A Virtual Competition to Inspire the Next Generation of Satellite Data Users

Katherine Pitts[1], Sherrie Morris[1], Maurice McHugh[2]

[1]Science and Technology Corporation, Greenbelt, MD, USA
[2]NOAA/NESDIS/GOES-R, Greenbelt, MD, USA

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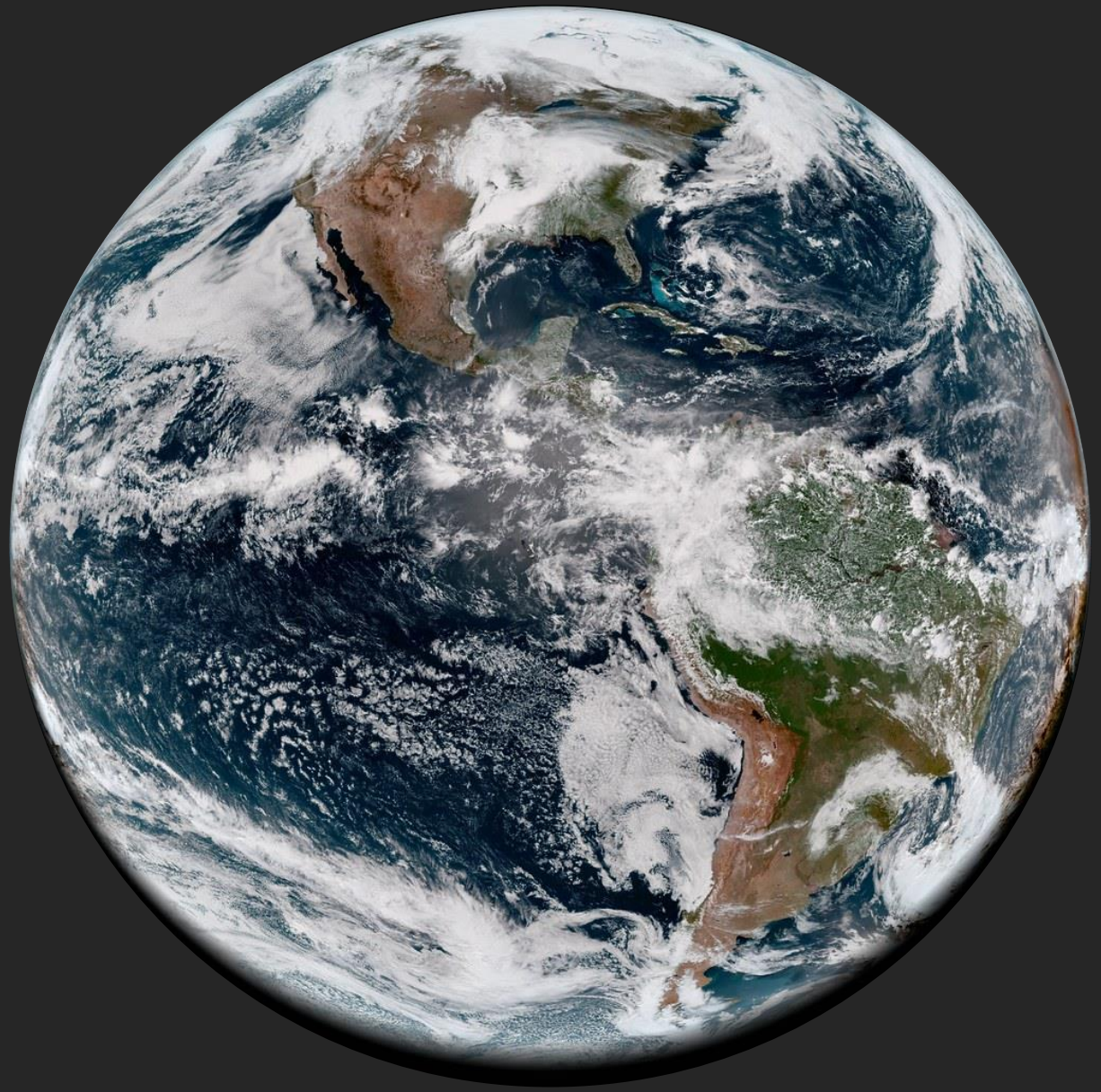
Presentation 7.3
33rd Conference on Education



