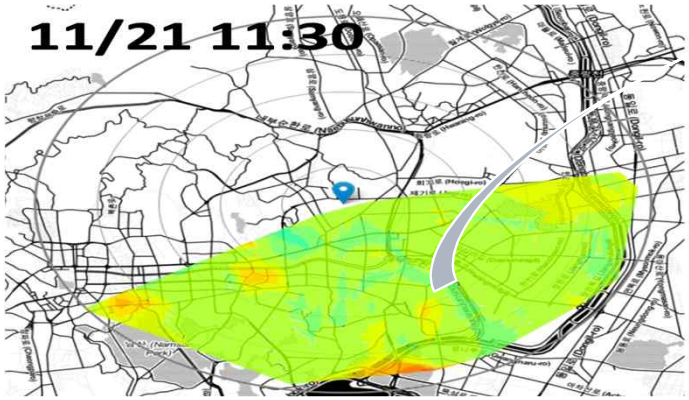
Seoul's seasonal PM management through 16 reduction measures in 4 areas

Area	Measure	Note
Transport (7)	Restriction of grade 5 vehicles	
	Parking surcharge for grade 5 vehicles	
	Vehicle emission crackdown	
	Inspection of private automotive inspection stations	
	Special points for vehicle mileage	Improved
	Reduction of emissions through traffic levies	New
	Pilot operation of the Climate Card	New
Heating (3)	Distribution of eco-friendly boilers to households	
	Special eco-mileage points	
	Appropriate heating temperature control for large buildings	
Business sites (3)	Management of businesses with air pollutant emission sites	
	Intensive management of fugitive dust such as construction sites	Improved
	Prevention of illegal incineration of domestic (agricultural) waste	
Reduced exposure (3)	Enhanced cleaning of major highways and roads	Improved
	Special inspection of indoor air quality in multi-use facilities	Improved
	Management of PM concentration areas	

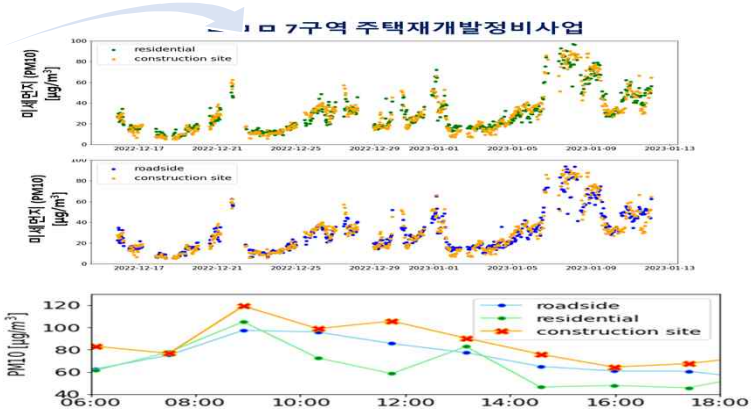
02. What we did

Scanning Aerosol Lidar

〈Scanning Aerosol Lidar system〉



〈Hot spot detection in Real time〉



〈Variation of PM concentration〉

- Observation radius : 5 km (~7.5m)
- Data from Lidar observation are compared to data with S-DoT data (Percent difference: ~16%)
  with beta-ray (Percent difference: ~20%)

Utilization of Research result in Public Policy Making

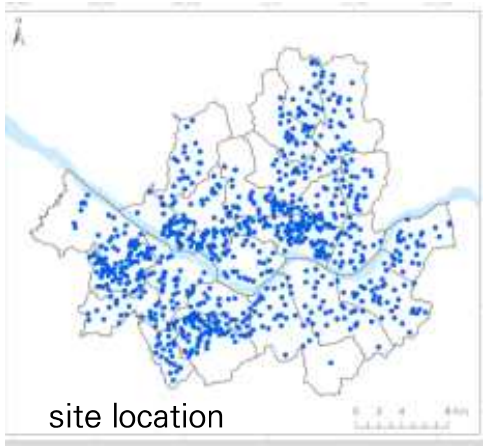
- Construction area management
- Intensive management area
- Effective pathway for street sweeper

