June 13, 2024 | 12:00 - 1:15pm EDT | Register HERE

NOAA LOW EARTH ORBIT (LEO) JPSS SATELLITE DATA NODD OFFICE HOURS

Hosted by NOAA National Environmental Satellite, Data, and Information Service (NESDIS), NOAA Open Data Dissemination (NODD), and NODD's cloud partner Amazon Web Services (AWS). Please join to learn more about NOAA's LEO Joint Polar Satellite System (JPSS) data (SNPP, NOAA 20 & 21), connect with NOAA and cloud subject matter experts, and share your use case.

Adrienne Simonson
NOAA Open Data Dissemination (NODD)

Satya Kalluri
NOAA LEO Joint Polar Satellite System (JPSS)

Lihang Zhou
NOAA LEO Joint Polar Satellite System (JPSS)

Chris Stoner
AWS Open Environmental Data Lead

Mya Sears
NC Institute for Climate Studies (NCICS)

NOAA Ocean Color Product | Image Captured by JPSS Visible Infrared Imaging Radiometer Suite (VIIRS) Sensor

GoogleMeet Webinar - Recorded

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- Thank you for your registration and interest.
- Webinar is recorded. Anyone with video display has to provide consent. Only hosts and presenters are asked to turn their video on.
- If do not wish to be part of the recording, please feel free to drop off.
- Meeting summary and presentation slides will be available on the NODD website
  - **NOAA.GOV/NODD**

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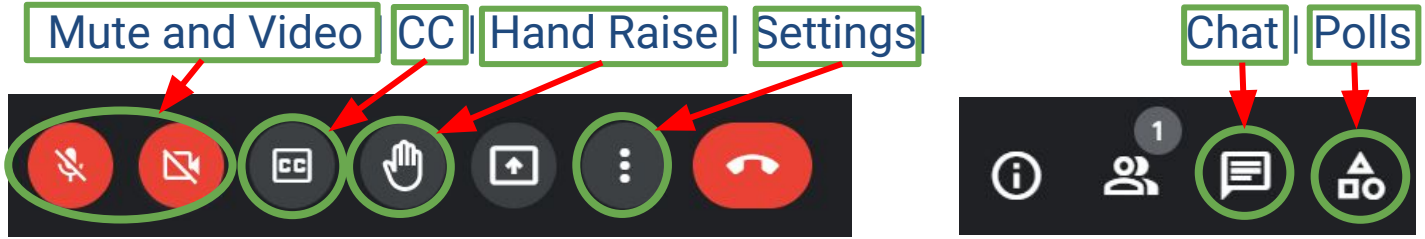
GoogleMeet Webinar Logistics

How to join the discussion!

- Keep yourself muted throughout (for call-in participants: to mute and unmute use *6) and videos off
- Raise your hand if you have a question and we'll respond in the order of the queue
- The following features of Google Meet:



- This webinar will be recorded.
- You can also join by phone line only if you are having connectivity issues.

Guidelines for Discussion

- Keep it brief
- Keep it respectful
- Use the chat function for links, references and/or resources
- Submit questions through the chat function or raise your hand
- Identify who the question is directed to where possible

Quick Google Poll

POLL1

- How do you access JPSS satellite data today?
  - On-prem via NOAA
  - Cloud
  - Both/Either
  - 3rd party/Web-based Viewer
  - None/Other

POLL2

- My primary goal for attending today is:
  - Technical use and access of JPSS data
  - To learn about cloud access to data (e.g. NODD Program)
  - Meet and engage with NOAA staff scientists
  - Learn about AWS access and tools

NODD Disseminates NOAA Line Office Data

Open and Free, with Value to the Public:

- From NOAA Line Offices via NODD to public cloud buckets of three CSPs =
  - ❏ An exponential number of users can access
- Harnesses the scalability of the cloud to improve data access
  - ❏ No egress costs for users or the agency
- No use restrictions or user registration
- Appropriate Metadata included

NOAA Data is Growing Exponentially

TECHNOLOGY MODERNIZATION

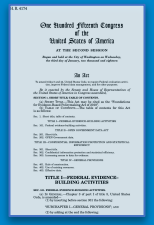
Reduces stress on NOAA's on-premise dissemination systems

Improves services for users

FULL & OPEN PUBLIC ACCESS

Supports Federal Data Strategy & Evidence Act Requirements

No egress costs



ENABLES & ENGAGES USERS

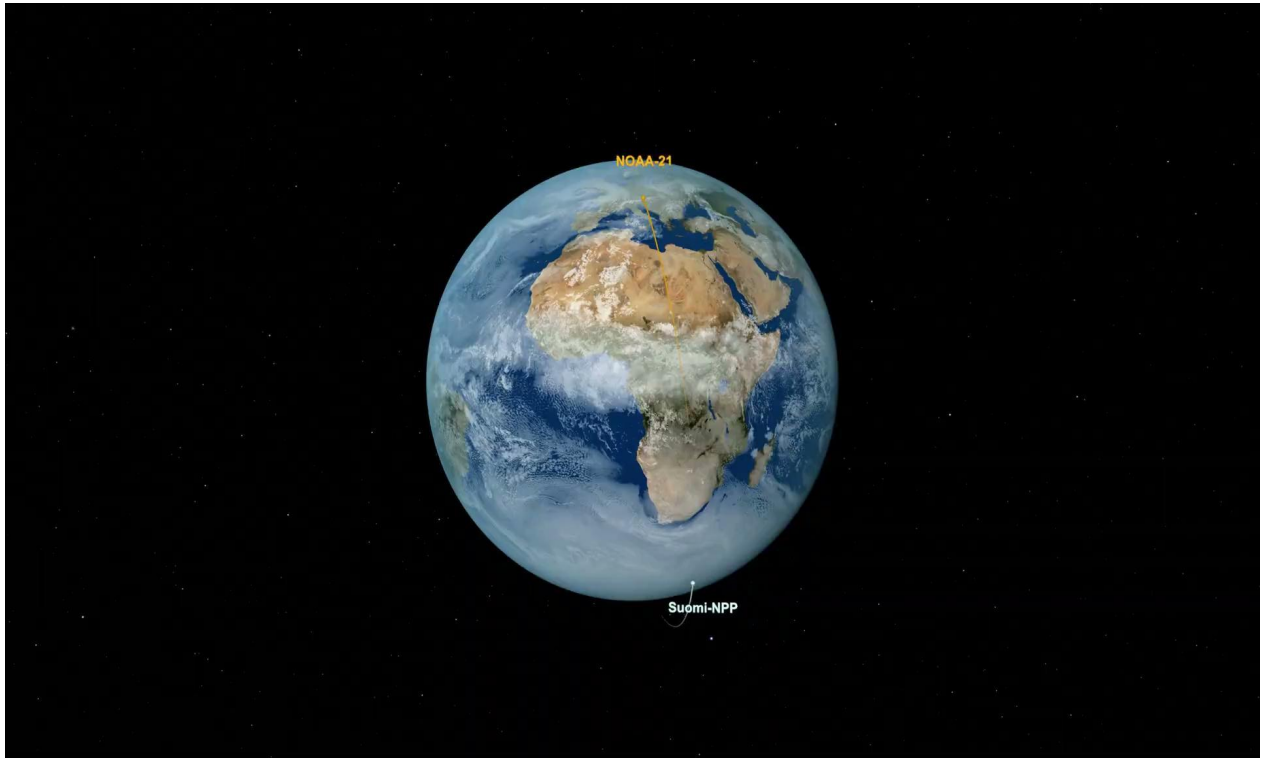
Catalyzes innovation in environmental services

Enables interoperability

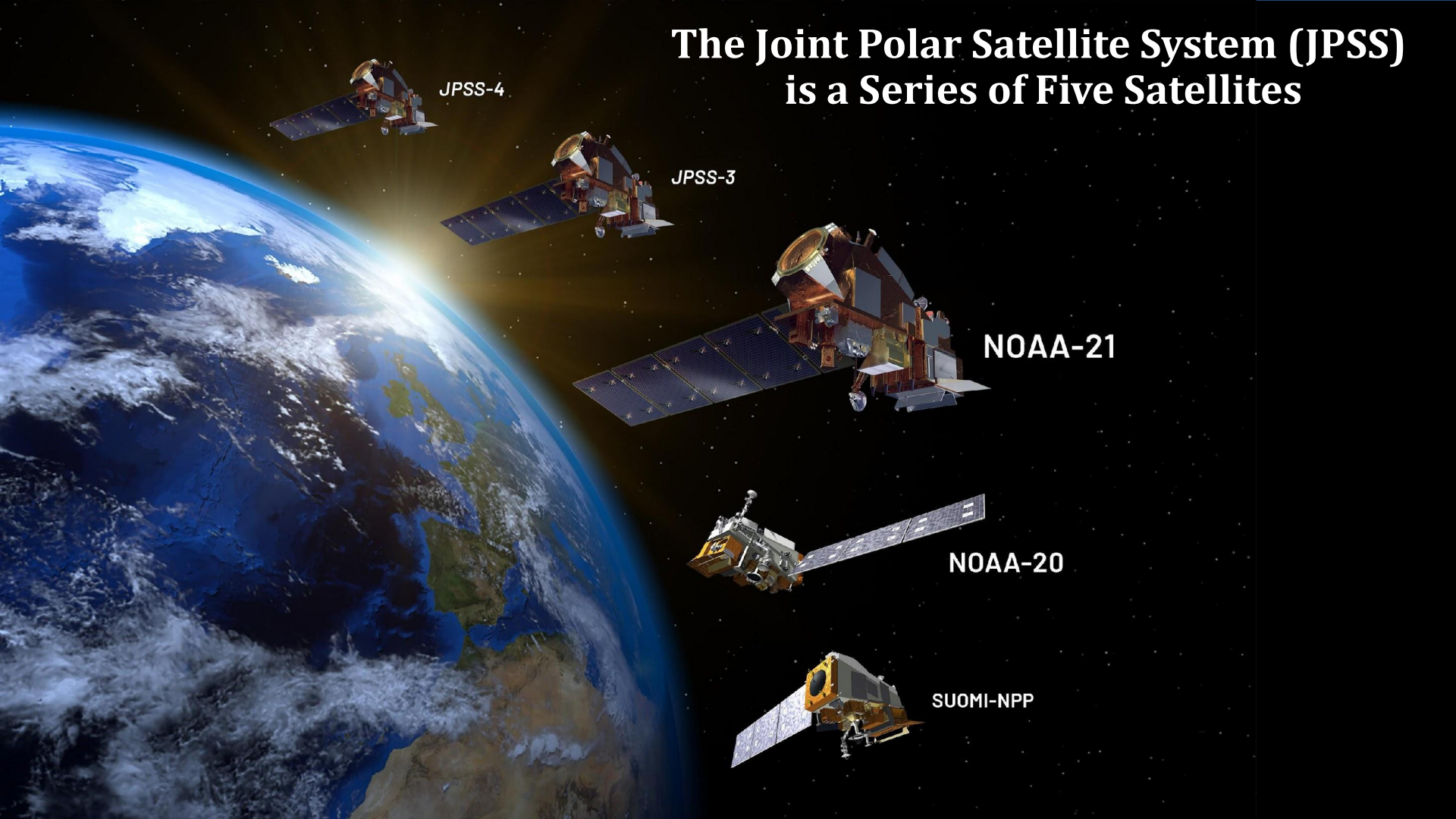
Low Earth Orbit (LEO) Satellites

SNPP, NOAA20, NOAA21: Operational Constellation

- Launched into Low Earth Orbit—512 miles
- **14x** Orbits Earth 14 times pole-to-pole with SNPP
- **2x** Images entire globe twice a day
- State of the art instrumentation to collect data on Earth's atmosphere, lands, and oceans
- Sends more than 2,000 gigabytes of data to Earth every day

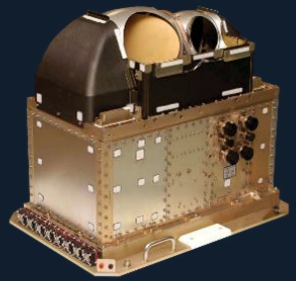


The Joint Polar Satellite System (JPSS) is a Series of Five Satellites



JPSS Instruments

ATMS
Advanced Technology Microwave Sounder



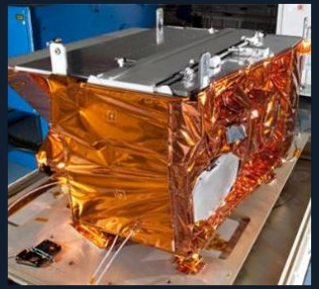
ATMS and CrIS together provide high vertical resolution temperature and water vapor information needed to maintain and improve forecast skill out to 5 to 7 days in advance for extreme weather events, including hurricanes and severe weather outbreaks.

NORTHROP GRUMMAN

CrIS
Cross-track Infrared Sounder

HARRIS

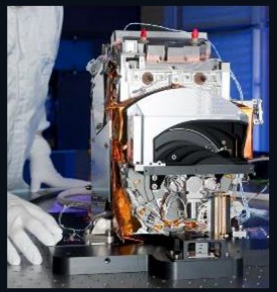
VIIRS
Visible Infrared Imaging Radiometer Suite



VIIRS provides many critical imagery products including snow/ice cover, clouds, fog, aerosols, fire, smoke plumes, vegetation health, phytoplankton and chlorophyll abundance.

Raytheon

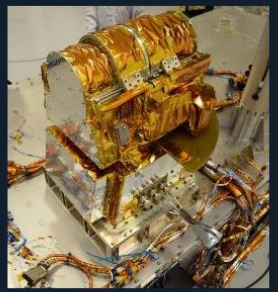
OMPS
Ozone Mapping and Profiler Suite



Ozone spectrometers for monitoring ozone hole and recovery of stratospheric ozone and for UV index forecasts.

Ball

CERES
Clouds and the Earth's Radiant Energy System

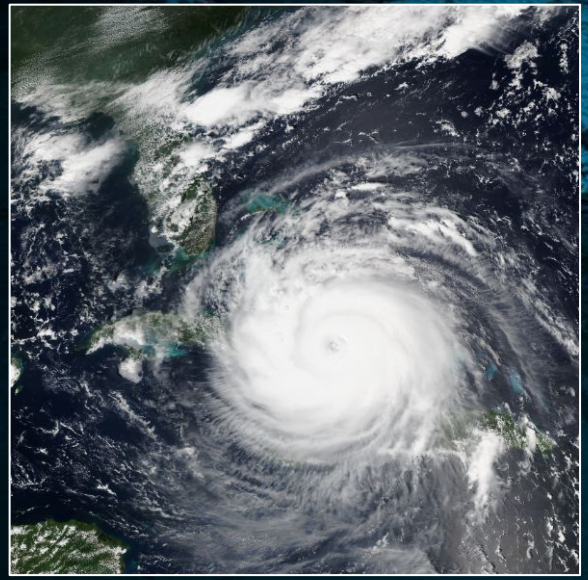


Scanning radiometer which supports studies of the Earth Radiation Budget (ERB).

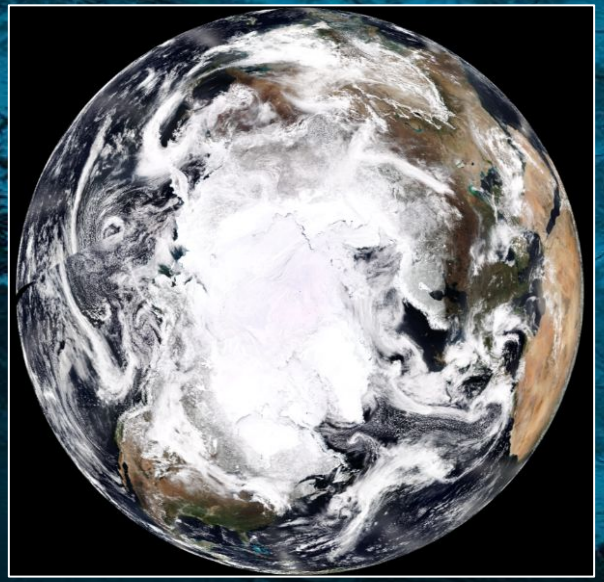
**Discontinued after JPSS-1 (NOAA-20)*

NORTHROP GRUMMAN

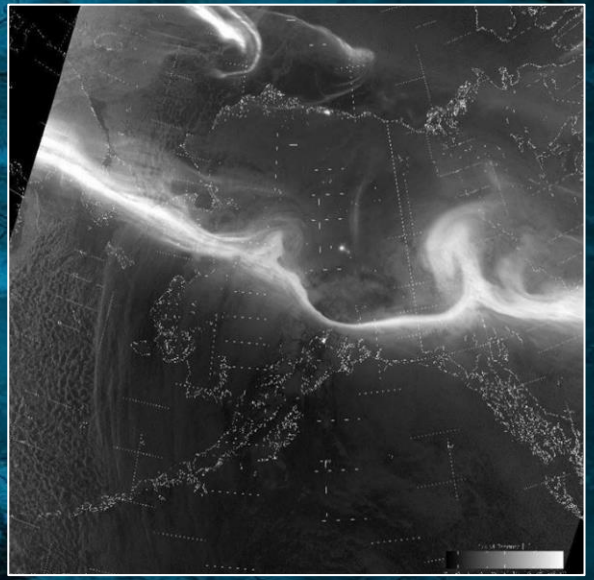
JPSS Satellites Improve Medium- and Long-Term Forecasts



Critical data for numerical weather prediction to enable accurate 3–7 day forecasts.

