



EOSDIS

NASA'S EARTH OBSERVING SYSTEM
DATA AND INFORMATION SYSTEM

Smart Hand Offs & Earthdata Search

ESIP Winter 2019

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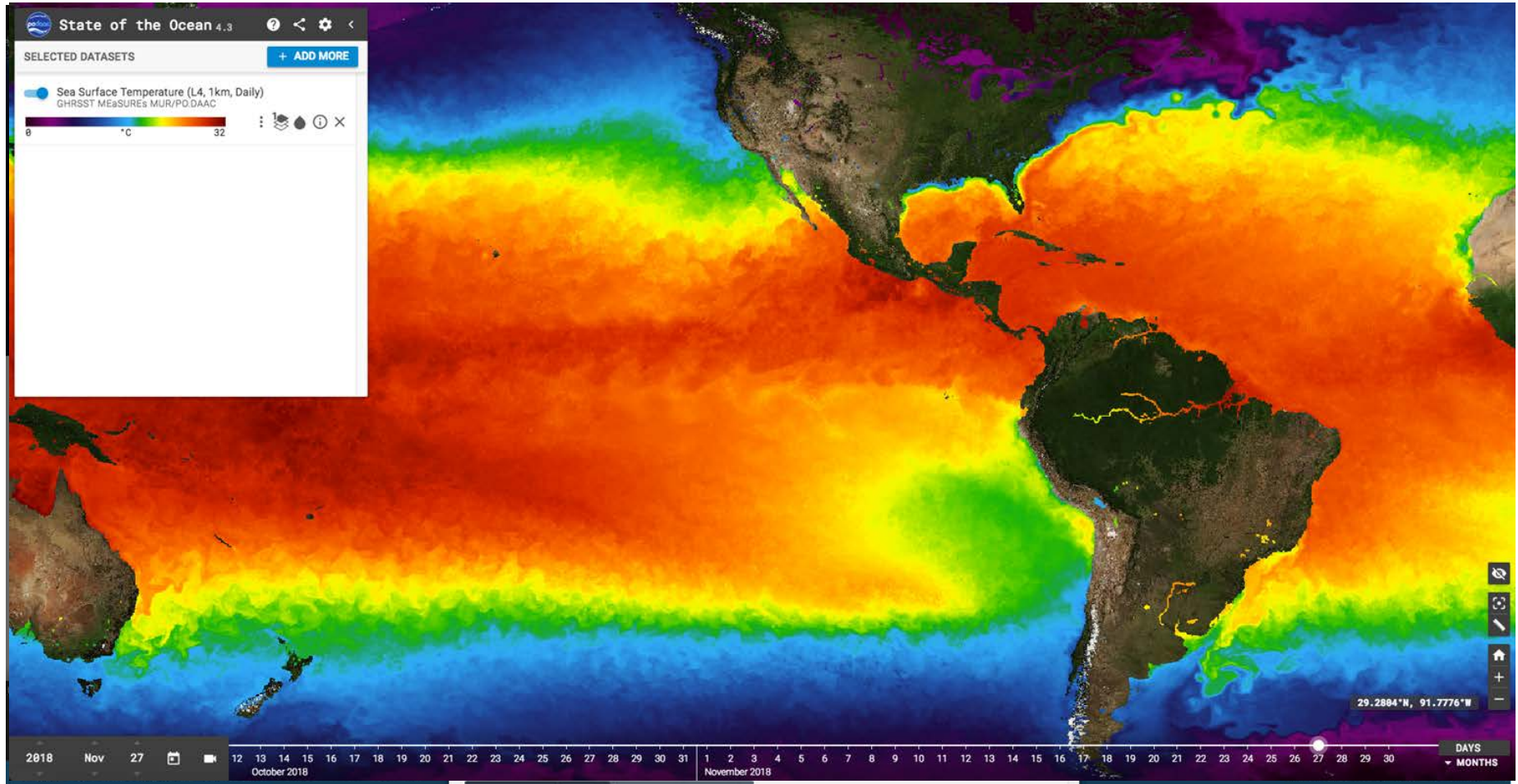
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ORIGINS & VISION