02. What we did

Utilization of S-DOT (Smart Seoul Data of Things) data

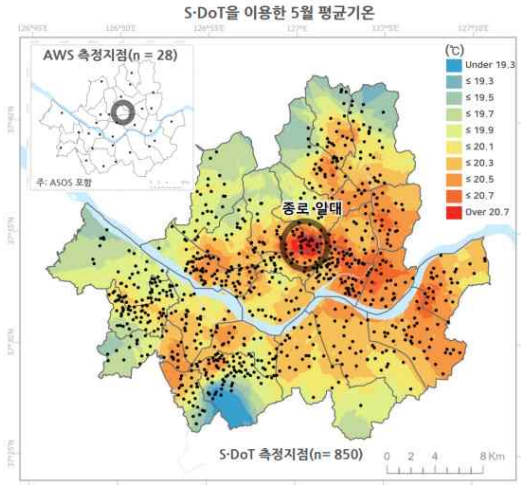
Measurement Parameter (Time resolution : 2min. (close data), 1 hour (open data))

- 미세먼지 (PM10)
- 초미세먼지 (PM2.5)
- 기온 (Temp.)
- 상대습도 (RH)
- 조도 (Illuminance)
- 소음 (Noise, dB)
- 진동 (Vibration)
- 풍향(Wind direction)
- 풍속(Wind Speed)
- 자외선 (UV)



http://data.seoul.go.kr/dataList/OA-15969/S/1/datasetView.do

2020.4.1 ~ present
File format : **.csv, json, OpenAPI



Example : distribution of air temp.

03. 2024 Research Plan

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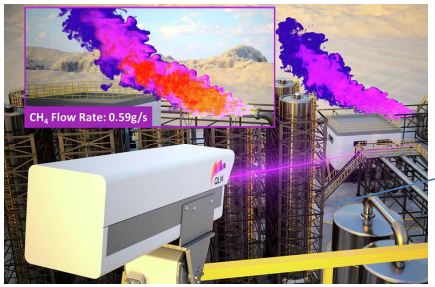
03. 2024 Research Plan

- **Resolving the contribution of VOCs to Ozone**
  (printing District, consumer goods…)

- **Impact of Low emission zone on air quality**



- **Lidar observation for CO_2, CH_4 monitoring**

- **Impact of meat grilling restraint on air quality**

03. 2024 Research Plan

Ways to Contribute to the ASIA-AQ 2024

❖ Public Policy Making for AQ management

- Solving air pollution problems with Science and Technology

- **Translating new finding from ASIA-AQ into evidence for air quality policy making**

❖ Air quality / GHGs monitoring over Seoul

- CO_2, CH_4 monitoring data by Raman Lidar
- VOCs, NOx monitoring data
- PM2.5, PM10 monitoring data by Sensor Network

- **Observation data-sharing**

Scientific Insights for Improving Air Quality in Seoul

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Philippines (1-14 February)

MOU is still awaiting an opportunity for signature. Minor changes to the text have been suggested by Philippine partners.

Flight plan discussion with CAAP has resolved remaining minor issues.

Sites for additional AERONET instruments have been identified.

South Korea (15-27 February)

MOU has been signed.

Discussion of details for flight over Seoul are still under discussion, but basic flight plans are in good condition.

Sites for additional AERONET/Pandora instruments have been identified and instruments have been shipped.

Malaysia (28 February-12 March)

Draft MOU has been sent to UKM.

Sites have been approved by DOE for additional AERONET and Pandora instruments. AERONET instruments have been shipped.

NRECC is moving forward with a cabinet paper and is ready to help us proceed with planning. This includes asking the Ministry of Defense to identify observers who will fly on the aircraft and determine the protocol for providing camera data after each flight. We also need MYSA to identify a representative to enable tech exchange with the GCAS group on air quality remote sensing.

Thailand (13-26 March)

MOU is near completion. Should be finished by end of the calendar year.

Follow up meeting with AEROTHAI to finalize flight plans was successful. Flight plans are well defined with only one minor detail (missed approach on military site) to be negotiated.

Packet for Ministry of Defense requesting a letter of support has been transmitted by the Embassy. This is the last step in securing flight permissions through CAAT.

Taiwan (sampled on transits)