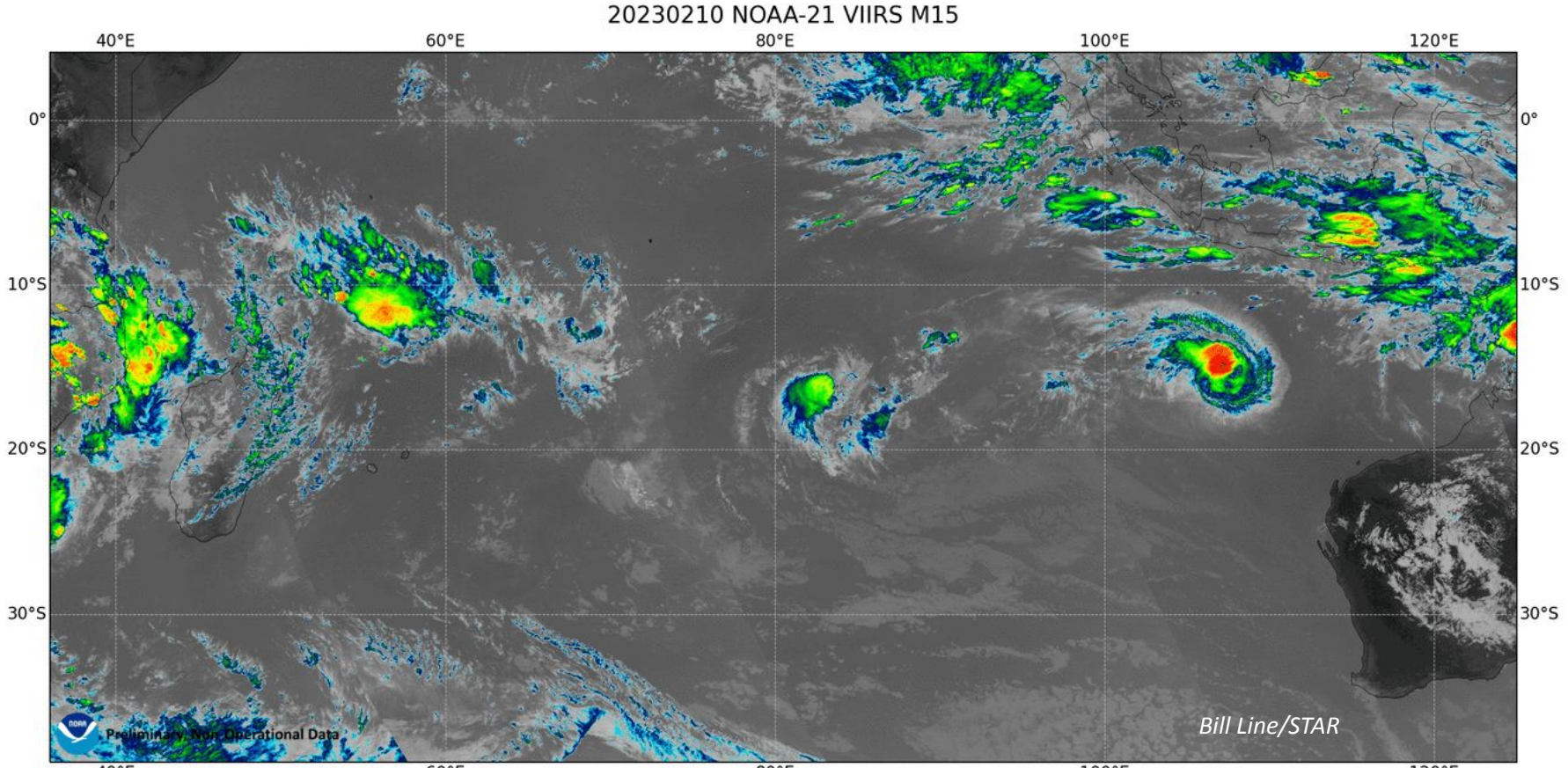


Operational weather and environment satellite observations for Alaska and the polar regions.

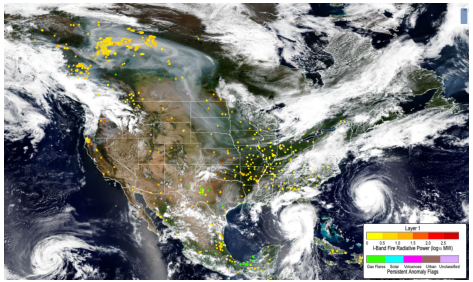


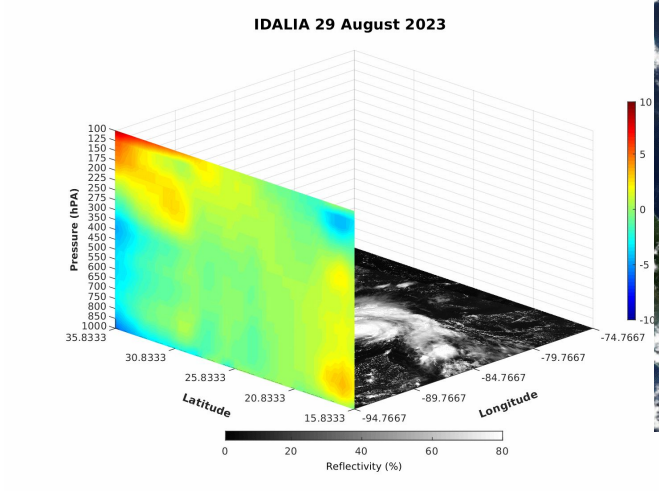
Global coverage and unique day and night imaging capabilities to support environmental monitoring and forecasting.

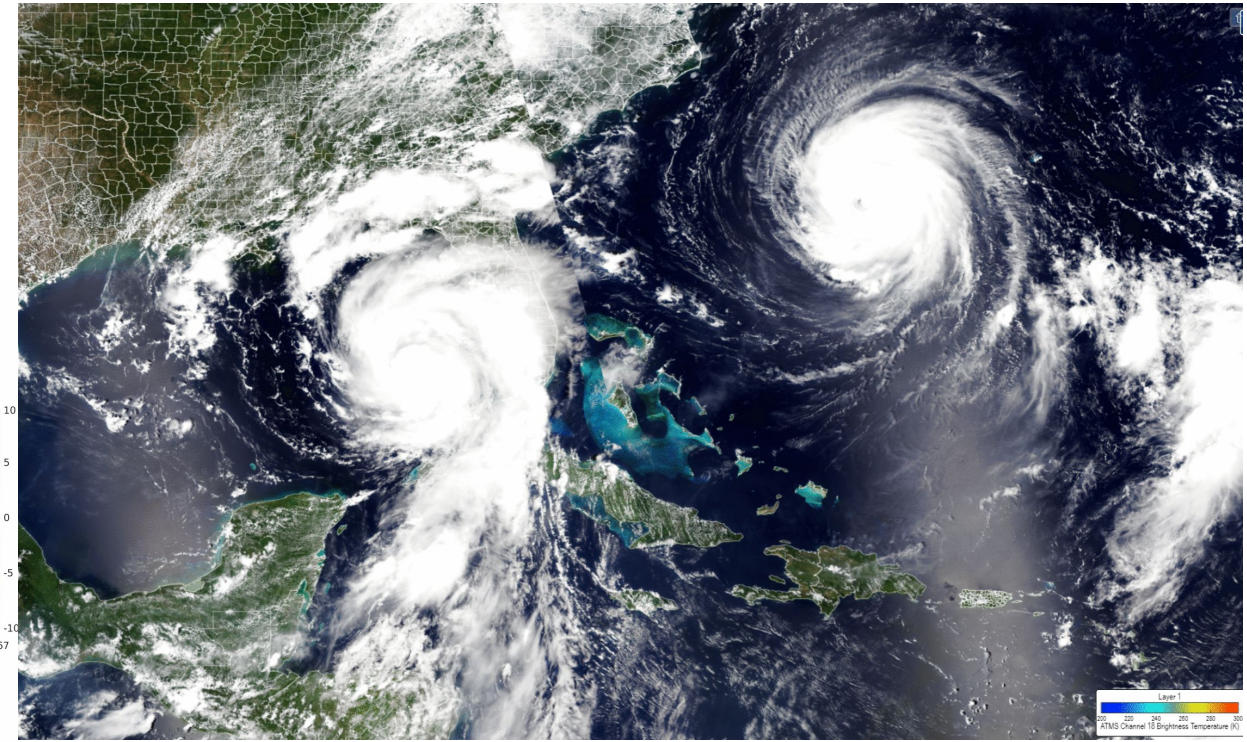
NOAA21 Captures Over 9000km, 17 Day Journey of Freddy



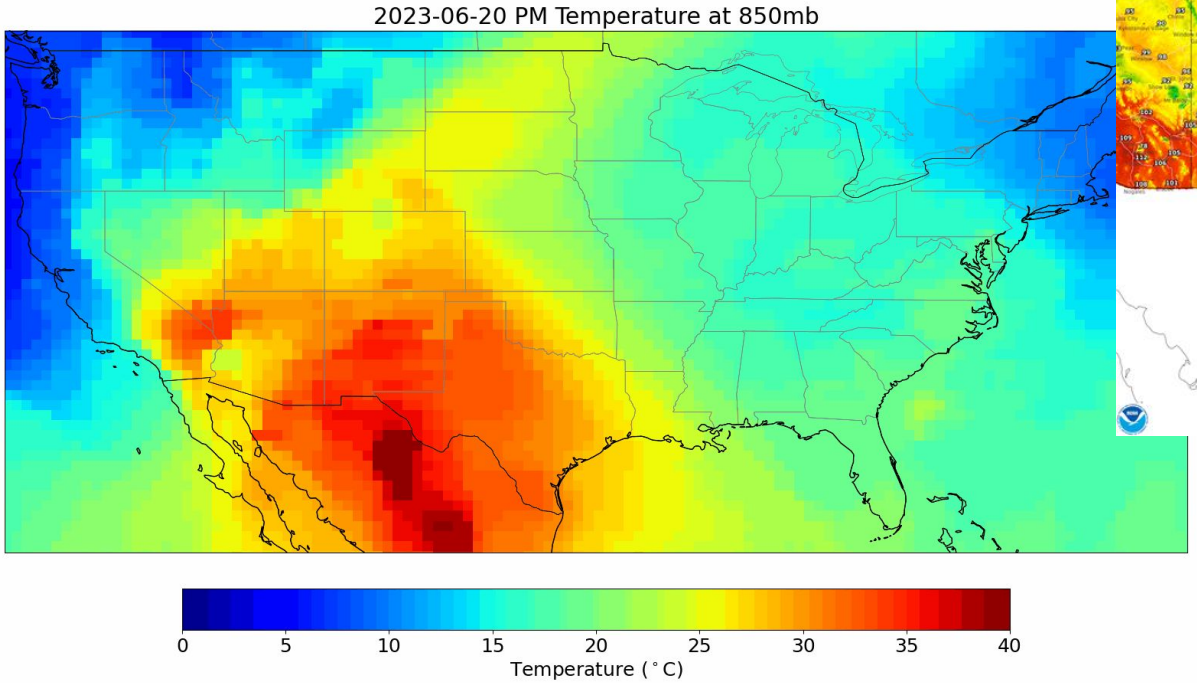
VIIRS and ATMS Views of Idalia

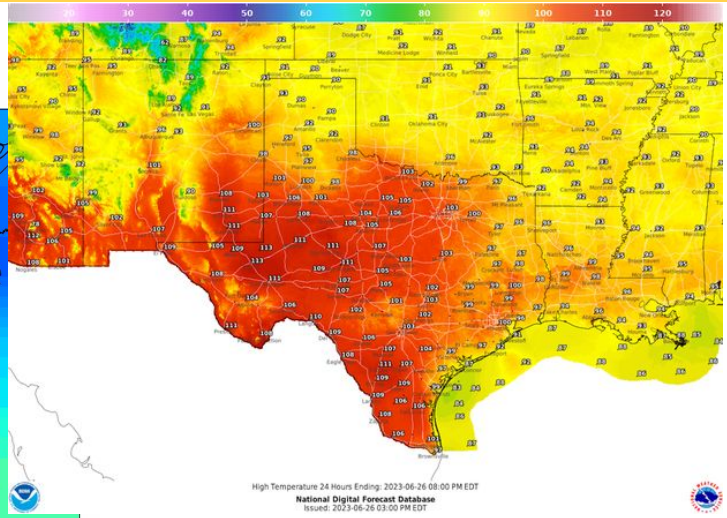


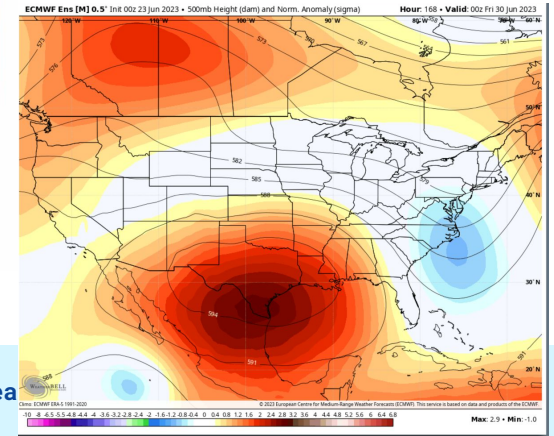




NUCAPS (CrIS+ATMS) Retrievals of Heat Wave (NOAA20)