Outline

1. DataJam Activities
2. The Challenge Winners
3. Lessons Learned

Geostationary Operational Environmental Satellite-R Series

The GOES-R Series is the latest fleet of geostationary weather satellites

- Joint NOAA/NASA mission
- Mission: Provide continuous imagery and atmospheric measurements of Earth's Western Hemisphere and space weather monitoring
- Four satellites:
  - GOES-R (now **GOES-16 / GOES-East**)
  - GOES-S (now GOES-17)
  - GOES-T (now **GOES-18 / GOES-West**)
  - GOES-U (launching April 2024)

What is the GOES-R DataJam?

Two-week **virtual competition** for **undergraduate and graduate students** of any major to showcase their best use of **GOES-R Series data**!

Training material provided ahead of competition include **coding exercises**, **background information** on GOES-R data, and **resources** relevant to the competition

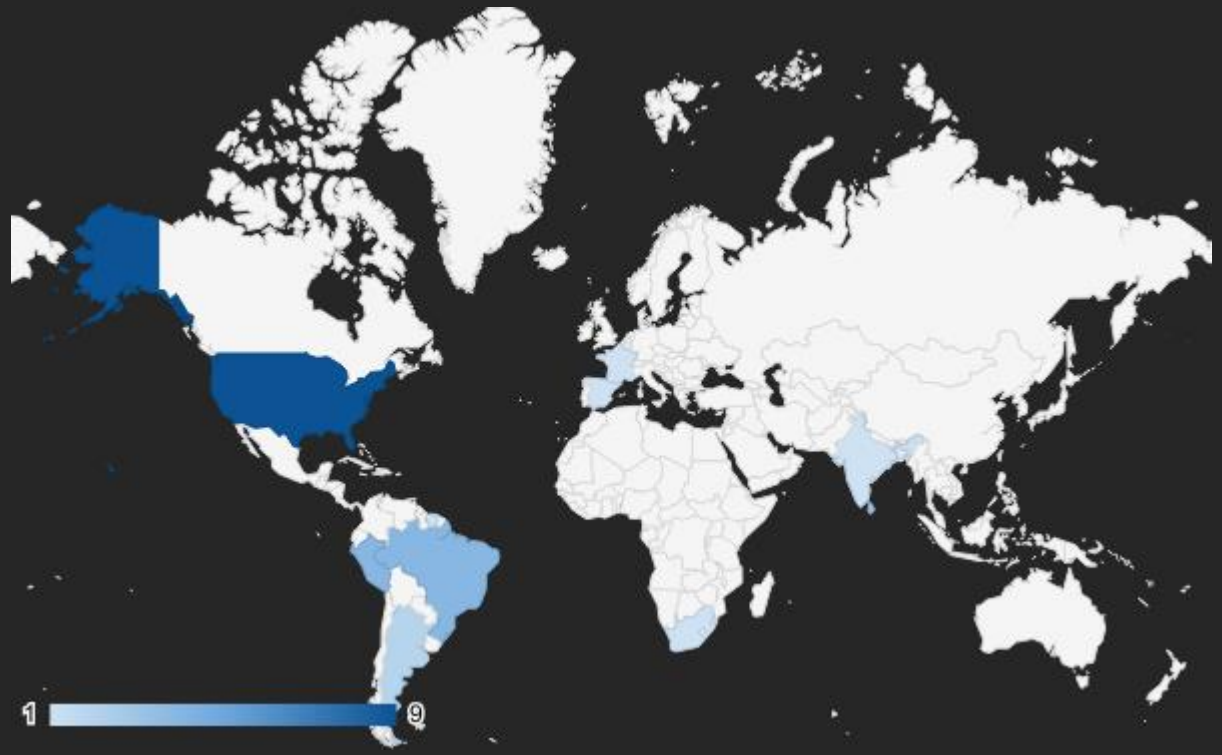
GOES-R DataJam Goals (1/5)

