New Variables and Functions on Giovanni to Enhance Service at GES DISC for NASA Sounder Data Users

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NASA Sounder Science Team Meeting

Greenbelt, MD

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Outline

- New plot functions on Giovanni

  overlay map plot, shapefile for plot and average

- New AIRS variables on Giovanni

  AIRS-only products, multi-year monthly mean surface temperature and anomaly

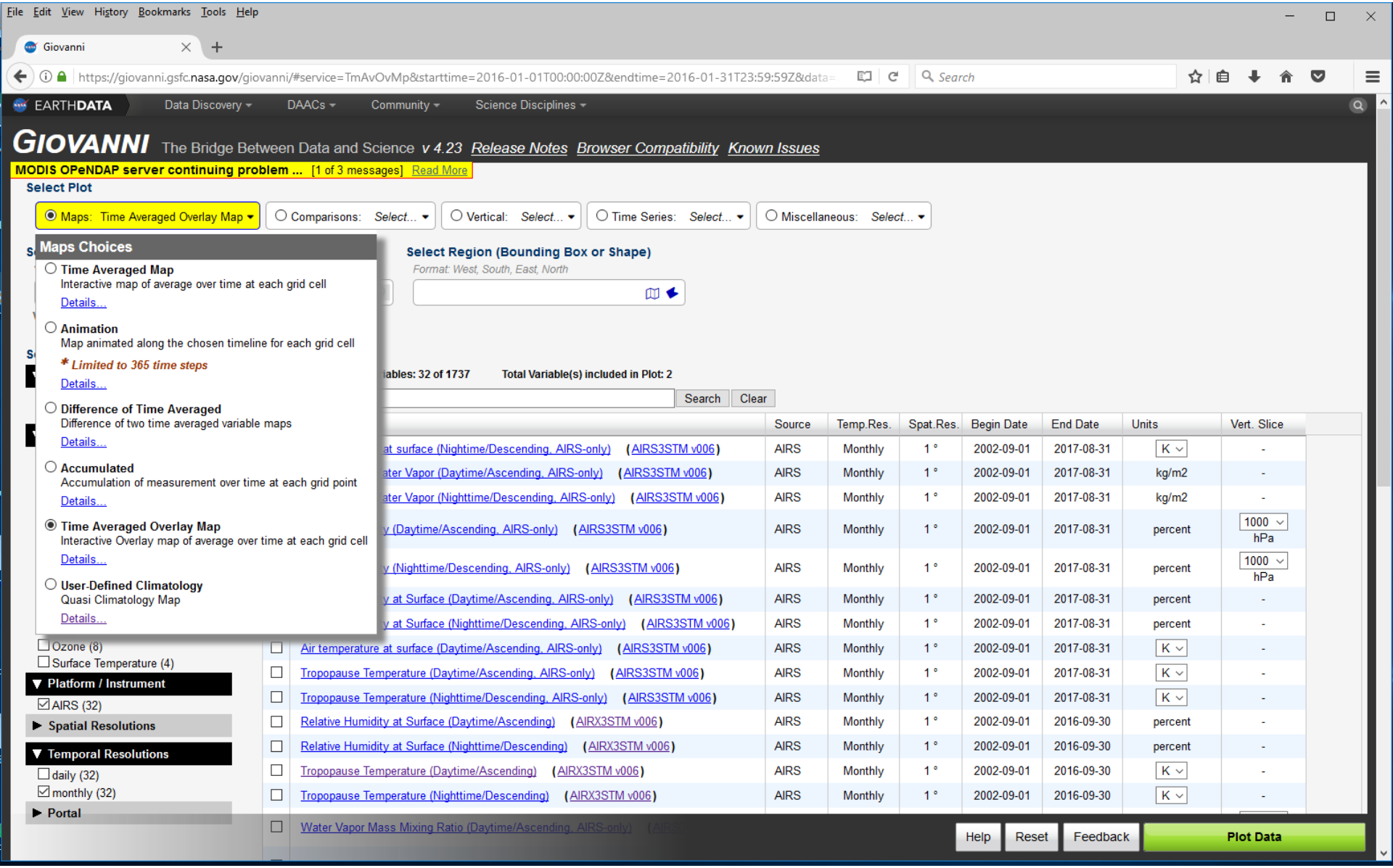
- User cases with new functions and variables on Giovanni

  →Comparison of AIRS+AMSU vs AIRS-only product

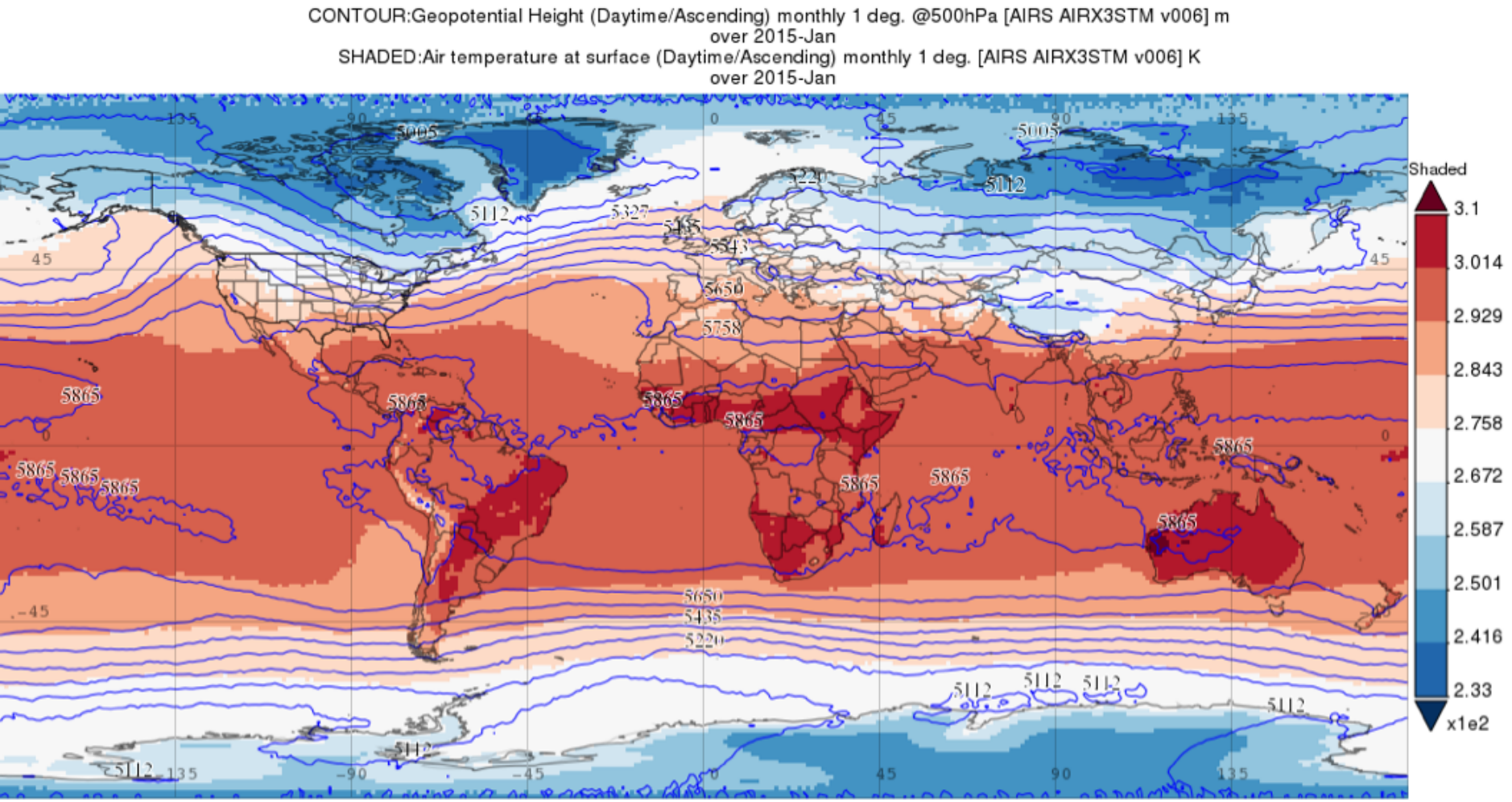
  →Multi-year Monthly Mean Surface Temperature and Anomaly time series plot with Region Of Interest (ROI) using shapefile