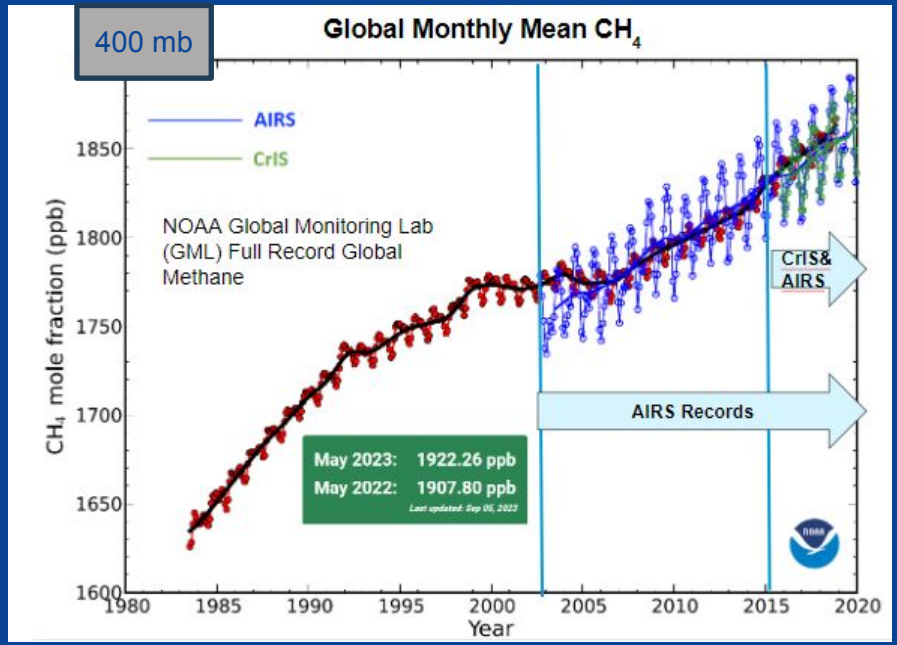




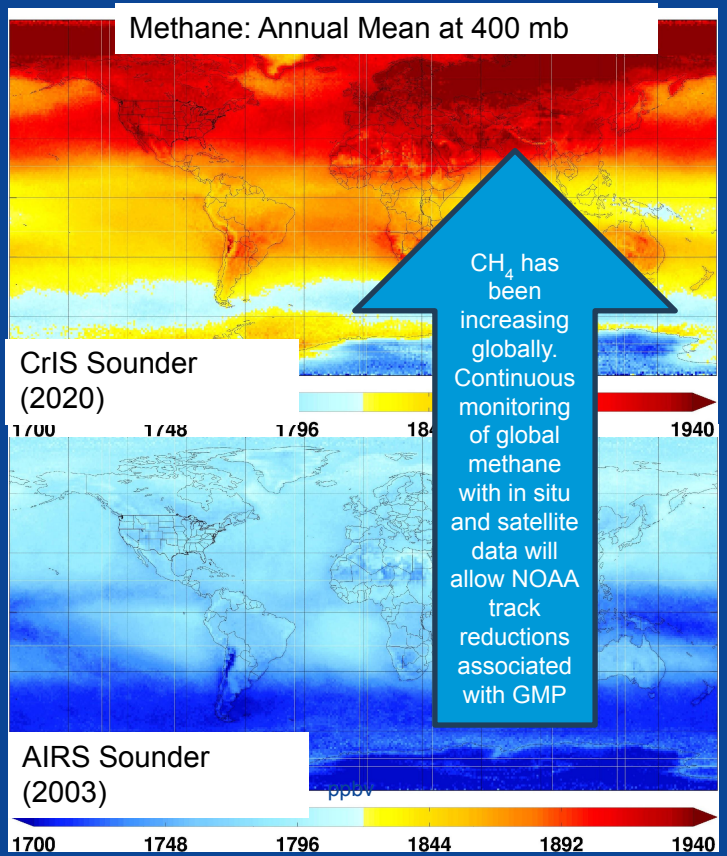


Rebekah Esmaili, STC

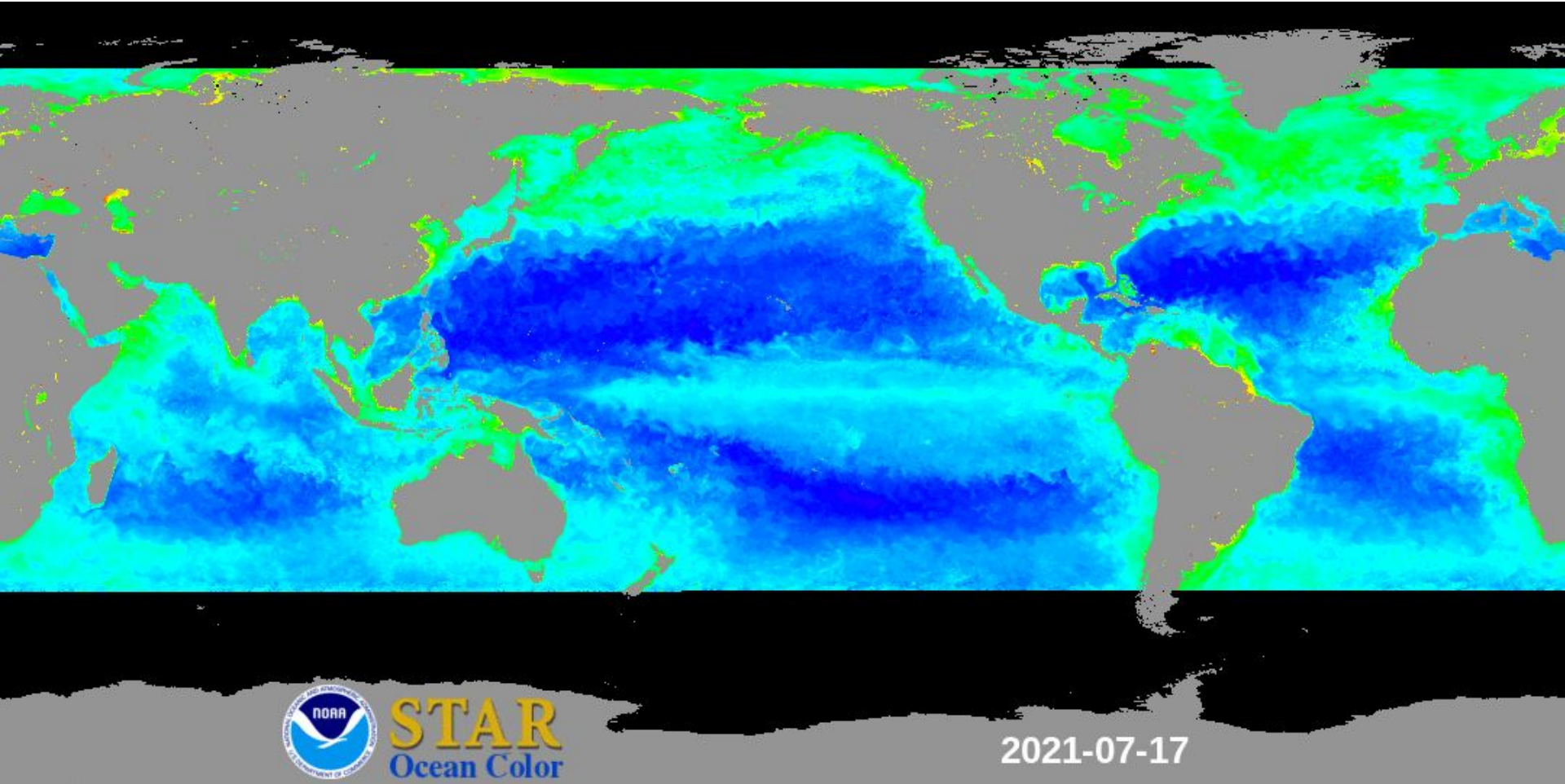
LEO Satellites' GHG Monitoring Capabilities - Methane



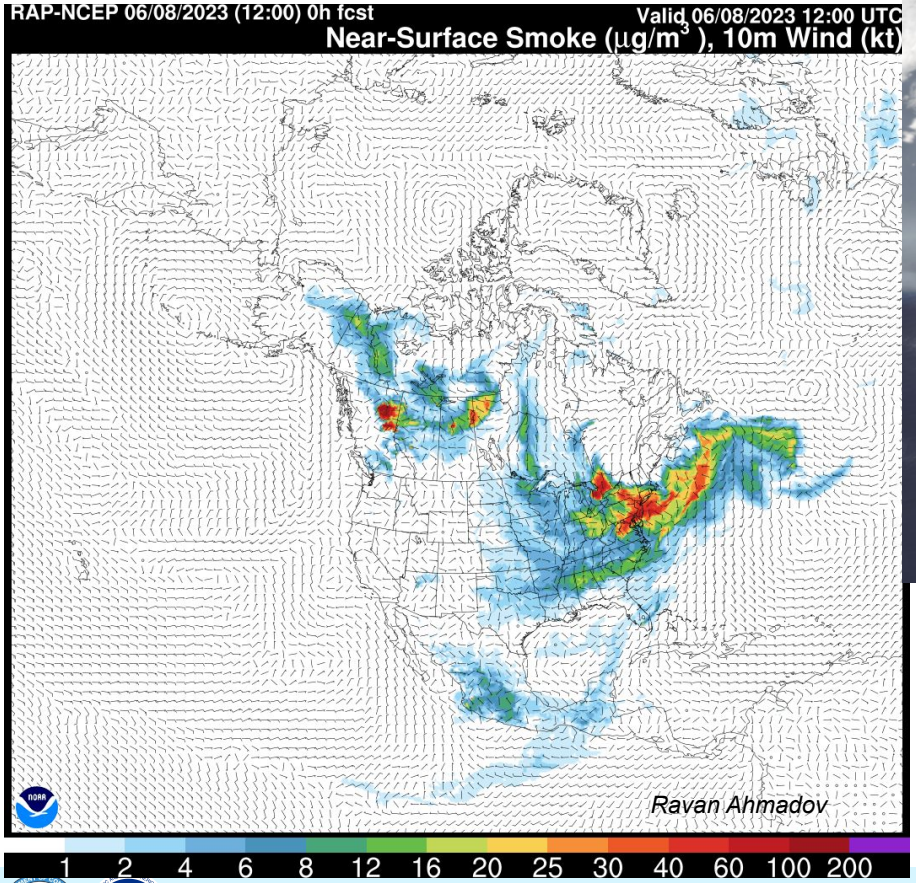
NASA Aqua AIRS: Atmospheric Infrared Sounder
NOAA-NASA Suomi NPP CrIS: Cross-track Infrared Sounder

