

April 6, 2022
12pm-1:30pm EDT

Title: **ESIP Cross-Domain Collaboratory: Challenges and Opportunities**

Agenda

12p	Introduction to ESIP Disaster Lifecycle Cluster Roadmap to 2023	Dave
1210	Operational Readiness Levels (ORLs)	Karen
1225	ESIP Cluster Updates	Bob Downs (LIVE), Douglas Rao, Data Readiness (Recorded) Steve Young, AQ (Recorded), Scotty Strachen, Envirosensing (Recorded),
1250	Approach to data interoperability, how we share the data, how it gets interpreted and mis-interpreted what challenges and opportunities are ahead	Dave & Karen
0100	Demonstration of GeoCollaborate	Dave



ESIP Cross-Domain Collaboratory: Challenges and Opportunities

April 6, 2022

12:00 – 1:30pm EDT
Eastern Daylight Time USA

Karen Moe , NASA Emeritus
Co-chair
karen.moe@earthlink.net

Dave Jones, CEO
StormCenter Communications, Inc
Co-chair
dave@stormcenter.com





The BIG Idea



Most Trusted & Reliable



High Trust Level (May not be timely)



Not Timely (But Trusted)



Not Timely (Emerging Useful Trust Level)

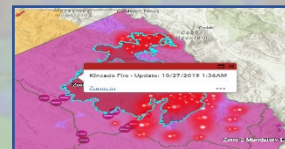
The sharing of trusted information drives decision making and shortens response time. Data can support community lifelines efficiently when it has an associated ORL number."



Tom Moran, Executive Director
All Hazards Consortium.

30 second Decisions

Satellite Detected Fires



Smoke Jumper Rapid Response



Long-Term Drought Outlook



Improves Water Management



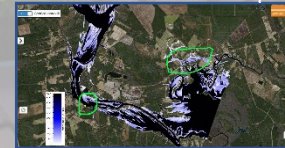
Intensified Activity Detected



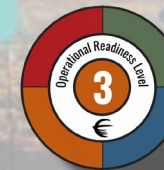
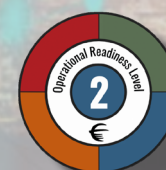
Identifying Danger Zones



Satellite Flood Maps



Drives Power Restoration Priorities



Putting Data to Work

Operational Readiness Levels (ORLs)
Disaster Lifecycle Cluster Engaging Users
Accelerating Research to Operations



Winter Meeting Summary

February 5, 2020

Disaster Lifecycle Cluster

**All Hazards Consortium GIS Meeting
Poster Session
NASA EOSDIS Meeting
Breakout Session**

Karen Moe, Dave Jones

Co-chairs Disaster Lifecycle Cluster

karen.moe@earthlink.net, dave@stormcenter.com



www.esipfed.org



Is supported by

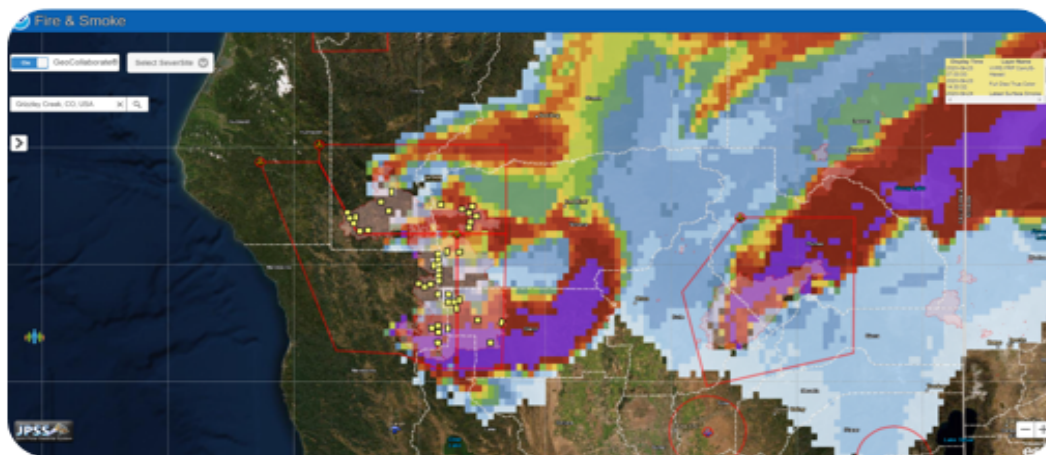


and 150+ partner organizations
#ESIPfed



The BIG Idea

**Collaborating with ESIP Clusters
and Activities to deliver RESULTS**



There is much data available to help decision makers...but our members are not sure if they can trust it and how to use it. ESIP and GeoCollaborate can be a very powerful combination to put more data to work."

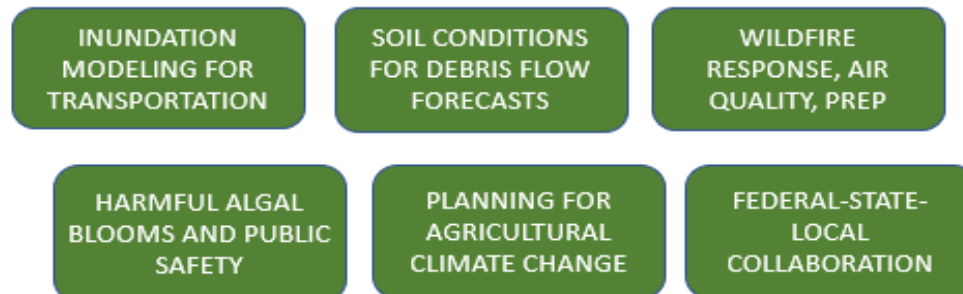
Tom Moran, Executive Director
All Hazards Consortium.



ESIP Acceleration



OPERATIONAL & APPLICATION AREAS



OPERATIONAL READINESS LEVELS FOR TRUSTED DATA ([more info](#))



[Mailing List](#)
[Monthly GoToMeeting](#)
[Monthly Notes](#)



GoToMeeting QR

Join us on the **First THURSDAY** of every month and participate in our telecons.

ESIP Disaster Lifecycle Cluster

Winter Meeting Outcomes January 26-29 2021 to Summer Meeting 2021 to Future Meetings



California Burning: Putting Data to Work

Describe key features of Trusted Data and identify opportunities to accelerate cross-sector data sharing for decision-makers.

Takeaways:

- Collaborate across Agencies before data need becomes urgent. Effective inter-agency and stakeholder communication is key.
- Collaborate with Community Resilience cluster on developing credible communications with the public.
- Accurate, timely info based on trusted data.
- Extend “Research to Operations” to “Operations to Access” and work with end-users to quantify impact.
- Who is using data? How? How useful is it?
- Work with clusters to accelerate an ‘ESIP ecosystem of innovation’

What is TRUSTED DATA?

any key features, 1 or 2 points that pop out when you think about trusted data





Operational Readiness Levels (ORLs)

WHY develop ORLs ?