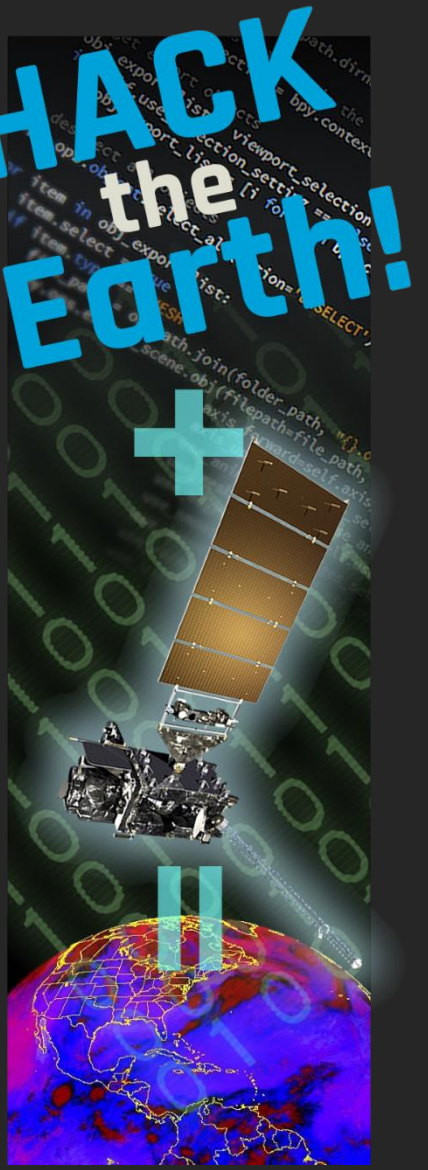
Expand remote sensing knowledge and technical skillset of participating students

- Communicating the Science
  Gina Eosco • Cassandra Shivers • Castle Williamsberg • Stephanie Hoekstra
- Detection of Fires from ABI
  Chris Schmidt
- How ABI Detects Smoke & Blowing Dust in the Atmosphere
  Amy Huff
- Python Tutorial to Access, Process & Visualize ABI Smoke/Dust Mask Data
  Amy Huff
- Visualizing and Analyzing GOES-R Data using Google Colab: Part 1/2
  Marcial Garbanzo • Diego Souza
- Accessing and Plotting GLM Data Using Python
  Joseph Patton
- Getting started with JupyterHub and AWS
  Myranda Shirk
- Using GLM Products to Anticipate and Understand Severe Thunderstorms
  Joseph Patton
- Using Python to Create ABI RGBs and Incorporate Other ABI Level 2 Products
  Tyler C Summers
- Visualizing and Analyzing GOES-R Data using Google Colab: Part 2/2 - SUVI
  Marcial Garbanzo • Diego Souza
- Visualizing and Analyzing GOES-R Data using Google Earth Engine
  Danielle Losos

GOES-R DataJam Goals (2/5)

Encourage innovative solutions through interdisciplinary teams

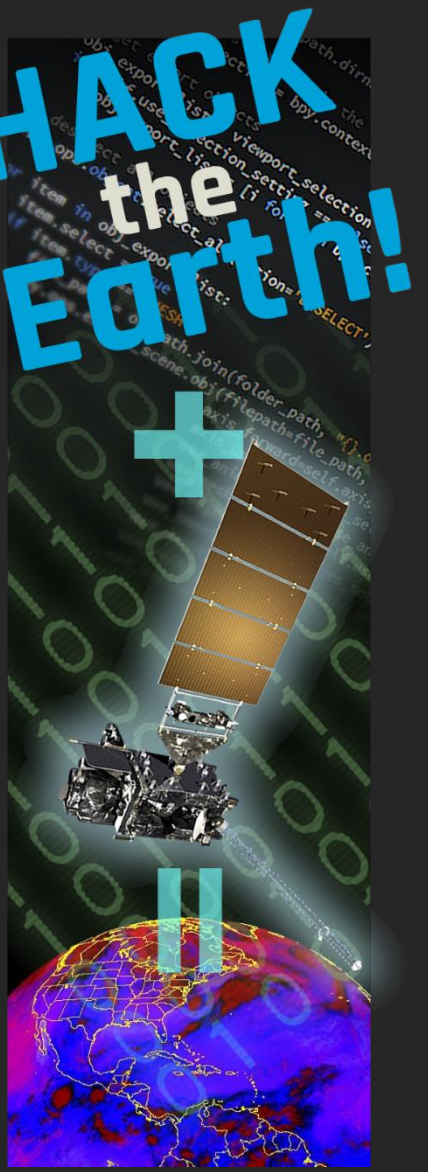




GOES-R DataJam Goals (3/5)