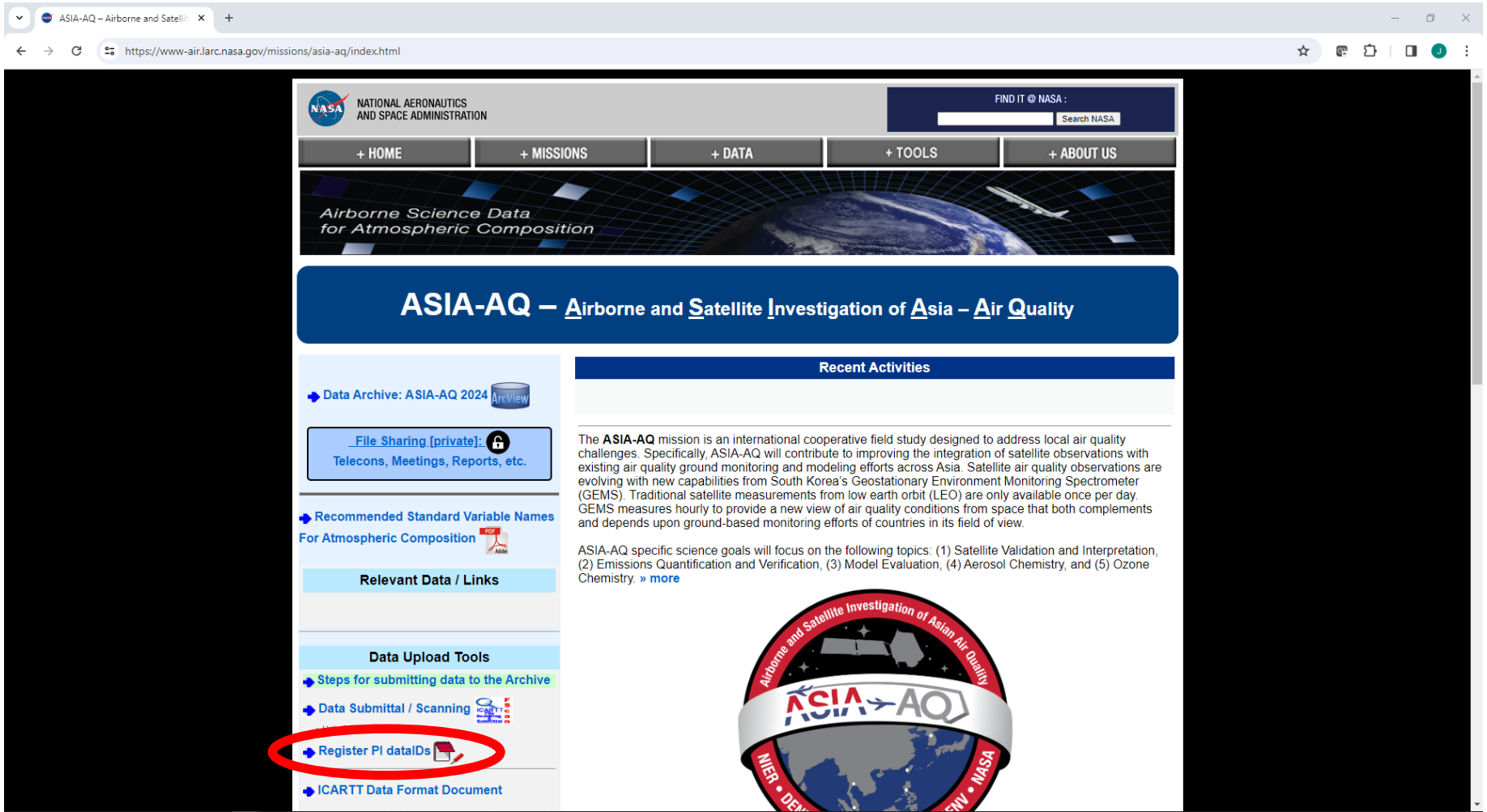
Final contents of the official overflight request have been discussed with Taiwan and transmitted today.

Overflight approval is pending evaluation of the request.

ASIA-AQ Data Archive and Registration of DataIDs

The data site for ASIA-AQ is now active: https://www-air.larc.nasa.gov/missions/asia-aq/index.html

Instrument teams will need to register DataIDs in advance of the campaign.