- We see ORLs as a pathway to accelerating research to operations
- We can use ORLs to introduce emerging data products
...and introduce them with credible operational qualifiers
- As the research data matures and moves toward potential operational applications, the ORL number will also increase
- Most importantly: ORLs provide confirmation to **non-technical** decision makers, that the data is trusted and credible
 - Therefore, they can proceed with making rapid decisions that can save lives, time and resources

Evolving Trusted Data for Decision Making

THE BIRTH OF ORLS



“We need the ability for non-technical decision-makers to rapidly assess the impacts to their system or business and move forward with small (and big) decisions...sometimes really big. So, they must have trust in the information that is driving their decisions.”

*Tom Moran, Executive Director
All Hazards Consortium*



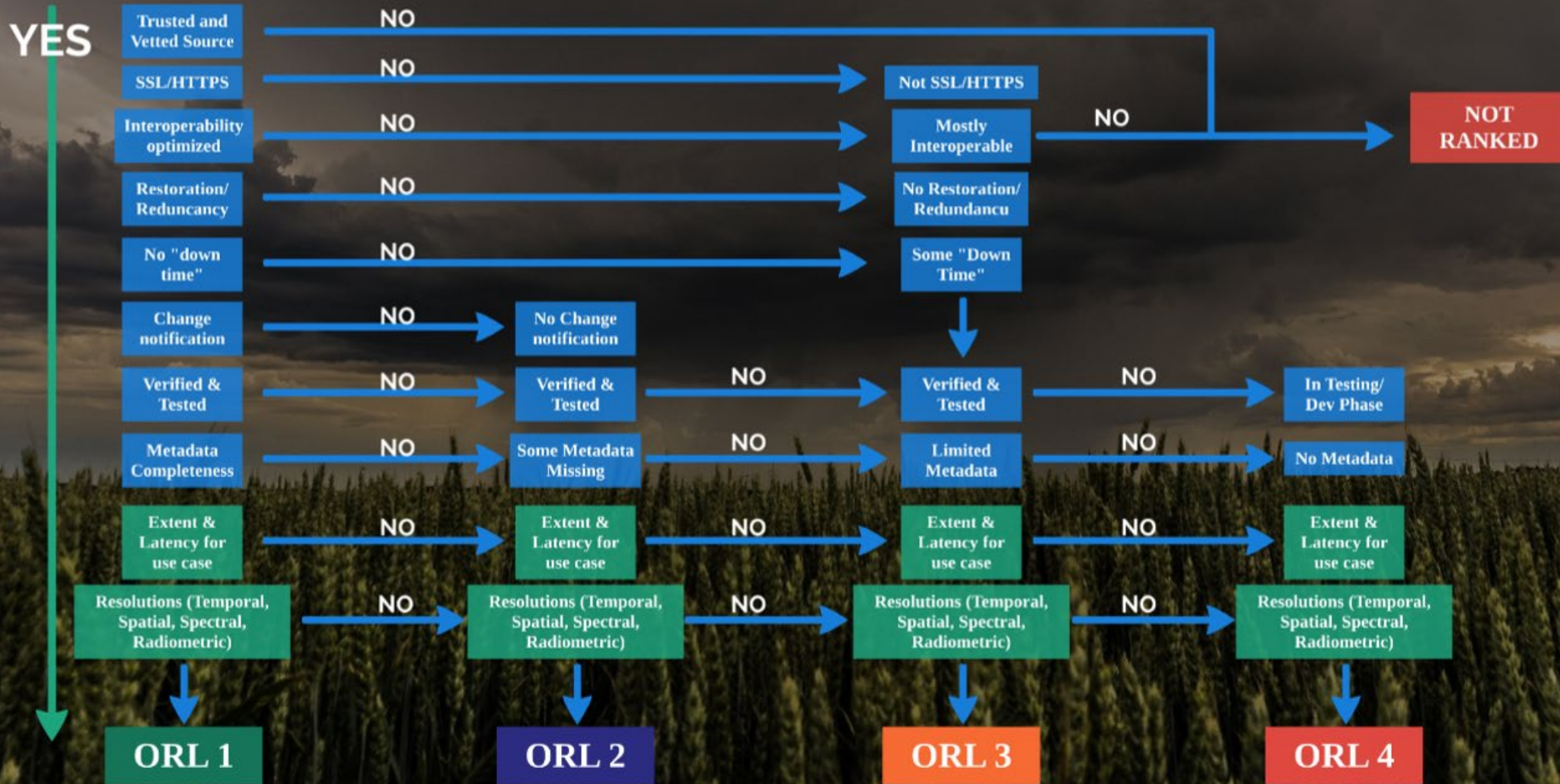
Evolving Trusted Data for Decision Making

THE BIRTH OF ORLS



*Evolving

ORL Model Decision Tree



Evolving Trusted Data for Decision Making

THE BIRTH OF ORLS



The All Hazards Consortium is using a Survey 1-2-3 form to help with the ranking of Trusted Datasets for decision making. We have presented this to the Data Quality Cluster and are continuing to collaborate with this cluster and the highly respected members. What can we add that will make ORLs even more valuable to decision makers and enable them to TRUST data even more?

Under consideration:

How frequently should ORLs be reviewed? Linking to other efforts, standards, etc.

How to link ORLs to use cases and describe how ORLs should be applied

Evolving Trusted Data for Decision Making

THE BIRTH OF ORLS - SURVEY 1-2-3



ORL Ranking Tool (v1.2)

Overall ORL Ranking: 1

The objective of the ORL Model is to provide an easy to understand, dynamic mechanism for standardized measurement of data confidence in an operational setting. This will help improve the transparency of data confidence and data quality over time, thus enabling rapid data driven decision making during incidents.

The tool helps decision makers quickly assess a "confidence level" on data products/sources to support their data driven decision making.

The tool helps decision makers quickly assess a "confidence level" on data products/sources. It provides a vetted process that identifies multiple data components that comprise a data confidence ranking from 1 (high confidence) to 4 (developing). Components include data sources, updating frequency, type of service, metadata, source reliability, etc.

Unranked data may not have a high confidence factor but may still be used at the user's own risk.

The ORL tool was developed by the SISE Working Group along with partners from ESIP, NASA, etc. [Link to Video](#)

Data Source URL*

http(s):// or ftp(s)://

Intended Use*

-Please Select-

Testing

Research

Operational Decision Making

*Other

1



Entered Date

Trusted and Vetted Source - ORL - *

[Link to SISE List](#)

-Please Select-

Help Information - Trusted and Vetted Source

SSL/HTTPS - ORL - *

Help Information - Trusted and Vetted Source

Is the data from a trusted and vetted source?