- AIRS V6 L2 and L3 worldwide users in last 12-month

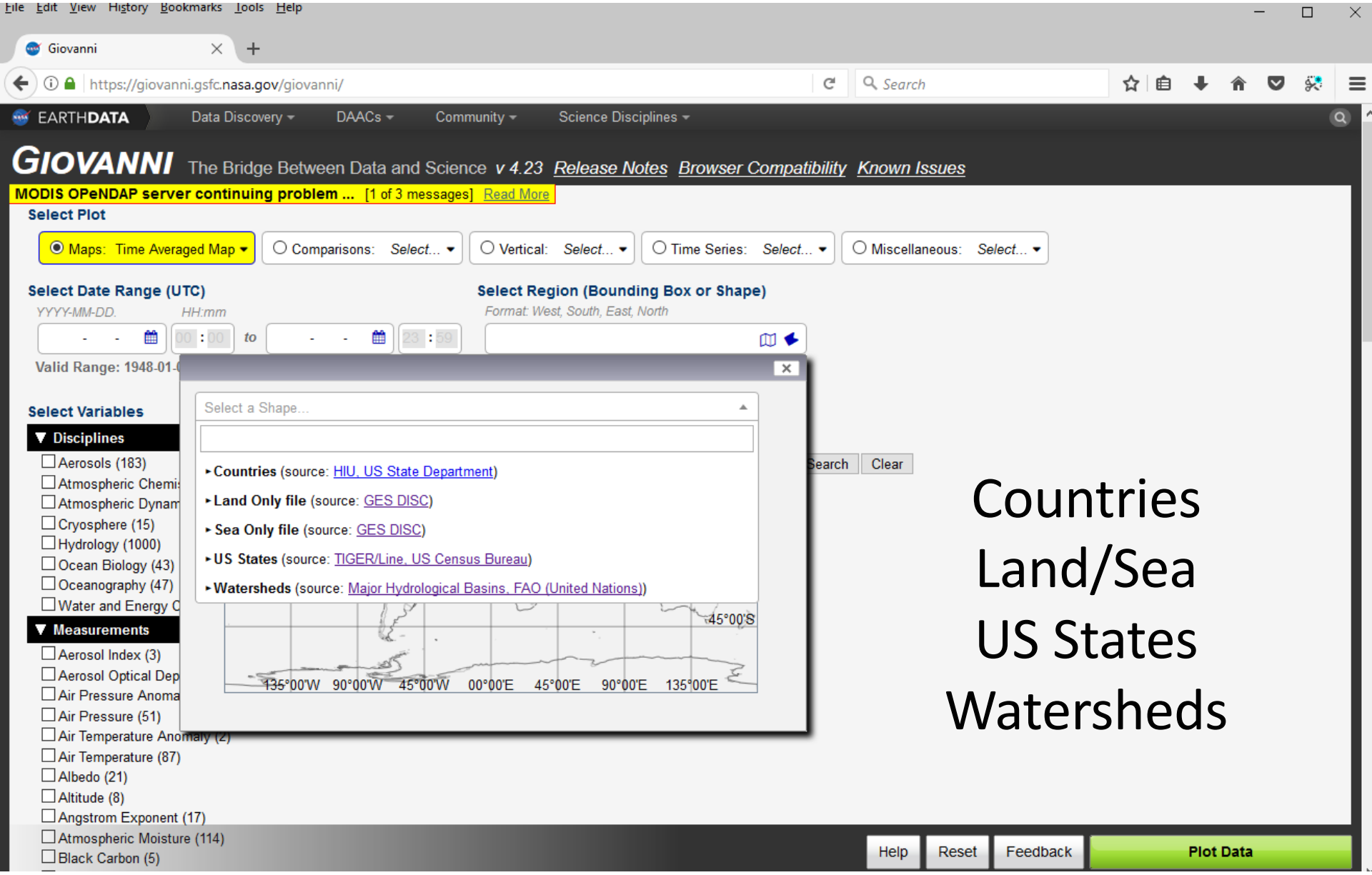
Giovanni: Time Averaged Overlay Map



Giovanni: 500hPa GH Overlay on T, Jan. 2016

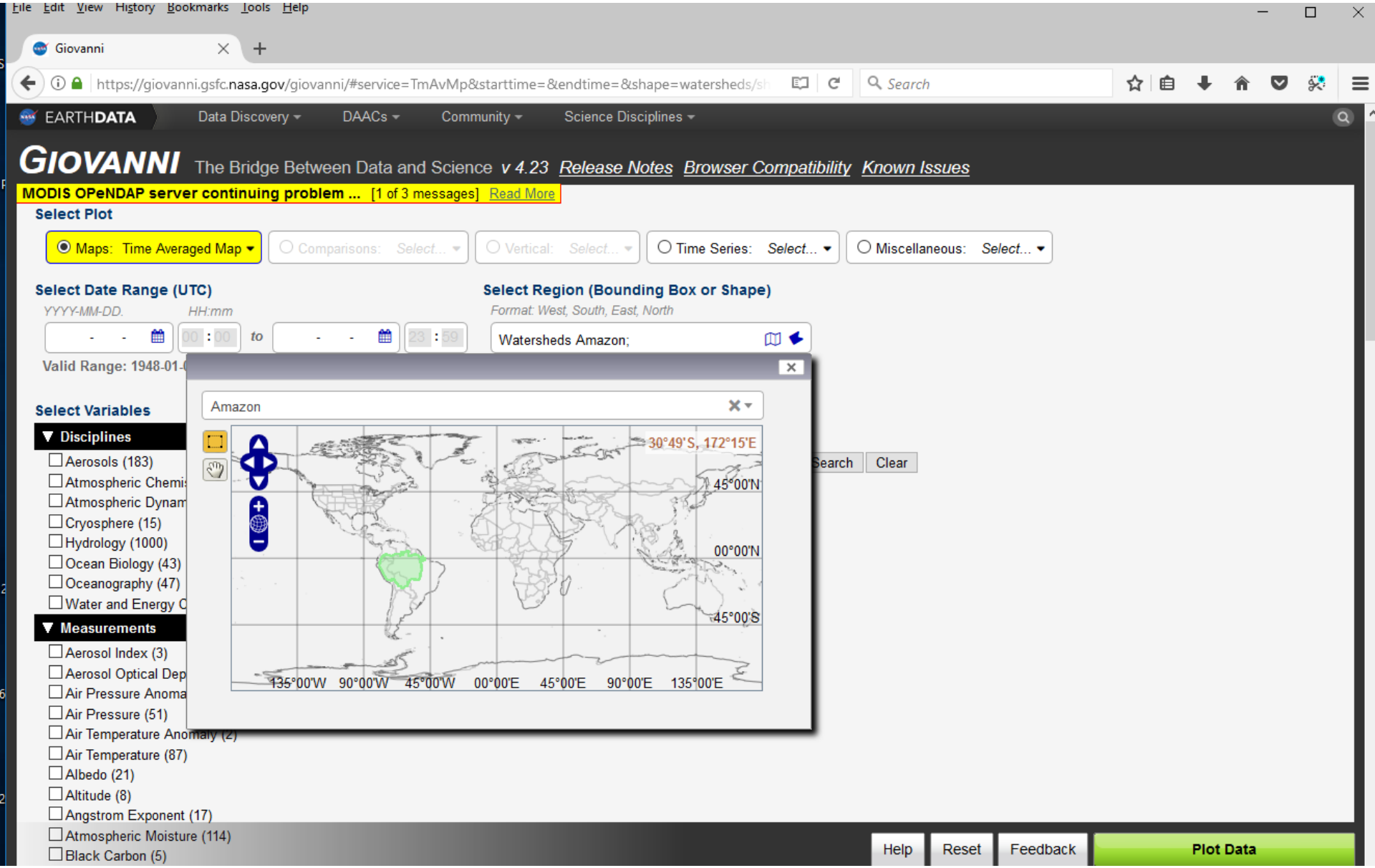


Giovanni: Shapefile



Countries
Land/Sea
US States
Watersheds

Giovanni: Amazon Watershed



New AIRS variables on Giovanni

- 92 variables from AIRS-only products

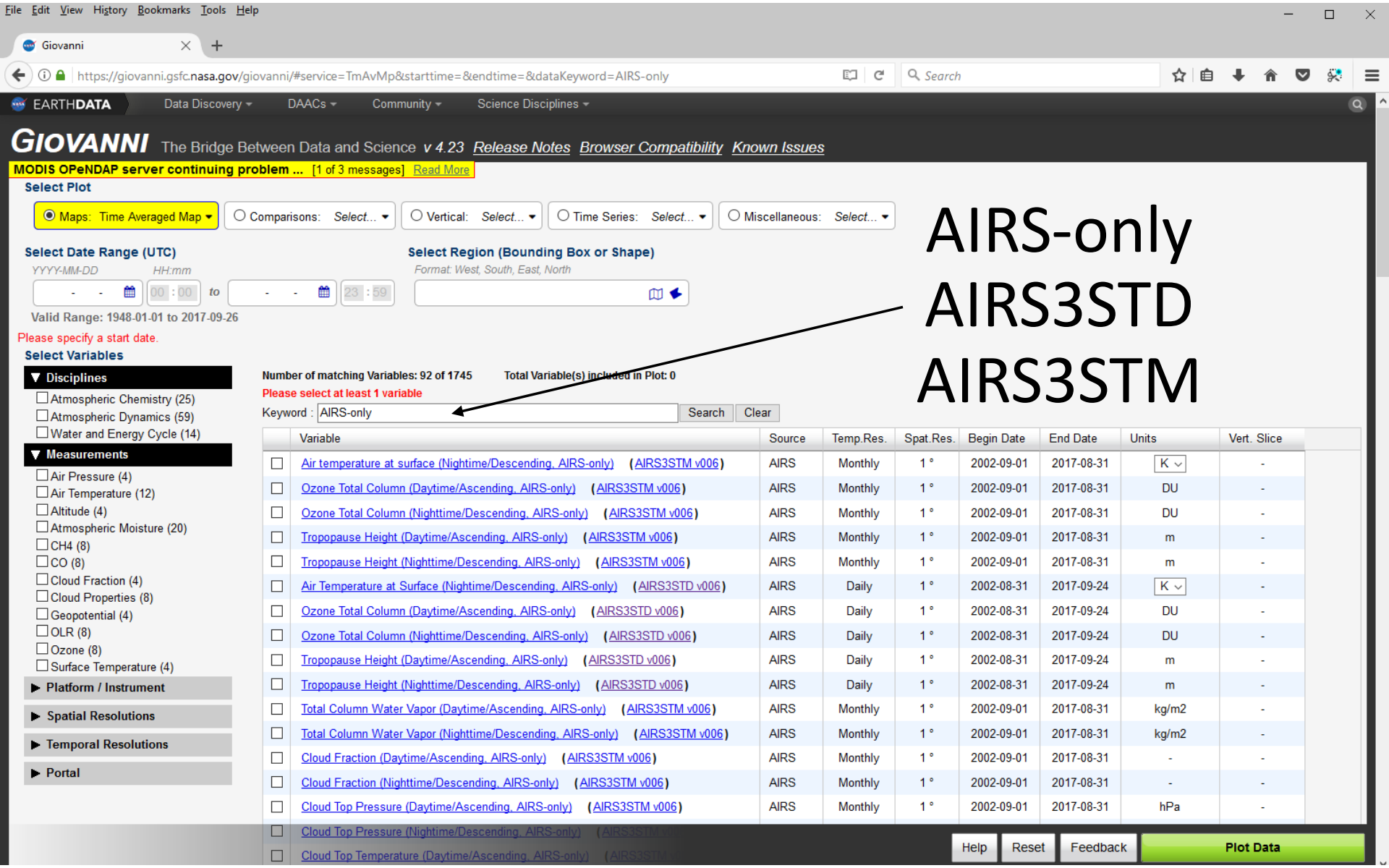
  46 from daily AIRS3STD and 46 from monthly AIRS3STM

- Multi-year monthly mean surface temperature and anomaly

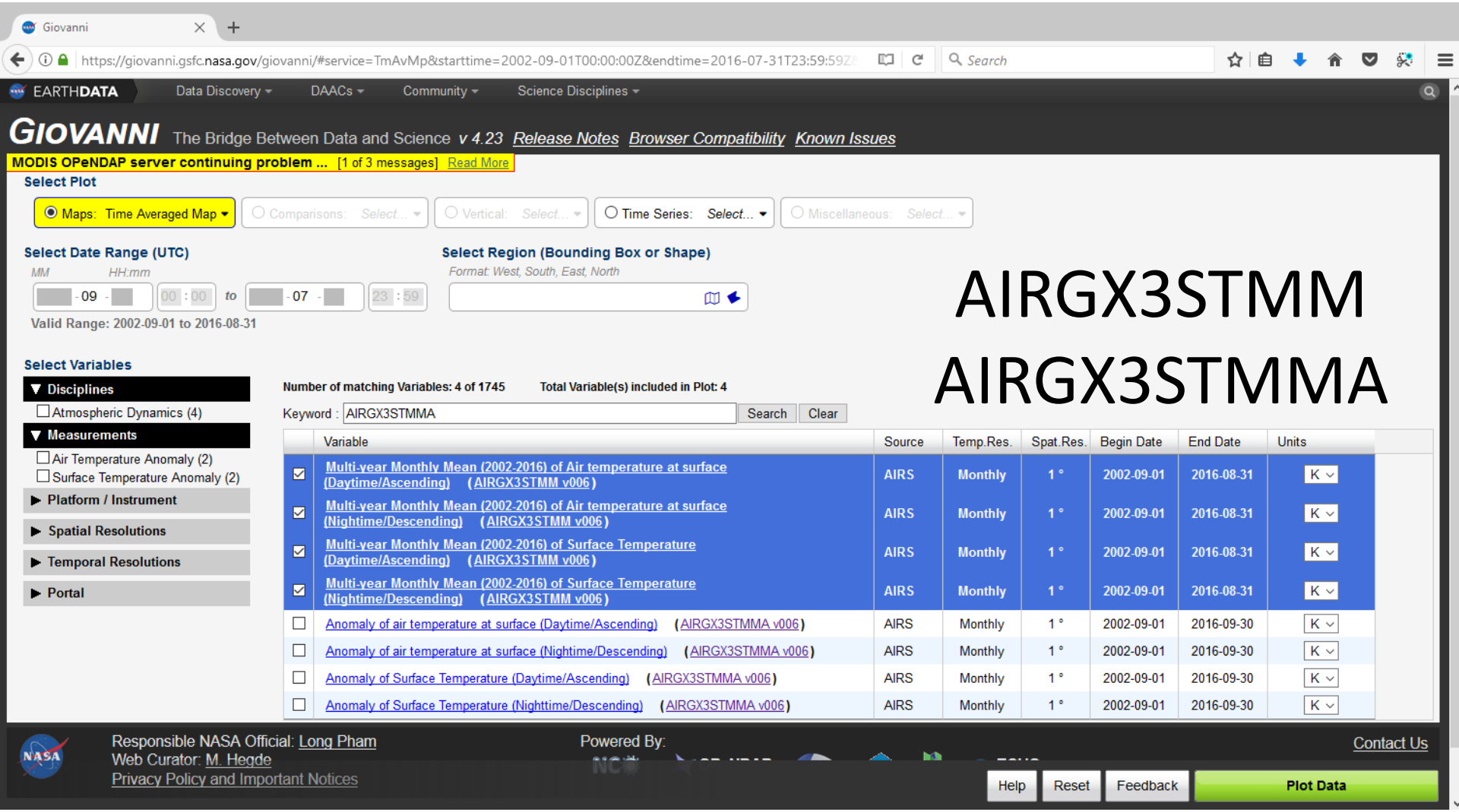
14-year (09/2002 to 08/2016) arithmetic mean of surface air and skin temperature from monthly product AIRX3STM

