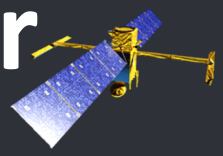
podaac
Physical Oceanography Distributed Active Archive Center

# Developing a roadmap for cloud services



Suresh Vannan, Michael Gangl, Michelle Gierach, Jessica Hausman, Catalina Oaida

Contact: suresh.vannan@jpl.nasa.gov

Jet Propulsion Laboratory, California Institute of Technology

July 18th, 2019
ESIP Summer Meeting 2019
Tacoma, WA

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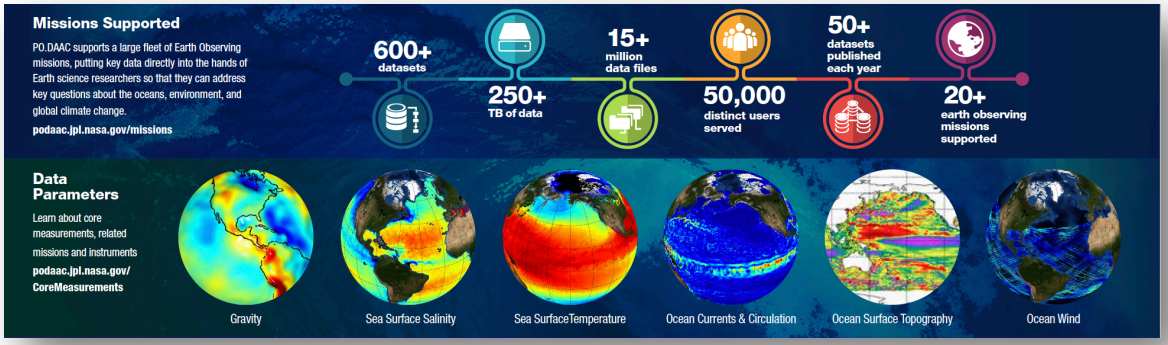
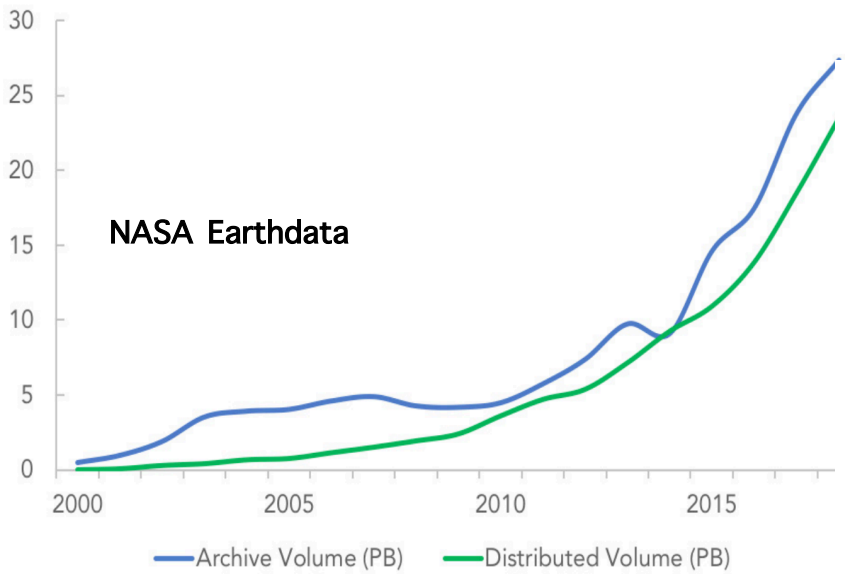
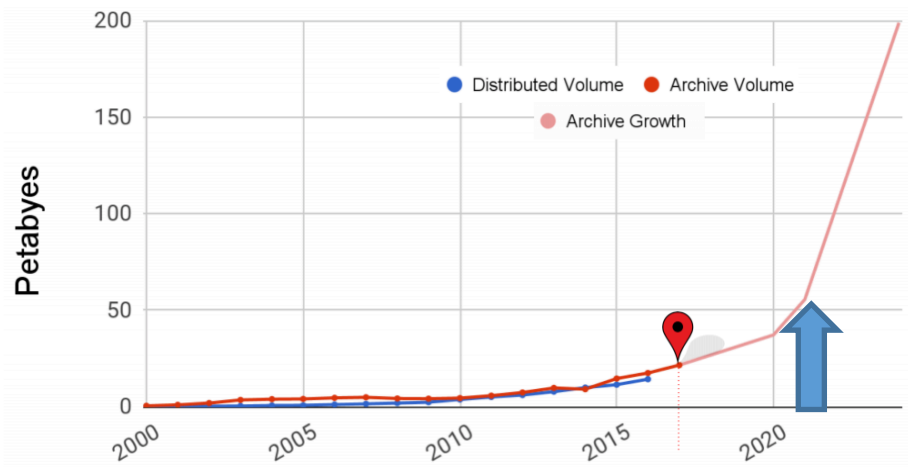
# PO.DAAC : SWOT




https://podaac.jpl.nasa.gov/SWOT




SWOT

Launch: Sept 2021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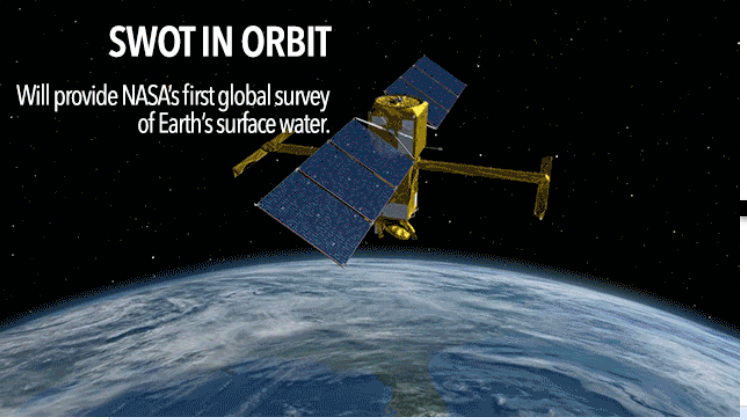