- Identified from a list of sources
[Link to SISE List](#)
- What are the criteria to vet a data source?
 - Can the owner be clearly identified?
 - Note: the "owner" of the data should be regarded as the entity responsible for data collection and storage. If the data has been re-served by a different entity, that is addressed in a follow-up criteria.
 - Examples:
 - Tweets, blog, social media website post are not as reliable
 - National Governor's Association COVID-19 site would be more reliable
 - The SISE would be considered more reliable

SSL/HTTPS - ORL - *

-Please Select-

Help Information - SSL/HTTPS

Data Format Sharability - ORL - *

Evolving Trusted Data for Decision Making

THE BIRTH OF ORLS



Resources for further information from All Hazards Consortium

<https://youtu.be/JDQ-8pU046E> - Description of ORL and process of how it is used

https://youtu.be/fz2tjtc_S98 – ORL model in operations, description

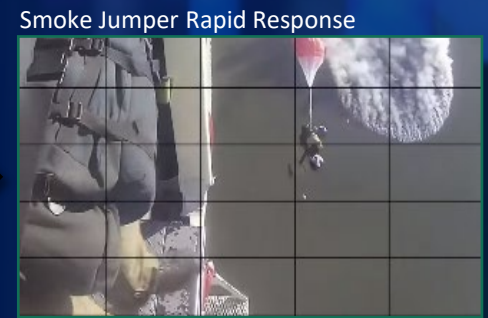
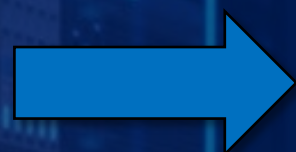
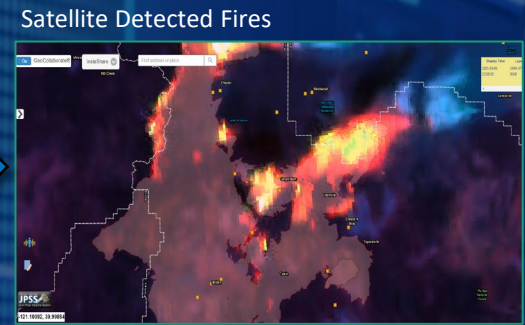
ORL Examples





ORL

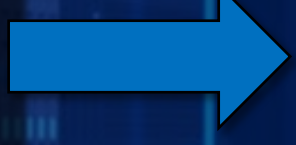
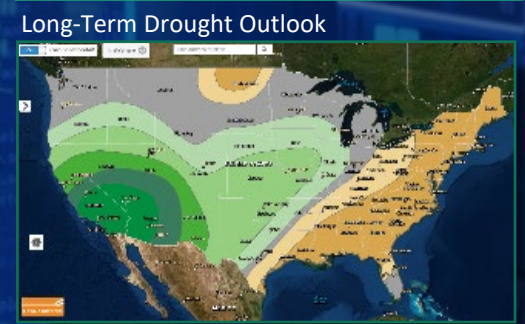
1





ORL

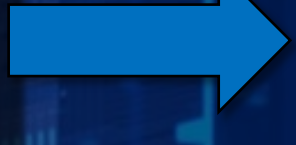
2





ORL

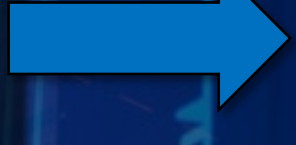
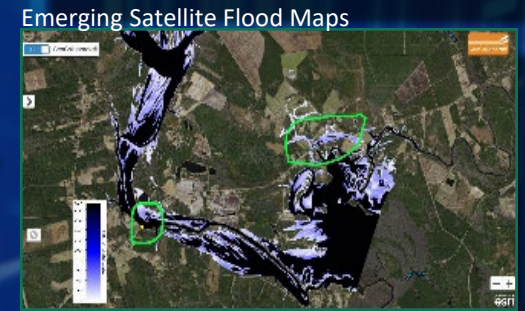
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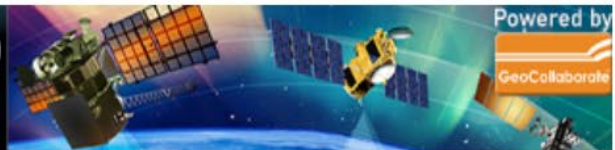
ORL

4





Sensitive Information Sharing Environment (SISE) DASHBOARD



Layer List

- ☐ Latest Storm Report...
- ☐ Yesterday Storm...
- ☒ US Boundaries-NOAA
- ☐ T Visible Clouds
- ☐ NWS Alerts
- ☒ Weather Radar
- ☐ T Vert Integrated ...
- ☐ NASA FIRMS Fire ...
- ☒ NHC Wind Field ...
- ☐ Graphical ...
- ☐ Arrival of TS Wind ...
- ☒ Status Yellow
- ☒ Active Storms NHC
- ☒ USGS EQ Colored by...
- ☒ USGS EQ Sized
- ☒ Florida SoE Fred

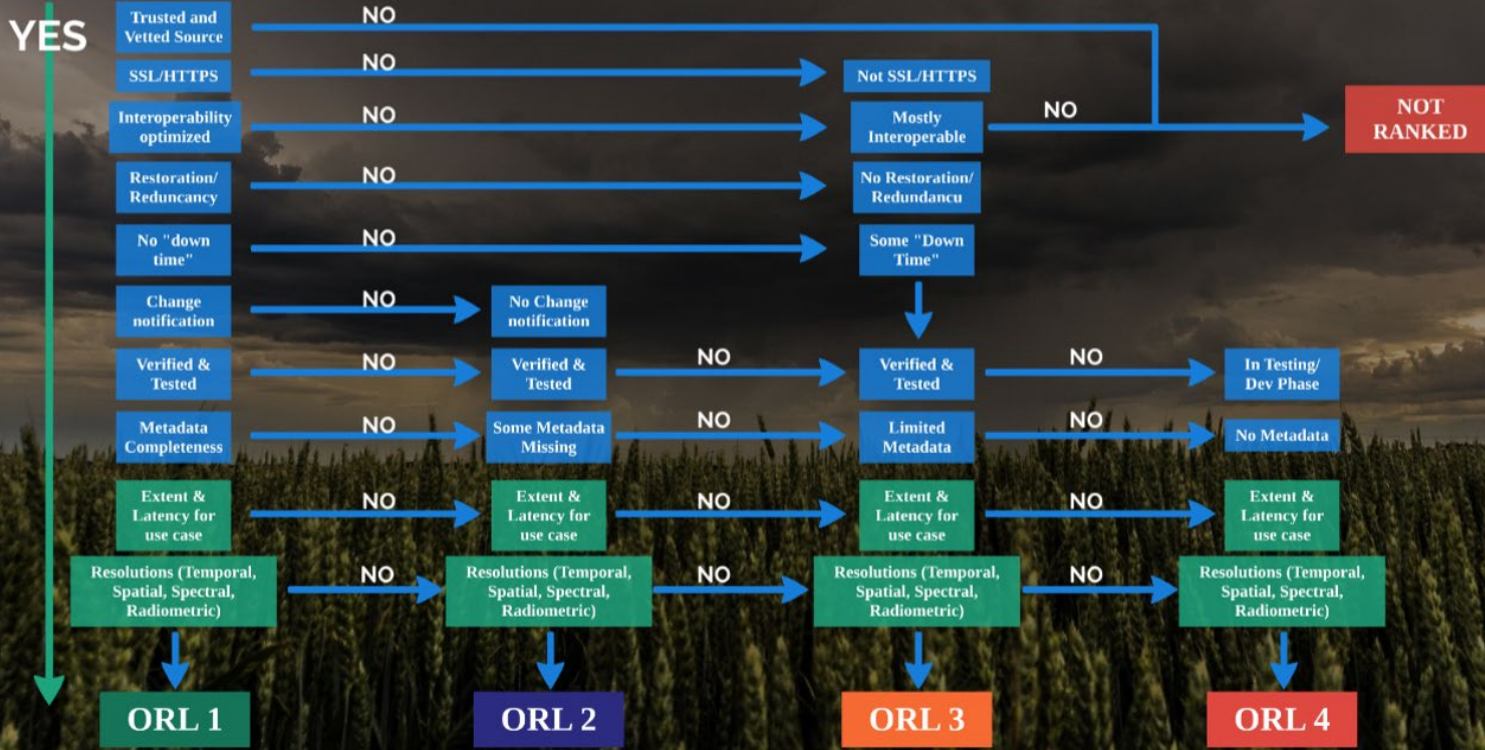
- Legend
- Animation Control
- Other Functions