Anomaly is the difference between a selected month and the multi-year monthly mean, done by http service

Giovanni: 92 AIRS-only Variables



Giovanni: Multi-year Monthly Mean Surface Temperature and Anomaly



AIRGX3STMM

AIRGX3STMMA

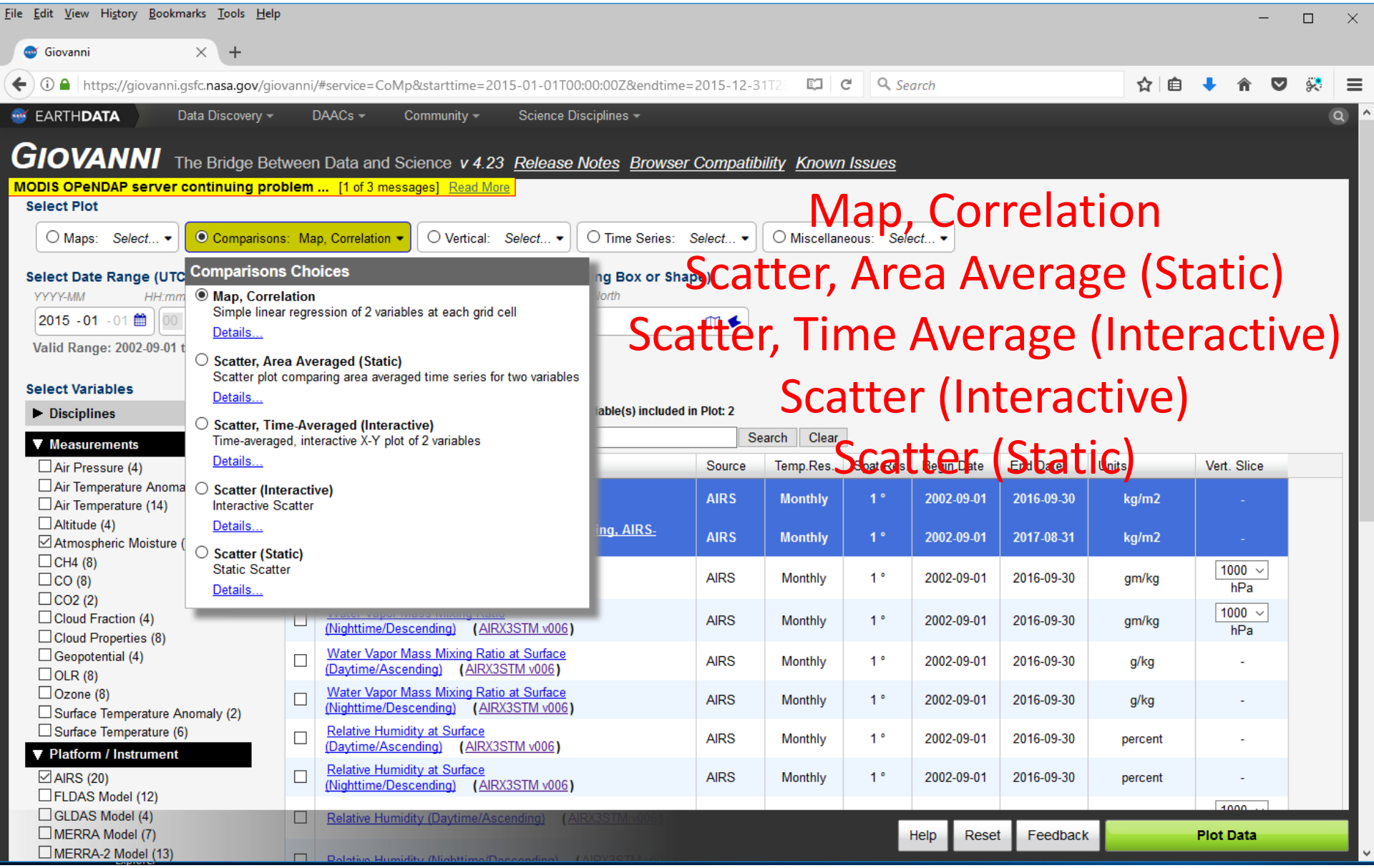
Use Case

- Comparison of AIRS+AMSU with AIRS-only product using Giovanni

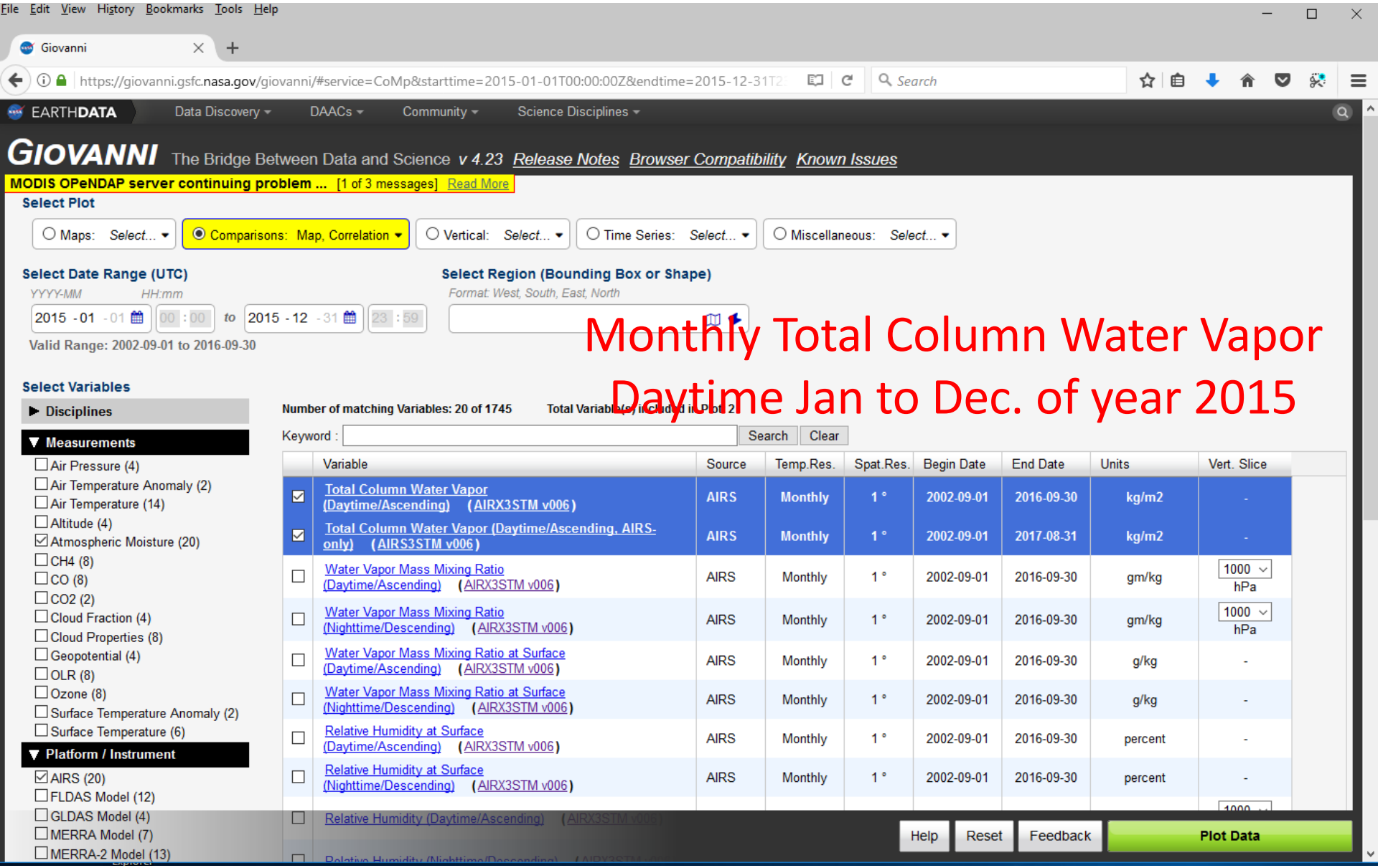
  Total Column Water Vapor Daytime Monthly