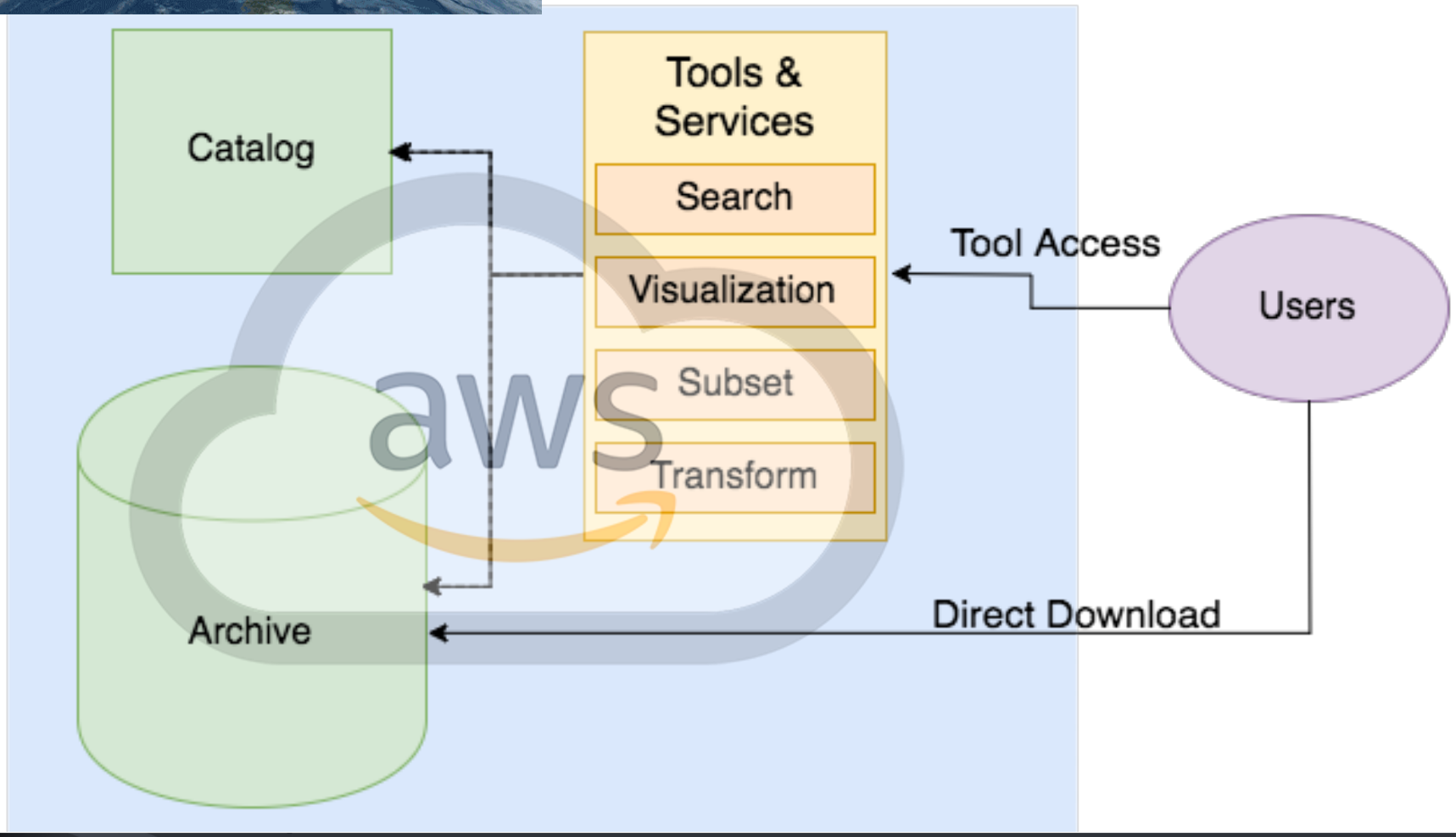



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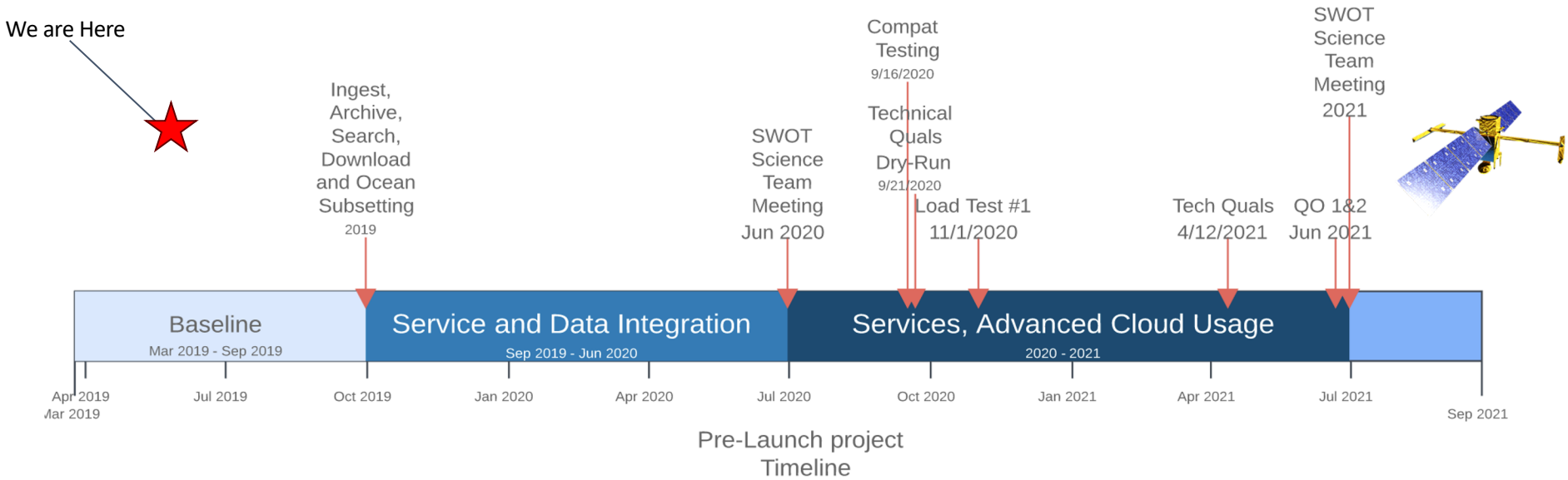
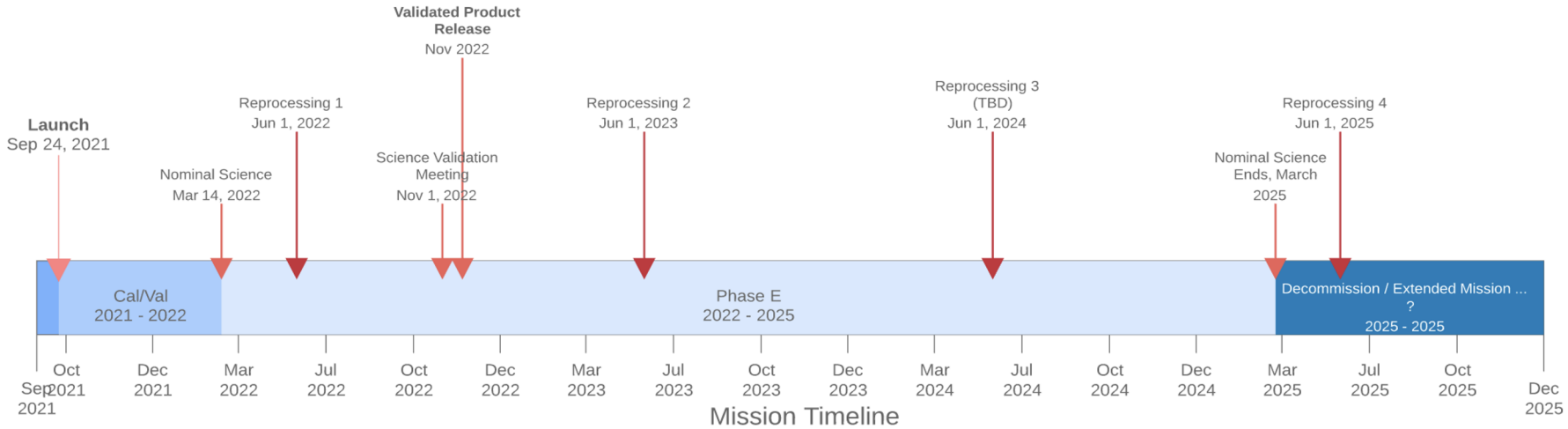
# Timeline





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# Developing a Roadmap

**Database**

**Use Cases**

**Cloud Services & Roadmap**

**SWOT Survey 2.0** (n=111)

**Application Journeys** (n=65)

Application **data requirements** and **user capabilities**

**User workflows**

Prioritized use cases based on **% users impacted**

This methodology is captured and detailed in a manuscript for publication: Stavros, E.N., C.M. Oaida, J. Hausman, M. Srinivasan, H. Hua, M. Gangl, M. Gierach, *A Quantitative Framework to Inform Cloud Data System Architecture and Services Requirements Based on User Needs and Expected Demand*, Requirements Engineering, *submitted*.


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# SWOT User Survey 2.0

## User Information/Preferences

All information is anonymous and the questions are written to understand
needs.

Are you a member of the SWOT Science Team?

- Yes
- No
- Not Sure

How much experience do you have working in your field?

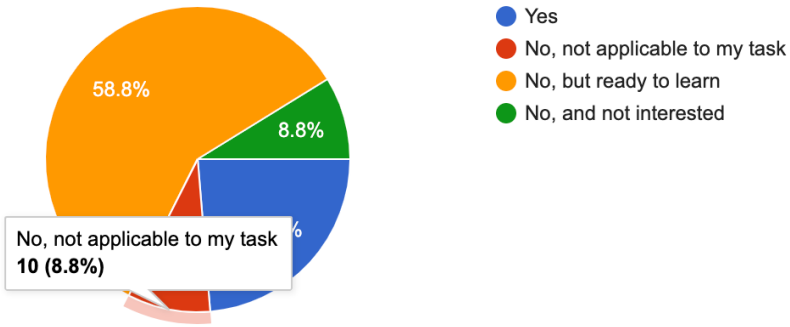
- <1 year
- 1-3 years
- 3-10 years
- 10+ years

Screenshot

For what kind of institution do you work?

