MethaneAIR Data Management Plan

Updated: 14 July 2021

Project Description

Field Phase Dates: August 1, 2021 to August 15, 2021 *(tentative - expect to start our upload of MethaneAIR on **21 July** with our checkout flight early in the week of the 26th)*

Location: Rocky Mountain Metropolitan Airport (RMMA), Broomfield, CO

Funding: NSF

Participants:

Harvard Group - S. Wofsy, J. Franklin, J. Samra

MethaneSAT Group - P. Vedder, T. Melendez

NCAR/EOL Research Aircraft Facility (RAF) - T. Thomas

NCAR/EOL/Data Management & Services (DMS) - L. Cully

MethaneAIR is an airborne imaging spectrometer and is the precursor to the MethaneSAT project. The NSF/NCAR GV HIAPER aircraft will have two, wide-swath, high-resolution imaging spectrometers that generate hundreds of GB of data on each flight (frames are acquired at 10 Hz, each roughly 1000 spatial pixels across track and 800 spectral pixels, for each of two spectrometers). The first scientific goal is to accurately measure emissions of CH4 from oil and gas production and processing facilities across the world, in order to define and track this major contribution to the rise of this greenhouse gas and pollutant in the global atmosphere. A more detailed description of the MethaneAIR project can be found on the EOL MethaneAIR Project website.

General Data Management

1. All project participants agree to follow the MethaneAIR Data Policy and this **MethaneAIR Data Management Plan**.
2. All EOL platform and instrument datasets will follow the EOL Data Policy including timely release of quality controlled EOL data and metadata plus full and open sharing of all EOL datasets with the scientific community and public. No requests for additional restrictions of EOL datasets were submitted to the EOL Directorate for MethaneAIR.
3. All datasets submitted to the MethaneAIR Data Archive will be accompanied by the required Dataset Documentation and metadata.
4. Any photographs submitted to the MethaneAIR Data Archive or that are to be displayed on the EOL MethaneAIR website must include written permission from all people shown in the photographs.

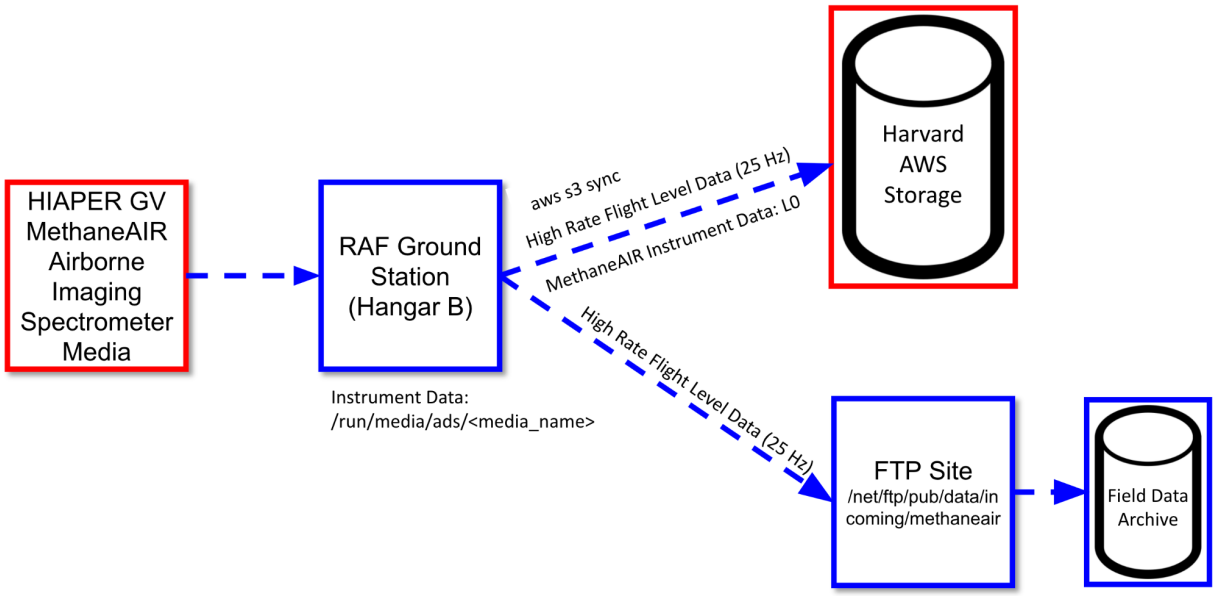
Data Archival

1. Data will be archived in the formats specified by the project PIs.
2. Raw airborne imaging spectrometer data (Level 0) will be managed by and only available from the MethaneSAT organization. Level 0 data **will not** be included in the NCAR EOL MethaneAIR Data Archive.
3. NCAR EOL will managed and ensure online ordering via the MethaneAIR Data Archive for the following datasets:
    a. Level 1 and other processed airborne imaging spectrometer datasets, as requested by the project PIs (DMS)
    b. RAF platform and instrument datasets (RAF)
    c. PI requested supporting datasets (DMS)

The list of the datasets to be included in the NCAR EOL MethaneAIR Data Archive can be found here. Data submission instructions for the post-field phase can be found on the MethaneAIR Data Submissions page.

Near Real-Time Data Collection

The near real-time data collection and transmission from the NSF/NCAR GV HIAPER aircraft to the Harvard AWS storage and to the NCAR FTP and the NCAR MethaneAIR Data Archive (i.e., part of the Field Data Archive) are shown in the chart below.



RAF will generate GV High Rate flight level data (25 hz) immediately following each flight. This data will be generated on the RAF ground station, a data processing computer located on the network in Hangar B, using the RAF post flight script. HRT files along with the airborne imaging spectrometer data will then be transmitted to the Harvard AWS storage. AWS credentials will be supplied by MethaneSAT staff to the RAF contact. The Harvard Group is providing a test case

dataset, representative of the expected volume of Level 0 (L0) data to be collected during each flight. This dataset will be used to determine expected data transmission times from the RAF Ground Station to AWS.

RAF will migrate a copy of any data that will be included in the MethaneAIR Data Archive to the NCAR EOL FTP space and/or the NCAR Campaign Storage. RAF will ensure that all EOL generated aircraft datasets are made available in the MethaneAIR Data Archive.

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