Origins



Vision

1. Handoff a user from Web Tool A to Web Tool B, *without* losing their “place”
 - a) Space
 - b) Time
 - c) Dataset
2. Handoff a user from a Google search tool to the Web Tool, without losing their place
3. Add handoffs via simple database updates (minimal code)

'General purpose' discovery

The screenshot displays the EarthData search interface. At the top, there is a search box containing 'AIRX' and a 'Find a DAAC' dropdown. Below the search box, a map of the Middle East region is shown with a red rectangle indicating the search area. The rectangle's coordinates are: SW: 25.875, -11.953125 and NE: 41.34375, 42.75. The map shows countries like Algeria, Libya, Egypt, Saudi Arabia, and others. Below the map, there is a 'Back to Collections' button and a title for the search results: 'AIRS/Aqua L3 Daily Standard Physical Retrieval (AIRS+AMSU) 1 degree x 1 degree V006 (AIRX3STD) at GES DISC'. There is also a 'View details' link. Below the title, there is a 'Sort by' dropdown set to 'Start Date, Newest first' and a 'Granule Search' box. To the right, there is a 'Download All' button and a '2 Granules' indicator. Below this, there is a table showing two matching granules for the selected day (07 Mar 2010). The table has columns for granule ID, start time, and end time. Below the table, there is a 'DAY' dropdown and a timeline showing the date 07 Mar 2010.

EARTHDATA Find a DAAC -

AIRX

Rectangle: SW: 25.875,-11.953125 NE: 41.34375,42.75

Back to Collections

AIRS/Aqua L3 Daily Standard Physical Retrieval (AIRS+AMSU) 1 degree x 1 degree V006 (AIRX3STD) at GES DISC [View details](#)

Sort by: Start Date, Newest first Granule Search: Search Single or Multiple Granule IDs... [Granule filters](#)

2 Granules [Add to project](#)

[Download All](#) 2 Granules

Showing 2 of 2 matching granules for the selected day. (Show All) Search Time: 0.7s

Granule ID	START	END
AIRS.2010.03.07.L3.RetStd001.v6.0.9.0.G1 3085133452.hdf	2010-03-07 00:00:00	2010-03-08 00:00:00
AIRS.2010.03.06.L3.RetStd001.v6.0.9.0.G1 3085131348.hdf	2010-03-06 00:00:00	2010-03-07 00:00:00

DAY

AIRS/Aqua L3 Daily Standard Physical Retrieval (AIRS+AMSU) 1 degree x 1 degree V006 (AIRX3STD) at GES DISC

01 Mar 2010 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

That would also look great in ...

- Giovanni
- State of the Ocean
- <Your application here>

But how do I get there?

- Open up a new browser window
- Navigate to the application
- Add my constraints
- Is this the same collection?

Why so difficult?

© Chris Lynnes

I'm at Earthdata Search

I want to look at this stuff in Giovanni

I want a link to Giovanni

I **don't** want to manually set up the same search in Giovanni

NAVIGATION & CONTEXT PRESERVATION

Context A to context B

I have the following constraints,

- Collection
- Spatial
- Temporal

How do I get that context to another tool?

I need to be able to describe the API

Standards for API description

Schema.org search actions

- <https://schema.org/docs/actions.html>
- 'The act of searching for an object'

```
{
  "@context": "http://schema.org",
  "@type": "WebSite",
  "name": "Giovanni",
  "url": "https://giovanni.gsfc.nasa.gov/giovanni/",
  "potentialAction": {
    "@type": "SearchAction",
    "target": "https://giovanni.gsfc.nasa.gov/giovanni/#service=TmAvMp&starttime={start}",
    "query-input": {
      "@type": "PropertyValueSpecification",
      "valueRequired": false,
      "valueName": "start"
    }
  }
}
```