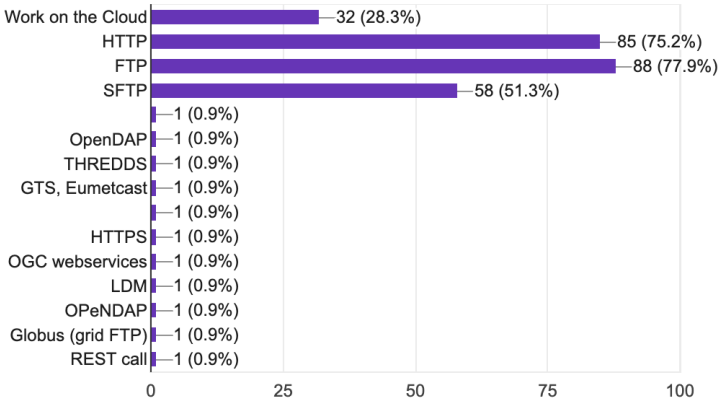
Do you have experience working in a cloud computing environment (e.g., Amazon Web Services)?

114 responses




How do you currently access data?

113 responses





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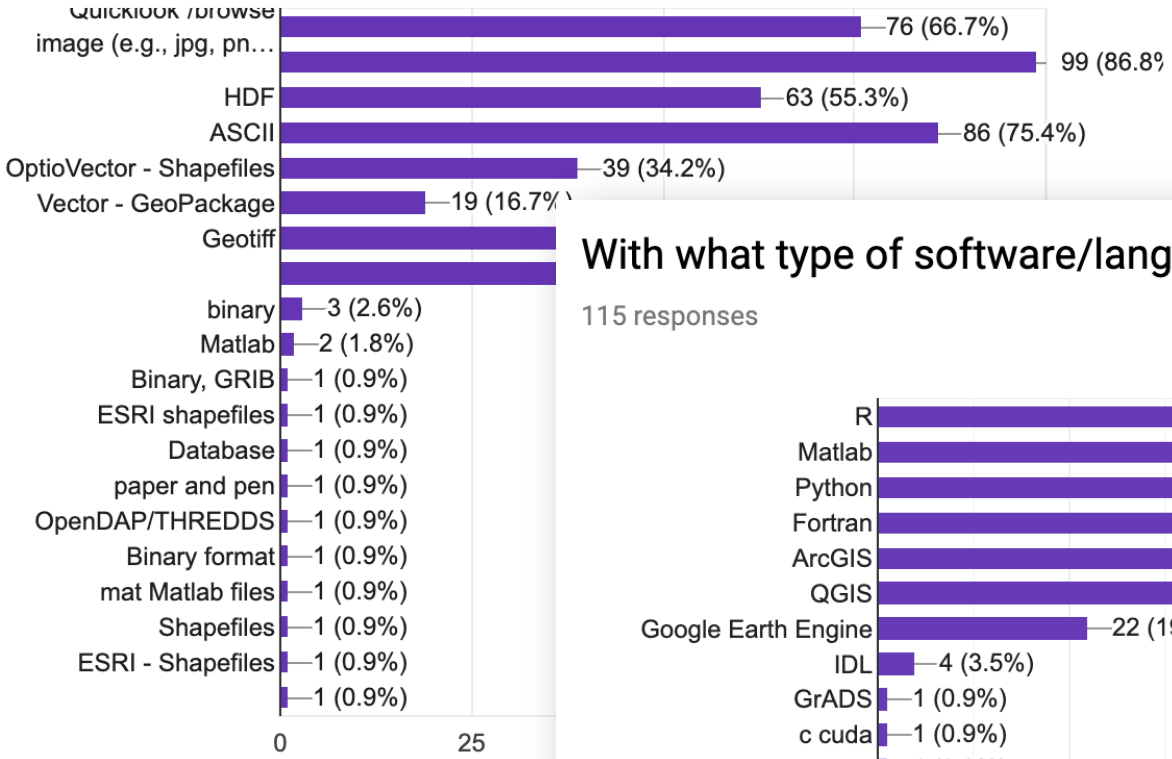
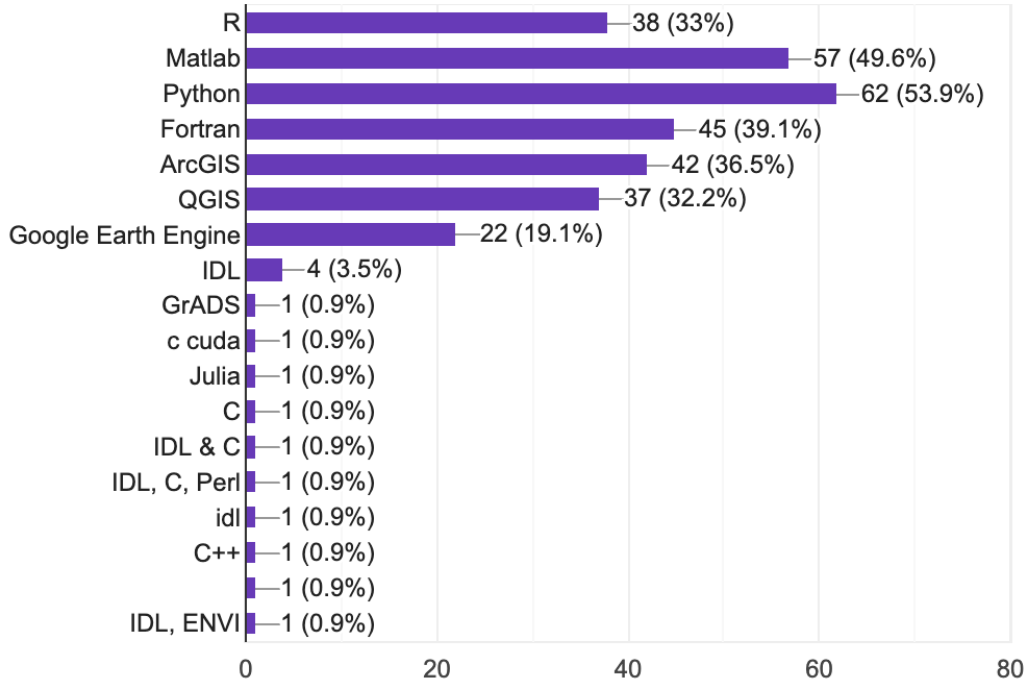
# With what data formats can you use/are you familiar?

114 responses




# With what type of software/language do you process data?

115 responses





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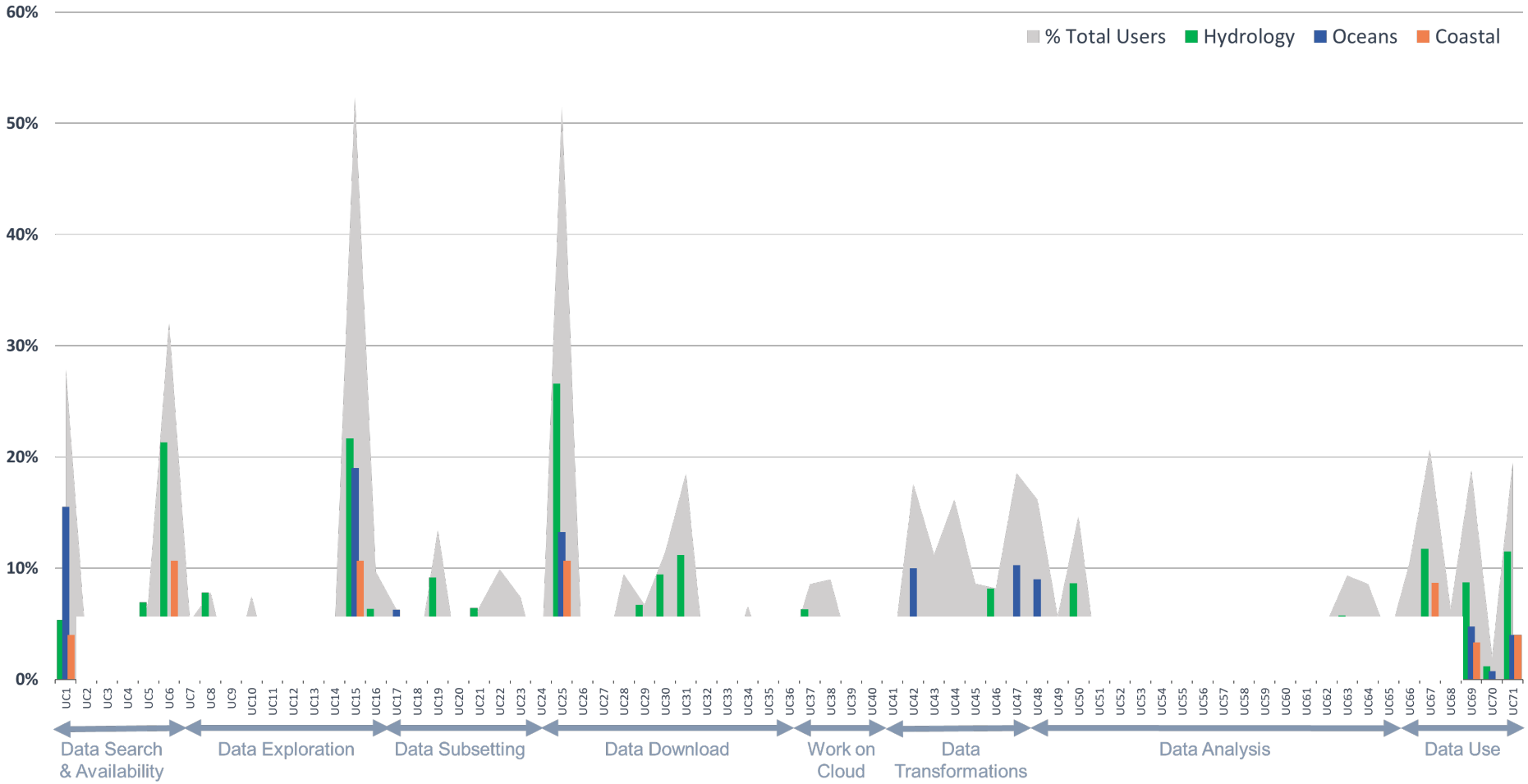
# User-driven Approach