  Jan. to Dec. of year 2015

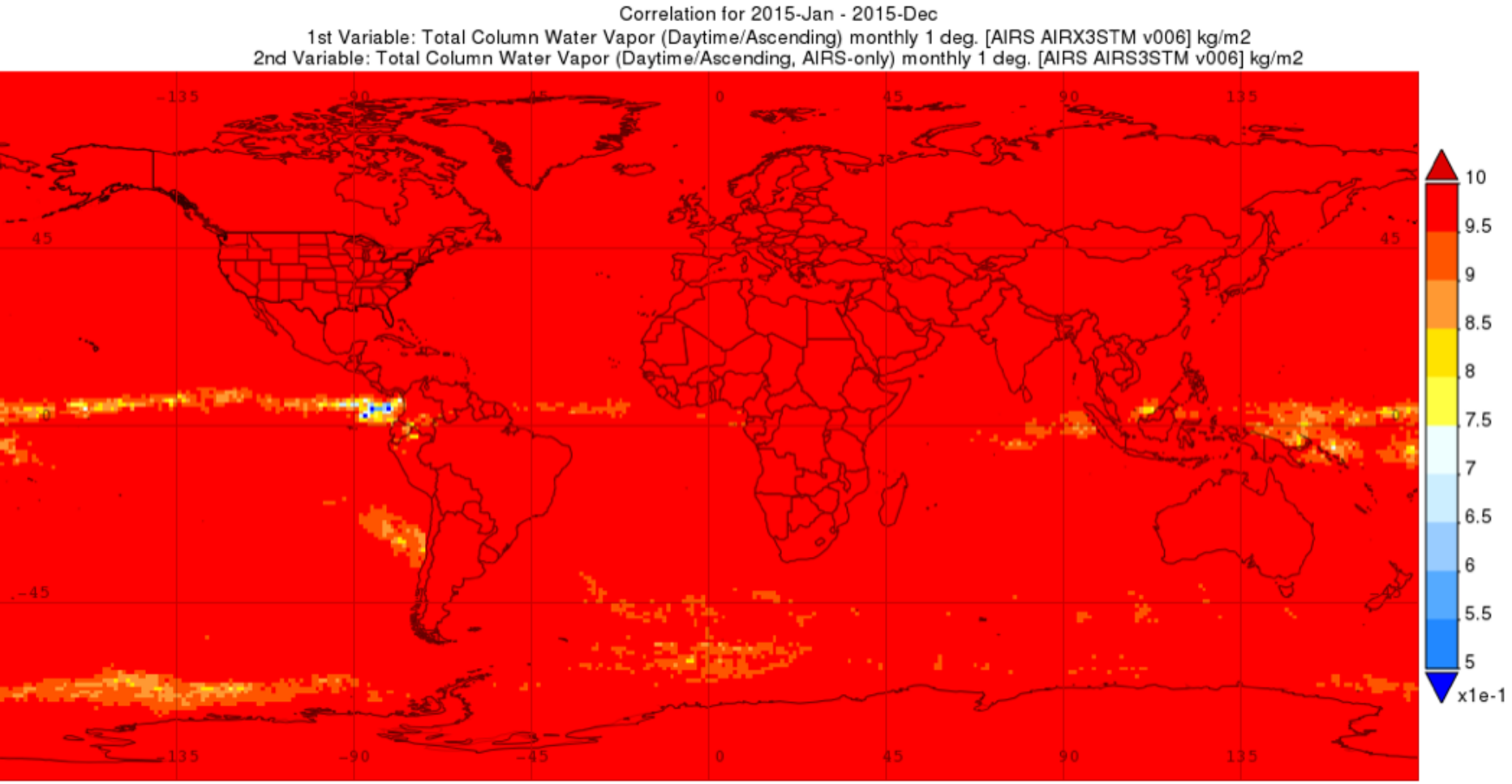
Giovanni: Comparison Function



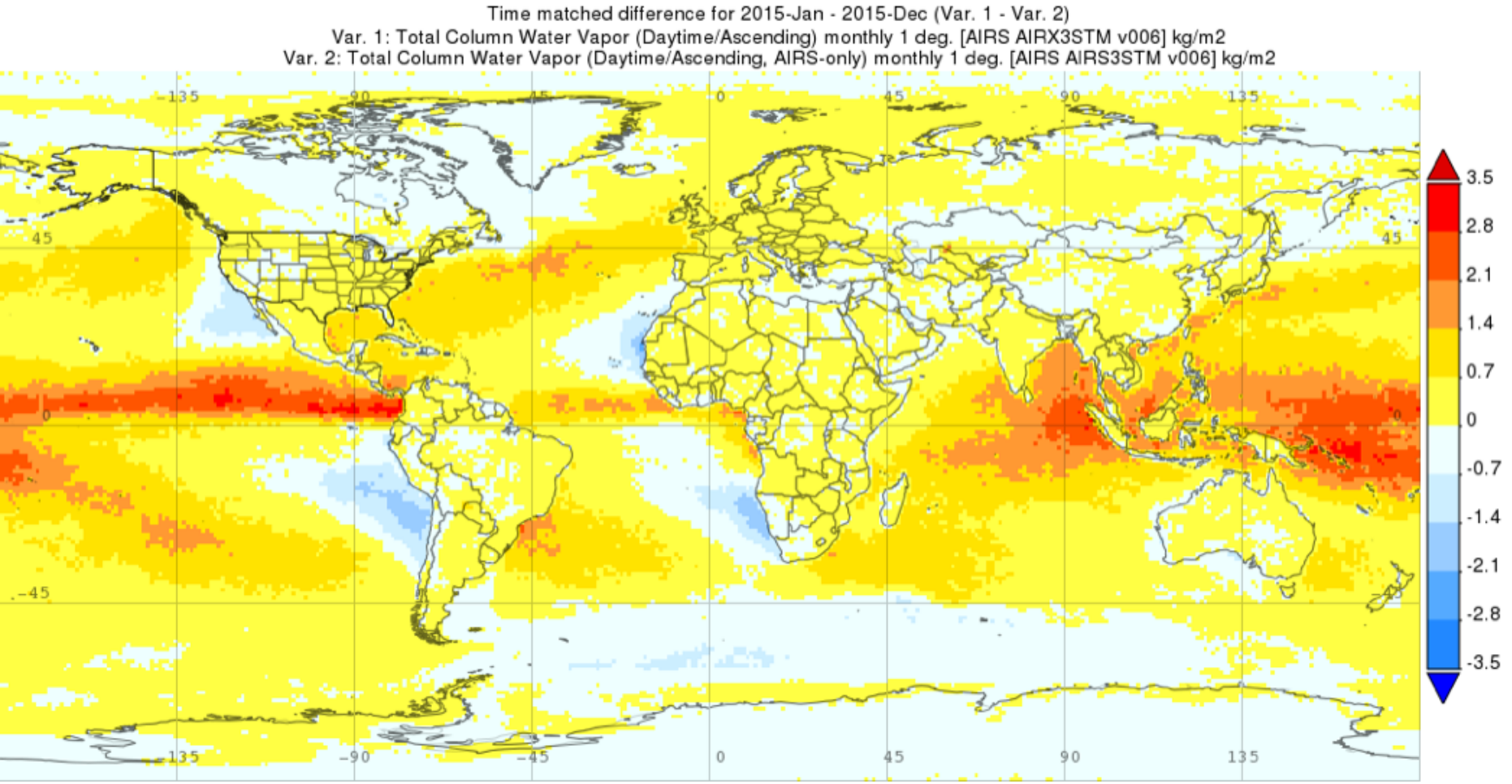
Giovanni: Comparison of AIRS+AMSU vs AIRS-only



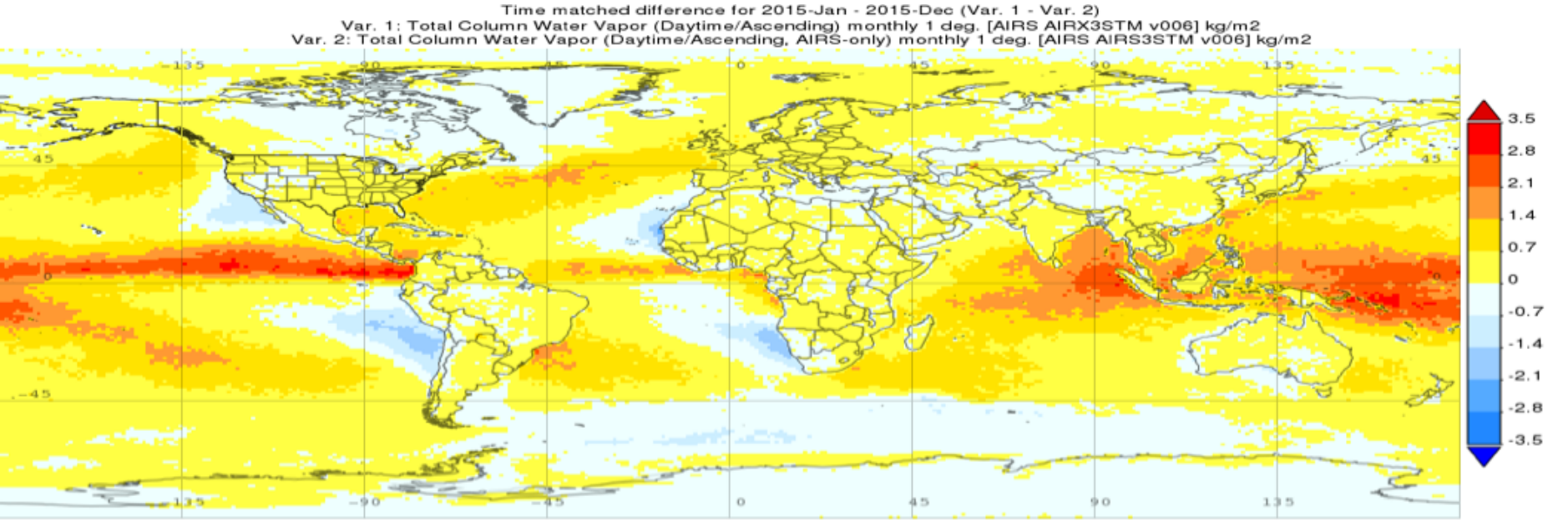
Giovanni: Correlation Map Plot
AIRS+AMSU vs AIRS-only

