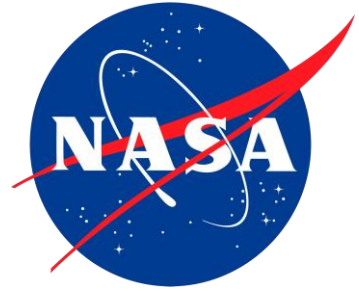




KORUS → **AQ**



Science Team Tag-up, 18 April 2016

Agenda

Test Flight #1 – Outcome

Test Flight #2 – Plans

Osan Logistics and Schedules

Shipping and other Logistics

Data Registration

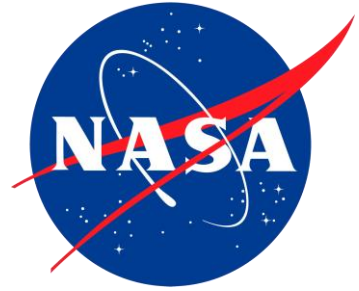
KORUS-OC Status

Comments/Questions



KORUS → **AQ**

Test Flight #1



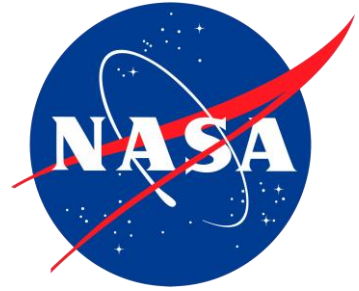
Outcomes:

- ***Flight went well with respect to flight objectives***
- ***Too cloudy due to jet traffic (4STAR orbits may be needed again, which only adds 8 minutes)***
- ***ATHOS may like to see another attitude change***
- ***Pressure changes were well executed, but would be good to do again***
- ***About half instruments working, other half not fully operated, and a few with issues to resolve, but no insurmountable issues. All day tomorrow and MAYBE some time on Wednesday***



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Test Flight #2



Plans:

- ***Manifest – need names to Jack Dibb ASAP, please email him or see him first thing tomorrow before lunch***
- ***Flight plan will be updated with Walt tomorrow (MBL, coastal forest, Table Mt. overflight, TCCON spiral over Edwards AFB, reverse heading at high altitude for wind calibration, and repeat of 4STAR) Come early tomorrow to Jack with your requests.***
- ***Takeoff time – earlier is good for logistics, but not for flight conditions.***

LaRC King Air status:

- Transit began this morning. Reached California today.

Hanseo King Air status:

- Fully integrated. Test flights on 21 and 22 April (2 hours each).

Please Check the KORUS-AQ website for Daily Updates!

- Daily schedule information and news have been appearing since 3 April.
- This will be the primary method of making flight announcements during the campaign.

KORUS-AQ

KORUS-AQ: An International Cooperative Air Quality Field Study in Korea

US Steering Group: Jassim Al-Saadi, Gregory Carmichael, James Crawford, Louisa Emmons, and Saewung Kim

Korean Steering Group: Chang-Keun Song, Lim-Seok Chang, Gangwoong Lee, Jhoon Kim, and Rokjin Park

Introduction

Air Quality is an environmental concern of fundamental importance across the globe. The need to monitor and understand air quality requires continual effort as populations grow, energy use increases, and industrial activity evolves. Air quality goals have also evolved as improved understanding of health effects has demonstrated the added benefit of setting lower targets for exposure of humans and ecosystems to ozone, fine particles, and other toxic pollutants in the air. Long-term efforts have relied primarily on ground-based observations to diagnose regions of poor air quality and modeling to develop mitigation strategies. In recent years, satellites in low Earth orbit (LEO) have demonstrated the ability to observe the critical constituents affecting air quality. However, the impact of LEO observations has been limited by their infrequent nature and coarse resolution with respect to source distributions and timing (approximately once per day at horizontal scales of tens of km), insufficient to observe the details of air quality events that can develop over timescales of a single day. The promise of geostationary (GEO) observations as a vantage point for studying air quality can overcome these problems by providing observations many times throughout the day and at higher spatial resolution by taking advantage of longer viewing times. The drawback of GEO is the limited viewing domain, preventing global observations with a single satellite. This has led to an international effort to launch a constellation of satellite instruments focused on air quality over Asia, North America, and Europe. These instruments will provide hourly observations of those regions throughout the day at horizontal resolutions of better than 10 km. The funded GEO atmospheric chemistry instruments expected to launch in 2018-2019 include GEMS by the Republic of Korea, TEMPO by the US, and Sentinel-4 by Europe (Figure 1). Also, with its planned launch in 2016 the Sentinel-5 Precursor (S5P) mission will begin providing the next generation of once-daily global measurements from LEO at horizontal resolution similar to the GEO missions.