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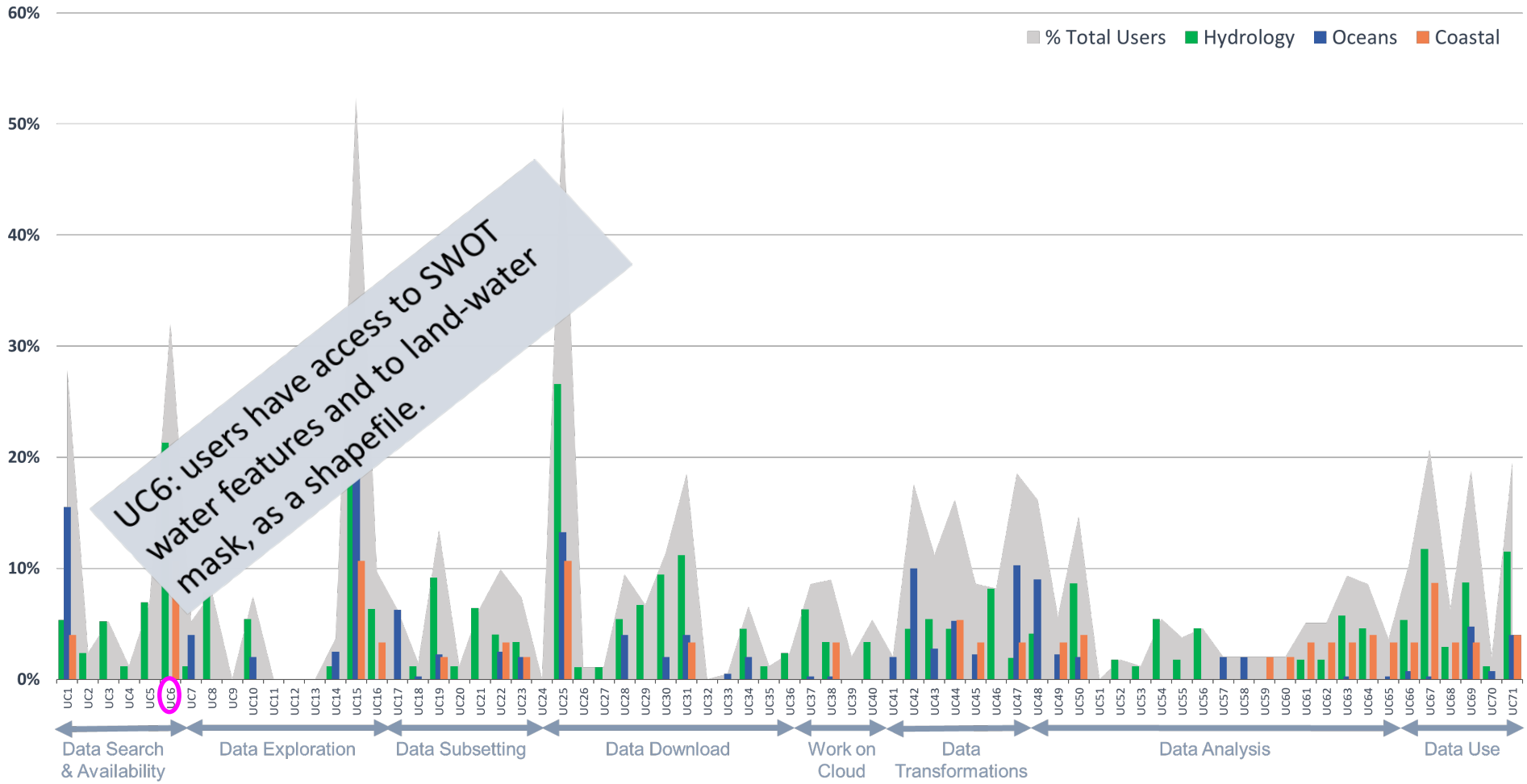
# User-driven Approach





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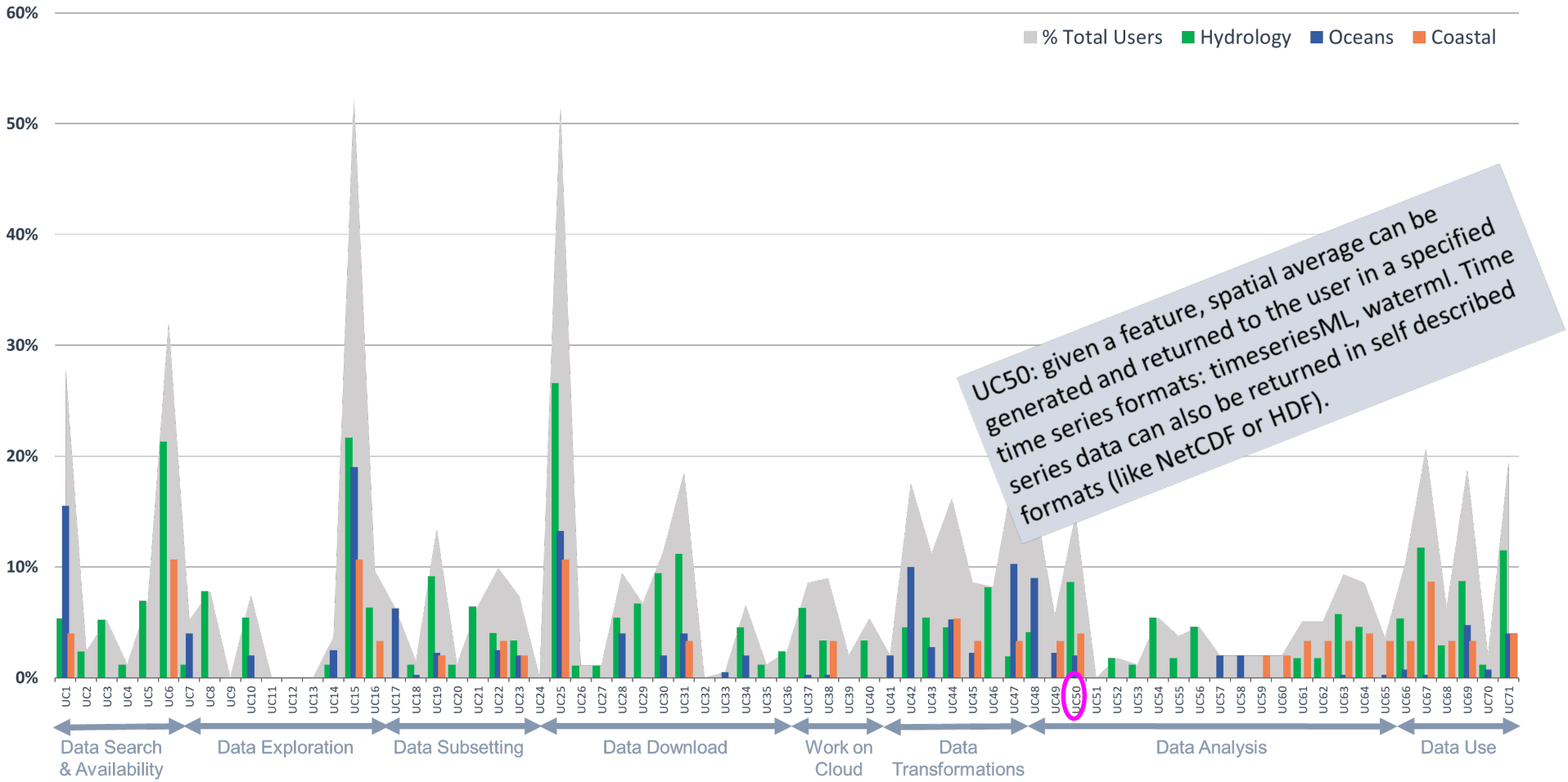
# User-driven Approach