Key Points

- ☒ Latest Storm Report...
- ☐ Yesterday Storm...
- ☒ US Boundaries-NOAA
- ☐ T Visible Clouds
- ☐ NWS Alerts
- ☒ Weather Radar



ORL Model Decision Tree

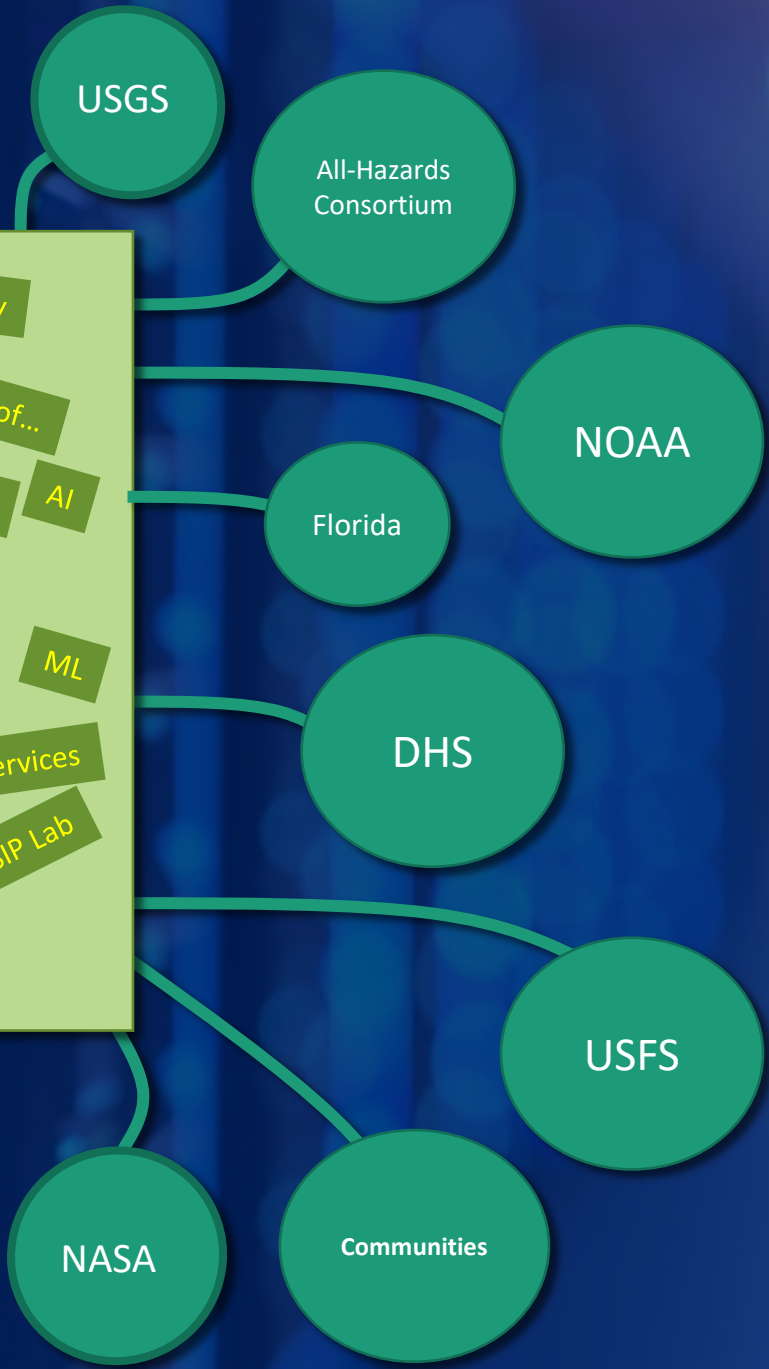
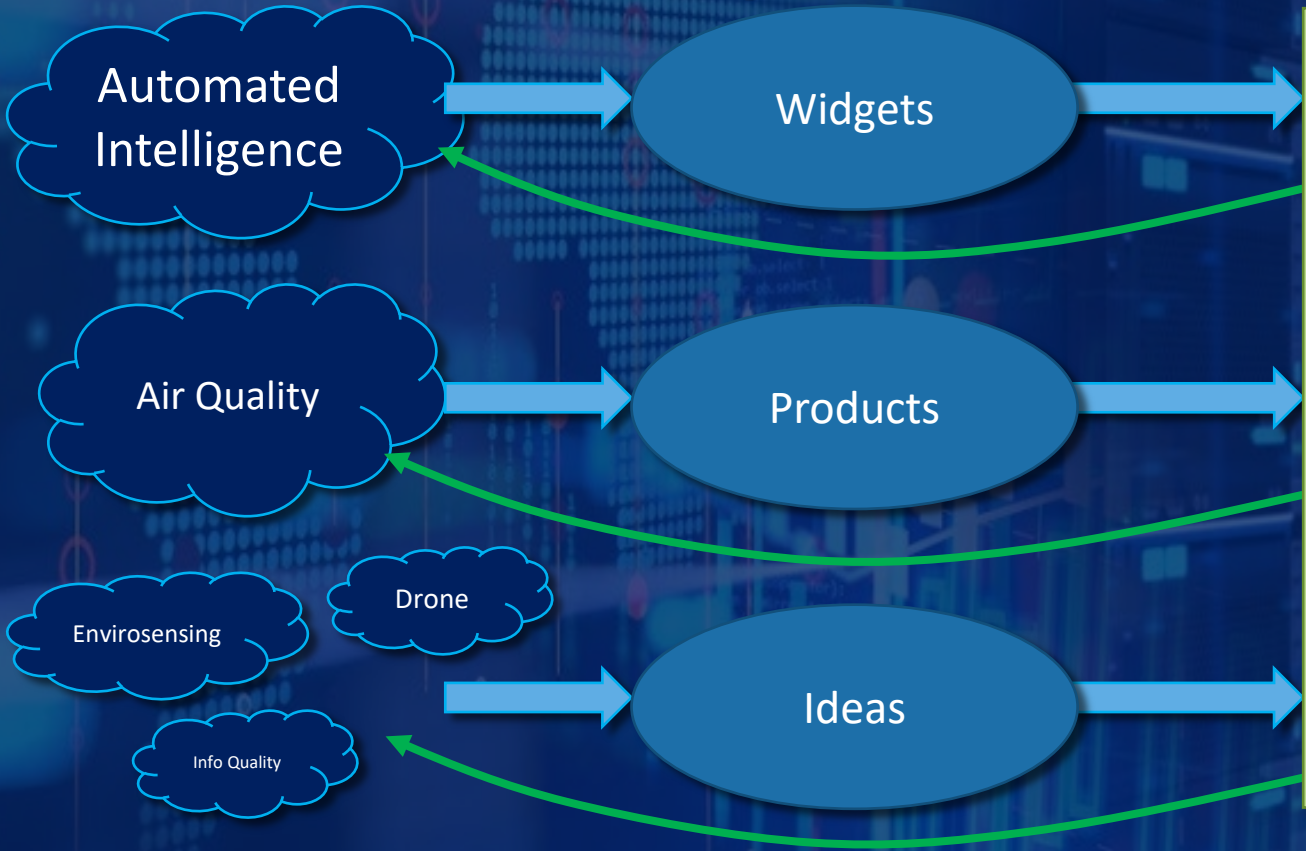