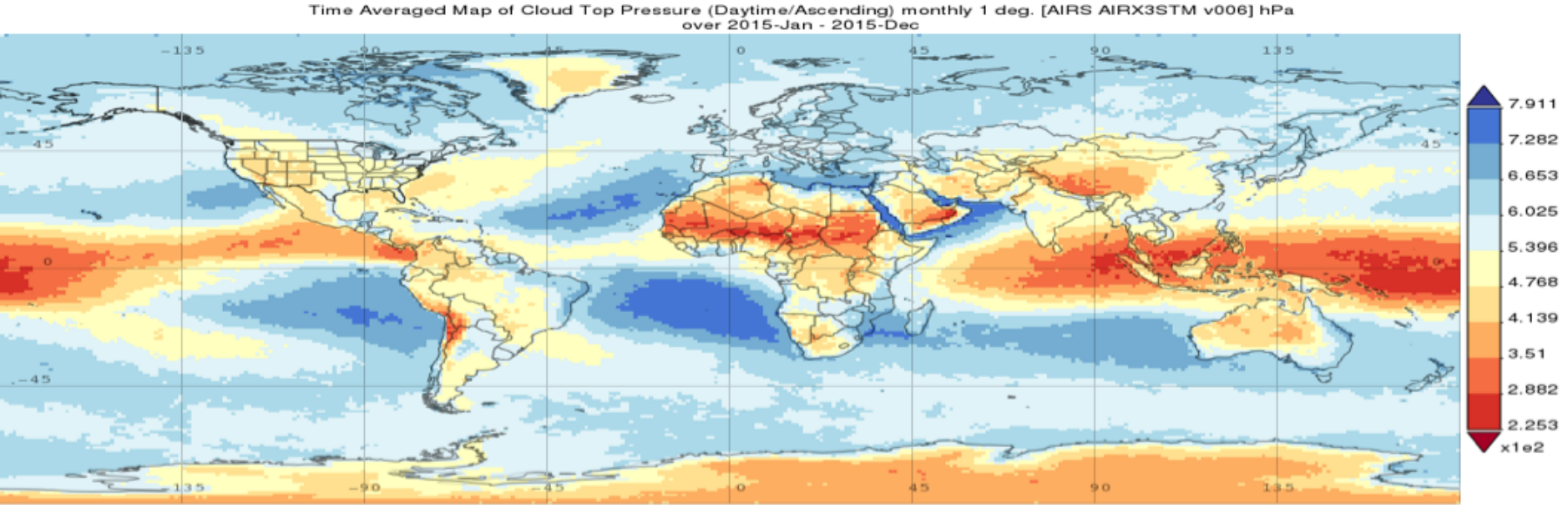


Giovanni: Time Matched Difference Plot
AIRS+AMSU vs AIRS-only

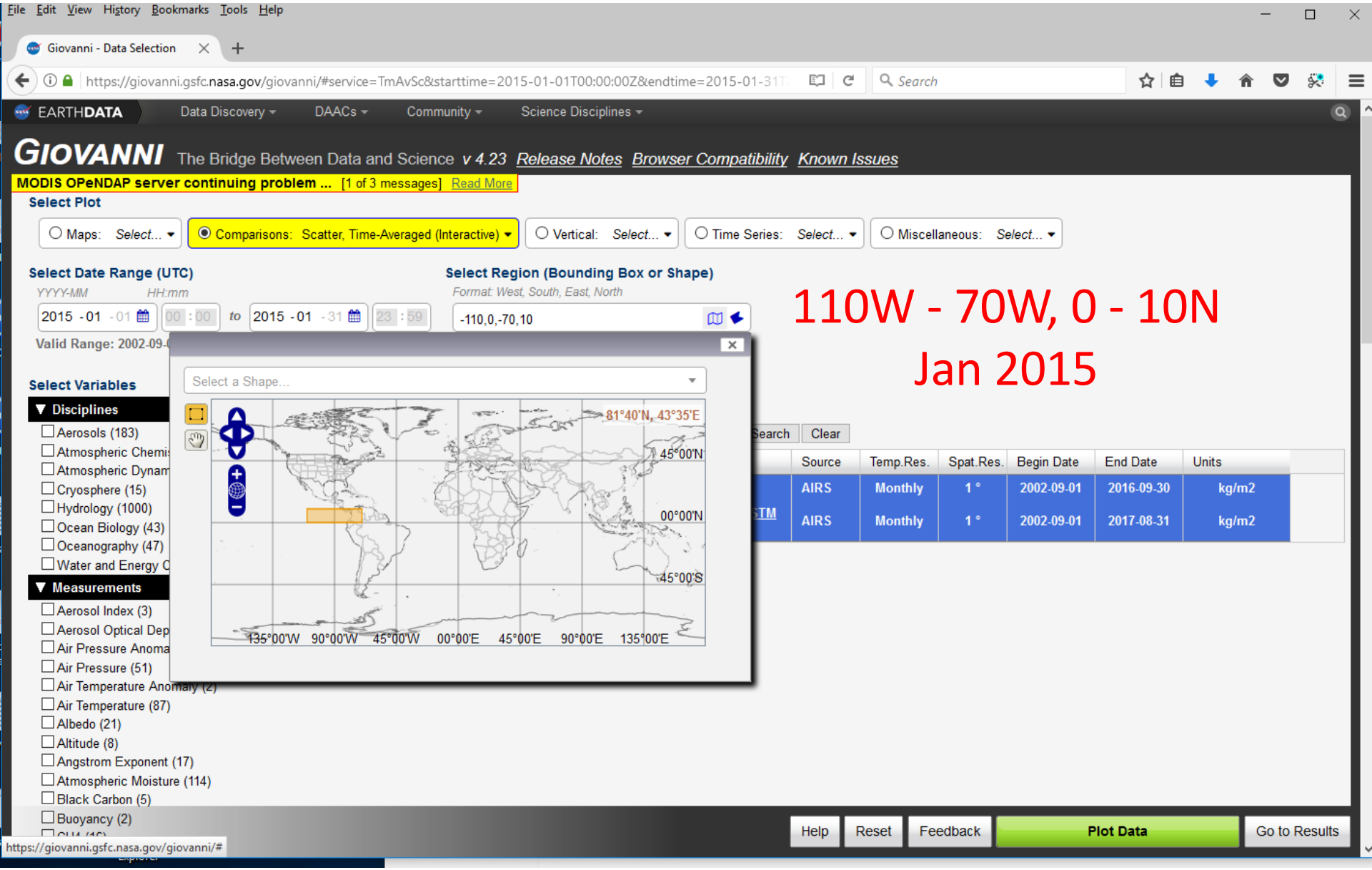


high clouds regions: IR-Only drier than AIRS+AMSU
low clouds regions: IR-Only wetter than AIRS+AMSU

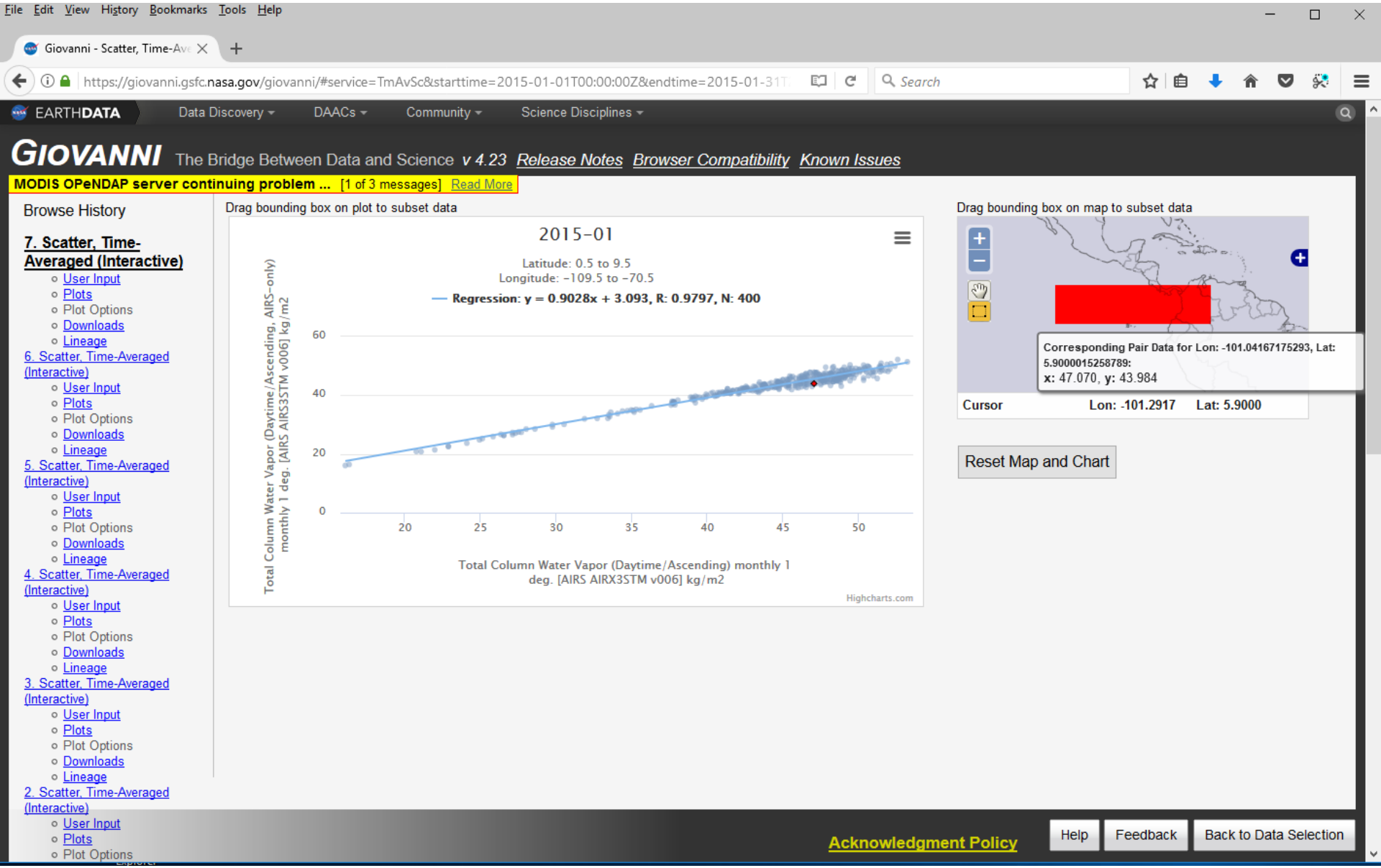




Giovanni: Time Averaged Interactive Scatter Plot AIRS+AMSU vs AIRS-only



Giovanni: Time Averaged Interactive Scatter Plot AIRS+AMSU vs AIRS-only



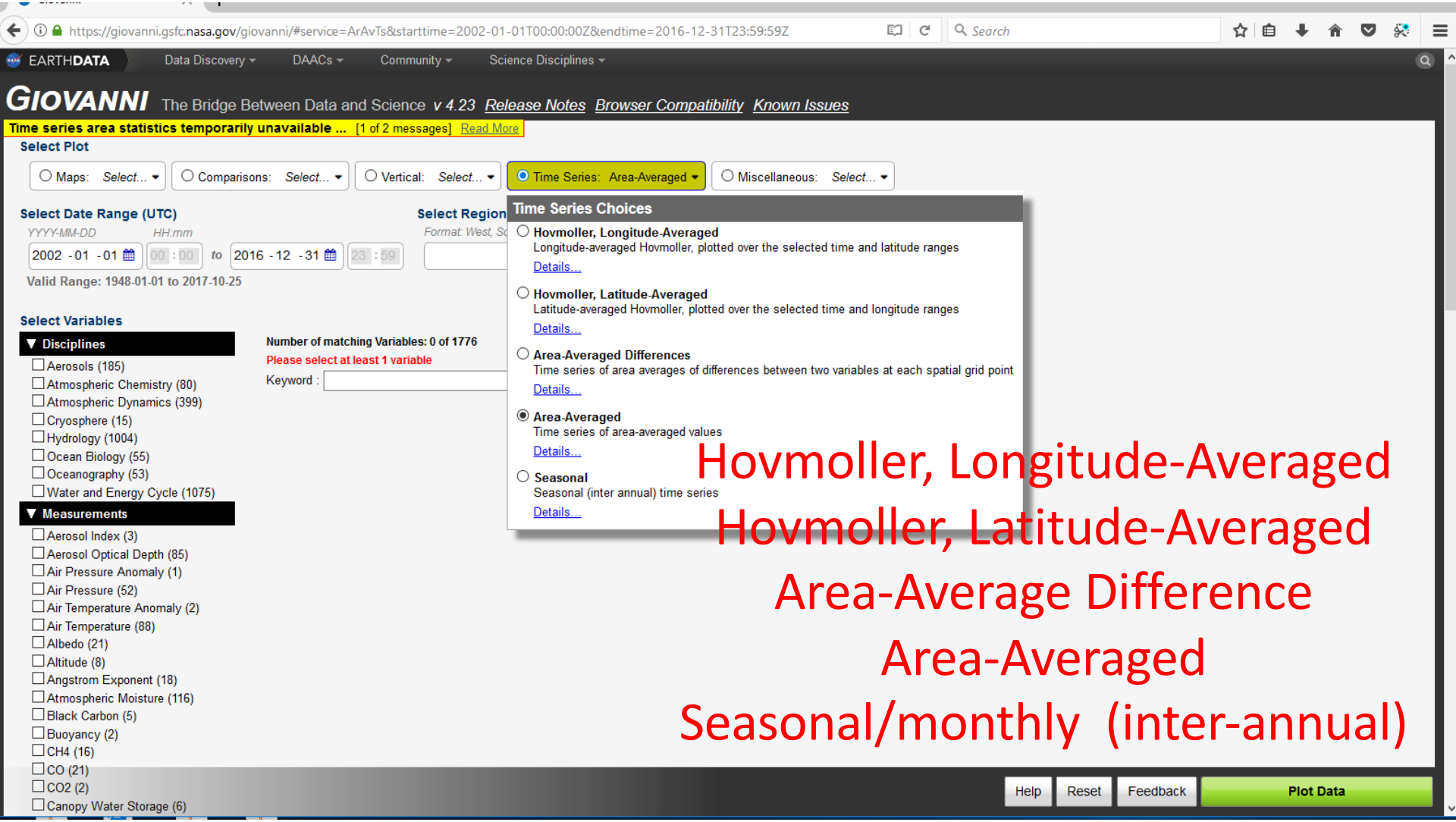
Use Case

- Multi-year Monthly Mean Surface Temperature and Anomaly time series plot with ROI using shapefile