Engage students through collaborative competition and exposure to NOAA & NASA scientists

Student Competitors	Team Mentors	Trainers	Subject Matter Experts	Judges
29*	13	9	19	6
* Total number of students who submitted a project out of original 62 who registered				



GOES-R DataJam Goals (4/5)

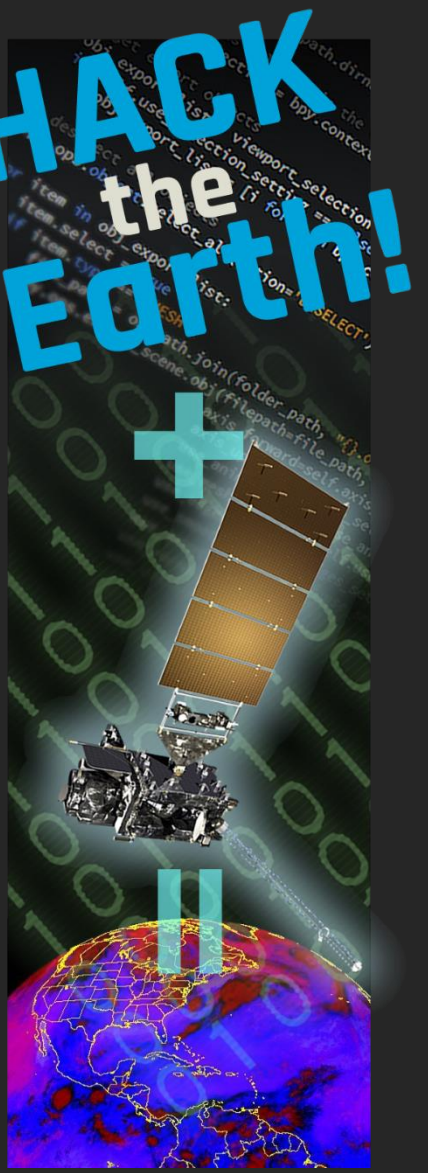
Award students with recognition for great ideas, leadership, and teamwork

Certificates of participation provided to all participants

First place winners get:

- Special certificates for winning team members
- Face time with GOES-R Program leadership
- GOES-R swag bags
- Highlight winning projects on webpage
- Launch pass nominations for GOES-U launch
- Free registration for January 2024 ESIP Meeting

GOES-R DataJam Goals (5/5)