Standards for constraints

```
{
  "@context": "http://schema.org",
  "@type": "WebSite",
  "name": "Giovanni",
  "url" : "https://giovanni.gsfc.nasa.gov/giovanni/",
  "potentialAction": {
    "@type": "SearchAction",
    "target": "https://giovanni.gsfc.nasa.gov/giovanni/#service=TmAvMp&bbox={box}",
    "query-input": {
      "@type": "PropertyValueSpecification",
      "valueRequired": false,
      "valueName": "bbox",
      "defaultValue": {
        "@type": "Place",
        "geo": {
          "@type": "GeoShape",
          "box": ""
        }
      }
    }
  }
}
```

Collection aliasing

Most of our tools follow the same standards, except...

We all have our own names for collections.

How do we handle that?

We can alias a collection name as follows,

```
{"app-name": "Giovanni", "alias": "dataKeyword=AIRX3STD"}
```

Template

Either by collection tagging or in the association between a UMM-S and UMM-C

substitution!

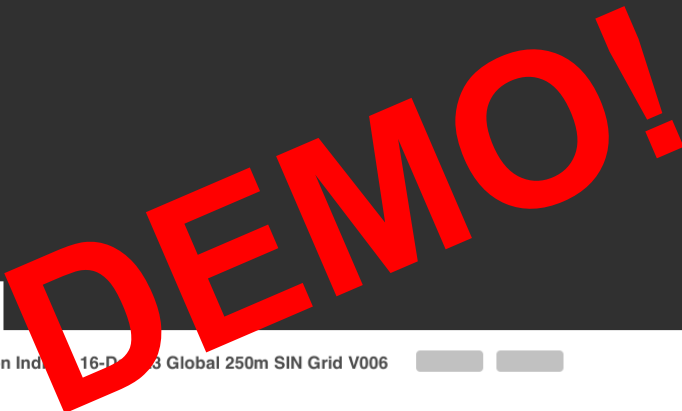
HTTP GET or POST or what?

This approach assumes we can interact with your application in a RESTful way, via GET or POST with Keyword-Value pairs.

There are applications out there that we would like to hand off to that don't conform to this.

SMART HAND OFFS

To Giovanni (1 of 3)



Back to Collections

MODIS/Terra Vegetation Indices 16-Day Global 250m SIN Grid V006

Additional Info:
[View All Related URLs](#)
[View More Info](#)

Temporal Extent
1999-12-18 ongoing

GIBS Imagery Projection Availability:
None

Science Keywords:

Open collection in:
[Giovanni](#)
[AnotherWeb App](#)

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

To Giovanni (2 of 3)

Back to Collections

MODIS/Terra Vegetation Indices 16-Day L3 Global 250m SIN Grid V006

Sort by: Start Date, Newest First Granule Search: [Granule filters](#)

6 Granules [Add to project](#)

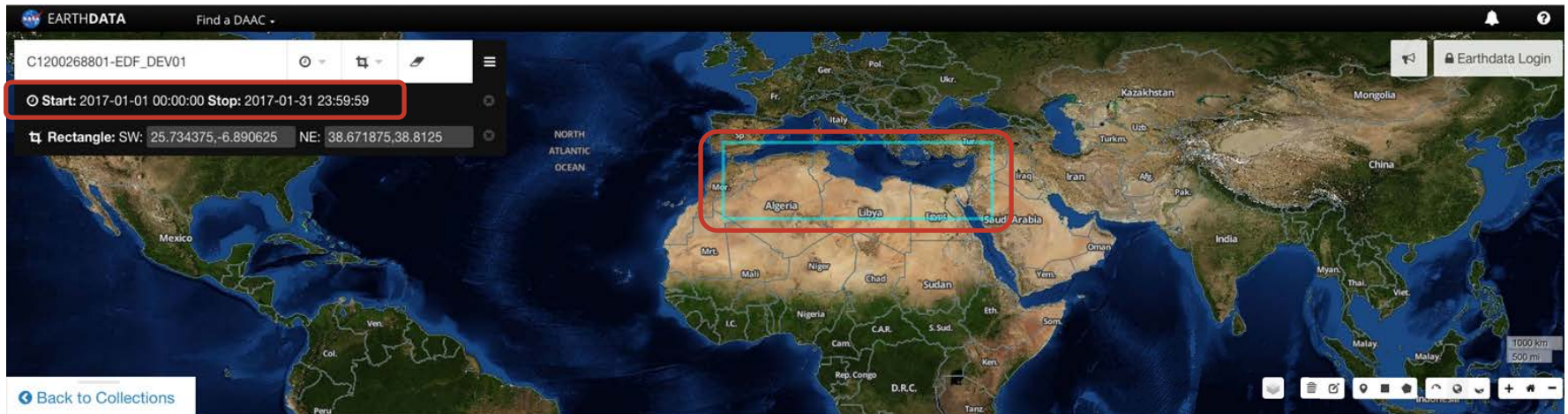
[View collection details](#)