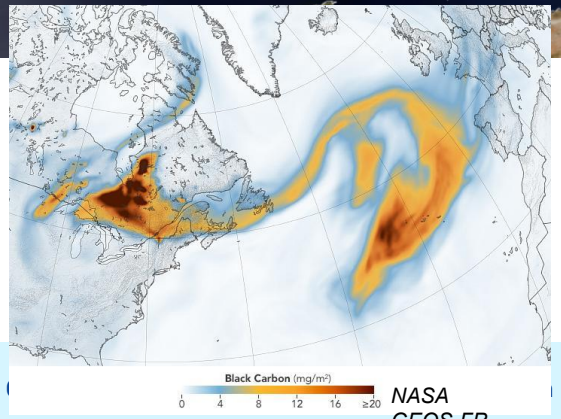


Ocean Color Capabilities on SNPP - First on a NOAA Mission

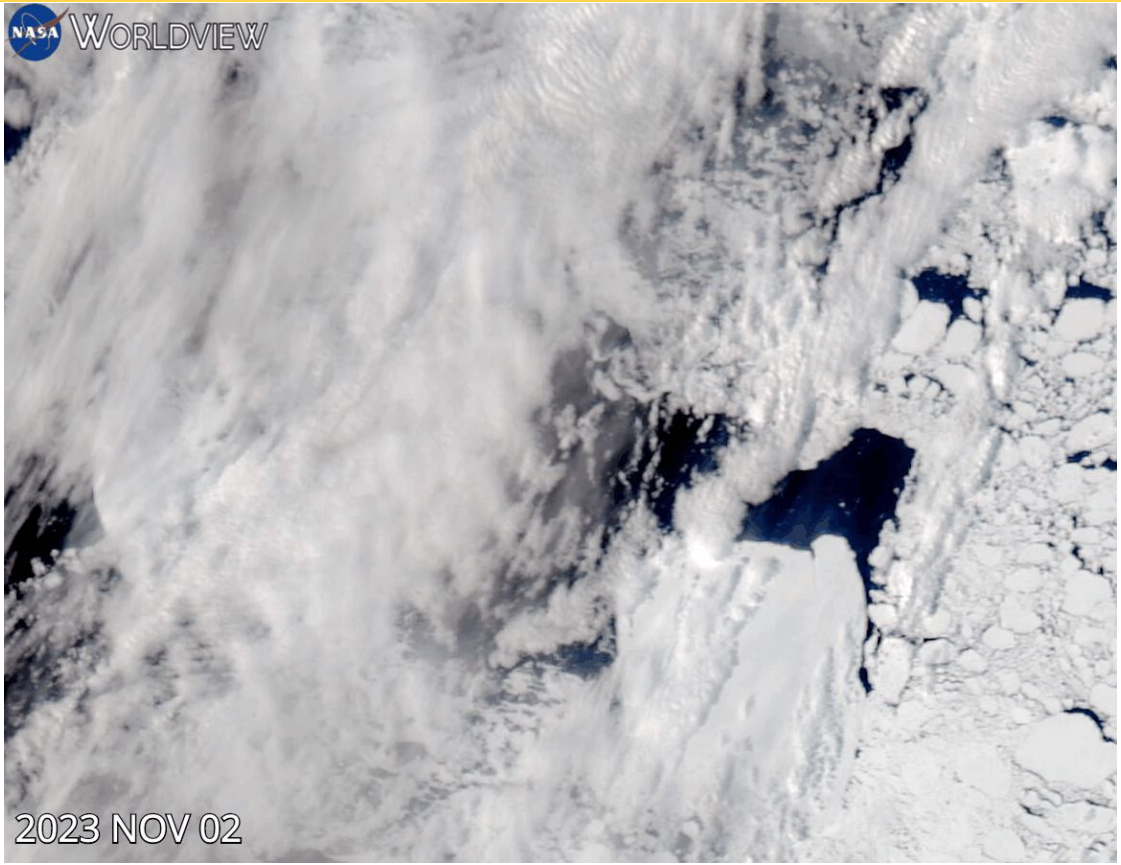


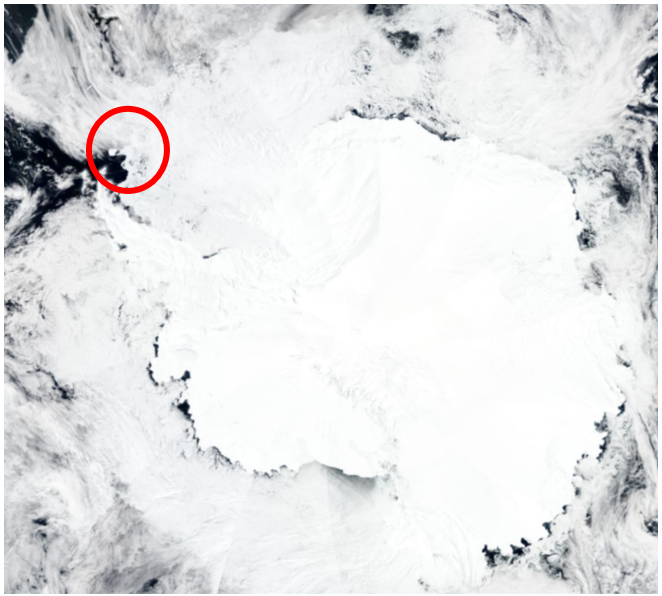
Canadian Fires Monitored by VIIRS



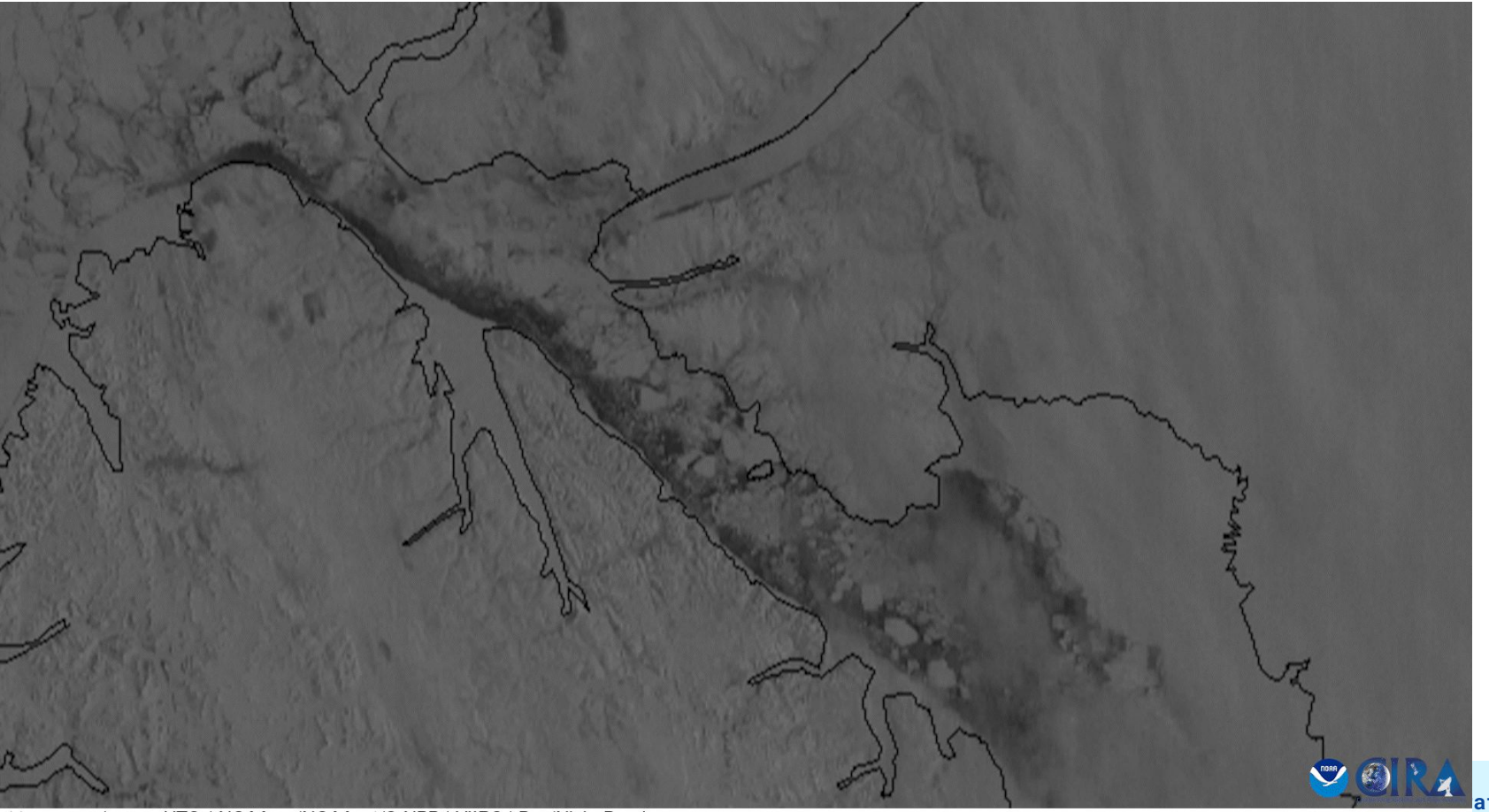


World Largest Iceberg (A23a) Breaks Loose From Antarctica





Arctic Ice Streaming Down Strait between Greenland and Ellesmere Island

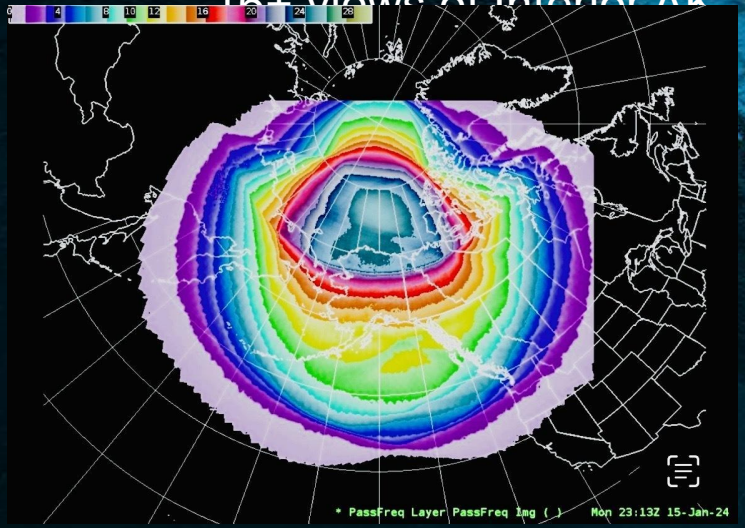


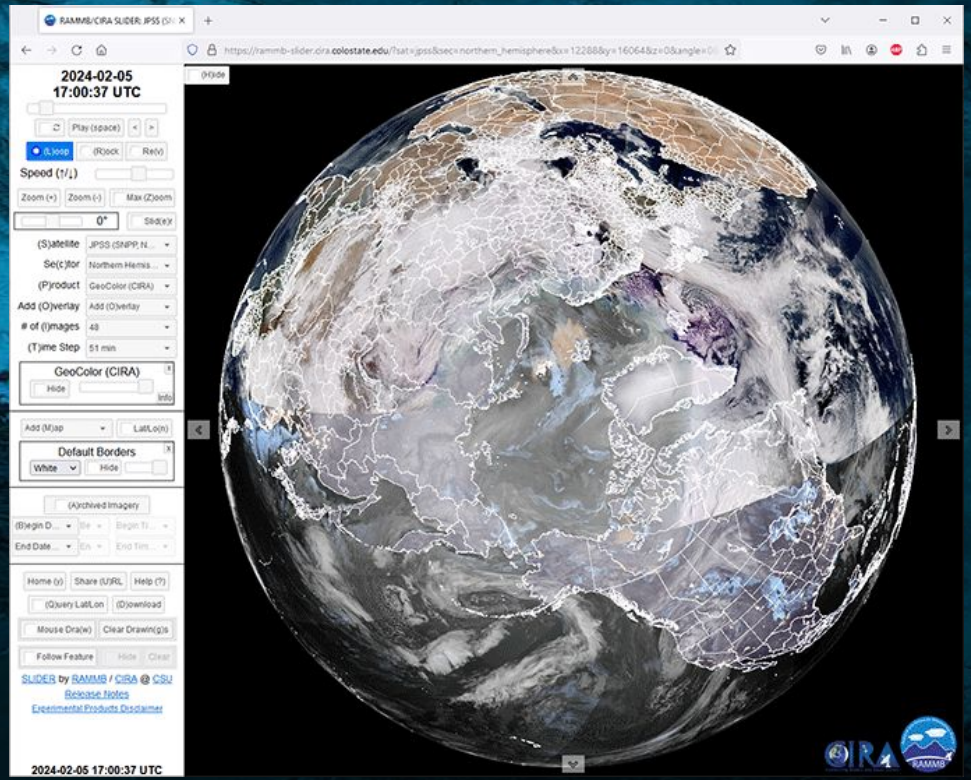
11-29-2023 | 05:35 UTC | NOAA-20/NOAA-21/S-NPP | VIIRS | Day/Night Band

NOAA-21 is Primary - Working together with NOAA-20, SNPP

3 JPSS Satellites VIIRS Sensor Coverage

- 24+ views of the Arctic
- 16+ views of Interior AK



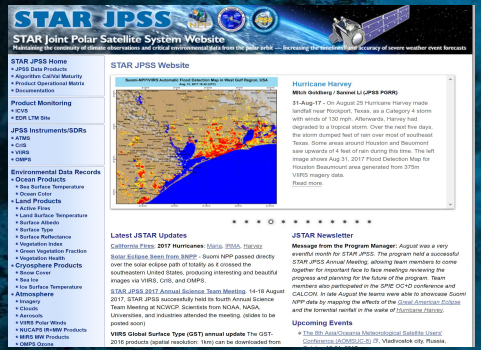


Jennifer Delamere (jsdelamere@alaska.edu) @ University of Alaska Fairbanks Geographic Information Network of Alaska (GINA)

https://rammb-slider.cira.colostate.edu/?sat=jpss

Where to Get the Data: Transparency and Accessibility

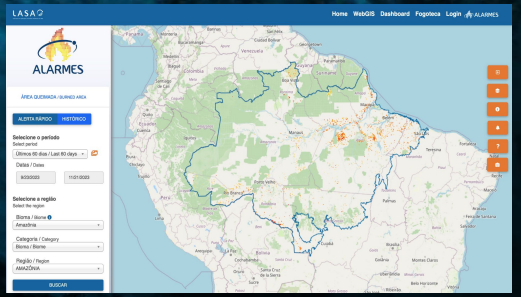
- **Transparency of the Science:** Detailed information on JPSS instruments, Science data products and documents (ATBDs, Cal Val Plans, Data Format, Product maturity status, README files, Requirements), Long term validation and science monitoring of SDR/EDR Products https://www.star.nesdis.noaa.gov/jpss/



- **Open Data**: JPSS Data is available through CLASS (Comprehensive Large Array-data Stewardship System), PDA (Production Distribution and Access), and Direct Readout/GEONETCast. JPSS data is also now available in NODD, for free and easy public access.

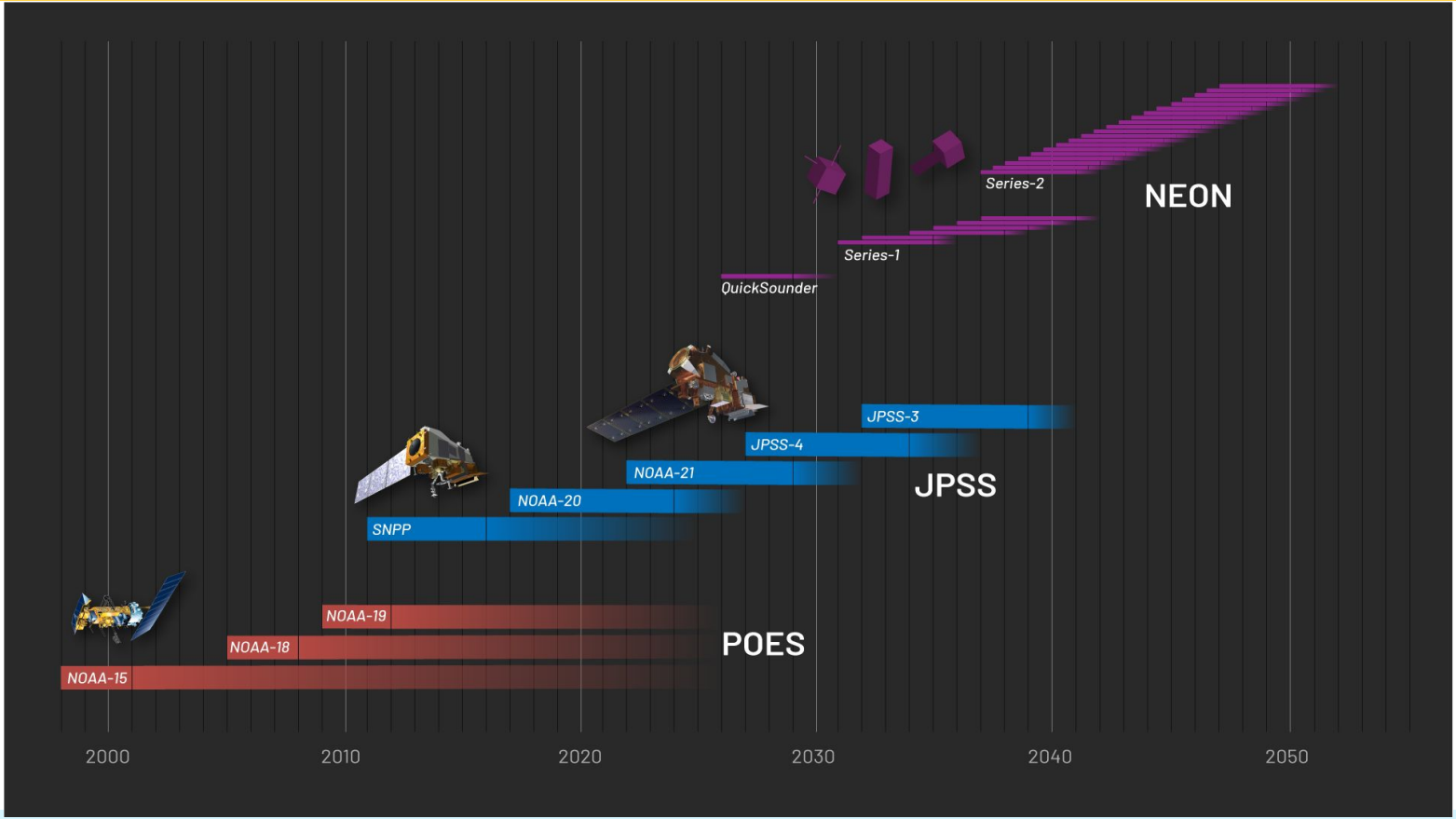
Near Real-Time JPSS Data via NOAA Open Data Dissemination (NODD)

The VIIRS data on the NODD is currently supporting NRT fire-related applications in Brazil and Mexico. https://alarmes.lasa.ufrj.br/platform/webgis (POC: Wilfrid Schroeder/NOAA NESDIS SAB)



NOAA Supports Open Science - Free, easy, and timely access to JPSS Data

LEO and the Near Earth Observation Network (NEON)



2023

JPSS

ANNUAL SCIENCE DIGEST

FROM THE NOAA NESDIS OFFICE OF
LOW EARTH ORBIT (LEO) OBSERVATIONS

EXPLORING THE IMPACT AND APPLICATIONS OF JPSS DATA

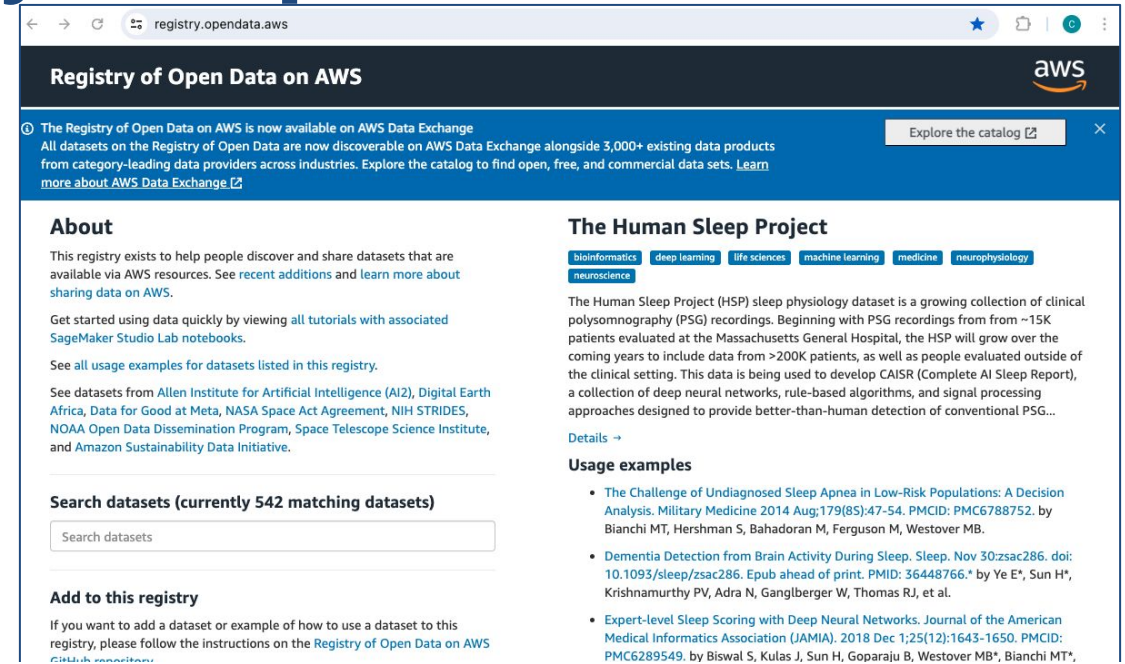
Download your copy today!