ESIP Ecosystem of Innovation

CONNECTING COMMUNITIES WITH SCIENCE DATA

Technology, Approach, Use Case,
Thoughts, Ideas, ESIP Lab

Community-Driven ESIP Members



Improving community access and use of Earth science data, modeling and alerting to improve wildfire mitigation, response and resilience. Filling a gap that has existed for decades to address risk and response.

Trusted Data for Risk Assessment, Response and Resilience

CONNECTING COMMUNITIES WITH SCIENCE DATA TO ADDRESS WILDFIRES

TRUSTED DATA via WEB SERVICES

Federal Data
NASA, NOAA, EPA,
USFS, Census, etc

NGO Data

Private
Sector Data

ESIP
Collaboratory

Community-Driven ESIP Members

GeoCollaborate
Trusted Data
Sharing &
Collaboration

Capable of
rapid deployment
& scalability



Community 1

Community 2

Community 3

- Building Awareness
- Identifying trusted datasets
- Training
 - How to collaborate
 - Communities on data use
- Training responders, decision makers
- Exercises
- Evolve **CON**cept of **OP**erationS
 - Multiple communities
 - Scaling for deployment

Improving community access and use of Earth science data, modeling and alerting to improve wildfire mitigation, response and resilience. Filling a gap that has existed for decades.

Quality at the Heart of the Big Vision

ESIP ECOSYSTEM OF INNOVATION



ORLs will help evolve the ESIP Ecosystem of Innovation

- Focus on identifying evolving data sources to use cases
- Including Automated Intelligence (AI) , Machine Learning (ML) & The Cloud
- Include users in the product development lifecycle
- Provide feedback to the product developer
- Transition the data service into operations in a phased approach and ORL rankings

...Graphically this is what it looks like...

ESIP Cluster Presentations

Bob Downs, Information Quality (LIVE)

Douglas Rao, Data Readiness (Recorded)

Steve Young, Air Quality (Recorded)

Scotty Strachen, Envirosensing (Recorded)

GeoCollaborate Demonstration

Real-Time Data Access and Sharing

Across platforms and devices

Cross Domain & Cross Sector Languages

ESIP ECOSYSTEM OF INNOVATION



Challenges

Courtesy: Dave Zader
Boulder County FD
ESIP Federation Meeting

Recent Wildfire Operations Poll

- Having the ability to have some of the information public facing as to **perimeter, closest town/subdivision** etc. Is hugely helpful.
- Weather, expected weather, local weather trends, topography with satellite overlay (best and most recent). Water points **Real time imagery of the fire and area with a weather/topography overlay** would be amazing
- **A data aggregator** that would combine NWS, State EOC, Normal Fed sources It's wild how **you have to go so many different places** Basically marry FIRMS, Caltopo, Wildweb, NWS and Interra and put **all those layers on a common map**
- I'd say my most important things personally would be:
 - 1: Topography
 - 2: **Values at risk**
 - 3: **Roads and streams (these can be used as quick and effective fire lines depending on circumstances)**

Cross Domain & Cross Sector Languages

ESIP ECOSYSTEM OF INNOVATION



Data User
Decision Maker

Data Provider
(Science)