Open collection in:

- [Giovanni](#)
- [AnotherWeb App](#)

[Download All 6 Granules](#)

To SOTO

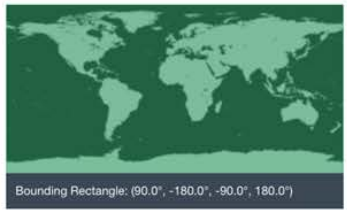


GHR SST Level 4 MUR Global Foundation Sea Surface Temperature Analysis (v4.1) V001

MUR-JPL-L4-GLOB-v4_1 VERSION 1

Client Hand Offs View More Metadata API Endpoints

State Of The Ocean

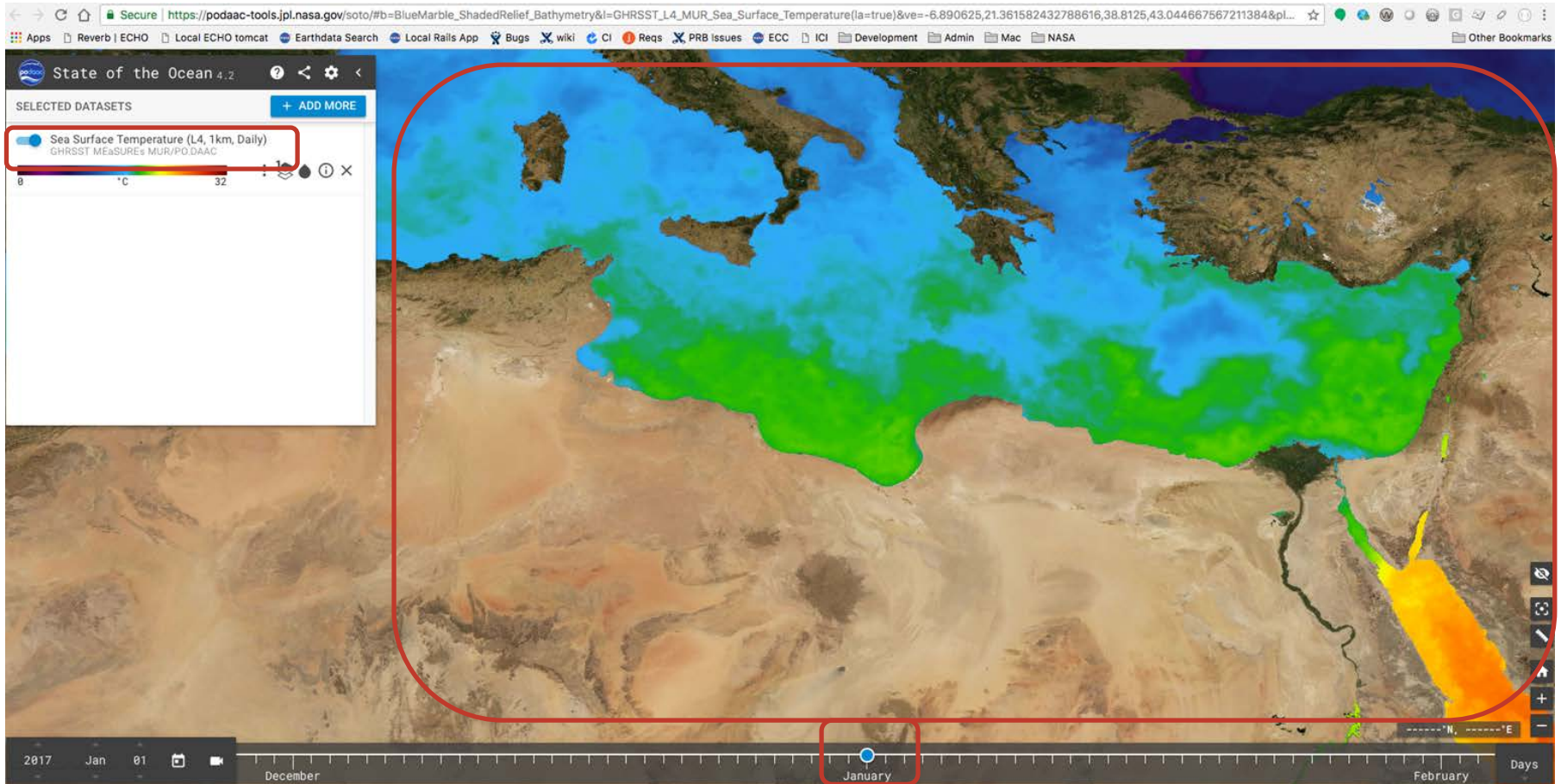


Related URLs:
[User's Guide](#) | [View All Related URLs](#)
Temporal Extent:
2002-06-01 ongoing
GIBS Imagery Projection Availability:
None

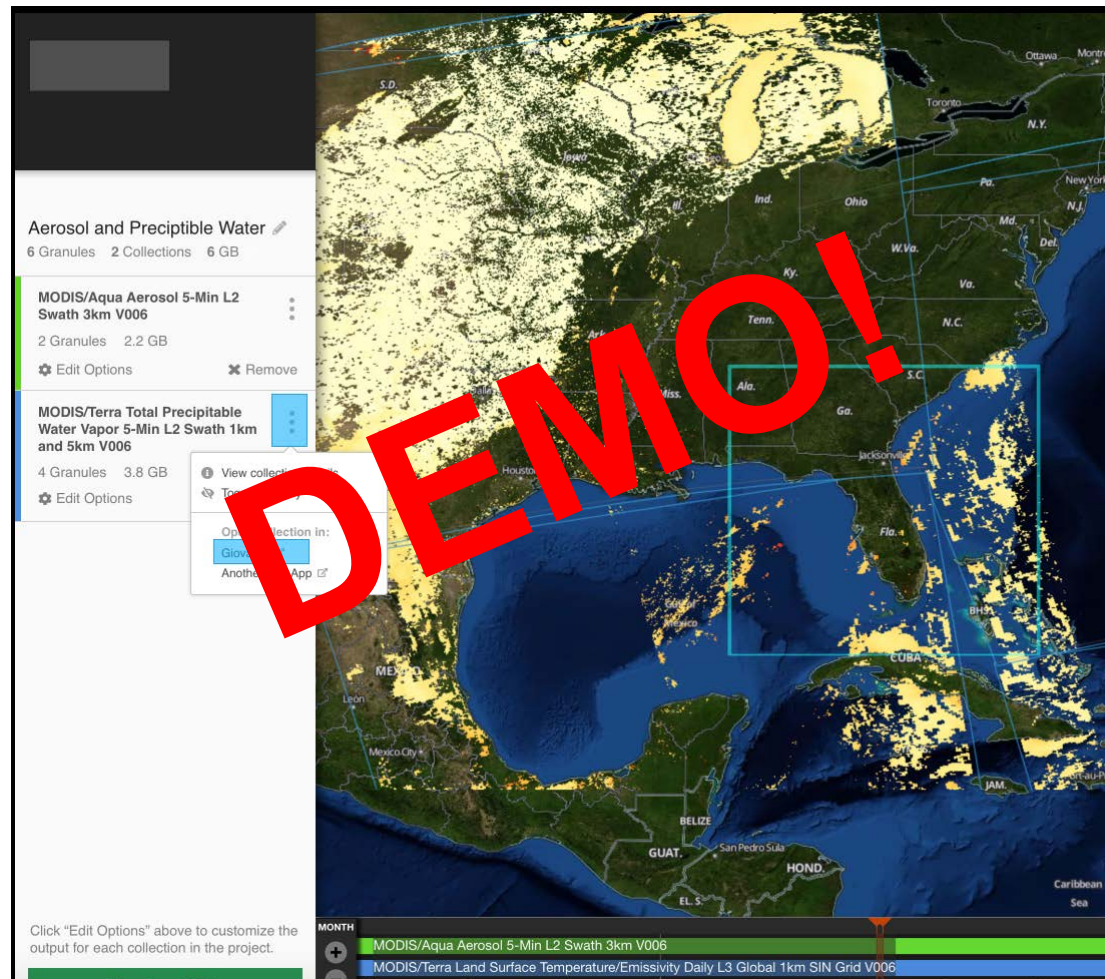
Science Keywords:
EARTH SCIENCE OCEANS OCEAN TEMPERATURE