www.nesdis.noaa.gov/JPSS-digest

Chris Stoner

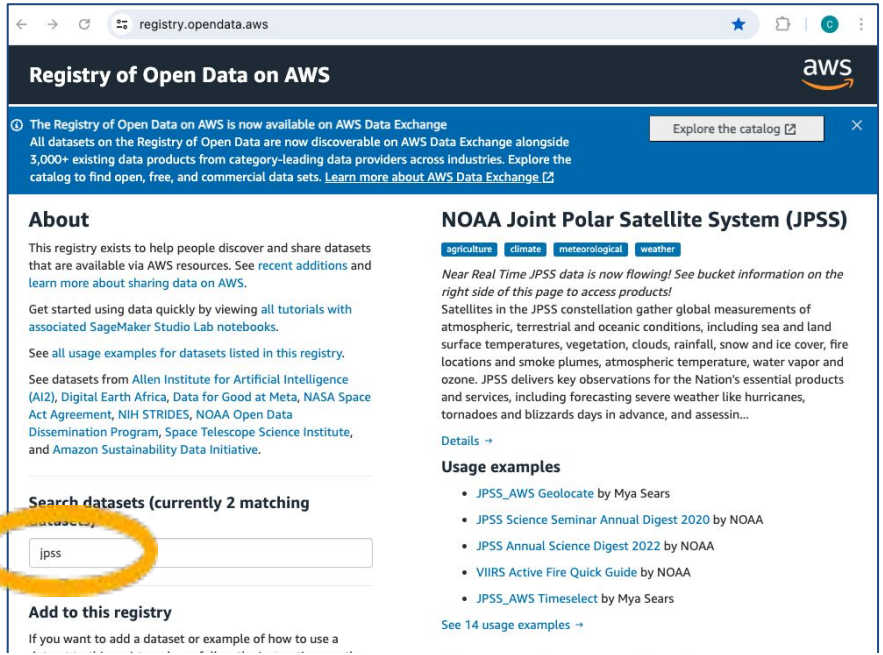
AWS Open Environmental Data Lead

Registry of Open Data



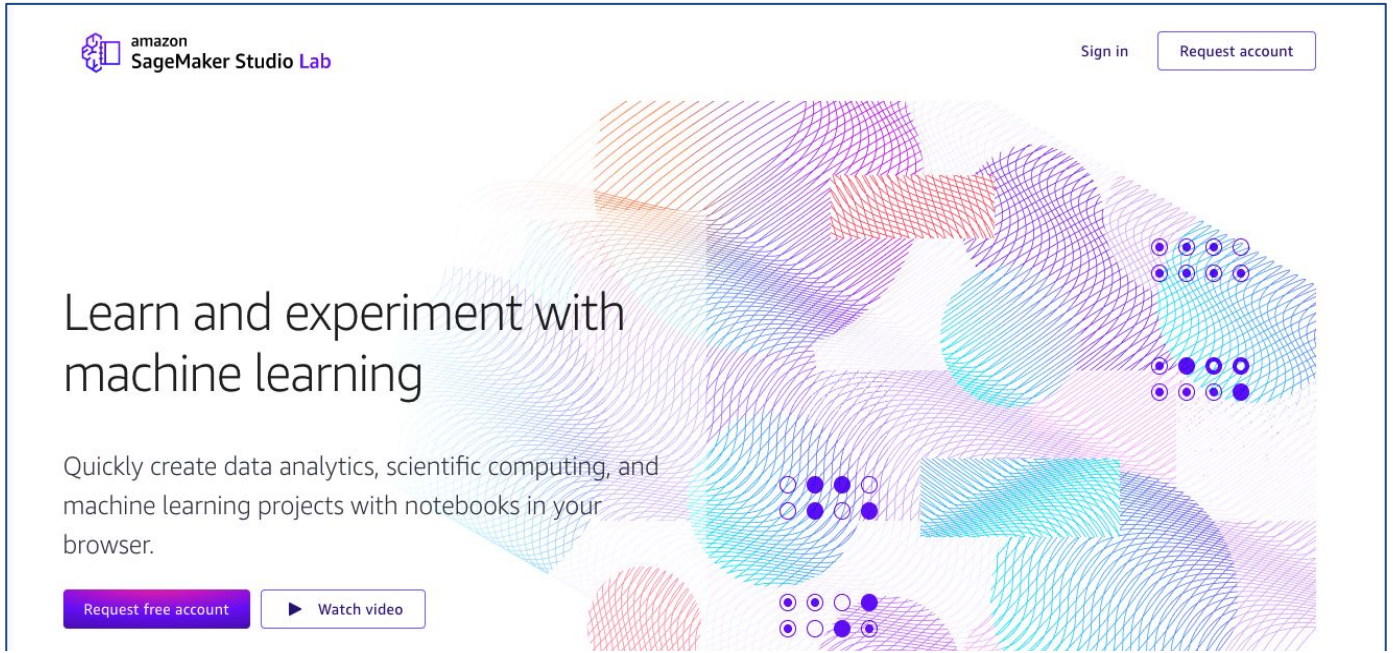
https://registry.opendata.aws

Registry of Open Data: JPSS



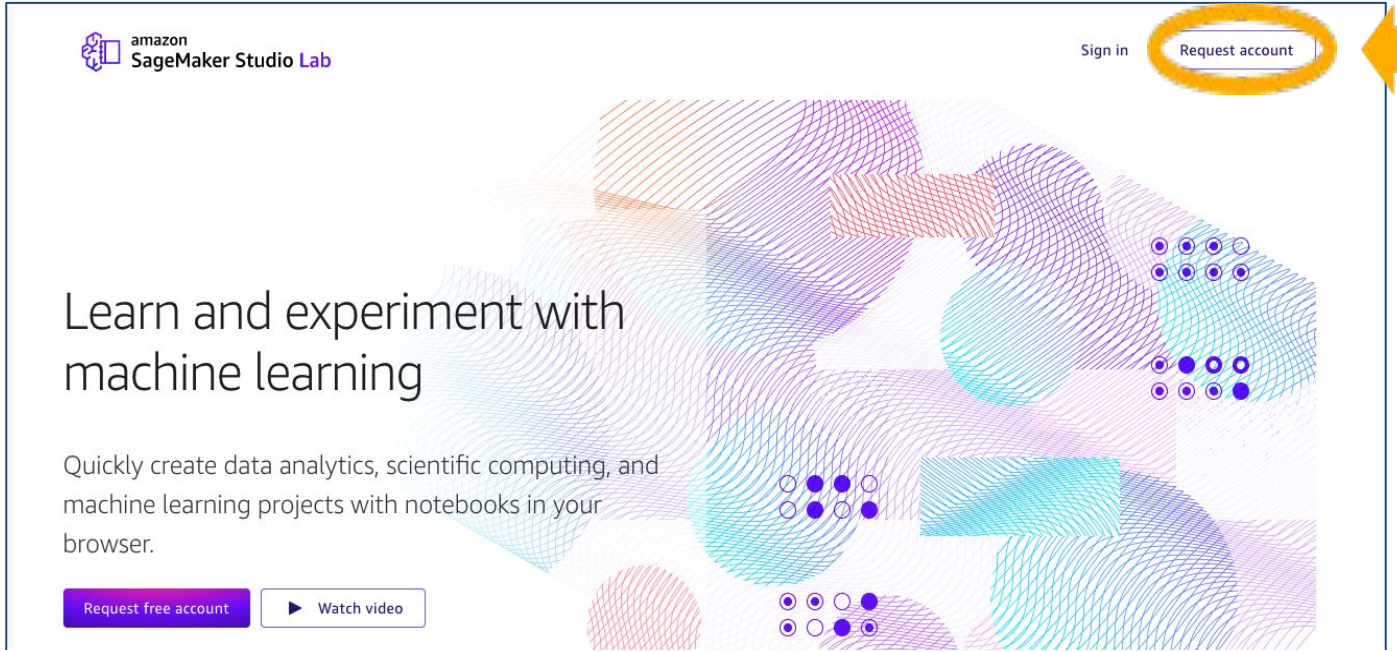
https://registry.opendata.aws

Step 1: Create a SageMaker StudioLab account



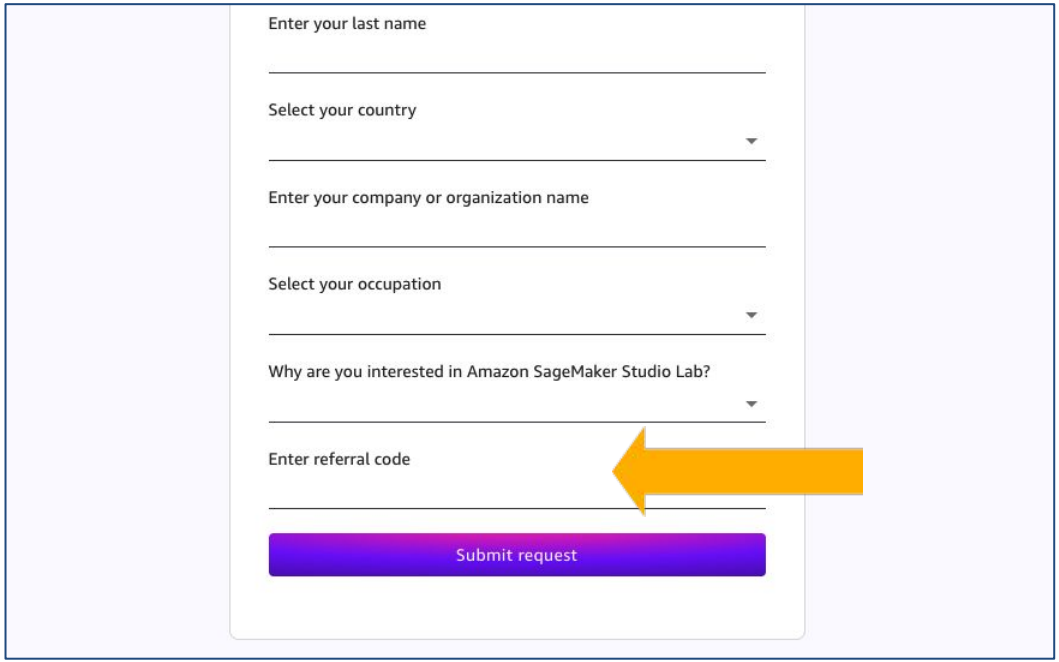
https://studiolab.sagemaker.aws/

Step 1a: Request account



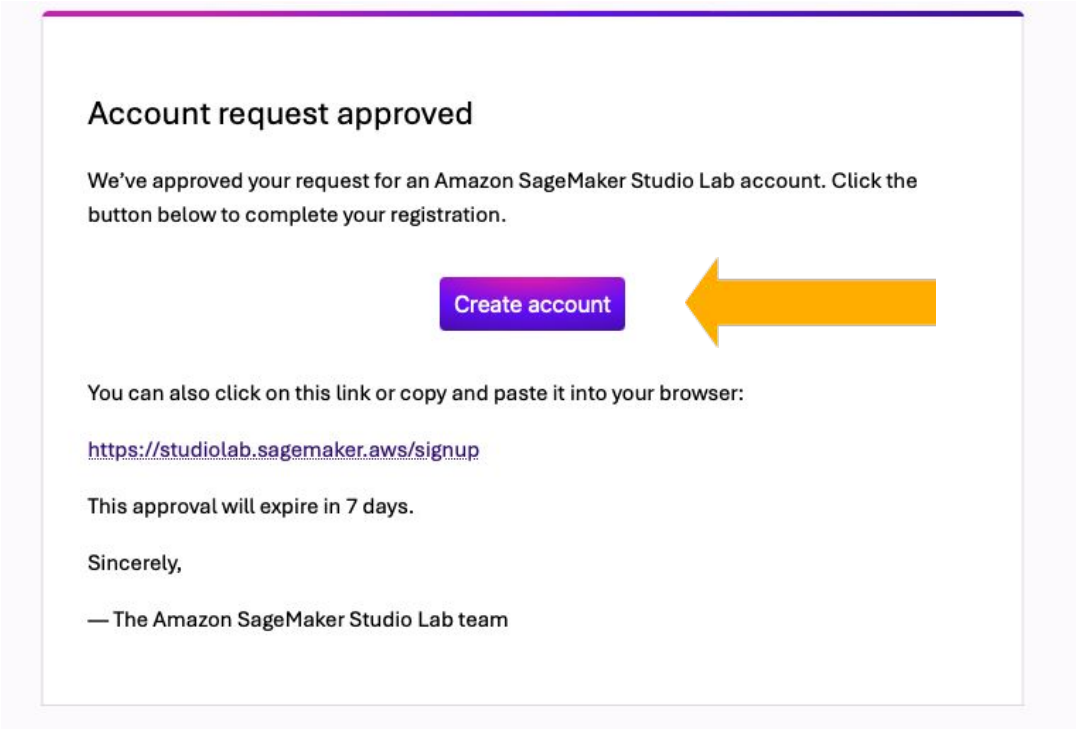
https://studiolab.sagemaker.aws/

Step 1b: Use referral code

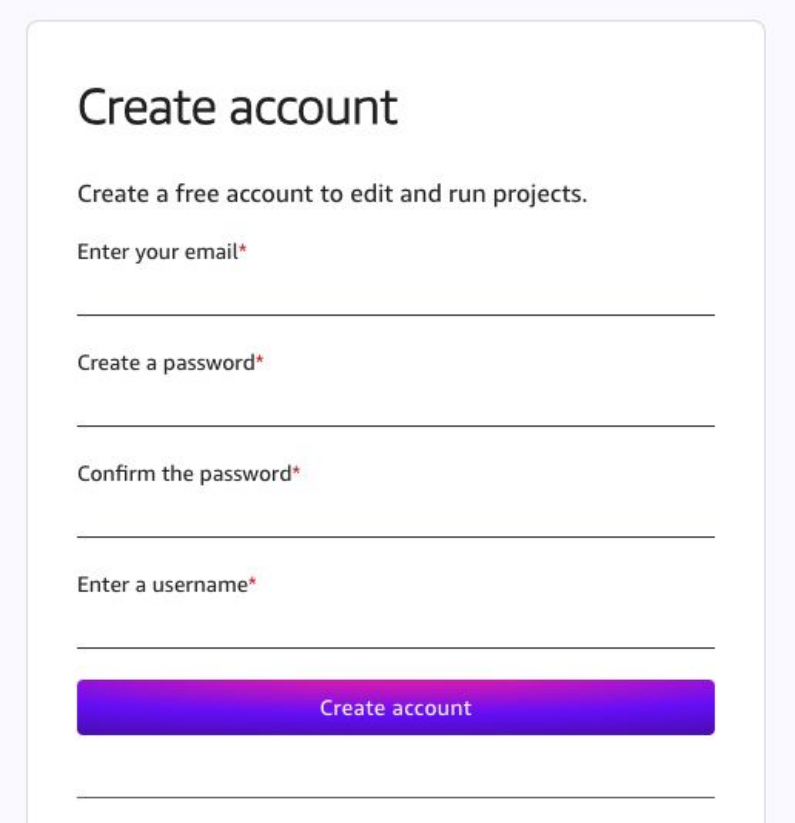


nodd-jpss-E6C61

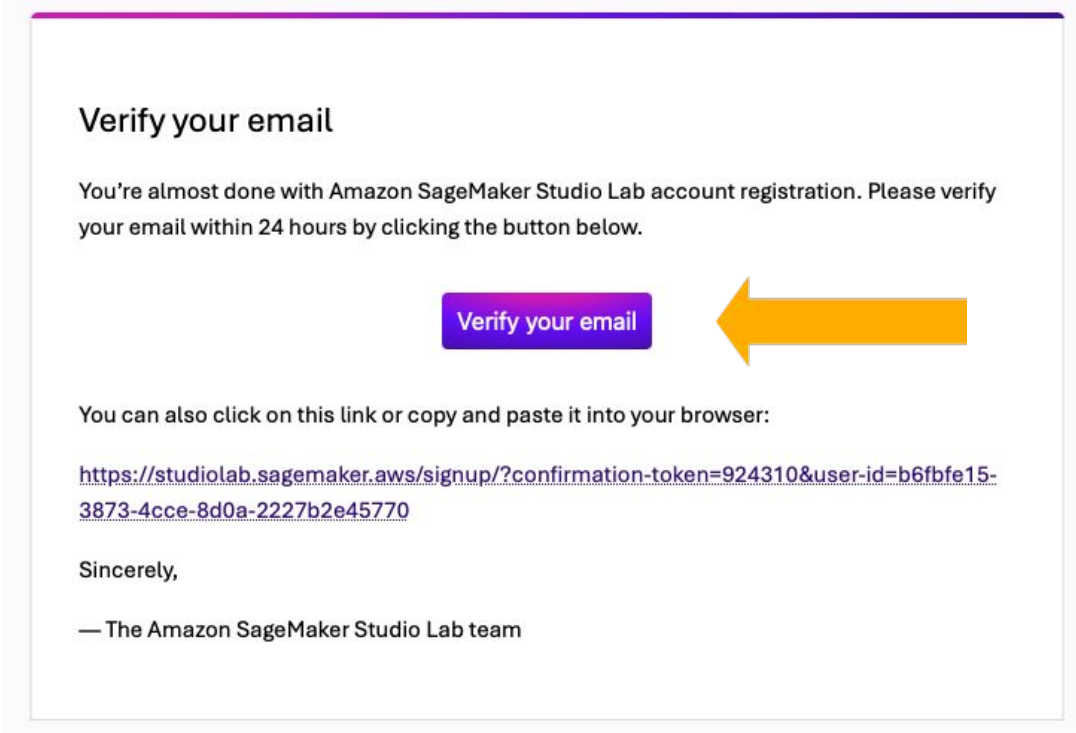
Step 2: “Account request Approved” Email



Step 3: Create new Account



Step 4: Verify Email



Verify your email

You're almost done with Amazon SageMaker Studio Lab account registration. Please verify your email within 24 hours by clicking the button below.

