ORNL DAAC Airborne Data Tools

ORNL DAAC

NASA Airborne and Field Data Workshop

March 29, 2022

Approved for public release

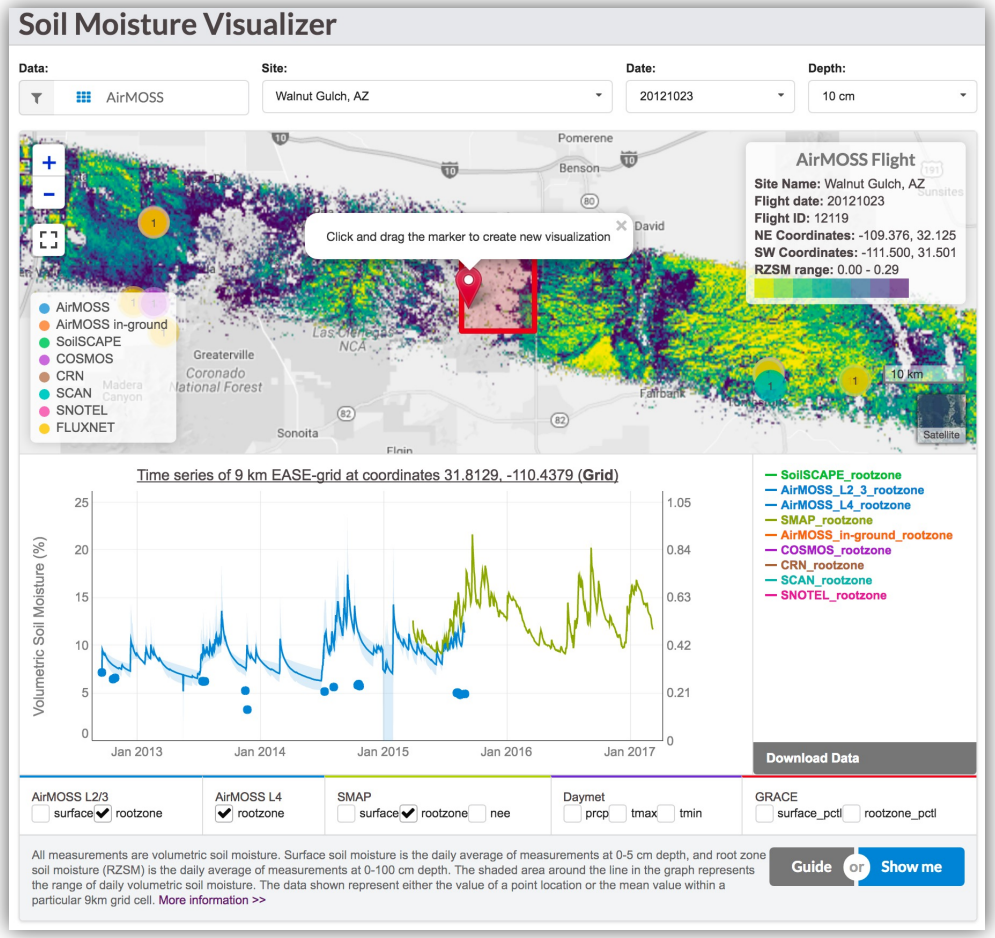
ORNL Airborne and Field Data Tool Activities

- File format standardization and improved discoverability
  - ICARTT (csv)-to-netCDF file conversion
    - Ties discrete (point:x,y,z) flight path with in-situ measurements
    - Creates 'trajectory' data files that are geolocated in space and time
    - Improved discoverability and interoperability (NASA Earthdata)
- ORNL DAAC Airborne Tools
  - Soil Moisture Visualizer
  - ACT-America Campaign Catalog
  - Airborne Data Visualizer (ADV) – atmospheric chemistry, geotracjectory
  - Spatial Data Access Tool (SDAT) – gridded, geoTIFF, AirSWOT

Soil Moisture Visualizer

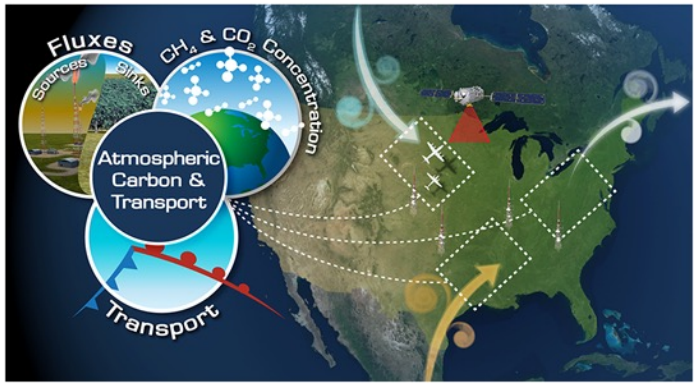
https://doi.org/10.3334/ORNLDAAC/1366

- An integrated visualization and data distribution platform that harmonizes a wide variety of soil moisture data over North America
  - Field, Airborne, Orbital, other
    - ➢ AirMOSS L2/L3, L4
- Facilitates analysis and data discovery



Shrestha, R., and A. G. Boyer (2019), Soil moisture data sets become fertile ground for applications, *Eos, 100,* doi:10.1029/2019EO114329

ACT-America Campaign Catalog



- Compiles flight details of 121 Research Flights
  - ➢ 3 Years (2017, 2018, 2019), 4 Seasons, 3 US Regions, 2 Aircrafts
- Includes: *flight dates, regions, objectives, weather conditions, instrument status, aircraft flight paths, detailed weather reports, and measurement summary figures*

ACT-America Campaign Catalog

Summer 2016 | Winter 2017 | Fall 2017 | Spring 2018 | Summer 2019

Search:

Date	Region	Weather Conditions	Flight Patterns	Instrument /Flight Status	More Details (click icons to edit)	Flight Track zip	Weather zip	[CO2] cross-sections zip	[CH4] cross-sections zip	CPL or HALO HSRL zip
SUMMER_2016										
2016-07-18	MA	Cold front approaches from NW, crossing through Lake Erie by end of day	Cold front crossing flight	All operational						
2016-07-19	MA	By morning of Jul 19, analyzed cold front is just off Jersey coast, and pushes from the northern VA border to the southern border by early afternoon; little movement during afternoon	Cold front crossing flight	B200 down						
WINTER_2017										
2017-02-06	South	GoM inflow conditions in presence of warm conveyor belt	Warm conveyor belt sampling	Bird hit C130 in the BL leg in LA						
2017-02-08	South	Cold front approaches northwest LA	Cold front crossing flight	C130 down						
2017-02-09	South	Fair weather conditions with high pressure and NE winds	Methane Box pattern flight	C130 down						

Pal, S., and K.J. Davis. 2021. ACT-America Campaign Catalog. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/1862

Airborne Data Visualizer

Python-based web application

Web browser display of flight paths and graphical plots of in-situ measurements

Select and display individual flights and variables

Direct granule download

https://doi.org/10.3334/ORNLDAAC/1860