Daily Schedule

Monday, April 11, 2016

PLAN FOR 4/12:
0600 - 1700: Instrument Integration CIT-CIMS, GT-CIMS, K-ACES, K-CIMS, and K-PTR-MS.

END OF THE DAY REPORT:
DC-8:
CIT-CIMS: Installed.
GT-CIMS: Ready for power check.
K-ACES: Installed.
K-CIMS: Ready for power check.
K-PTRMS: Installed.
Several instruments have open issues and documentation to complete prior to Friday shake down flight.

NOTES:

- Lab meeting 1300 every day except Saturday and Sunday.

LaRC B200: (by Lucille Crittenden)

- The science instruments were installed on the aircraft, finishing up just after noon today.
- Due to inspections still to complete and a lot of paperwork still to close out, an ICF today was not possible. Scientists were posed to do more ground checks to verify their systems this afternoon.
- An ICF will be conducted once the aircraft reaches Korea.

Asset Tracker

Twitter @KORUS_AQ

Figure 1. Global air quality satellite constellation showing expected fields of view for hourly geostationary observations from satellites positioned over North America (NASA-TEMPO), Europe (ESA-Sentinel-4), and Asia (KARI-GEMS). These observations will be supplemented by daily global views from TROPOMI onboard ESA's LEO satellite, Sentinel-5P. The background image is the

Daily Schedule sometimes has more information (this is from 4/17)

UPDATE FROM OSAN AB:

GOOD NEWS:

The base has granted ration card privileges to all US citizens. ESPO will print out the necessary forms and distribute them upon your arrival. You must bring this form, together with your passport (or passports if you had your passport renewed during the approval process) to the Pass & Registration Office (see UPON YOUR ARRIVAL below); with this number of Ration cards available it should be easy to accommodate everyone in our mission to purchase groceries at the base commissary.

LOGISTICS:

Our sea surface shipment arrived, the cargo has been unloaded (except for DC-8 equipment).

We'll be able to accommodate everyone in building 1187. The office space setup there is almost complete (see attached photo). Team seating assignments will be emailed in a few days (an email about this will soon follow up.)

The ISP run into some delays laying the fiber optic cable to our building, it is expected to be up and running by the end of this week.

Buildings 1161 office space setup is complete. This building will be utilized by both B200 aircraft, crews, and instrument teams.

BADGING:

Osan AB Security Services has sent a request up their chain of command to have the Pass & Registration Office open exclusively for KORUS-AQ personnel on April 26th in order to expedite the issuance of 37EK Base ID cards.

We have a lot of people to process that day, so we appreciate your patience. New arrivals will be broken up into smaller groups in order to minimize the wait. Details will be given that morning.

UPON YOUR ARRIVAL:

Remember to keep ESPO aware of your arrival: osan@espo.nasa.gov

We will meet in the lobby of the Turumi Lodge at 0740 the morning after your arrival. ESPO will distribute some required documentation as appropriate and from here, we'll take you to the pass and registration office to get your 37EK Osan ID card (and Ration Card authorization as needed.)

If planning to bring vehicles on base, bring the additional documentation: driver license, car registration, insurance information.