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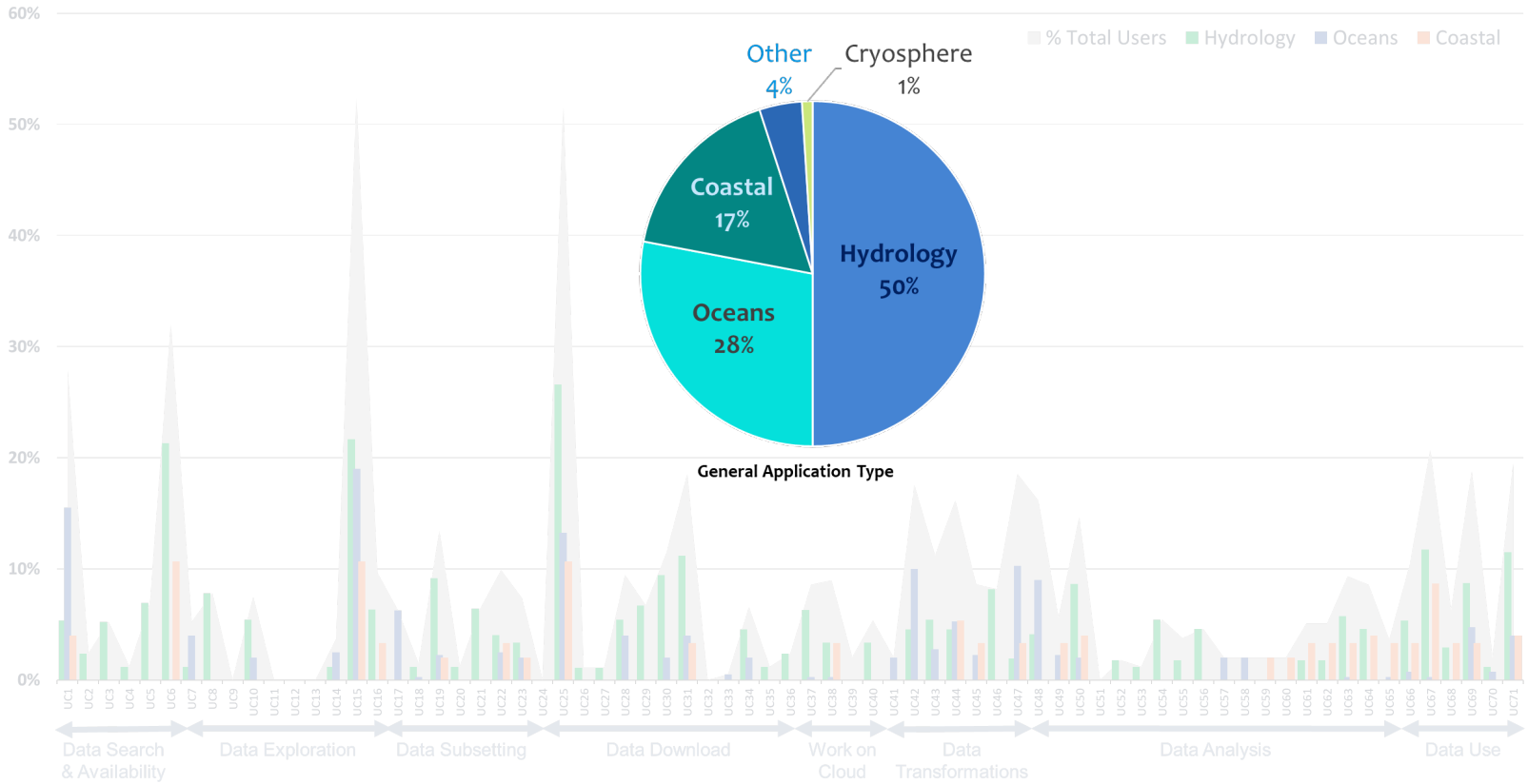
# User-driven Approach





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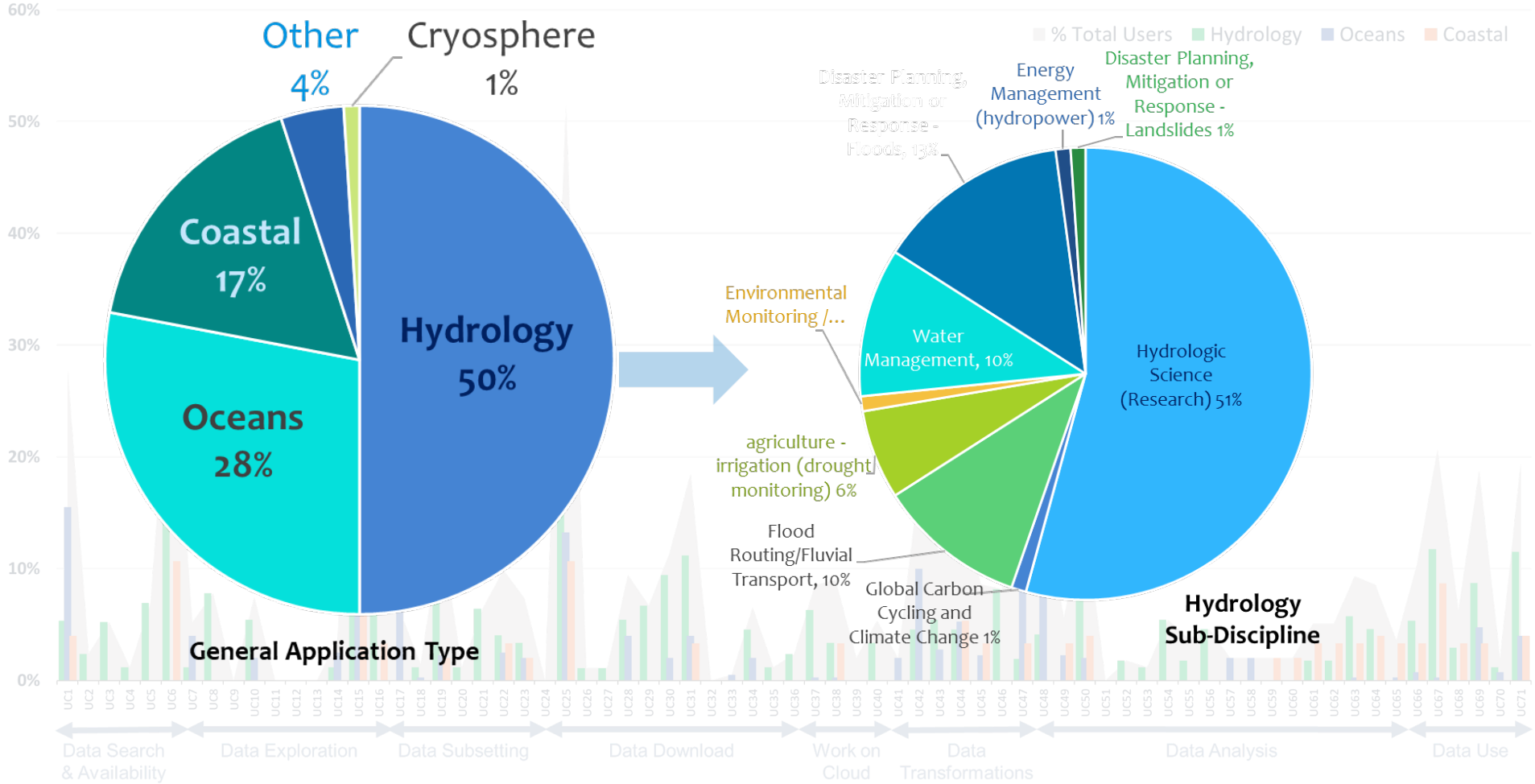
# User-driven Approach