Data User
Private
Sector

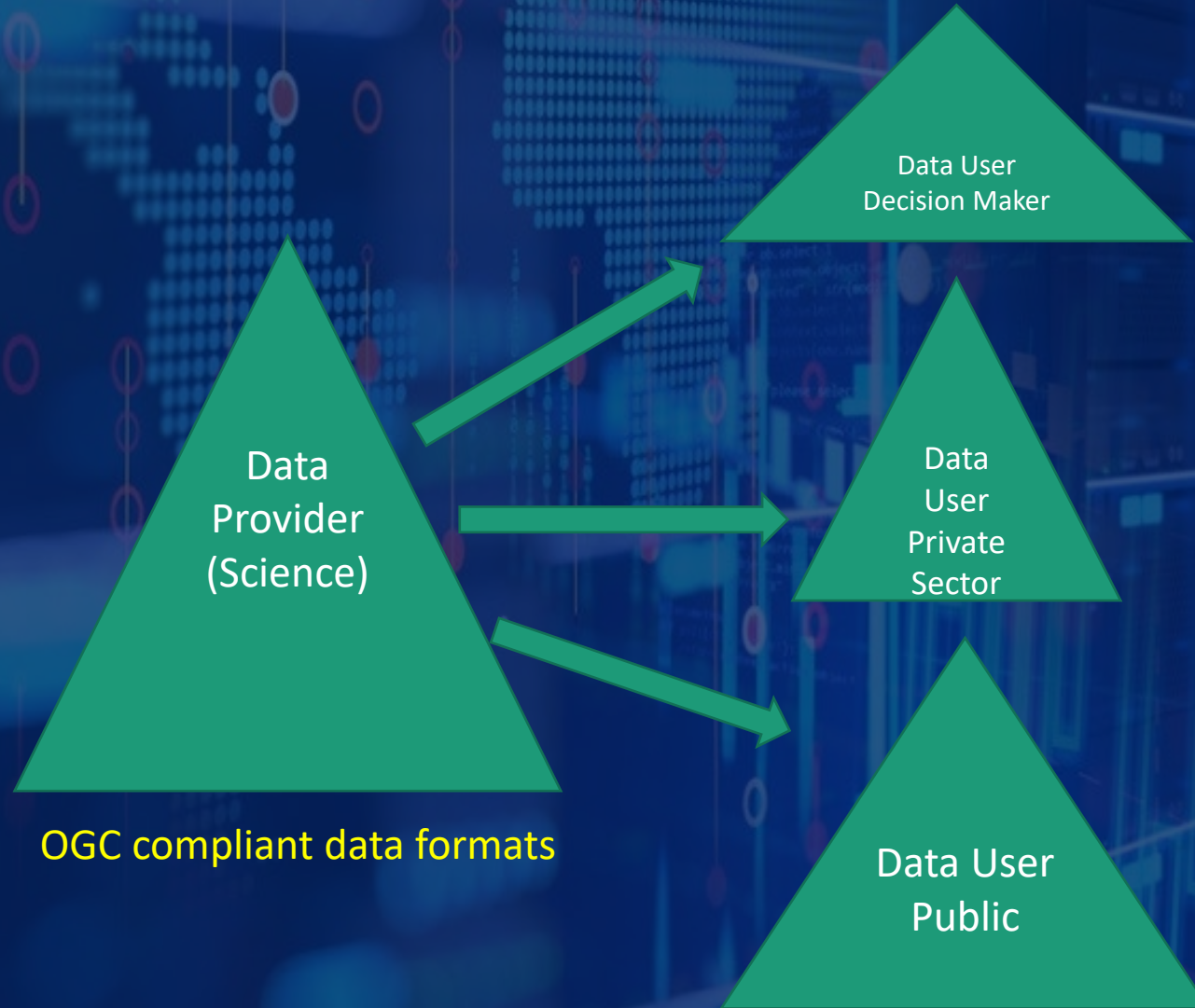
Data User
Public

BIG PROBLEM
Understanding the data

- Lack of science education
- Trust in information
- Understanding of terms

Make Data Matter | Enable Decision Making

ESIP ECOSYSTEM OF INNOVATION



GOAL
Empower Decision Makers

- Lack of science education
- **Trust in information**
- **Understanding of terms**

Cross Domain & Cross Sector Languages

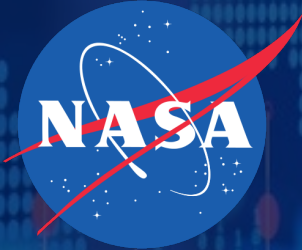
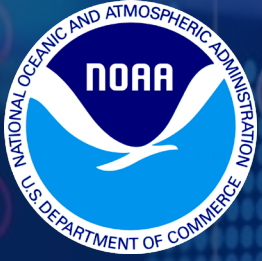
ESIP ECOSYSTEM OF INNOVATION



Data Sharing in Real-Time Collaborative Environment
Data Interpretation - Addressing Risk of Mis-Interpretation
Challenges we are addressing

Make Data Matter | Enable Decision Making

ESIP ECOSYSTEM OF INNOVATION

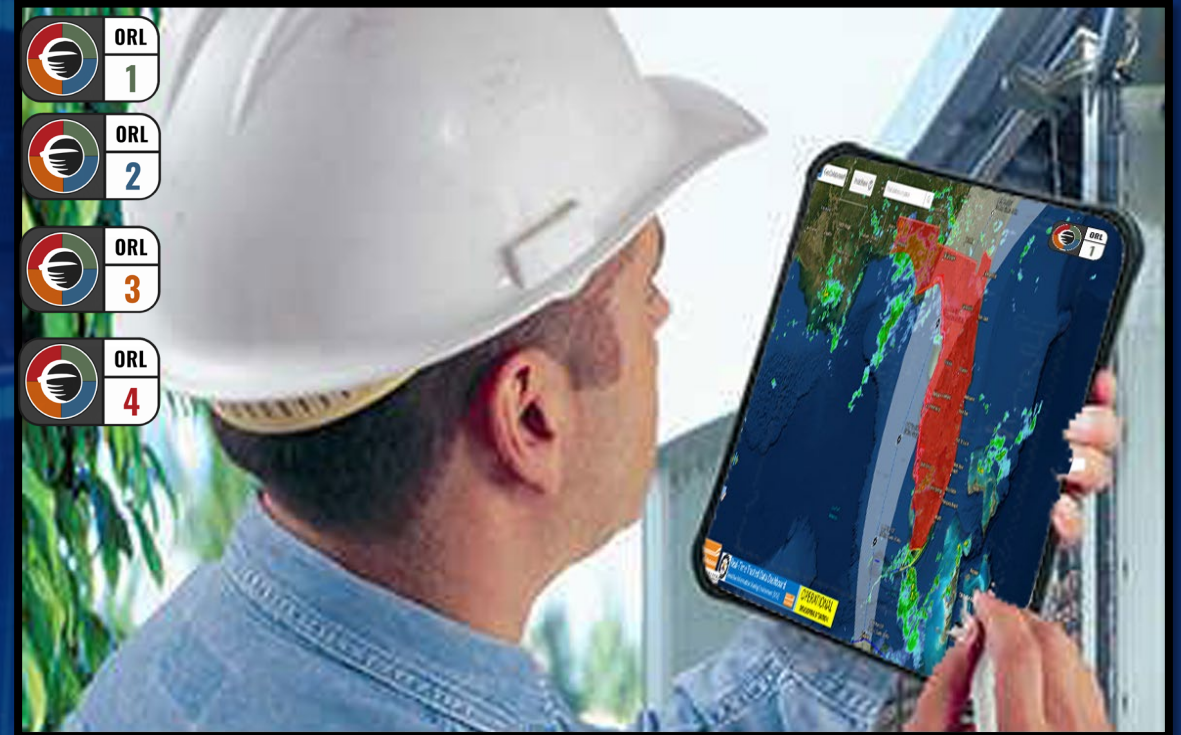
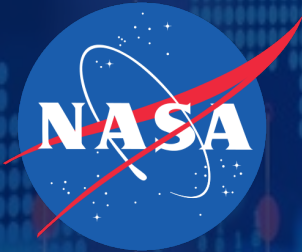


GOAL Empower Decision Makers

- Lack of science education
- **Trust in information**
- **Understanding of terms**

Make Data Matter | Enable Decision Making

ESIP ECOSYSTEM OF INNOVATION



Actionable Data

GeoCollaborate Dashboard



GeoCollaborate® Dashboard

Maxar 30cm Optical Imagery - RealEarth

Layer List

☐

NWS WWA IDP

☐

NWS Weather Radar

☐

I Fire Band 07

☒

I VIIRS Active Fire ...