Multi-year Monthly Mean Surface Temperature time series plot over Global, Land, and Sea

Surface Air Temperature Anomaly inter-annual seasonal (DJF) time series plot over California from 2008 to 2016

Giovanni: Time Series



Hovmoller, Longitude-Averaged

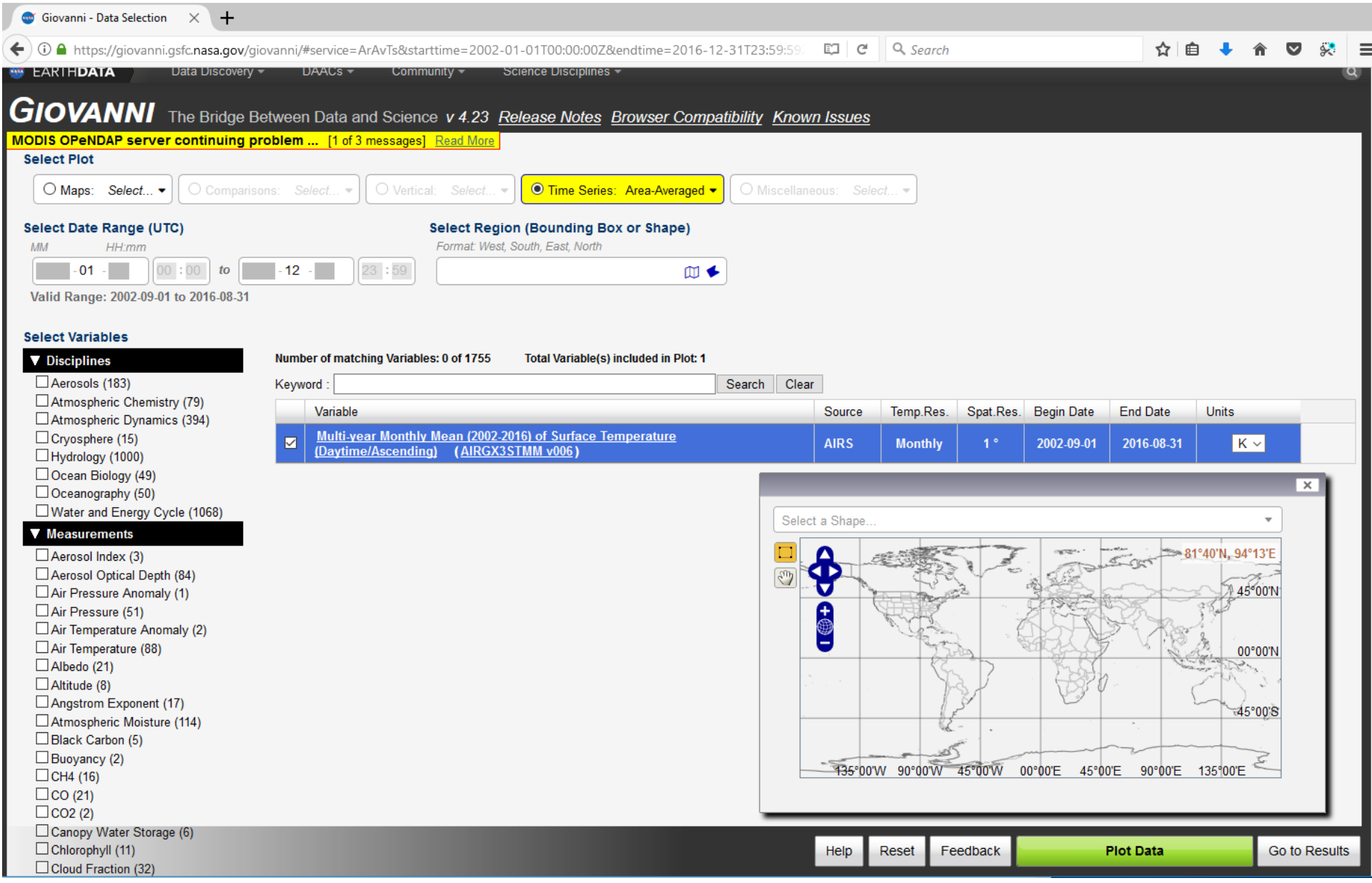
Hovmoller, Latitude-Averaged

Area-Average Difference

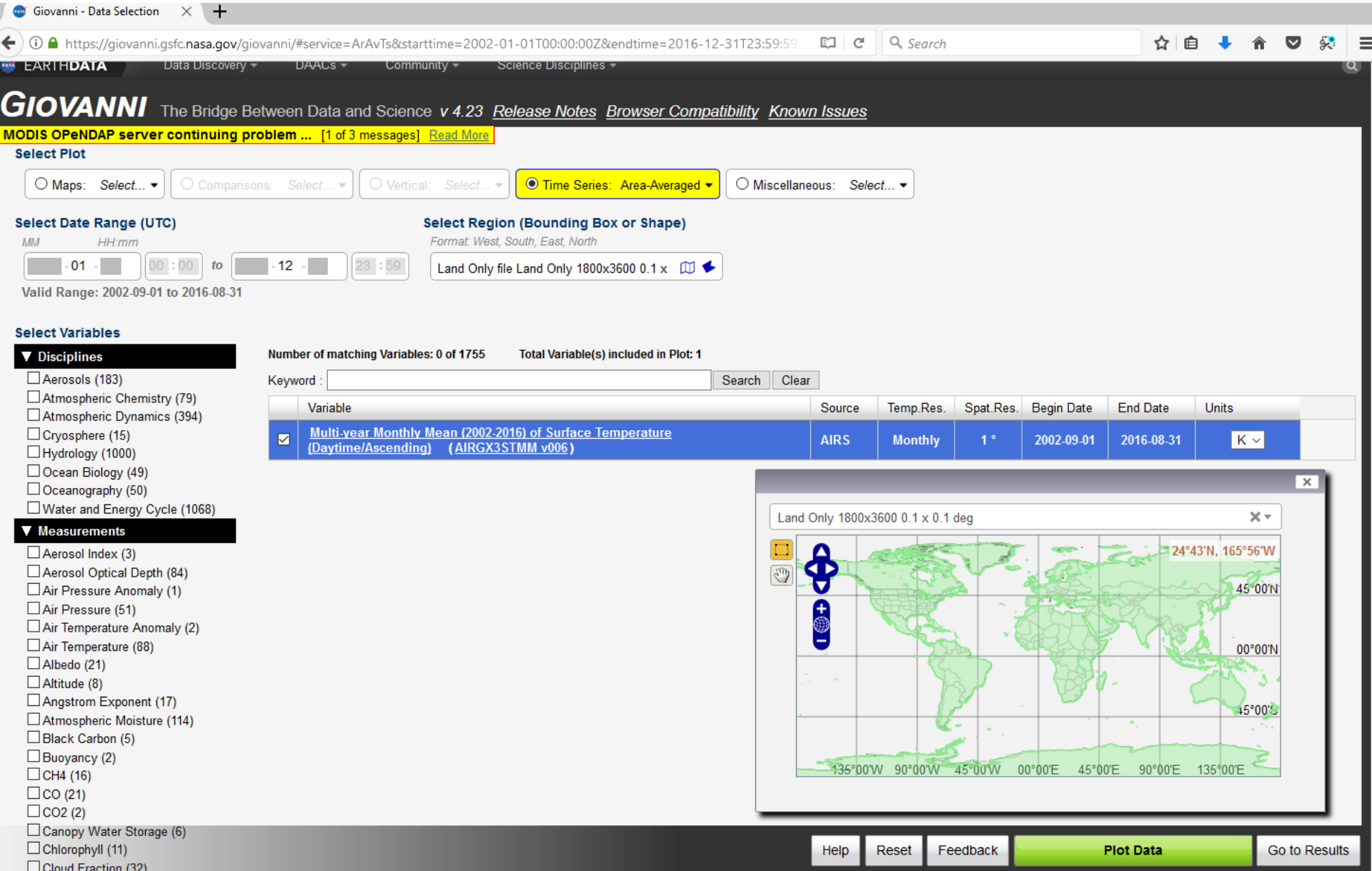
Area-Averaged

Seasonal/monthly (inter-annual)