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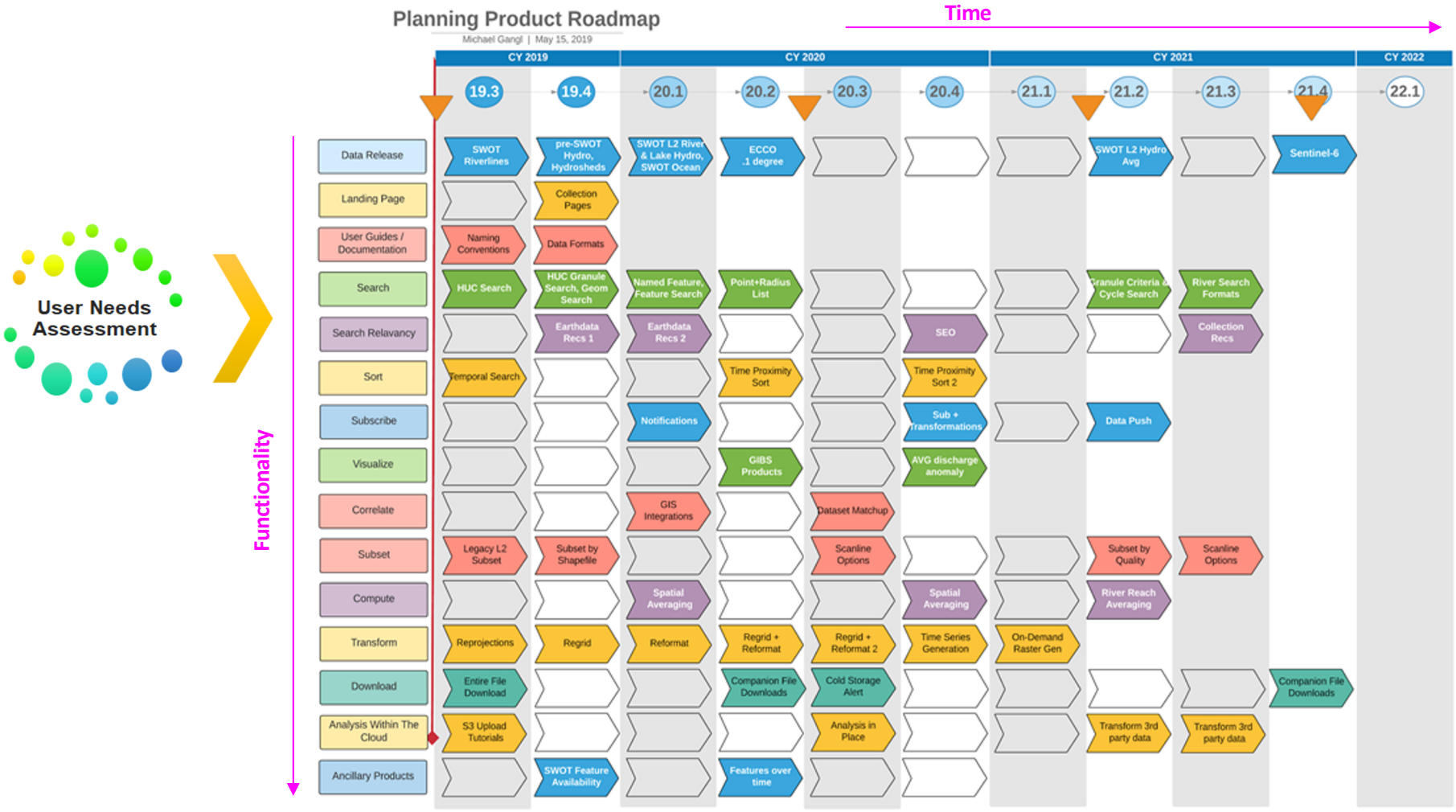
# Cloud Services





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# PO.DAAC SWOT Capabilities

**2019**
Services Development

**2020**
Service & Data Integration

**2021**
Services, Advanced Cloud Usage

**SWOT Launch**

Today
June 2019

2020 SWOT STM
Hands-on Workshop 1

2021 SWOT STM
Hands-on Workshop 2

### Search and Download

- Geometry Type
- HUC
- SWOT Feature ID
- Spatial and Temporal Search

### Dissemination

- Subscribe
- Subset (space, time, variable, polygon, Quality)

### Analysis

- Analysis in place (Cloud)
- Integration with other datasets

### Transformations

- On-Demand Raster
- Re-grid
- Reformat
- Data Product Specific: e.g. River Reach Averaging

https://podaac.jpl.nasa.gov/SWOT
**Website: Major update coming Fall 2019**


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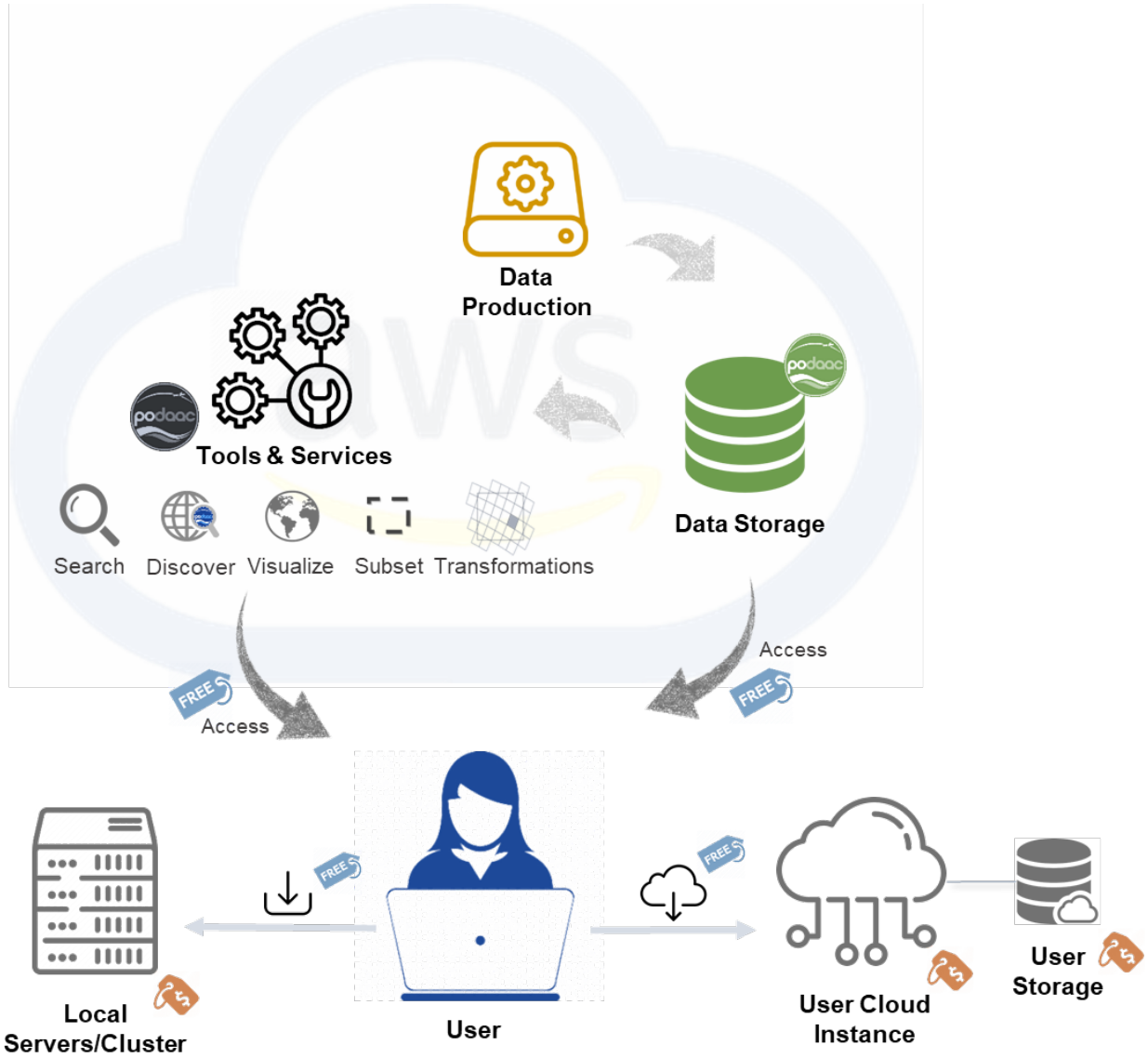
# PO.DAAC SWOT (Cloud) Data Flow





