NOAA National Ocean Service (NOS) + NOAA Open Data Dissemination (NODD) + AWS Office Hours
February 29, 2024 | 12-1:15 PM EDT

TO: NOS NODD AWS Office Hours Participants

DATE: 29 FEBRUARY 2024 | 12-1:15 PM EDT

FROM: Jon Sellars, Jason Woolard (NOAA National Ocean Service National Geodetic Survey (NGS)), Adrienne Simonson, Jenny Dissen & Kate Szura (NOAA Open Data Dissemination Engagement and Communication)

SUBJECT: Responses to Questions from ERI Office Hours

Dear Colleagues,

Thank you again for your tremendous contribution during the NOS NODD AWS Office Hours. Your data related questions and comments raised during the discussion were heard and noted by NOAA.

This document provides brief responses to questions that were identified during the registration and that were raised during the discussion. Names and attributions of individuals and their affiliation have not been documented, unless it is a NOAA speaker.

We recognize the importance of continued engagement and collaboration, and invite ongoing comments via our emails.

Thank you,

Jon & Jason (NOS NGS Cartographers)
Adrienne, Jenny, Kate (NODD Engagement and Communication)

<u>Contents for the Summary Notes</u>

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1. General Agenda of the Webinar

OUTLINE FOR THE DISCUSSION

12:00 - 12:06   Brief Introductions by NOS ERI, NODD, and AWS
12:06- 12:08   NODD Overview (Adrienne Simonson)
12:08 - 12:25   Emergency Response Imagery (ERI) Presentation (Data Access)
12:25 - 12:45   ERI Access via AWS (Training and Demo) and Use Cases
- Access to AWS Code / SageMaker StudioLab
- Notebook
- Analysis / Visualization (Case Study of Idalia)
12:45 - 1:10   Open Discussion (Please use "Raise Hand" or the chat to raise questions)
1:10 - 1:15   Summary Comments/Closing Remarks/Next Steps

2. Questions and Responses

The questions below were identified as part of the registration process and during the Office
Hours discussion. Responses are provided in brief where the NOAA team felt information was
available.

QUESTIONS RAISED FROM REGISTRATION FORM

QUESTION FROM REGISTRATION	RESPONSE
Interested in learning more about egress deals that are in place from NODD and AWS and the differences	All NOAA data available on NODD can be accessed without registering. There are no egress costs to download the NOAA data.
NESDIS Data - GOXO	Thank you for submitting a topic of interest. The scope of this Office Hours focused on Emergency Response Imagery.
Cost management for imagery on AWS?	Thank you for submitting a topic of interest. The scope of this Office Hours focused on how to access and analyze Emergency Response Imagery via AWS.
Quantified Precipitation Estimates	Thank you for submitting a topic of interest. The scope of this Office Hours focused on Emergency Response Imagery. This submitted topic of interest is related to NEXRAD, which is a different dataset.

Does the access method change after the emergency is over? (archival access from another NOAA cloud data source?)	No, the data are pushed to the NODD at the end of every processing day and remain there after the event.
Does pre impact imagery get flown every year and when is it posted?	Yes, we do collect pre-event imagery every year on an opportunistic basis. We might not collect everything every year but we collect and process as much as we can. The pre-event processing and data availability can be anywhere from weeks to several months.
Disaster Imagery	Primarily the images are collected post disaster.
Imagery in the context of public health, forecasting, seasonality (heat related illness, respiratory illness, etc.)	Thank you for submitting a topic of interest. The scope of this Office Hours focused on how to access and analyze Emergency Response Imagery via AWS. Please submit additional information for our teams to be able to answer specific questions you may have related to these topics.
Is aerial imagery only available for declared disasters? If there is an unnamed storm that occurs, is it still possible to request imagery from NOAA?	No, aerial imagery may be collected to support any NOAA navigation requirements. It doesn't have to be a named storm/event. We have responded to tornadoes, flooding, Nor'easters and winter storms in the past.
I'd be interested in lessons learned over the course of the program and how technology has changed particularly in regards to the faster processing speeds and turnaround times. Future of the program. Is it here to stay, expanding, sensor changes or upgrades coming? Is the data used for things other than response or used by other programs inside or outside NOAA?	-This could be a presentation all its own!! Briefly, over the last 20 years we have gone from delivering un-rectified 16 megapixel data in three days to delivering ortho-rectified mosaics from a 300 megapixel system in three hours. -The program is currently slated to continue and we are constantly looking at 'what's next' in terms of hardware. -The primary use of the imagery is response by our federal, state and local partners including but not limited to FEMA, USACE, Coast Guard, multiple state EOC's, and even the public calling for assistance when they see that relatives have spelled HELP using debris after a storm.
Image time series from moving aircraft	Thank you for submitting a topic of interest. The scope of this Office Hours focused on how to access and analyze Emergency Response Imagery via AWS. Please submit additional information for our teams to be

	able to answer specific questions you may have related to this topic.
How is the imagery geo corrected? Is it as accurate as Data access viewer, is it available to download out of digital coast.	-OSSIM https://github.com/ossimlabs/ossim -Typical accuracy is sub-meter in areas of little to no -relief. -Imagery does get indexed via Digital Coast (the data itself stays on the NODD).