☐

I FD TC

☐

I VIIRS Fire RGB

☐

Historic Fires ...

☒

I Vert Integ Smoke Ops

☐

Drought Monitor ...

☒

NASA FIRMS 24Hr ...

☐

Alaska Active Fire ...

☒

Michael Oct4 18Z

☐

Exclusive Economic ...

☐

I FD IR Enhanced B13

☒

Baer Polygons 2021

☒

I Maxar 30cm Boulder

☒

Fire Perimeters All...

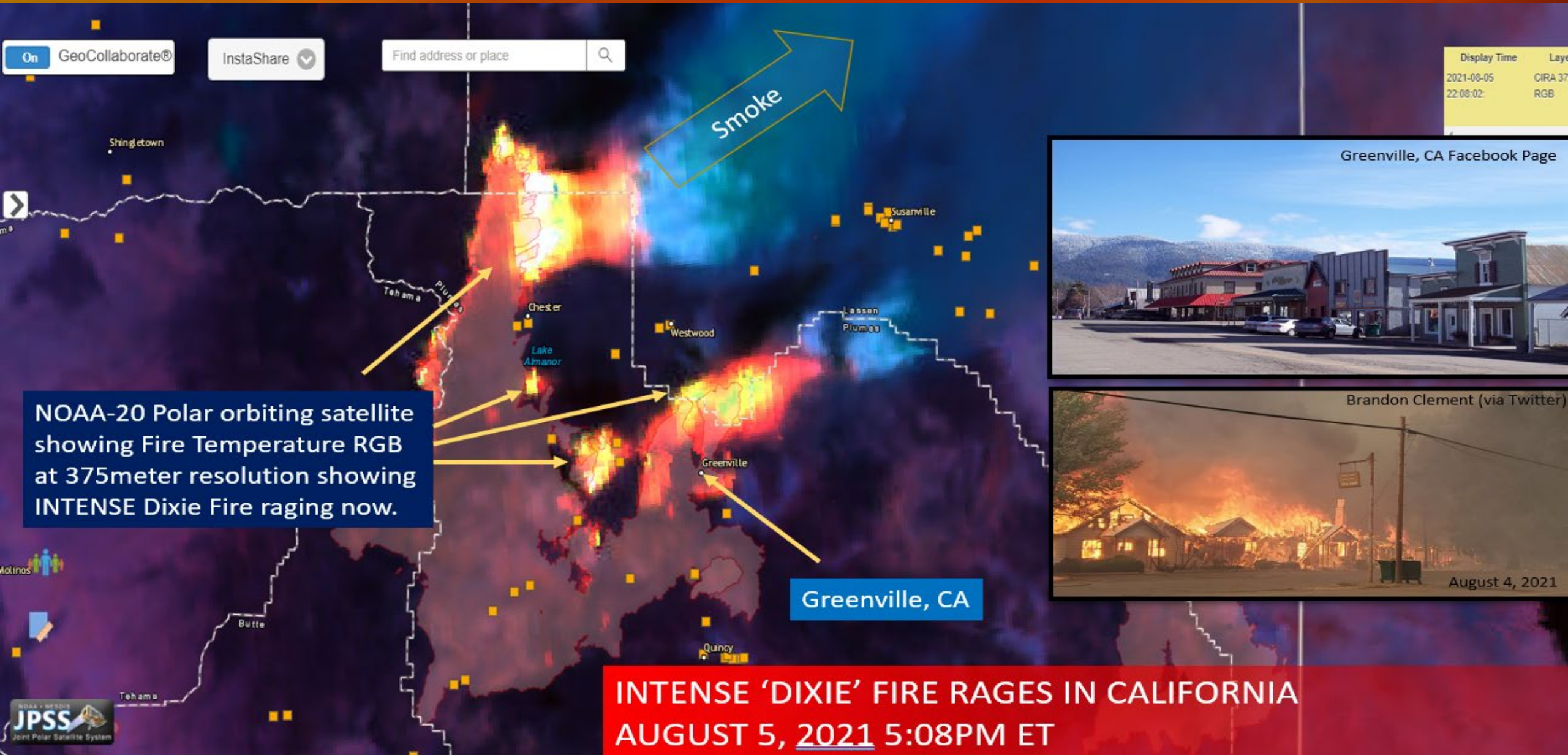
Legend

Animation Control

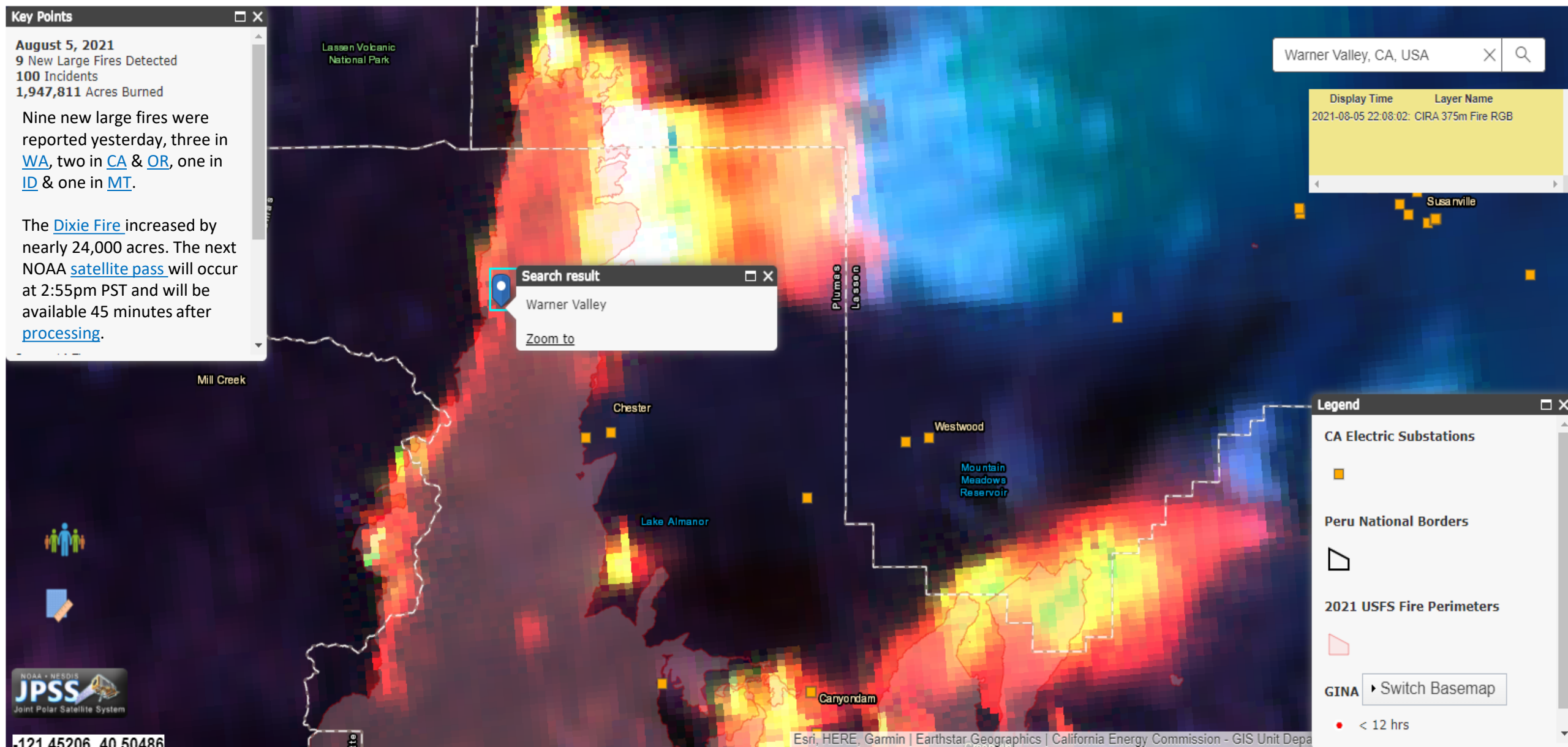
Other Functions



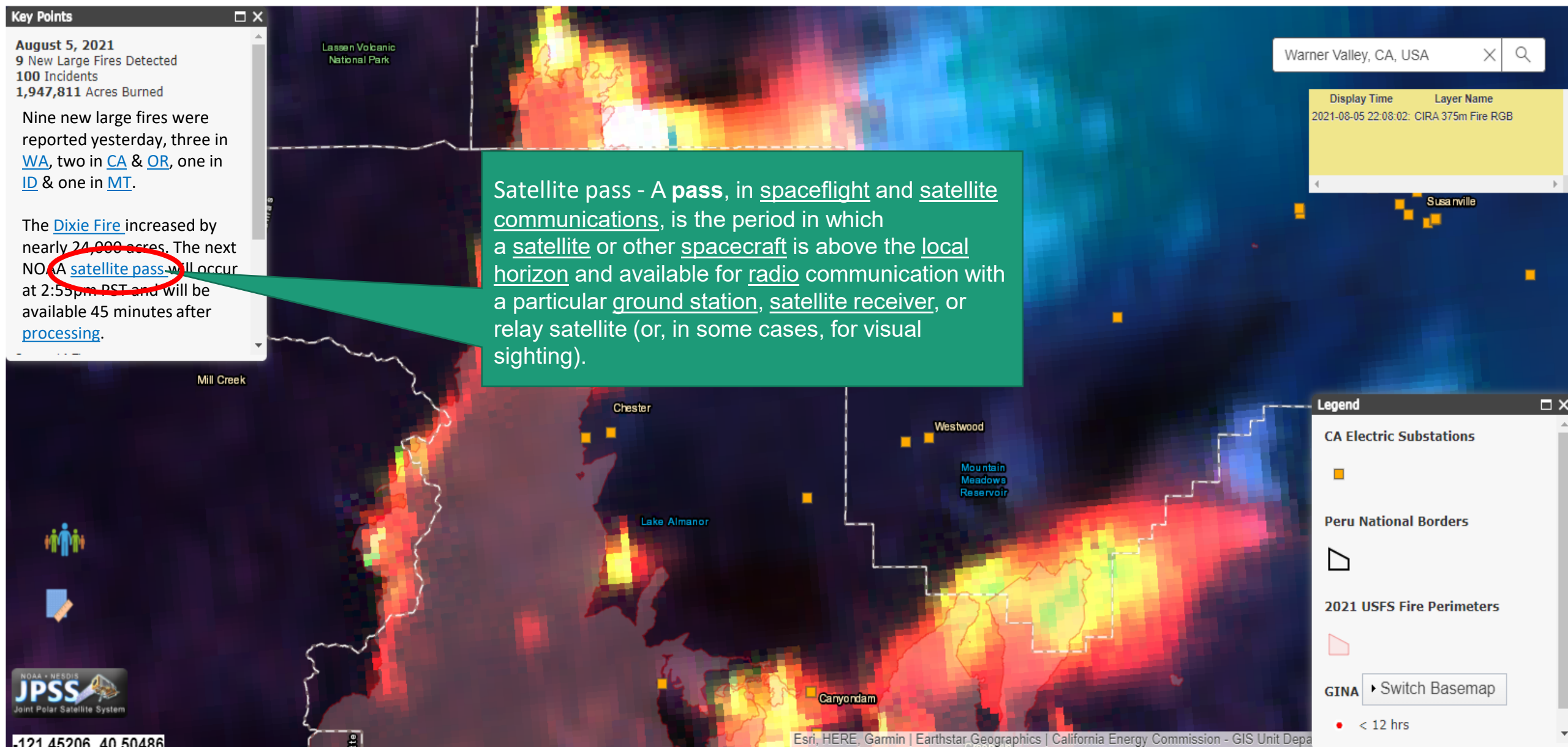
GeoCollaborate Dashboard



GeoCollaborate Dashboard



GeoCollaborate Dashboard



Challenges | Guidance Appreciated



Can the Ontology Summit participants point us to 'best practices' for deciphering the FEMA terms.

Note they have collected an impressive list with multiple definitions/examples of terms as I just looked at Acceptable Risk and Accident.

How can we move forward to link terms and integrate them into a test case for connecting with communities?

Vocabularies need to be tailored to various disaster response use cases

We want to deliver the 'end product' for actionable information that is understood widely (public)

10/27/08

1

GUIDE TO EMERGENCY MANAGEMENT AND RELATED TERMS, DEFINITIONS, CONCEPTS, ACRONYMS, ORGANIZATIONS, PROGRAMS, GUIDANCE, EXECUTIVE ORDERS & LEGISLATION

A Tutorial on Emergency Management, Broadly Defined, Past and Present

© 2007 B. Wayne Blanchard

B. Wayne Blanchard, Ph.D., CEM
October 22, 2008
(Date of Last Modification)

"Not until terms and concepts have been clearly defined can one hope to make any progress in examining the question clearly and simply and expect the reader to share one's views."
(Carl Von Clausewitz, *On War*, Princeton University Press, 1976, p. 132)

NOTE: This is not a comprehensive, definitive, exhaustive or official treatment of "emergency management" and related terms, definitions, acronyms, programs or legislation. It is simply a collection of terms, definitions, acronyms, and program and legislative descriptions and pulled together into a single document as time and opportunity have allowed to be assembled.

The original "Emergency Management-Related Terms and Definitions Guide" was developed as a student handout in an Introduction to Emergency Management college course taught by the author in 1999 and has been maintained as time allows for the authors' own purposes, one of which is to continue supporting collegiate emergency management courses. Another is as an aid

Challenges | Guidance Appreciated



Thank You

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