PERSONAL CARS/VEHICLES

Personnel planning to bring their vehicles on base must bring the paperwork as indicated above.

It is highly recommended that for the first time, the vehicles be parked off-base (there is a parking garage within walking distance from the main gate).

The driver may then enter the base via the Main Gate and bring the above documentation to the Pass & Registration office. A temporary 30-day pass will be issued at that time. Please refer to the information package for details about gates' hours, etc.

PIs should email Jhony to let him know whether you prefer an office space or a spot on the hangar floor at Osan

Daily Schedule

Early morning (<8am): Forecasters prepare forecasts

8-10 am: Daily planning meeting – for flight planners, forecasts, and any interested measurement people

2 pm: Science Meeting to share preliminary results (on days without flights)

Afternoon: Updated chemical forecasts might be prepared based on a flight plan decision for the next day.

Nowcasting: During a flight, it might be helpful to have a meteorologist and chemical forecaster monitoring conditions.

Daily Planning Meeting 8-10 am

Forecasts for the next flight (1-2 days)

- Summary of meteorology and cloud forecast
- Summary of satellite images and forecasts for each objective
 - Seoul plume location and plume age
 - Inflow over West Sea, upwind of Seoul
 - Biomass burning impacts
 - Dust impacts
 - Biogenic vs anthro emissions (e.g., biogenic without anthro influence)
 - Conditions for BL-free trop mixing (BL ventilation; entrainment)
 - Conditions at ground sites
 - Transport from Hebei, China (aircraft sampling by Chinese plane)
- Discussion and decision on flight plan (or to not fly)

Osan Logistics (1)

- This information package has been updated as of 11 April and can be downloaded from the KORUS-AQ website
- The direct link is https://espo.nasa.gov/home/korus-aq/content/KORUS-AQ_Osan_Orientation_Package
- **READ IT!**



KORUS-AQ MISSION PARTICIPANT INFORMATION PACKAGE

Osan AB Mission Information Package

WELCOME TO OSAN AB
This document will get you started and answer most of your questions ahead of your arrival to Osan AB.
For further questions email the Earth Science Project Office osan@espo.nasa.gov (ver. April 11, 2016)



KORUS-AQ Shipping Update

Return shipment dates have been added to the Mission Calendar:

Air shipment (13-17 June)

Sea Shipment (17 June – 18 July)

*Work with Steven if these dates cause problems for your team.

Shipping Schedule for Air Shipment from PMD to Osan posted to the RSS feed on the KORUS-AQ website. Please check announcements daily.

Base Restrictions (taken from the Osan Logistics Document)

- **No Photography** on the flight line or towards the runway. No photographing of military aircraft.
- Always carry the following identification:
 - Form 37EK: issued by Osan Air Base
 - ESPO issued ID mission badge: Allows you to visit KORUS-AQ restricted areas.
 - KID /passport
 - Special access/training as needed (i.e.: base issued forklift authorization.)
- **High visibility reflective vests** must be worn at all times inside the restricted areas. Bring your own if you have one, if not ESPO can **loan** you one if you don't have one available.
- **Appropriate working attire:** no open toe shoes nor heels.
- **Do not meander or walk into buildings not authorized for our use.**
- **Last minute visitors:**
 - Must be escorted at all times
 - No after-hour access, therefore last minute visitors CANNOT stay on base.
 - No last minute Designated Country Personnel will be granted access.

Note: Base personnel -anyone, not just base security- will challenge your authorization and identification at any time while operating inside the restricted areas. **ALWAYS** carry identification.

Failure to follow these rules not only jeopardizes your access to Osan. It also puts the entire KORUS-AQ mission at risk. Please follow these rules exactly.

Escorting Designated Country Personnel

- *Designated country personnel* (DCP) **MUST** be escorted at all times.
- Only US citizens are authorized to escort DCP's.
- Primary responsibility for escort is with members of the DCP's instrument or investigation team
- An escort can only bring one DCP through the gate, so research groups cannot bundle the problem by having one person pick up the DCPs.