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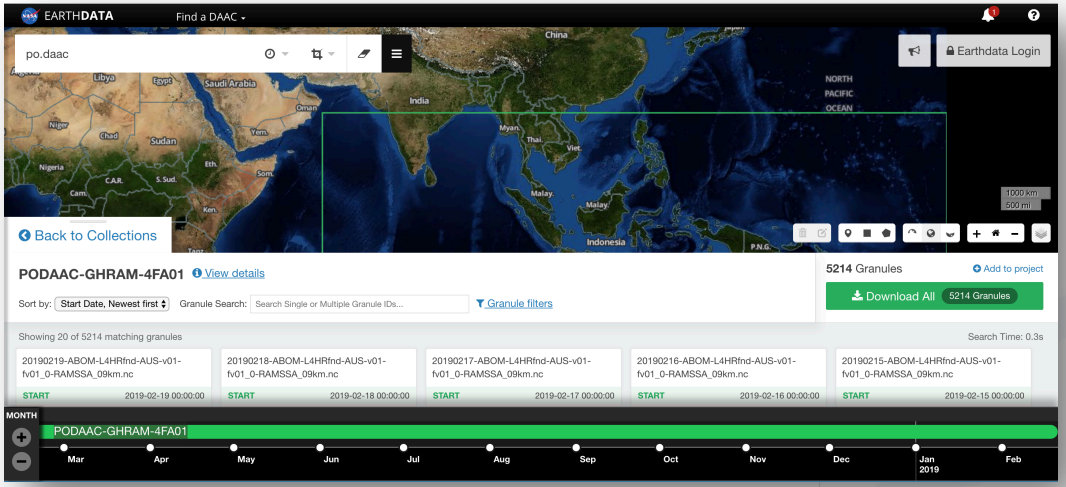
# PO.DAAC SWOT – Hydrology User Workflow




## 1 SWOT Data Search Portal

https://search.earthdata.nasa.gov/portal/**SWOT**/search

→ Earthdata Search available now
→ SWOT Search portal available fall 2019

More Information

Meet with PO.DAAC Representatives
Attend the Hydro Splinter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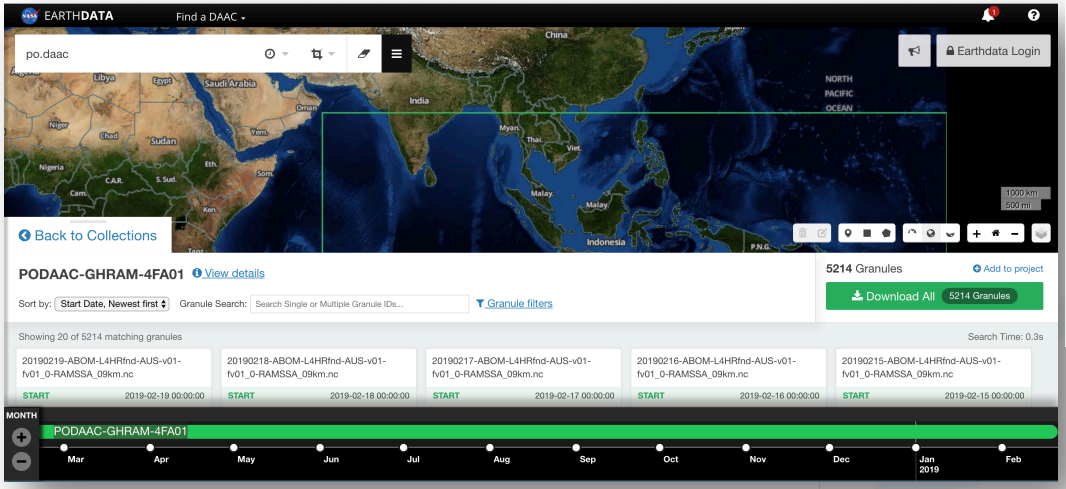
# PO.DAAC SWOT – Hydrology User Workflow

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More Information

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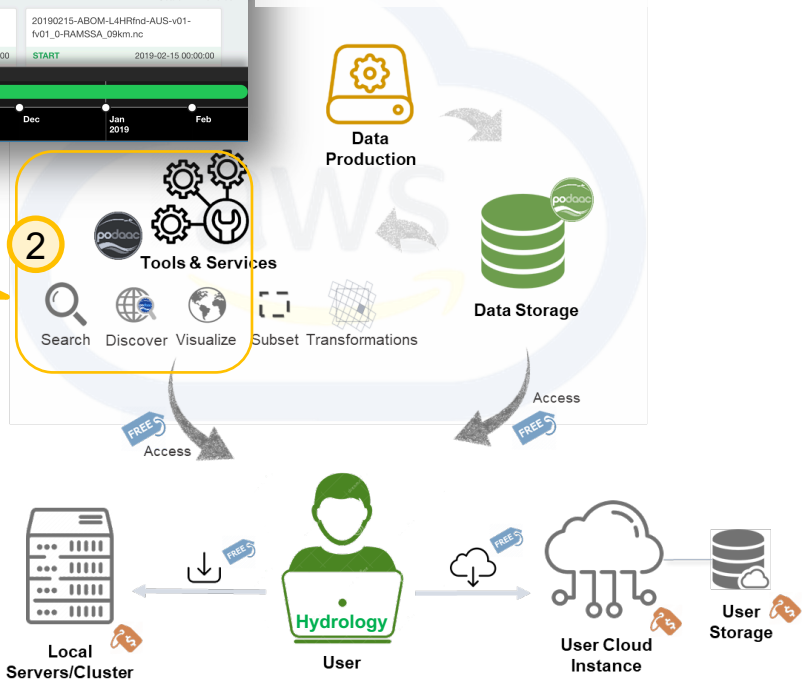
Attend the Hydro Splinter

2

SWOT Feature **Search**

HUC **Search**

**Subscribe** by HUC (Search-based Subscription)





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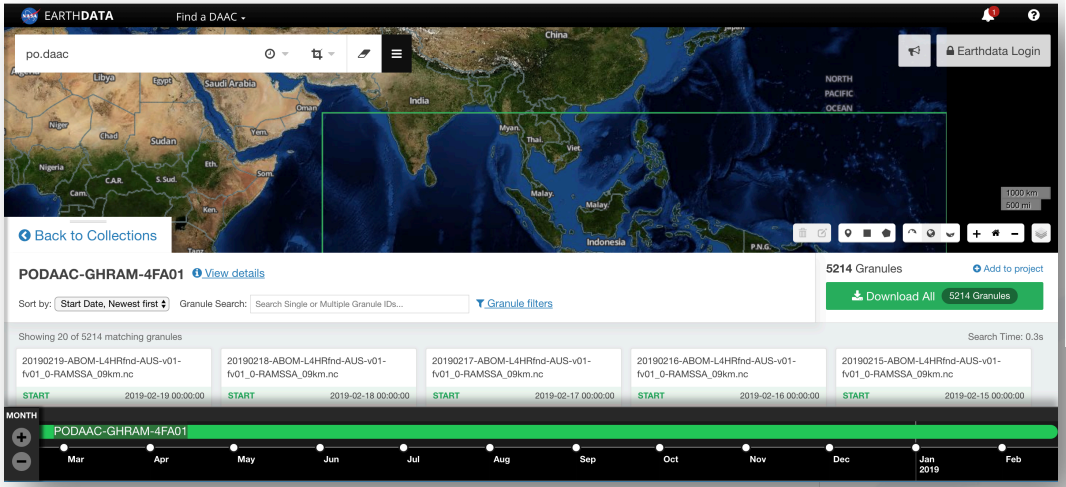


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→ SWOT Search portal available fall 2019

More Information

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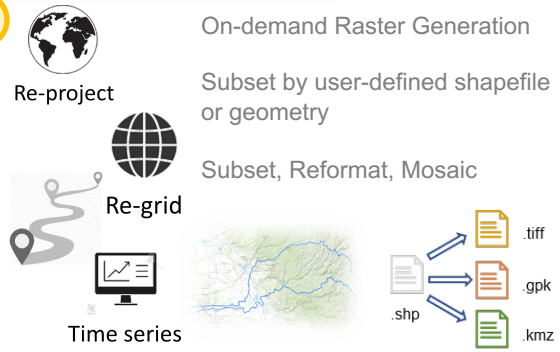
GIS Services, Integrations and Standards