Verify your email

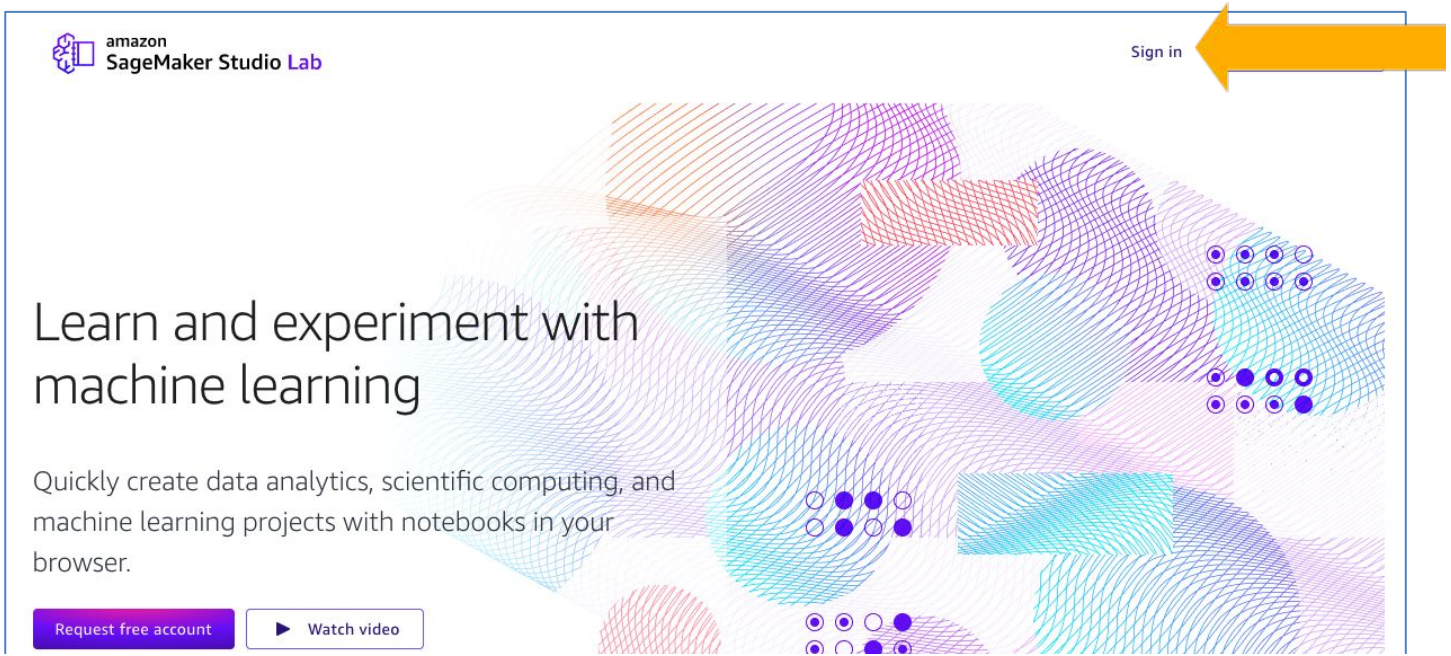
You can also click on this link or copy and paste it into your browser:

https://studiolab.sagemaker.aws/signup/?confirmation-token=924310&user-id=b6fbfe15-3873-4cce-8d0a-2227b2e45770

Sincerely,

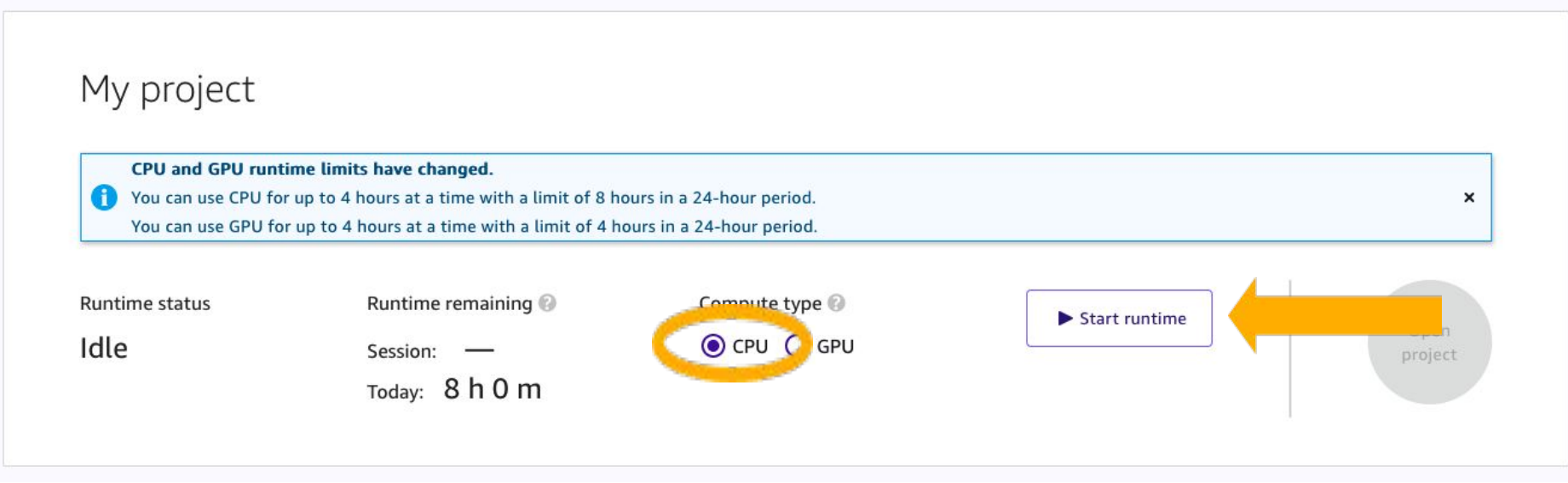
— The Amazon SageMaker Studio Lab team

Step 5: Sign in

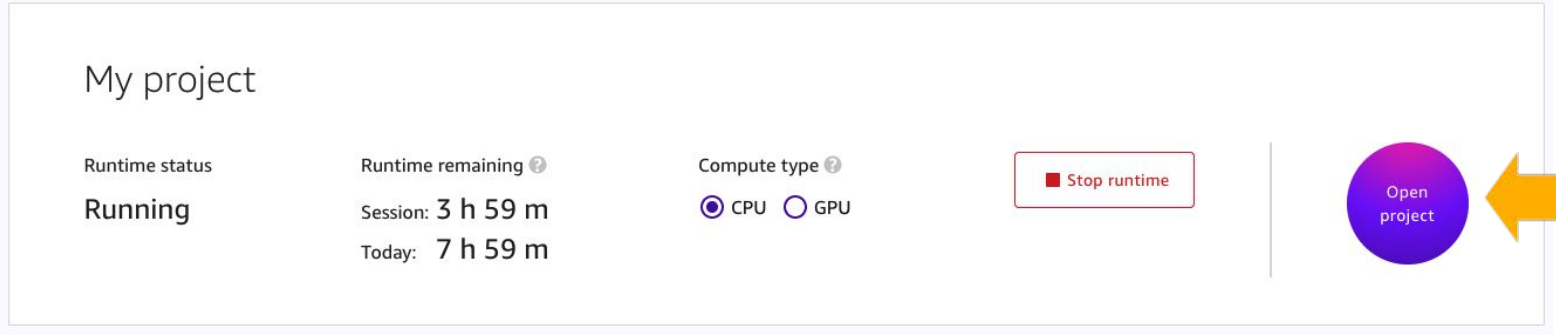


https://studiolab.sagemaker.aws/

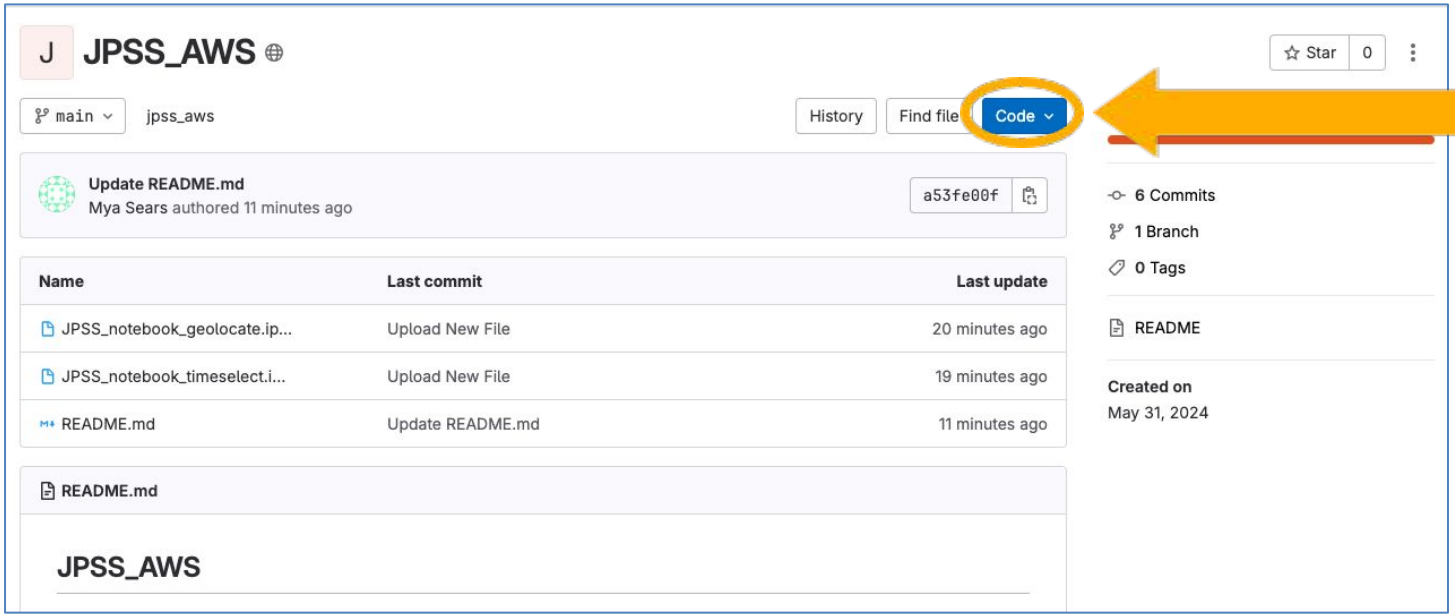
Step 6: Start CPU runtime



Step 7: Open Project

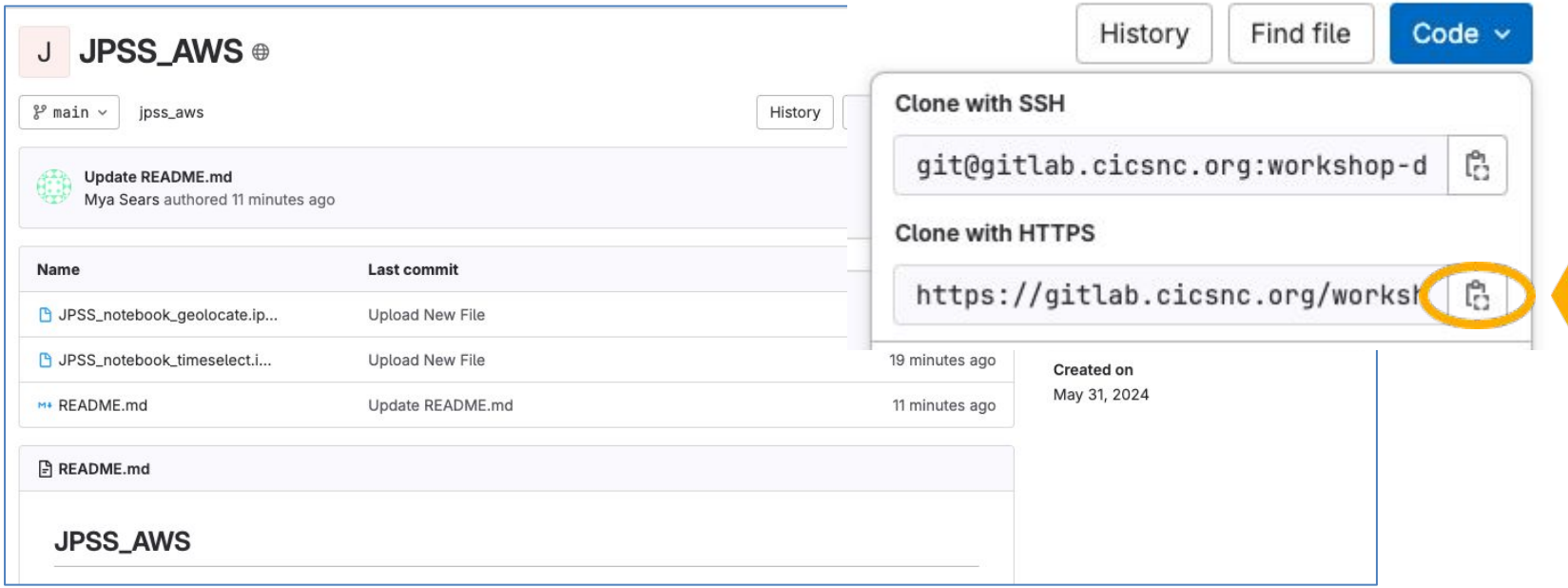


Step 8a: Open Github Repo in browser



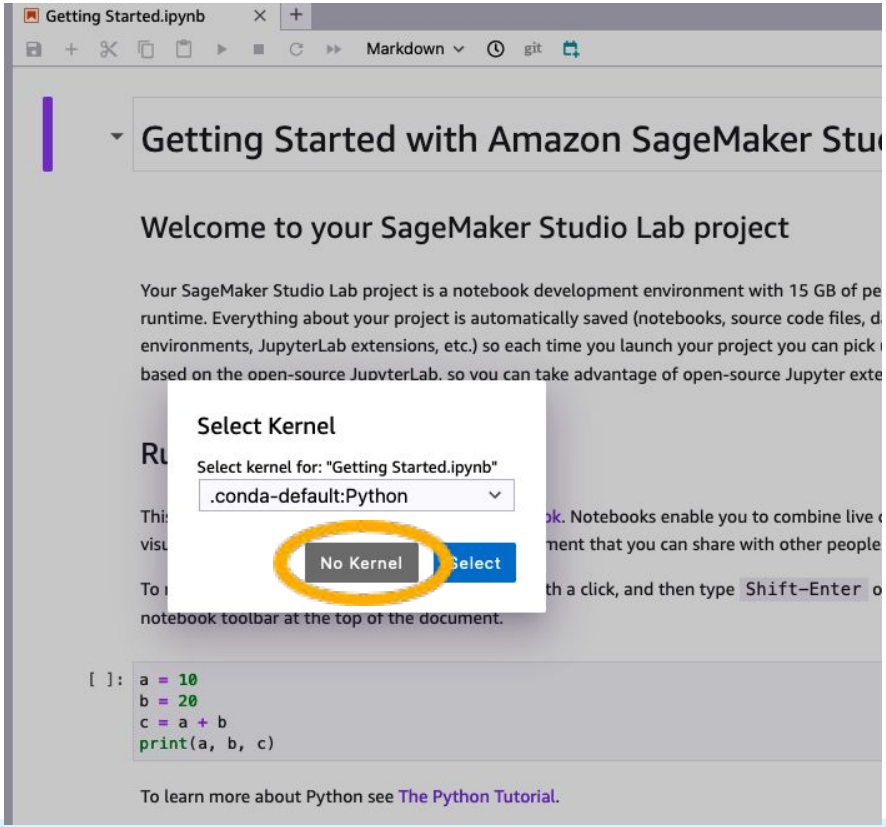
https://gitlab.cicsnc.org/workshop-development/jpss_aws