- Some teams will need help with this responsibility:

While we have had some volunteers offer to assist with escorting, we need to monitor this closely on our arrival. Ultimate responsibility for arranging escort belongs to the relevant instrument teams, but we will help you.

Failure to follow these rules not only jeopardizes your access to Osan. It also puts the entire KORUS-AQ mission at risk. Please follow these rules exactly.

Data Registration and Archive:

It is time to register dataIDs (instructions were emailed earlier today).

Data will be hosted at:

<http://www-air.larc.nasa.gov/missions/korus-aq/index.html>

Due to data volume, a separate site will be established for model, satellite, GeoTASO, and MOS data at <https://korus-aq.larc.nasa.gov> (this site is not yet active).

Login: korusaq

Password: *****(see note below)

(Password will not be included in distributed slides but it can be obtained from Gao Chen, gao.chen@nasa.gov; Ali Akan, a.a.akan@nasa.gov; or Michael Shook, michael.a.shook@nasa.gov)

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Airborne Science Data for Atmospheric Composition

KORUS-AQ -- An International Cooperative Air Quality Field Study in Korea

Data Archive: KORUS-AQ ArcView

Team Members Only !
** Login Required **

File Sharing / Telecons / Forecasts / Docs

+ Upload Daily / Status / Quick Look Reports

View Daily / Status & QuickLook Reports

KORUS-AQ Data Management

ICARTT Data Format Document

Relevant Data / Links

AERONET - Aerosol Robotic Network

Data Upload Tools

Steps for submitting data to the Archive

- Data Submittal / Scanning
- Register PI dataIDs

Useful Tools

- Download HDFView -- visual tool for browsing & editing HDF files
- Download File Scanning SW for Windows (Requires IE)
- Download Flight Planning SW for Windows (Requires Google Earth)

Recent Activities

- KORUS-AQ Science Team Meeting, 15-16 October 2015
NASA Langley Research Center

KORUS-AQ offers the opportunity to further advance NASA goals and those of its international partners related to air quality through a targeted field study focused on the South Korean peninsula and surrounding waters. The study would integrate observations from aircraft, ground sites, and satellites with air quality models to understand the factors controlling air quality across urban, rural, and coastal interfaces.

KORUS-AQ serves as a model for international collaboration as Korean and U.S. scientists would cooperate on all aspects of air quality research. This would build relationships and strengthen future collaboration critical to the success of the constellation of geostationary air quality satellites to be launched by NASA, KARI, and ESA later this decade > more

Figure 1. Global air quality satellite constellation showing expected fields of view for hourly geostationary observations from satellites positioned over North America (NASA-TEMPO), Europe (ESA-Sentinel-4), and Asia (KARI-GEMS). These observations will be supplemented by daily global views from TROPOMI onboard ESA's LEO satellite, Sentinel-5P. The background image is the global distribution of NO₂ as seen from space

KORUS-AQ

>> KORUS-AQ: Science Overview
>> KORUS-AQ: DC-8 Instruments
>> Article: The Future of Monitoring Air Quality from Space

National Institute of Environmental Research
1978
<http://www.nier.go.kr>

For KORUS-AQ details, visit: <https://espo.nasa.gov/home/korus-aq>

KORUS-AQ Kick Off and Media Day Update:

26 April – No longer anything planned

29 April - Media Day will be conducted at Osan Air Base (2-5 pm). Arrangements are being made for participation from the US Ambassador and VIPs to include US and ROK delegations to the 2nd Civil Space Dialogue. Media coverage will be coordinated closely between the communication teams from the Embassy, NASA, Osan, and NIER.

KORUS-OC Status and Update:



What indicators would raise priority for overflight of the ship?

Theory team will be monitoring this and Carolyn Jordan will participate to keep attention on KORUS-OC issues.

Comments/Questions:

Next WebEx this Friday/Saturday. Report on test flight outcomes and transit details.