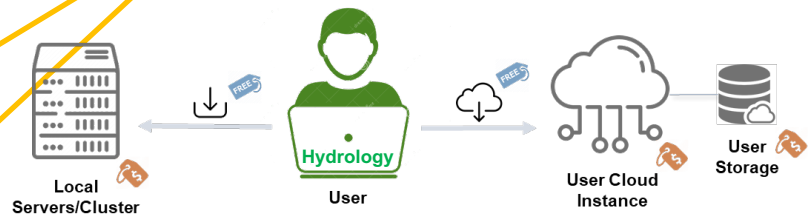
3




On-demand Raster Generation

Subset by user-defined shapefile or geometry

Subset, Reformat, Mosaic





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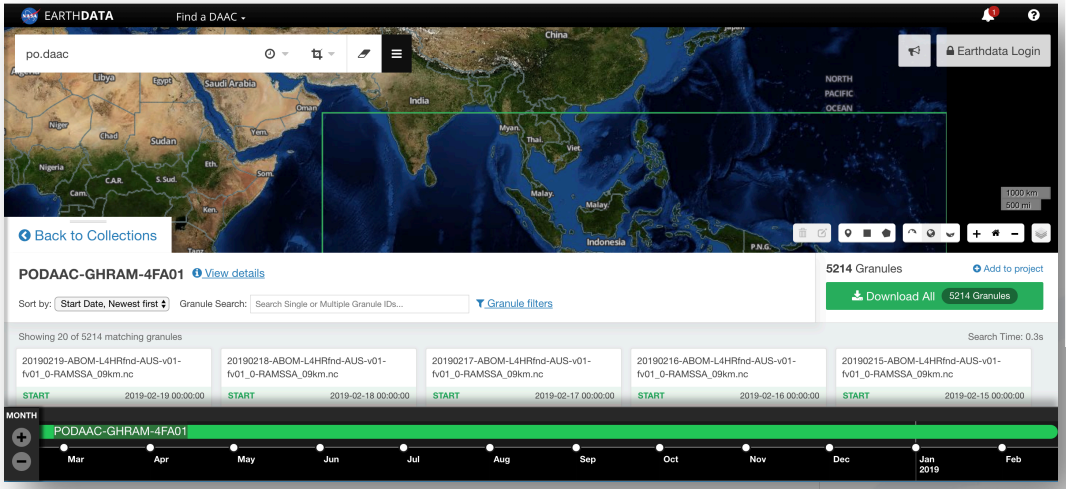


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→ SWOT Search portal available fall 2019

More Information

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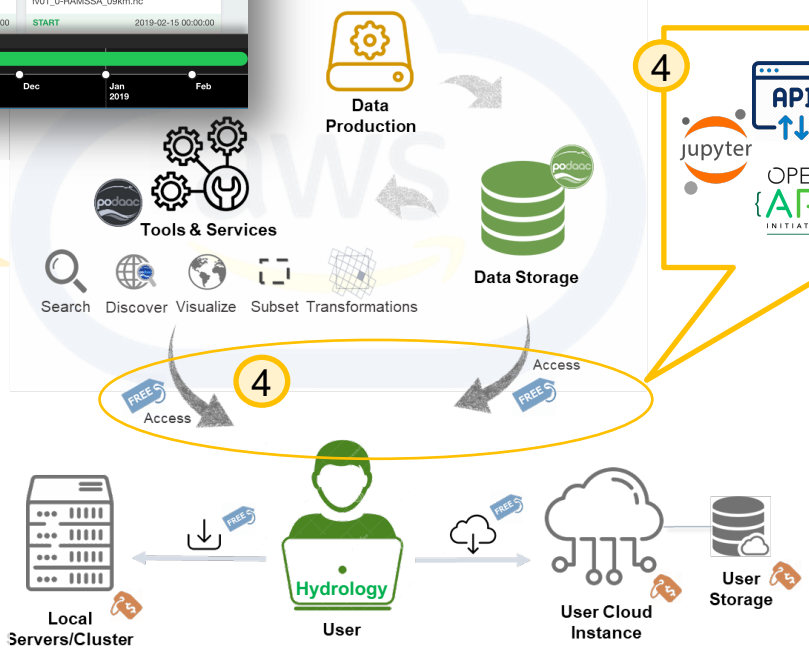
2 SWOT Feature **Search**
HUC **Search**
**Subscribe** by HUC (Search-based Subscription)

3 On-demand Raster Generation
Subset by user-defined shapefile or geometry
Subset, Reformat, Mosaic
Re-project
Re-grid
Time series
.shp
.tiff
.gpk
.kmz




4 API-based **access** to metadata/data

Scripted Access: PO.DAAC Webservices 2.0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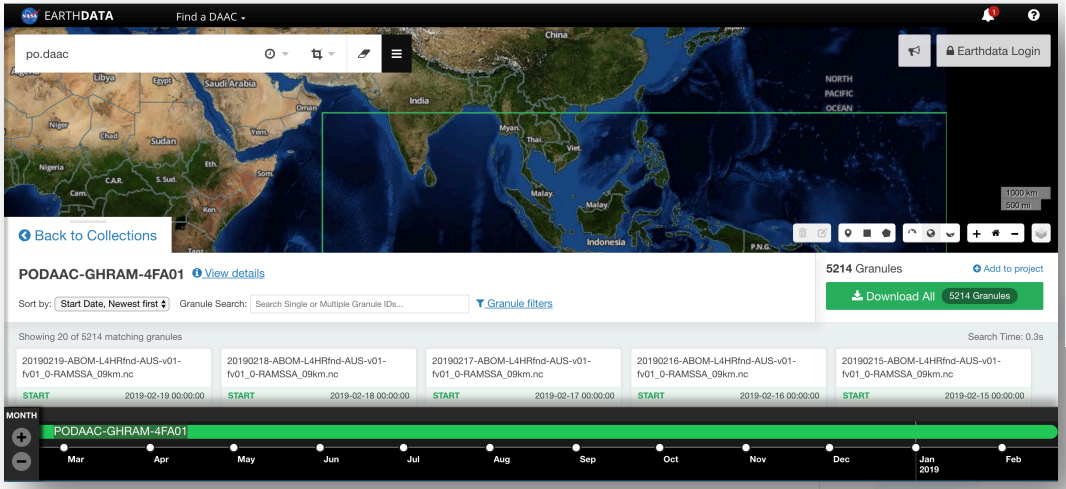
# PO.DAAC SWOT – Hydrology User Workflow

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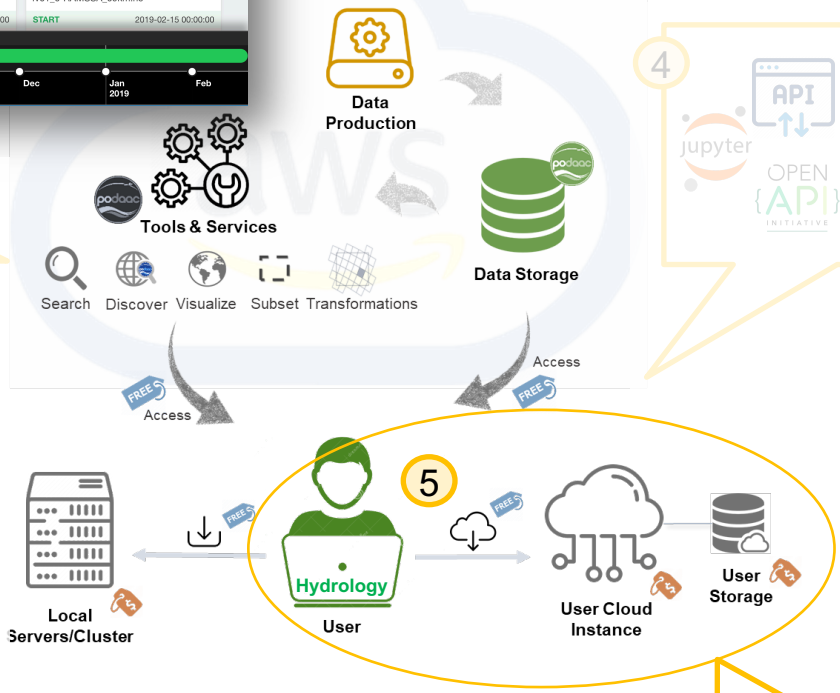


4 API-based **access** to metadata/data
Scripted Access: PO.DAAC Webservices 2.0

5 Access from User Cloud-based workspace, or View in GIS Client


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# Questions?

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https://podaac.jpl.nasa.gov/SWOT

https://podaac.jpl.nasa.gov/rss.xml