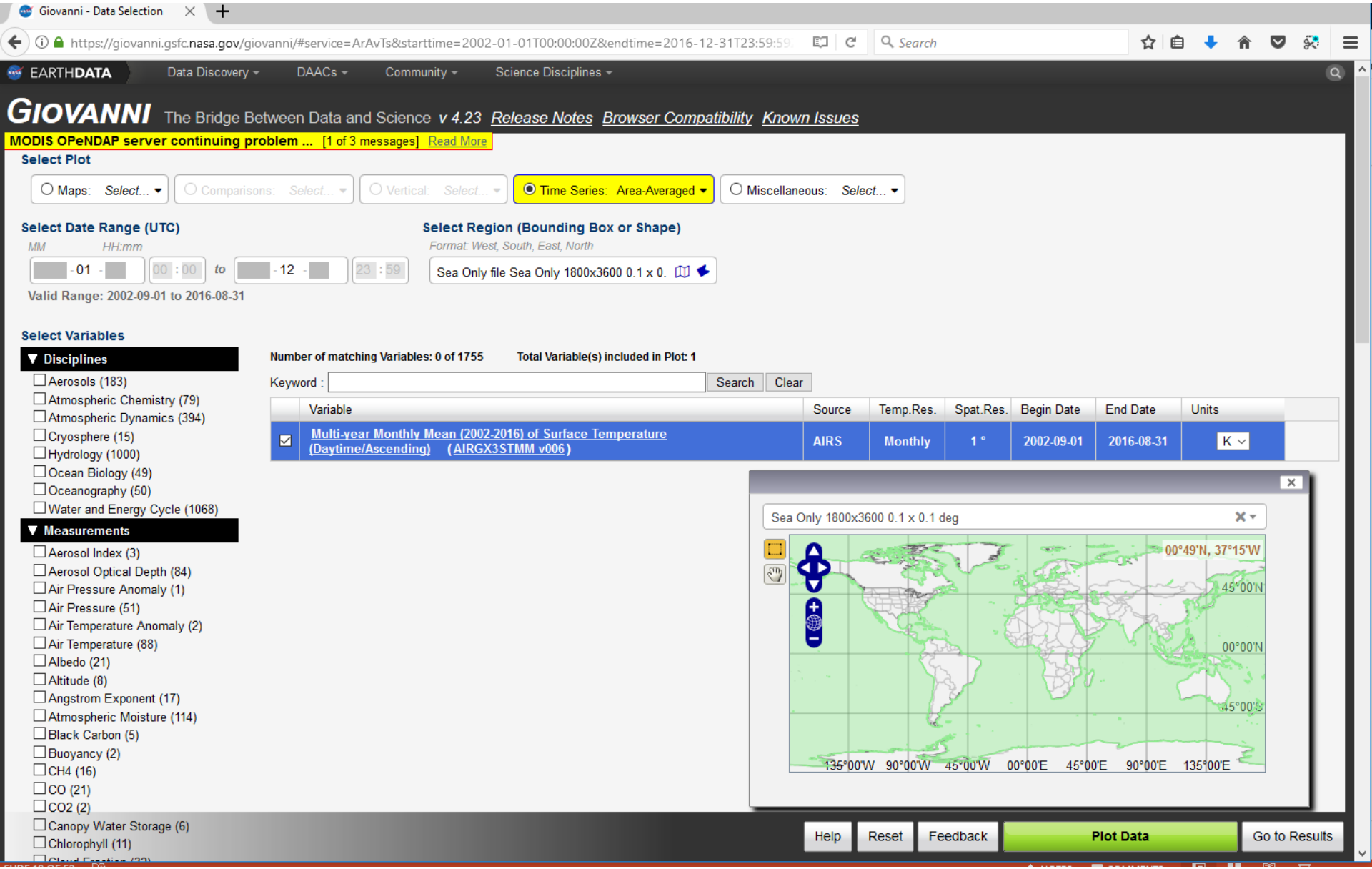
Giovanni: Time Series of Multi-year Monthly Mean Surface T Daytime Jan. to Dec. Global Averaged



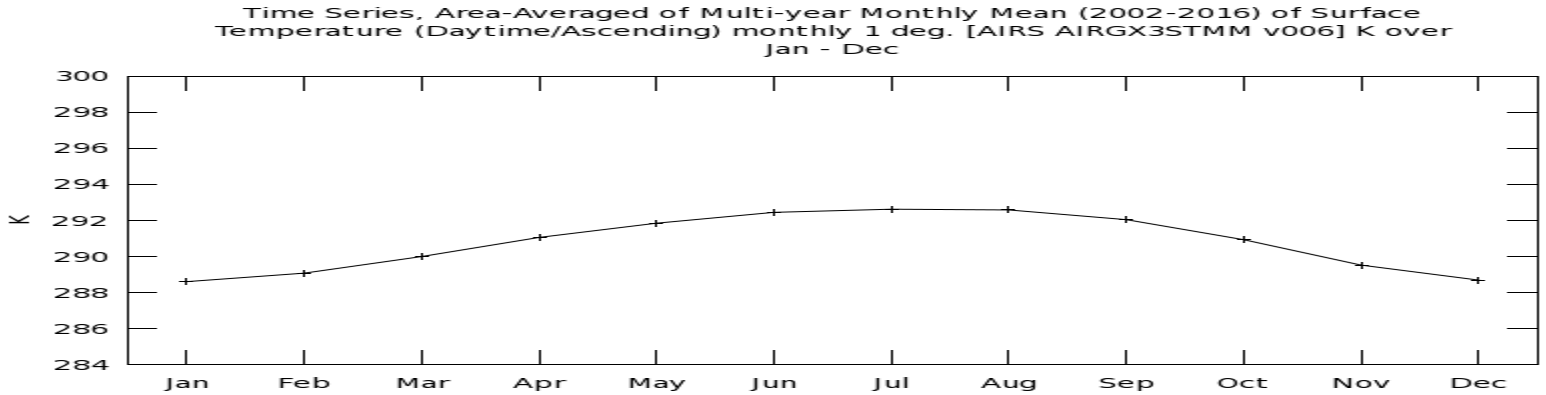
Giovanni: Time Series of Multi-year Monthly Mean Surface T Daytime Jan. to Dec. Land Only



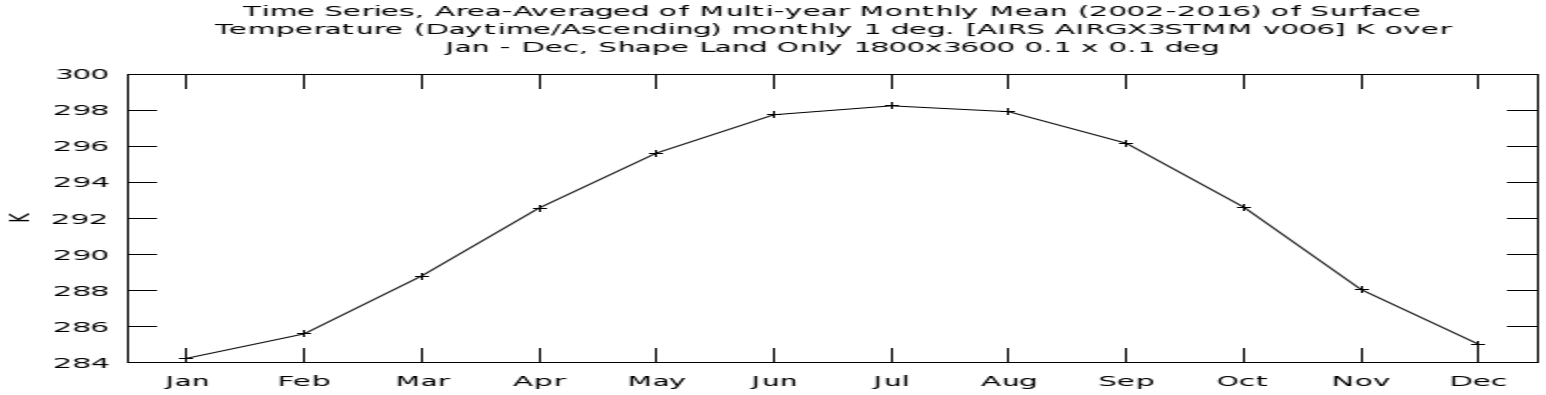
Giovanni: Time Series of Multi-year Monthly Mean Surface T Daytime Jan. to Dec. Sea Only