Step 8a: Open Github Repo in browser

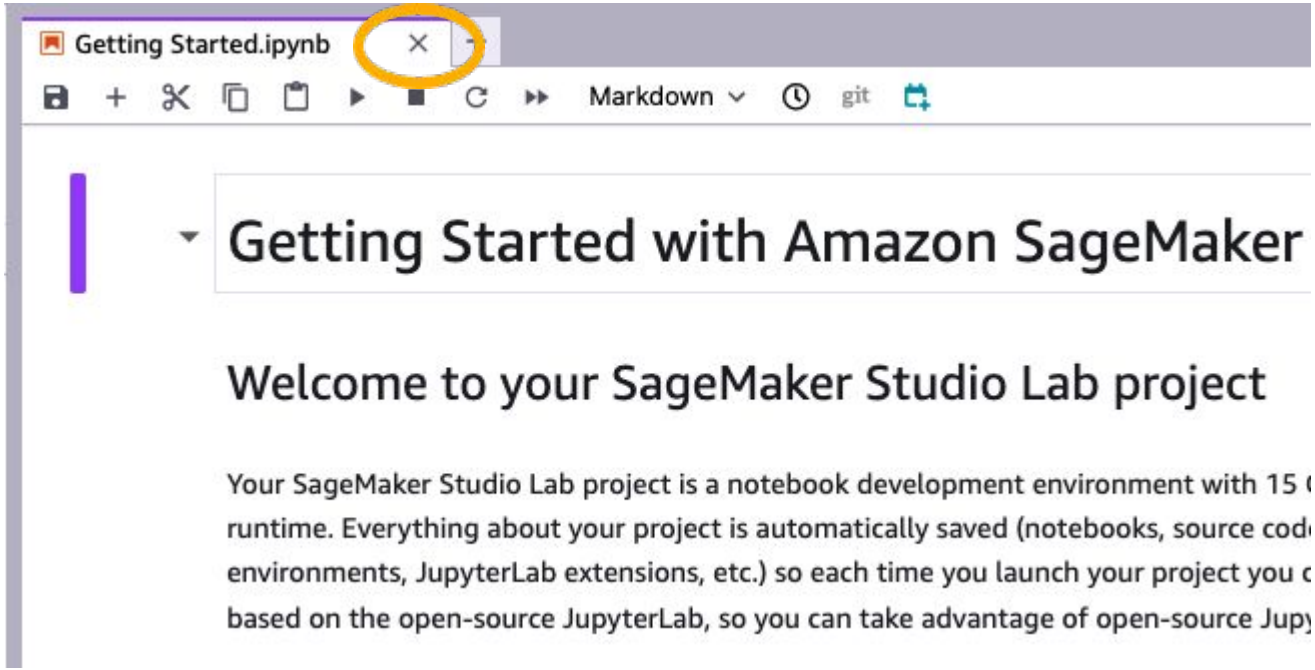


https://gitlab.cicsnc.org/workshop-development/jpss_aws

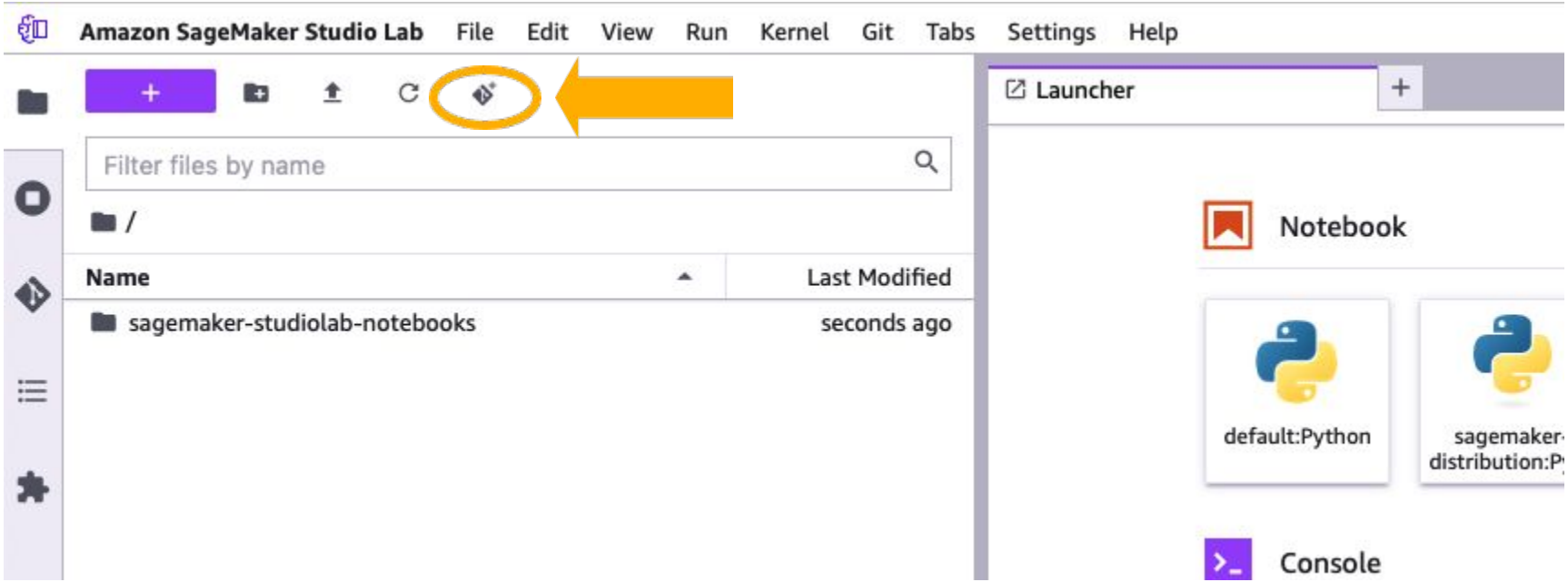
Step 8b: Close the Getting Started notebook



Step 8b: Close the Getting Started notebook

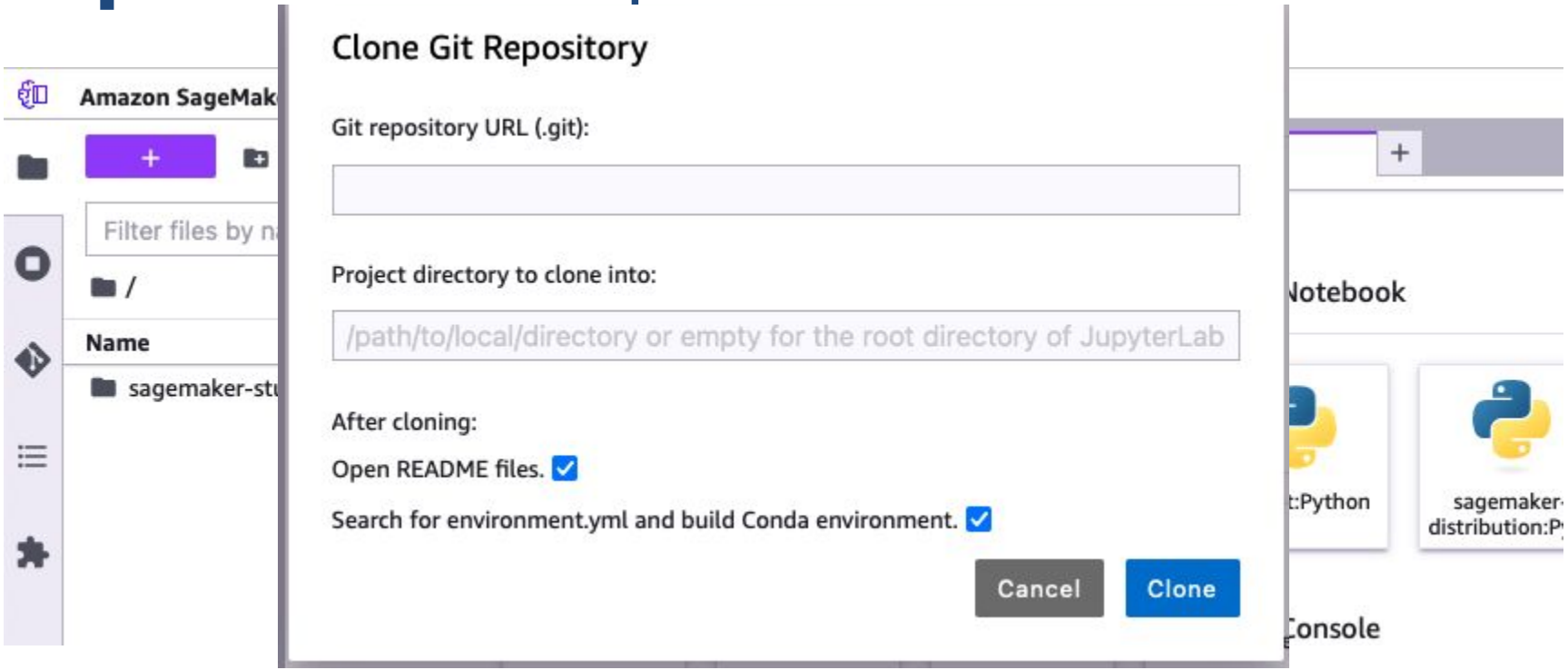


Step 8c: Clone Repo



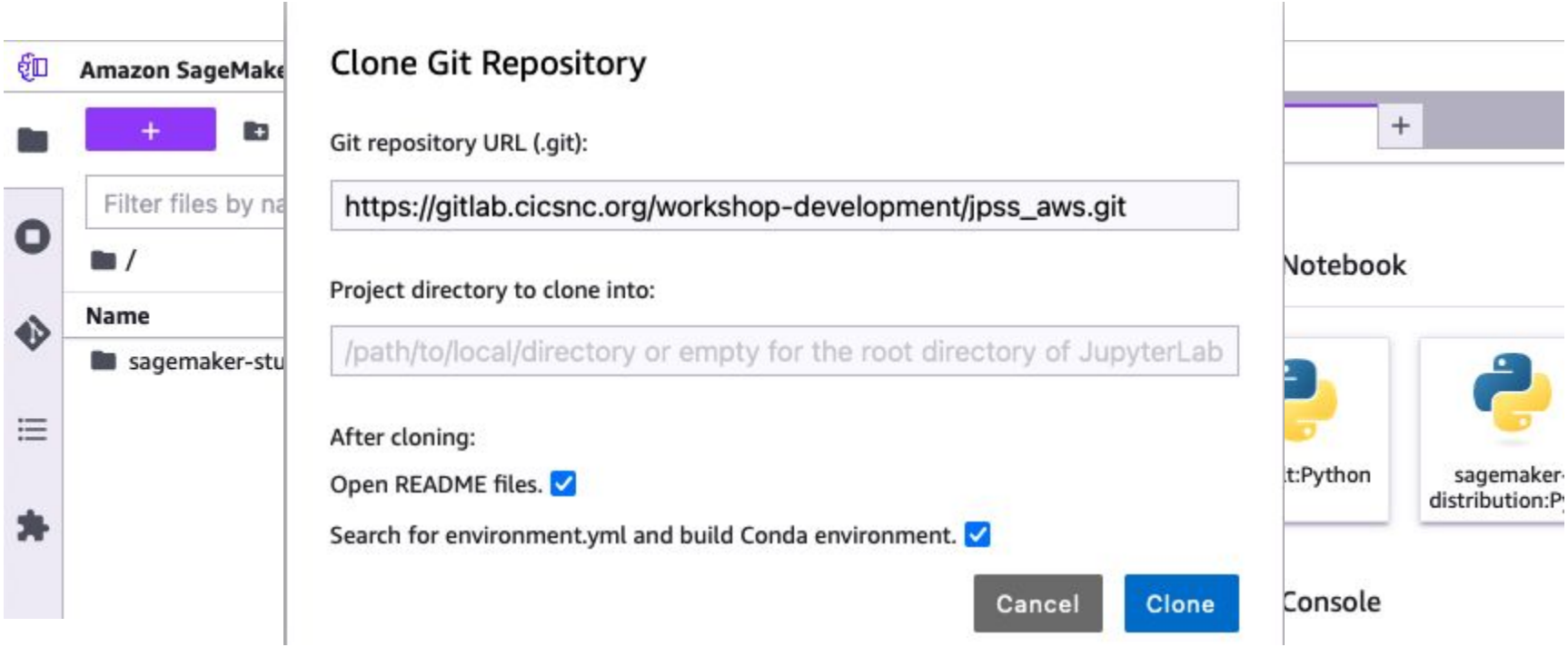
https://gitlab.cicsnc.org/workshop-development/jpss_aws

Step 8c: Clone Repo



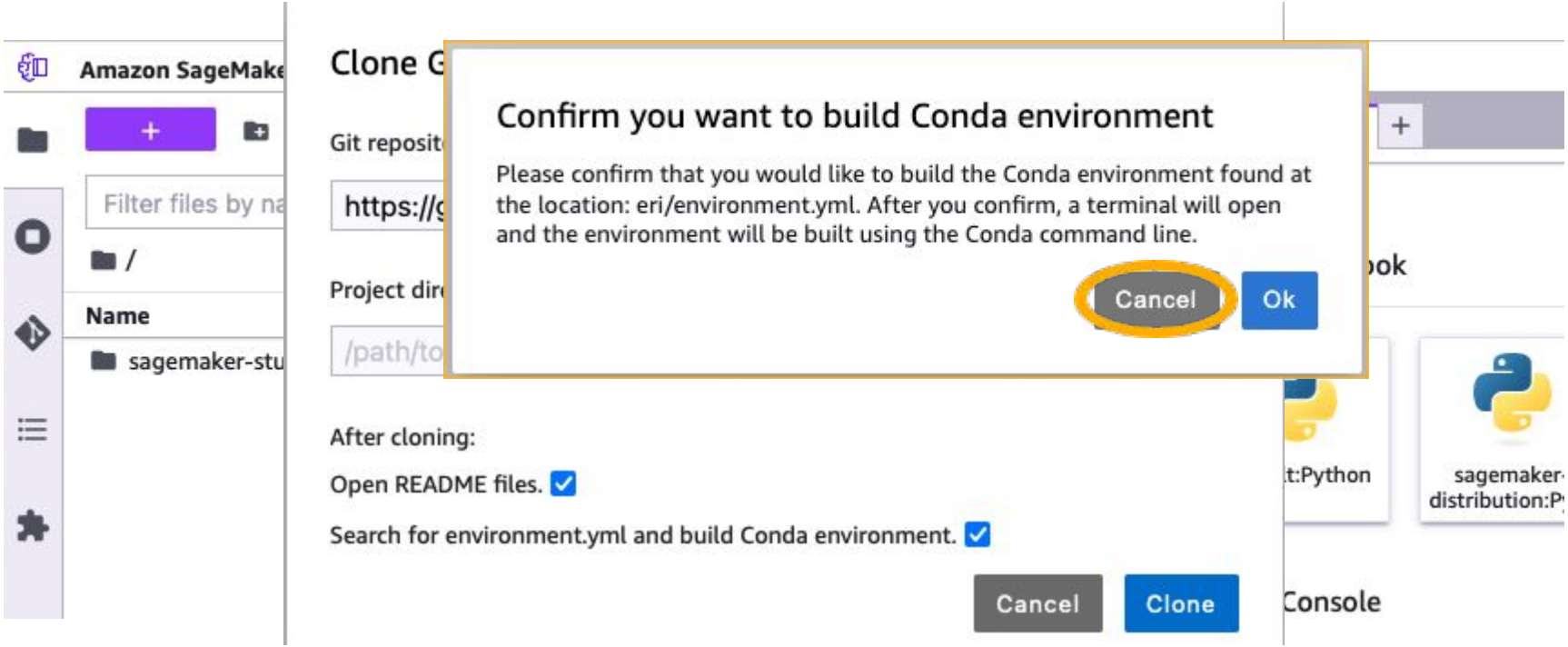
https://gitlab.cicsnc.org/workshop-development/jpss_aws

Step 8c: Clone Repo



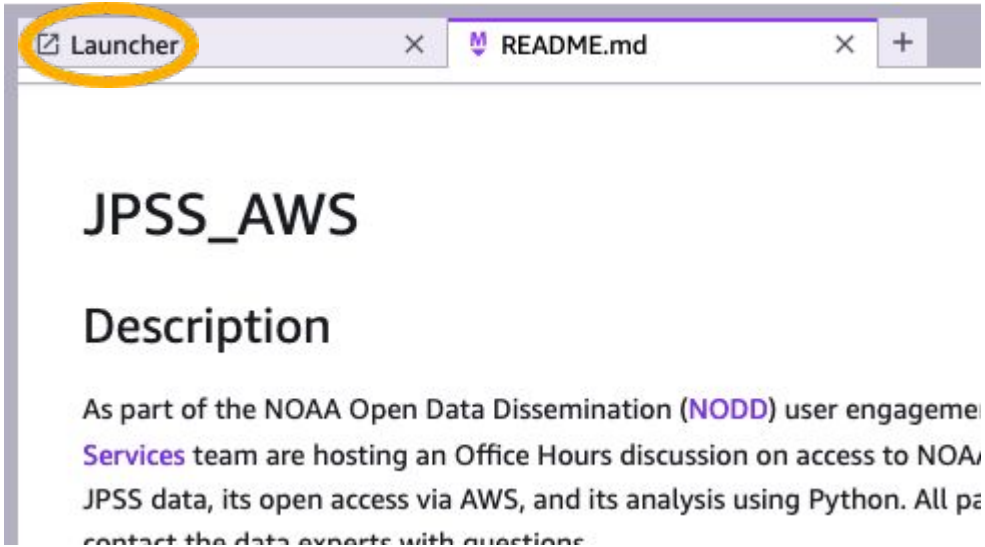
https://gitlab.cicsnc.org/workshop-development/jpss_aws