A Group for High Resolution Sea Surface Temperature (GHR SST) Level 4 sea surface temperature analysis produced as a retrospective dataset (four day latency) and near-real-time dataset (one day latency) at the JPL Physical Oceanography DAAC using wavelets as basis functions in an optimal interpolation approach on a global 0.01 degree grid. The version 4 Multiscale Ultrahigh Resolution (MUR) L4 analysis is based upon nighttime GHR SST L2P skin and subskin SST observations from several instruments including the NASA Advanced Microwave Scanning Radiometer-EOS (AMSRE), the Moderate Resolution Imaging Spectroradiometer (MODIS) on the NASA Aqua and Terra platforms, the US Navy microwave WindSat radiometer, Advanced Very High Resolution Radiometer (AVHRR) on several NOAA satellites, and in situ SST observations from the NOAA iQuam project. The ice concentration data are from the archives at the FLIMTSAT Ocean and Sea Ice Satellite Application Facility (OSI SAF) High 1 altitude Processing Center and are also used for an improved SST parameterization for the high-latitudes. This data set is funded by the NASA MFSU/IRF's program (<http://earthdata.nasa.gov/our-community/community-data-system>).

Transferring to SOTO



Visualization and smart handoff



GOING FURTHER

State of play

- Giovanni – now
- State of the Ocean – 19.1
- <Your application here> - 19.x

Embed your search action

The screenshot shows a Google search page with the query "MOD02QKM beijing summer 2010". The search results are displayed below the search bar. The first result is "ECHO 10 - NASA" with a URL: https://cmr.earthdata.nasa.gov/search/collections.echo10?concept_id=C1219252422.... Below the search results, there is a dark overlay containing HTML code for embedding a search action. The code is as follows:

```
<li class='search-link' itemprop="potentialAction" itemscope itemType="http://schema.org/SearchAction" typeof="WebSite">
  <meta property="url" href="https://search.sit.earthdata.nasa.gov/search"/>
  <a rel="search" target="_blank" href="https://search.sit.earthdata.nasa.gov/search/granules?p=C3878-LPDAAC_ECS">
    Search for granules from this collection
  </a>
  <meta itemprop="target" content="https://search.sit.earthdata.nasa.gov/search/granules?p=C3878-LPDAAC_ECS&q={query}"/>
  <meta property="query-input" type="text" name="query"/>
</li>
```

Egress costs (a partial solution)

- In the cloud, egress costs money!
- Put the data next to the analytics
- Put the analytics next to the discovery
- Use smart hand offs to navigate

QUESTIONS

This work was supported by NASA/GSFC under Raytheon Co. contract number NNG15HZ39C.

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