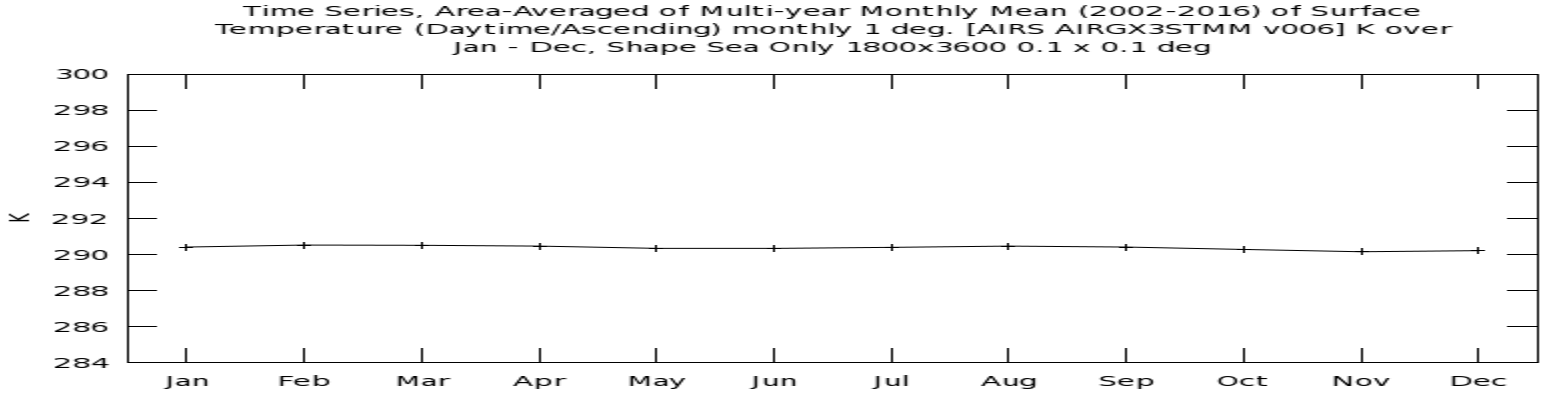
Global, Land, Sea Surface Temperature



Global

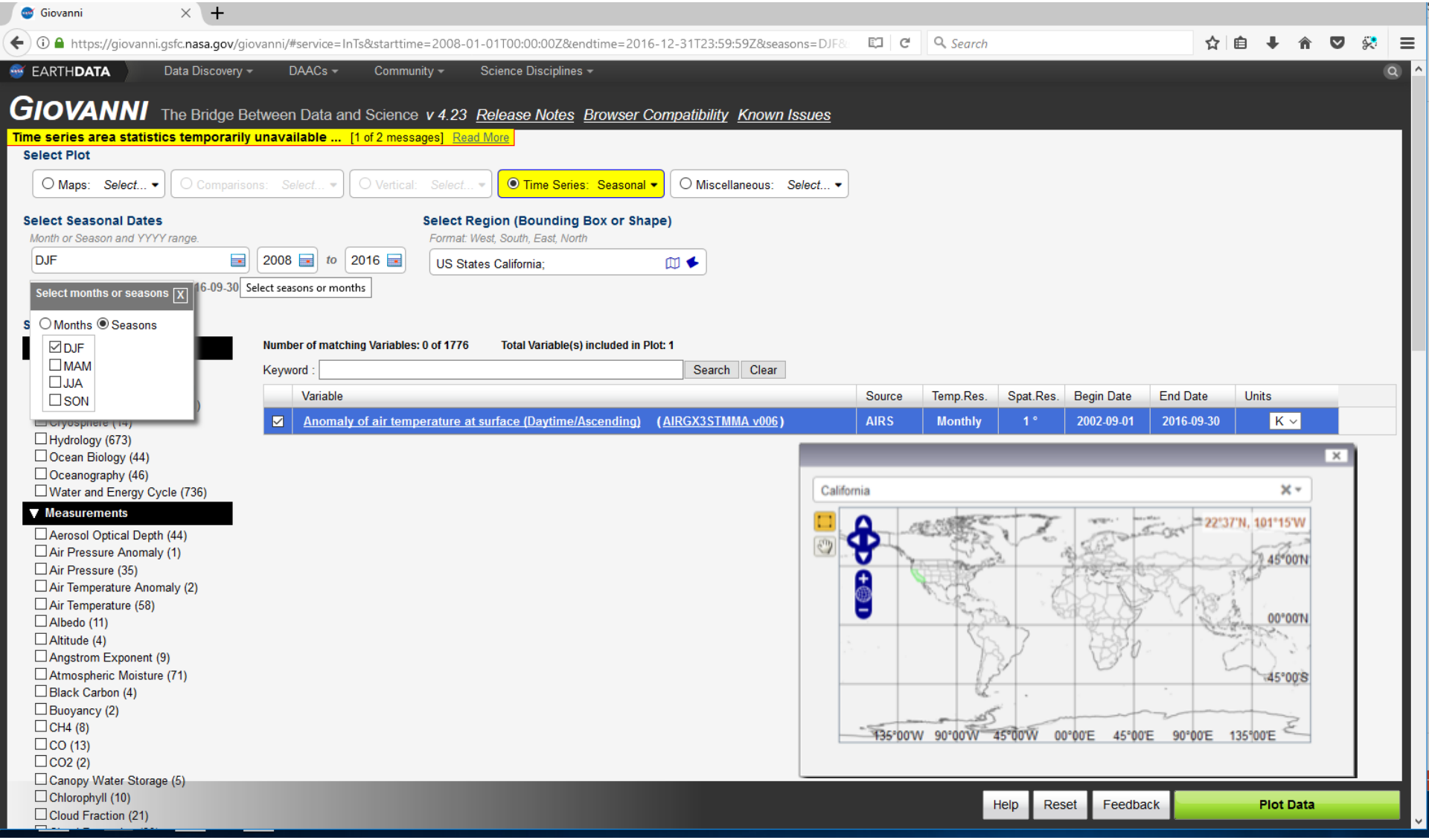


Land

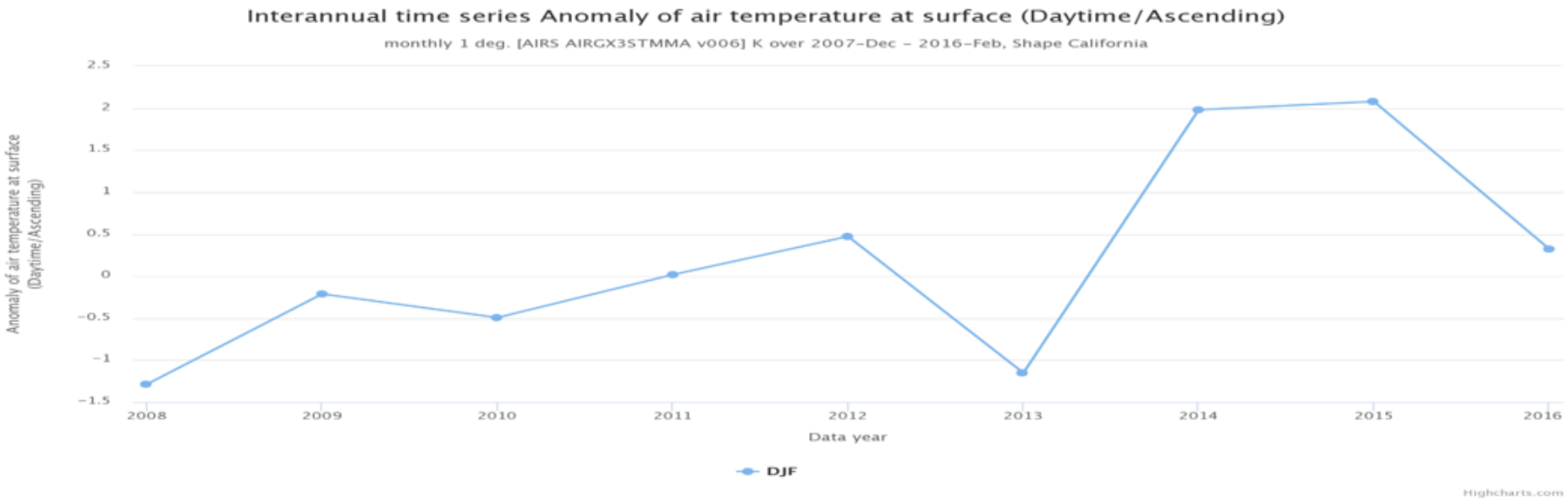


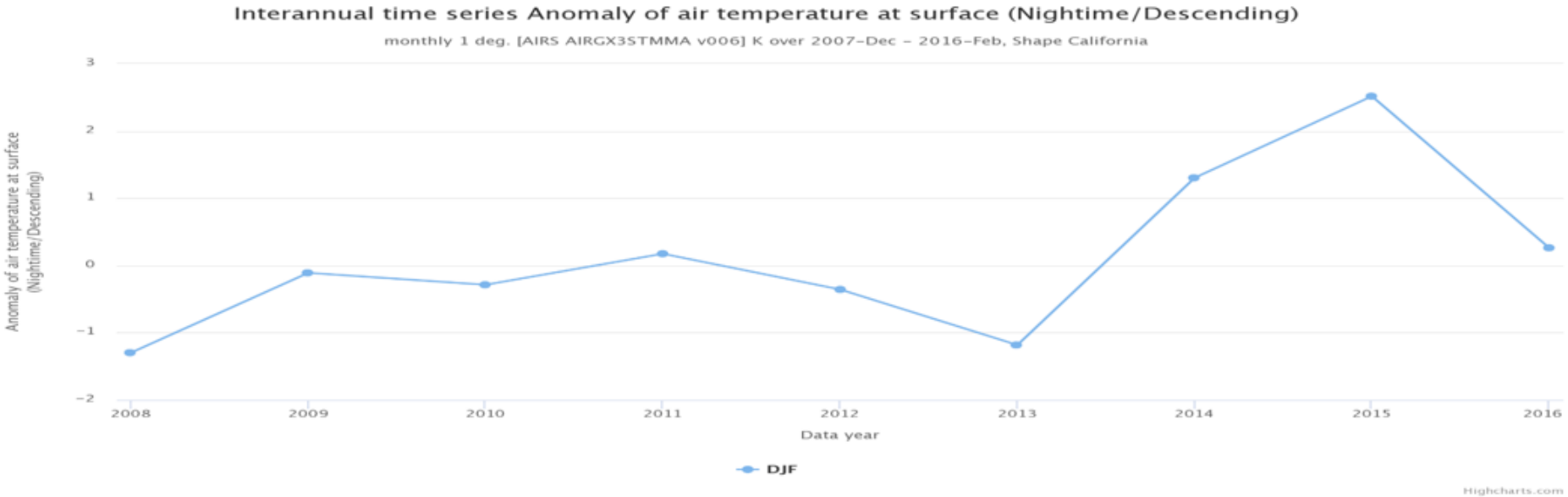
Sea

Giovanni: Surface Air Temperature Anomaly inter-annual seasonal (DJF) time series plot over California from 2008 to 2016

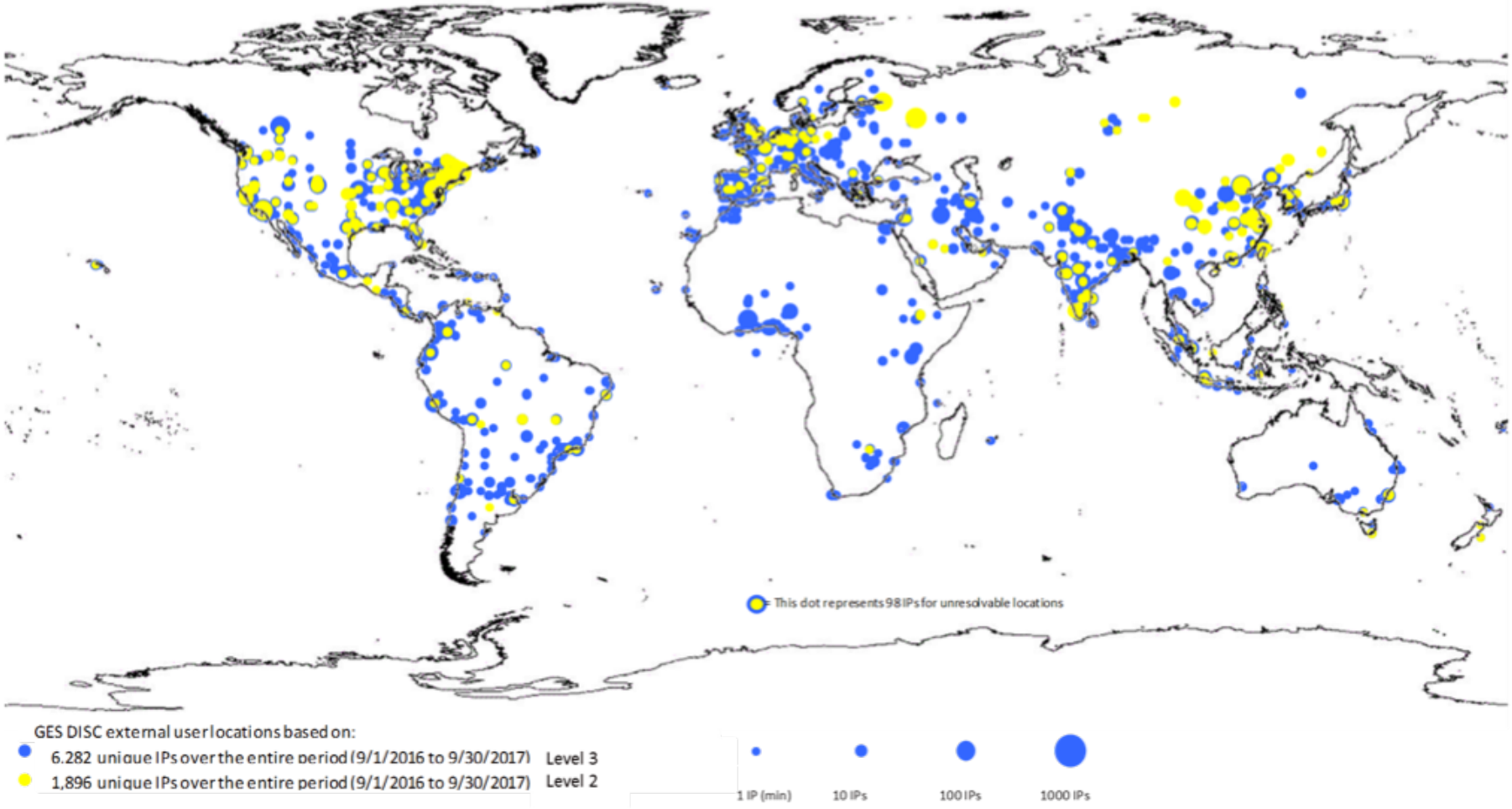


Giovanni: Surface Air Temperature Anomaly inter-annual seasonal (DJF) time series plot over California from 2008 to 2016





AIRS V6 L2 (yellow) and L3 (blue)users from Sept 2016 to Sept 2017



Summary

- Overlay map plot and shapefile functions added on Giovanni
- AIRS-only products and multi-year monthly mean surface temperature and anomaly available on Giovanni
- New functions and variables give users more flexibility of analysis
- AIRS products are used worldwide

https://giovanni.gsfc.nasa.gov/

https://disc.gsfc.nasa.gov/

gsfc-help-disc@lists.nasa.gov