Inspire students to be the next generation of satellite data users

2023 GOES-R DataJam Activities

Sep 18: Training Material Provided – students utilize asynchronous learning

Oct 2-3: Trainer Office Hours – Q&A on background info and coding exercises

Oct 6: Scoping Day – team leads propose project ideas and recruit team members

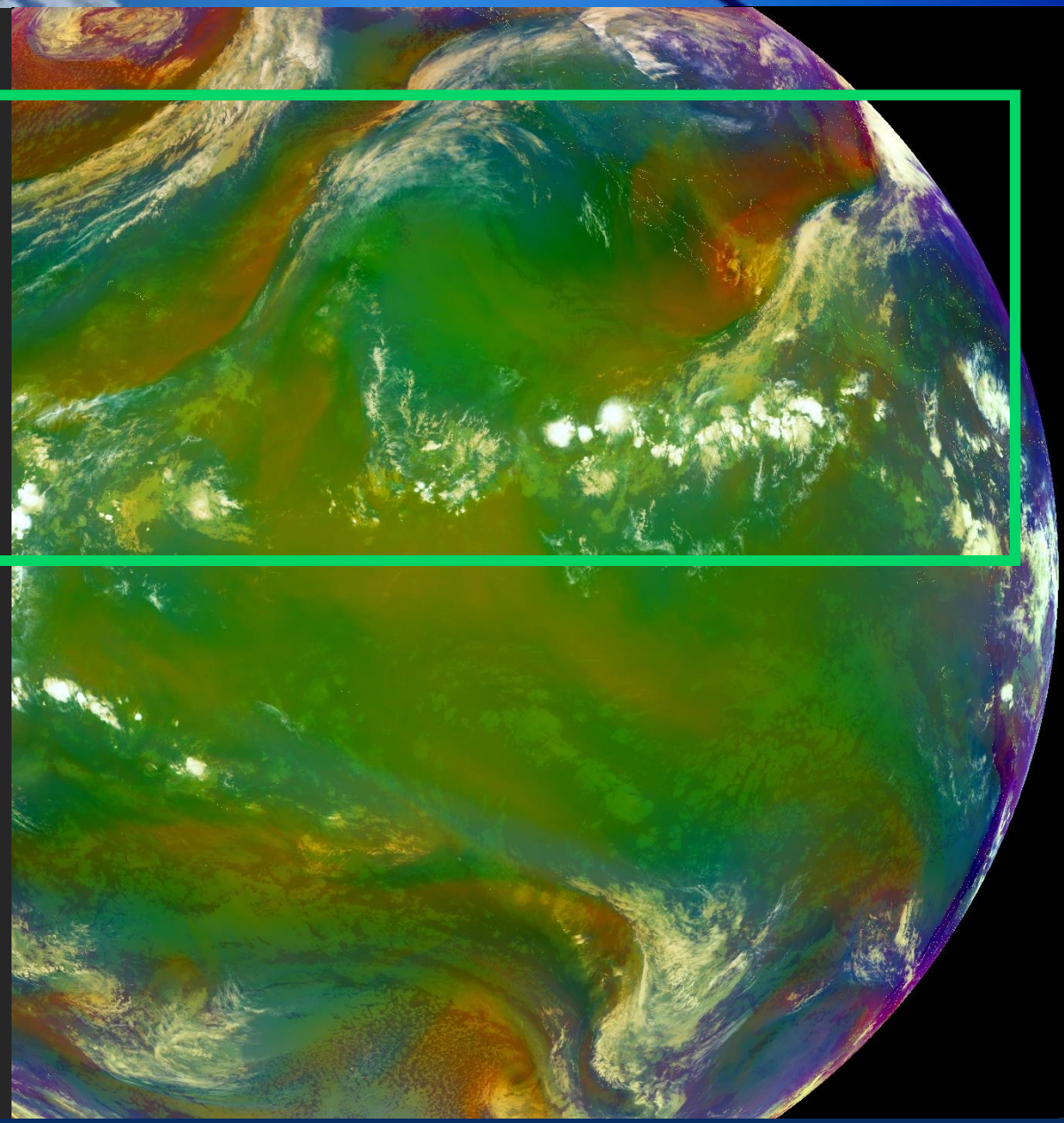
Oct 13-26: Competition – two weeks to come up with a solution to a challenge

Oct 27: Presentation Day – teams present results to judges

Nov 8: Awards Ceremony – celebrate the accomplishments of our students!

Challenge #1

Visualize the View



Communicating science to a general audience imparts knowledge and inspires curiosity. Create a visualization or interactive experience that educates the public about GOES-R data and usage. Projects should be aesthetically compelling. Innovation and out of the box thinking encouraged.

Coding experience required: **any skill level**

First Place Award - Challenge #1

Team 4

Gabriela Lima da Silva,
Luan Cordeiro, Miles Leonard,
Angela Iza, Estefania Fernandez

Communicate the science of GOES satellites through social media to provide scientific information, linking it to a common problem in areas where many people live

"You're tackling something that is a fundamental challenge for NOAA - communicating science in a way that is relatable and understandable - not to scientists or technical folks but to broader audiences"

"Making a quick, simple, and informative video is paramount for reaching a younger demographic"

Challenge #2

Clouds Computing Clouds

With terabytes of GOES-R data being generated each day, efficient ways to access, process, and synthesize these data into easily accessible end-user products requires significant computer processing. In this challenge, fuse GOES-R data with another type of data set, utilizing cloud computing resources, to create a novel end-user product or methodology.