QUESTIONS / DISCUSSION FROM THE OFFICE HOURS

QUESTION FROM DISCUSSION	RESPONSE
Is OSSIM what you are using to georeference the image from the geom file?	Yes, we use OSSIM to ortho-rectify the data. https://github.com/ossimlabs/ossim
What is the full volume of imagery in the ERI on the cloud? just curious.	There are 16TB in the ERI bucket right now.
Do you have repeat flyovers after a disaster to look at change over the course of a week or two to see how it progresses? Example of flood waters receding.	Typically, we do not repeat the flights, except occasionally during floods. Over the course of weeks, satellite data becomes more available. What makes our data unique is that we can fly underneath the clouds, something satellites can't see below in the optical wavelengths. After Sandy, there was a persistent cloud deck and with our ability to fly beneath the cloud deck, we provided the only source of imagery for several days following the event.
What is the threshold for determining when an event is captured by flyover and separately, what has been the feedback from other federal agencies on the value of this dataset?	From NOAA's perspective the focus is on safety and navigation. Minor storms can disrupt the inlets enough to require imaging to ensure that sandbars have not been pushed into navigation channels, etc. One of our largest partners is FEMA, they identify additional areas that need to be flown and we work together to determine priorities.

	To initiate individual assistance, FEMA used to send people out to houses to check for damage. Now they can use ERI data to do orders of magnitude more assessments shortly after an event. The Coast Guard has used data to determine where to position landing zones to provide assistance for those impacted by storms.
This is mostly new to me and very interesting! Is there any existing system in place to notify when new imagery is available? (Short of setting up a script to parse the bucket).	The NOAA National Ocean Service (NOS) National Geodetic Survey has an email list where information about new data is sent out multiple times a day. There is also an SNS topic on the landing page that can be subscribed to. As soon as an object lands in the bucket, you get a notification that allows you to do processing as the dataset arrives.
I'm also curious as to when pre-event imagery is collected (esp. for Florida). Is this done annually?	The National Geodetic Survey team tries to fly the southeast annually, however it is done on an opportunistic basis – in transit between other coastal mapping projects. Florida typically ends up being when the weather is clear already. Aircraft operation center is in FL, so they survey on transit to that center.
What is the function of Sagemaker in this process? Could this notebook be run anywhere else?	Yes! You can also run the Jupyter ERI notebook that was shown as a demo in this Office Hours in Google Colab, run it locally, etc. The notebook is not specific to Sagemaker. Additionally, the notebooks are an example of one of many ways to access and utilize the data.
From an engineering/consulting perspective (AECOM) - I think having access to this data is really cool, and beneficial. We do a lot of pre-post disaster work (especially for Hurricanes/severe flooding), but a lot of others as well) for a variety of diverse clients. I'll need to go back to see what some of our engineers are using to see how this could fit in, and whether they are aware of this incredible resource.	Thank you for the feedback and for providing this information.The NODD and NOS National Geodetic Survey teams value your input to help inform our data dissemination efforts.

3. Office Hours Organizing Team

Name	Title
Jon Sellars	NOS Cartographer
Jason Woolard	NOS Cartographer
Adrienne Simonson	NODD Director
Patrick Keown	NODD Program Manager
Jenny Dissen	NODD Engagement Lead / NCICS / NC State University
Kate Szura	NODD Communications Lead
Mya Sears	NC Institute for Climate Studies (NCICS) Engagement and Data Analyst
Otis Brown	Director, NC Institute for Climate Studies (NCICS) / NC State University
Chris Stoner	AWS Open Environmental Data Lead

4. Poll Results

Poll 1		
Question	**Answer**	**Count**
How do you access ERI data today?	On-prem via NOAA	6
	Cloud	4
	Both/Either	4
	3rd Party/Web-based Viewer	6
	None/Other	17

Poll 2		
Question	**Answer**	**Count**
My primary goal for attending today is:	Technical use and access of ERI data	14
	To learn about cloud access to date (e.g. NODD Program)	13
	Meet and engage with NOAA staff scientists	4
	Learn about AWS cloud access and tools	10

5. Resources / References
   - NOAA Open Data Dissemination | NODD Email
   - Jupyter Notebook - Emergency Response Imagery Demo
   - Emergency Response Imagery - NOAA Home Page
   - Emergency Response Imagery - AWS Registry of Open Data Page

Thank you to our participants for engaging in this discussion!