Step 8c: Cancel creating Conda environment

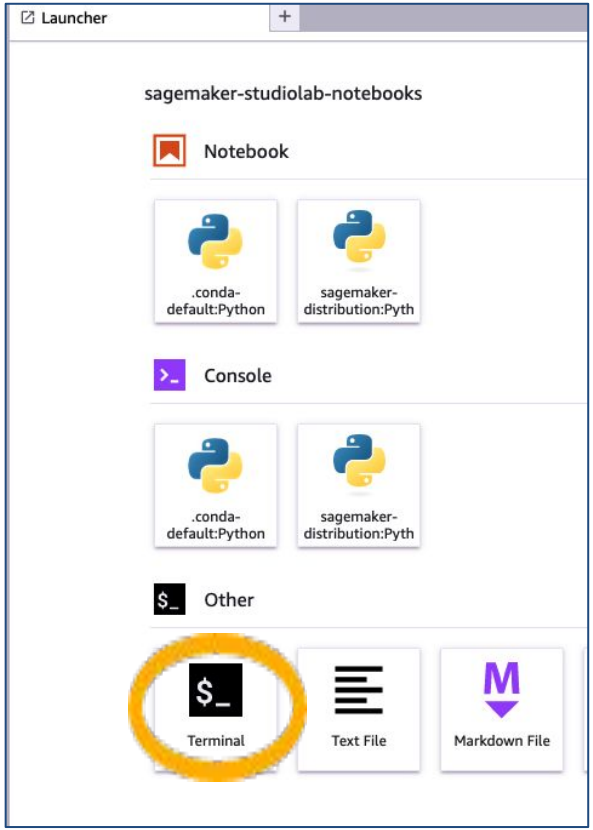


https://gitlab.cicsnc.org/workshop-development/jpss_aws

Step 8d: Click on Launcher



Step 8d: Launch Terminal



Step 9a: Get micromamba

curl -Ls https://micro.mamba.pm/api/micromamba/linux-64/latest | tar -xvj bin/micromamba

Step 9b: Create environment

bin/micromamba env create -f environment.yml

Step 9b: Say YES to install

```
  + bokeh                3.4.1  pyhd8ed1ab_0          conda-forge        5MB
  + branca               0.7.2  pyhd8ed1ab_0          conda-forge       29kB
  + botocore          1.34.106  pyge310_1234567_0     conda-forge        7MB
  + requests             2.32.3 pyhd8ed1ab_0          conda-forge       59kB
  + dask-expr            1.1.2  pyhd8ed1ab_0          conda-forge      158kB
  + distributed          2024.5.2 pyhd8ed1ab_0        conda-forge      796kB
  + ipykernel            6.29.4 pyh3099207_0          conda-forge      119kB
  + folium               0.16.0 pyhd8ed1ab_0          conda-forge       74kB
  + dask                 2024.5.2 pyhd8ed1ab_0        conda-forge        8kB
  + geopandas            0.14.4 pyhd8ed1ab_0          conda-forge        8kB
  + aiohttp              3.9.5  py312h98912ed_0       conda-forge      804kB
  + aiobotocore          2.13.0 pyhd8ed1ab_0          conda-forge       66kB
  + s3fs                 2024.6.0 pyhd8ed1ab_0        conda-forge       32kB

Summary:

Install: 273 packages

Total download: 283MB

Confirm changes [Y/n]
```

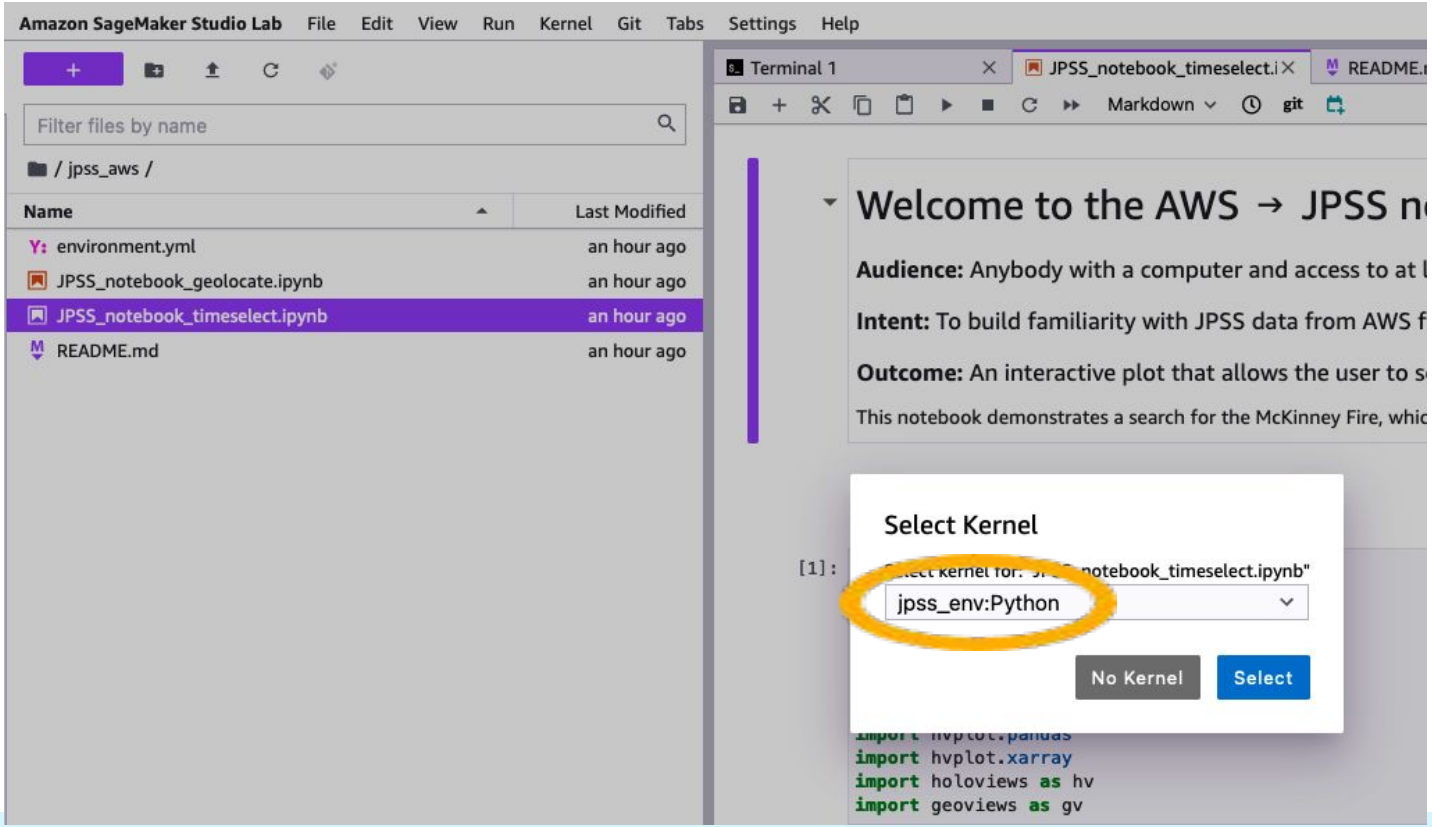
Say “Y”

Step 9c: Activate conda environment

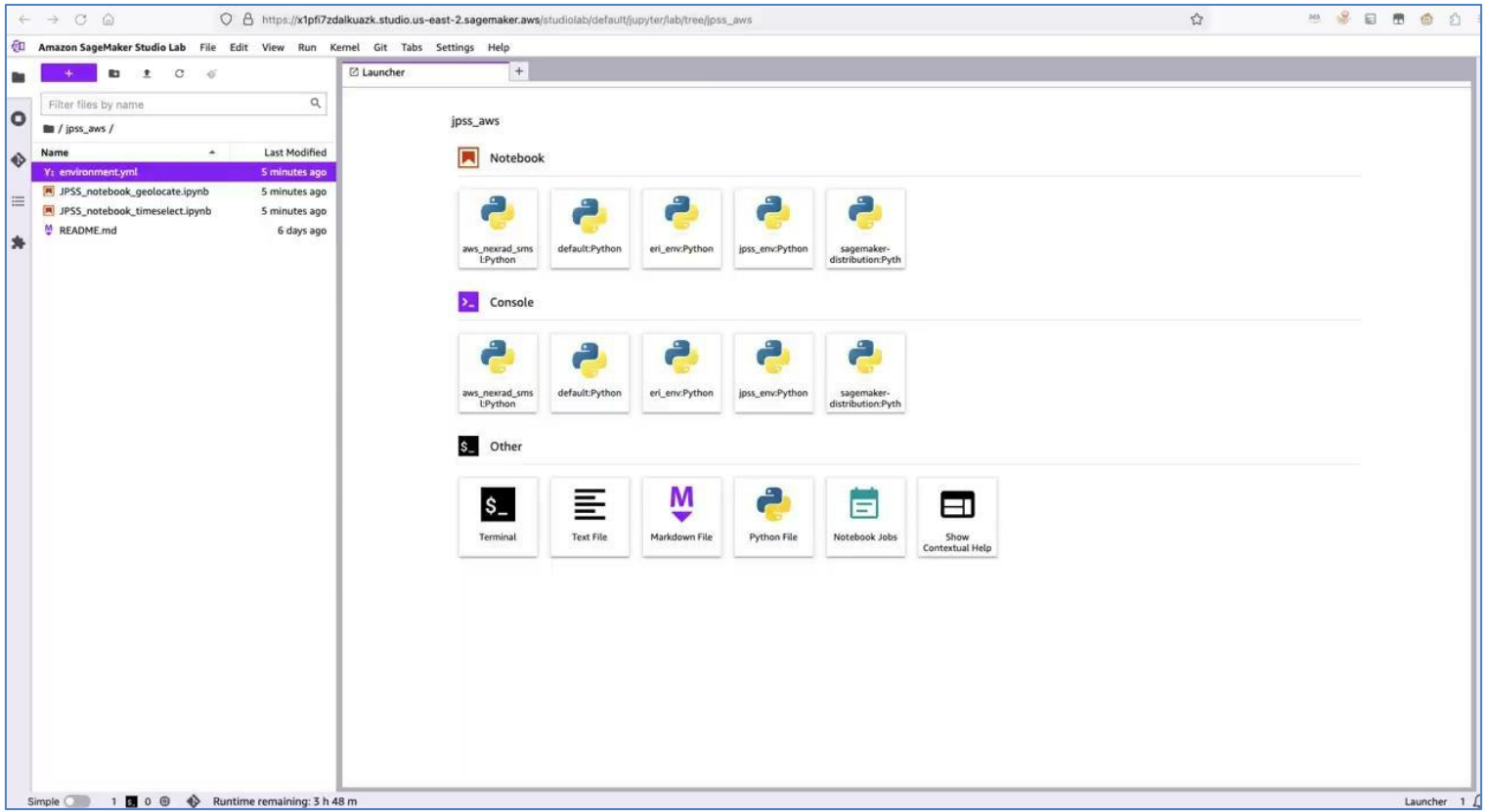
```
Linking aiohttp-3.9.5-py312h98912ed_0
Linking aiobotocore-2.13.0-pyhd8ed1ab_0
Linking s3fs-2024.6.0-pyhd8ed1ab_0

Transaction finished

To activate this environment, use:

    micromamba activate jpss_env

Or to execute a single command in this environment, use:

    micromamba run -n jpss_env mycommand

(studiolab) studio-lab-user@default:~/jpss_aws$ conda activate jpss_env
```

conda activate jpss_env

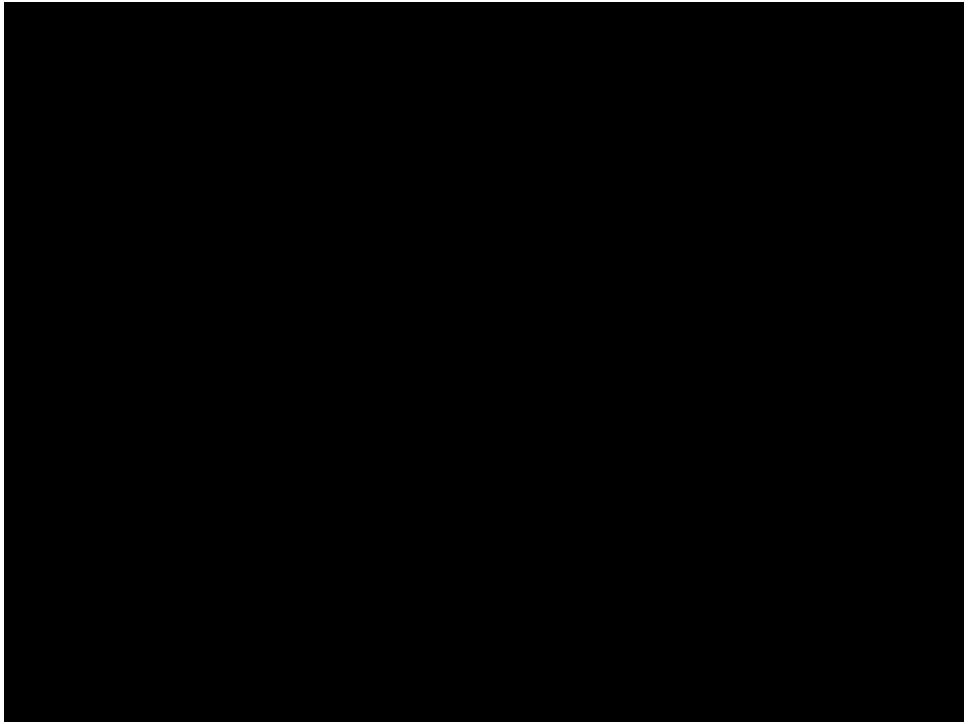
Step 10: Launch Notebook

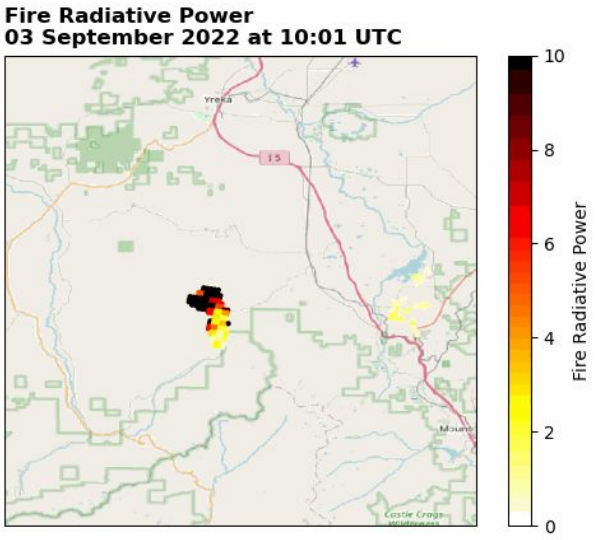


Run the notebooks!



Output from Notebook





Thank you Mya Sears, former NCICS engagement and data analyst

Questions and Discussion

- Please be brief in your questions / comments
- Use the chat or raise your hand for questions
- Identify who the question is directed to where possible
    - As questions are answered, we will go to the next in the chat queue and call on you to unmute yourself and ask your question.
    - We appreciate there may be questions that cannot be answered immediately and even those that we won't have an opportunity to get to: please be patient as we build our understanding and summary responses.

Resources

We invite you to stay engaged with NOAA!

- **NOAA JPSS:**
  - https://www.nesdis.noaa.gov/our-satellites/currently-flying/joint-polar-satellite-system
- **NOAA Open Data Dissemination:**
  - noaa.gov/nodd
  - Email: NODD@noaa.gov
- **AWS JPSS:**
  - https://registry.opendata.aws/noaa-jpss/