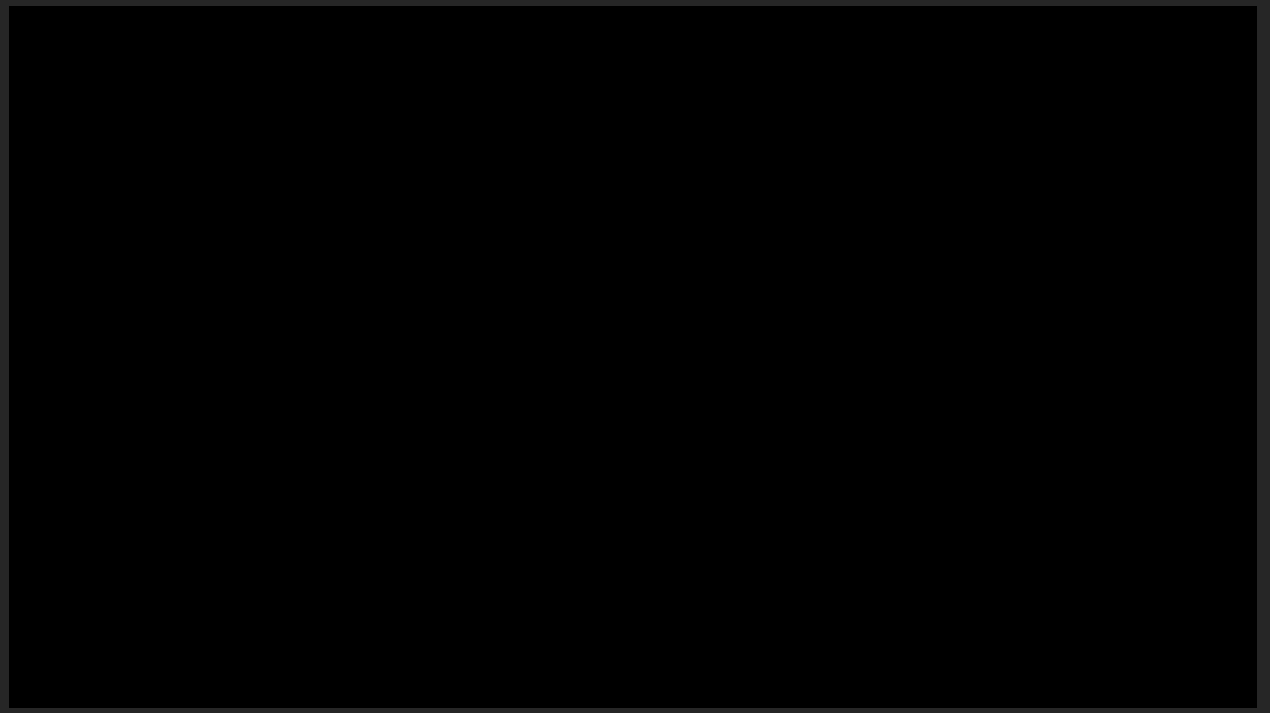
Coding experience required: **proficient**

First Place Award - Challenge #2

Team 1

Mohamed Abdelkader, Daniela Montano Bello, Jorge Bravo, Maria Moreno, Jessica Souza, Willem Matsane

Leveraging GOES-R observations for near real-time monitoring of weather hazards over the continental United States



"I'm surprised and impressed by all that was jammed into this project. I also want to commend this team for really spending time thinking about who their users are and how those users might have different needs."

"This is a great multi-utility application that can be leveraged by various stakeholders."

All Team Projects

Visualize the View

- **Team 4 - Communicate the science of GOES through Tik Tok**
- Team 2 - Visualizing Convection with GOES ABI: Visible and IR Bands
- Team 3 - Seasonal and Interannual Warming Variability of Arabian Sea

Clouds Computing Clouds

- **Team 1 - GOES-R observations for near real-time hazard monitoring**
- Team 5 - myFarm: Growing Tomorrow's Harvest Today
- Team 6 - Exploring ENSO dynamics through GOES-R data

Lessons Learned

Overall, lots of positive feedback!

"It was a rewarding experience where we acquired new knowledge and had the chance to put it into practice."

International participation brought diversified viewpoints and networking

Asynchronous learning worked with students' busy class schedules

Lessons Learned

But there is always room for improvement

Broad challenges could be focused to specific user problems

Provide additional guidance on how to structure and present a project

Ease of access to training materials could be better

Next GOES-R DataJam coming March 2025!

For More Information…

2023 GOES-R DataJam

goesrdatajam.sched.com

2023 Winners

goes-r.gov/users/dataJam

Email List Opt-In

forms.gle/wD4BGkz5eTvuzu518

Contact: katherine.pitts@noaa.gov or goesr.hackathon@noaa.gov