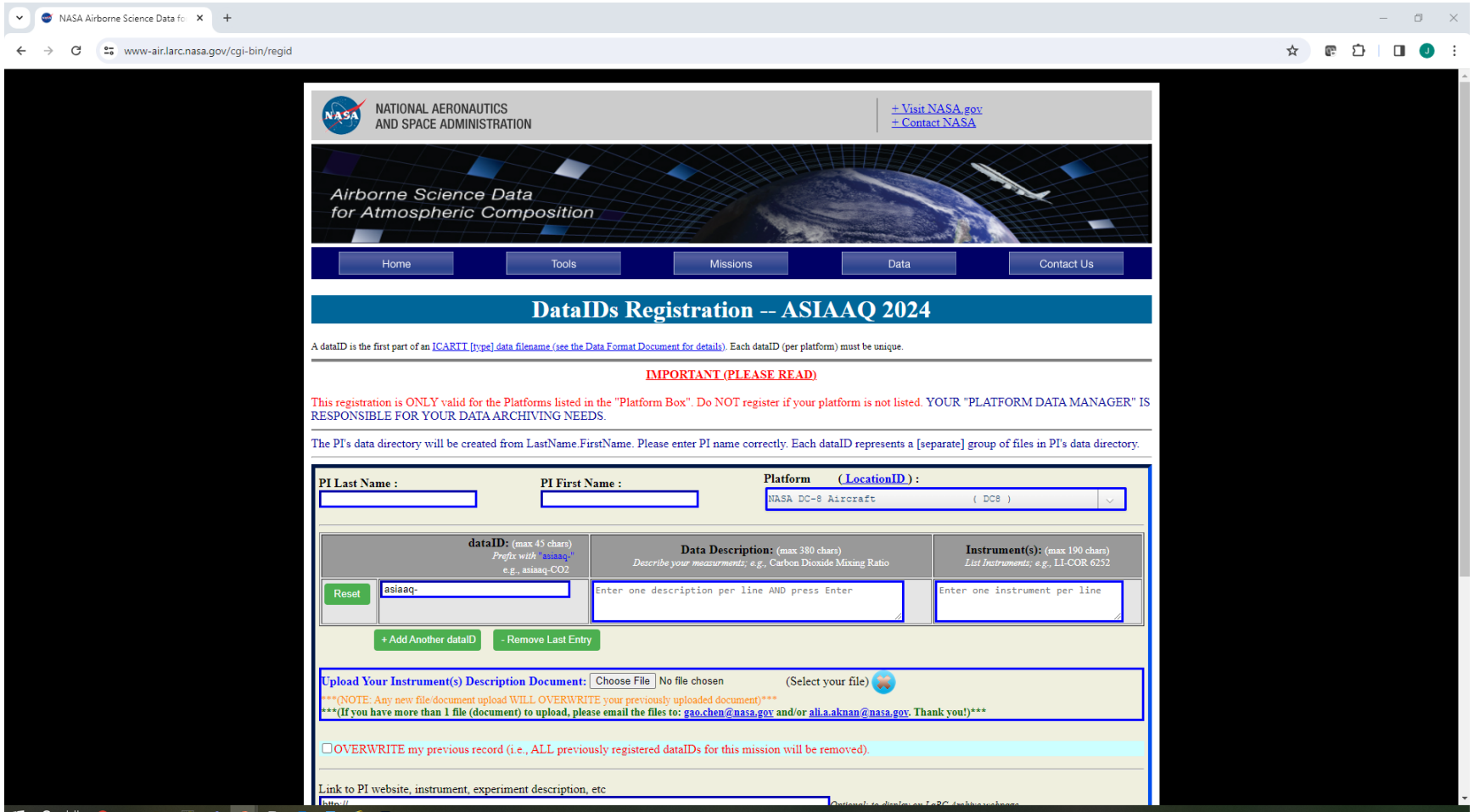


ASIA-AQ Data Archive and Registration of DataIDs (continued)

User ID/Password for registering, scanning, archiving, and accessing data will be: asiaaq/@irquality.@sia

Many of you have already done so in the past, so you are well acquainted with the process.

A more complete briefing on data protocol, file naming, and file scanning and format will be presented in January.



Mission Tools Suite (MTS) and Flight Tracking

All ASIA-AQ Science Team members and participants will have access to the Mission Tools Suite (MTS).

MTS is a web interface that enables tracking of the research aircraft, communications between aircraft and ground via chat, visualization of selected aircraft data, satellite overlays, and other functionality.

You will be receiving an email from Aaron Duley with instructions when the ASIA-AQ MTS is ready.

A training session is being arranged for mid-January. More to come on that.

We need to also track the Korean aircraft (similar to KORUS-AQ). Options for reporting aircraft location need to be explored.

More information in MTS can be found at https://airbornescience.nasa.gov/content/ASP_Mission_Tools_Suite

Tracking is also available to the general public at https://airbornescience.nasa.gov/tracker/

Local Assistance with Meteorological Forecasting

We need to find a local forecaster in each country to partner with our forecasting team. Their local knowledge will be invaluable.

We need help from the Steering Groups to identify a person who can commit to serve in this role, which requires them to be present on site with the science team.

Names of visitors and prioritized list of fliers

We expect three open seats on the DC-8 and one open seat on the G-III.

This translates into 12 flight opportunities on the DC-8 and 8 opportunities on the G-III (flying two sorties per flight day)

We need help from the Steering Groups to identify and prioritize candidates for these flight opportunities.

This may include observers (e.g., Malaysia), scientists, dignitaries, media, etc.