GROUP ON EARTH OBSERVATIONS

# OPEN DATA & OPEN KNOWLEDGE Workshop

National GEOs – Enabling Open Data access, sharing, and use Experiences from USGEO

*Nancy D. Searby, USGEO, United States on behalf of Cerese Albers, NASA, Dana Ostrenga, USGEO Data Management Working Group, Bob Downs, GEO Data Working Group and many others*

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United States Group on Earth Observations

## *Who we are*

Interagency committee enabling collaboration across agencies and coordinates engagement with the international community

Founded in 2005

16 US Federal departments and agencies and Components of the Executive Office of the President (EOP)

*Co-chairs* EOP: Office of Science & Technology Policy (OSTP)
Agencies: NASA, NOAA, USGS.

Broader USGEO community - private sector, non-profits, and academia

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***What we do***

Coordinate, plan, & assess federal Earth observations, research, and activities

**Foster improved Earth system data management and interoperability**

**Identify high-priority user needs for Earth observations data**

Formulate US positions for and coordinate engagement with regional and global GEOs

# National Plans for Civil Earth Observations

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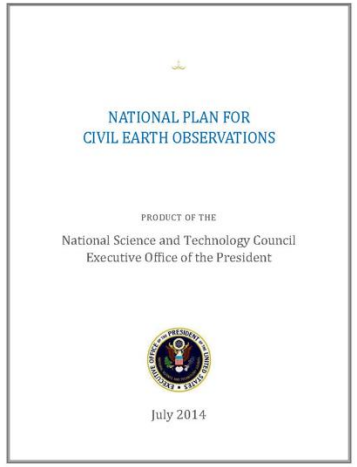
**National Plans:**
**2014**
**2019**
**c. 2023***

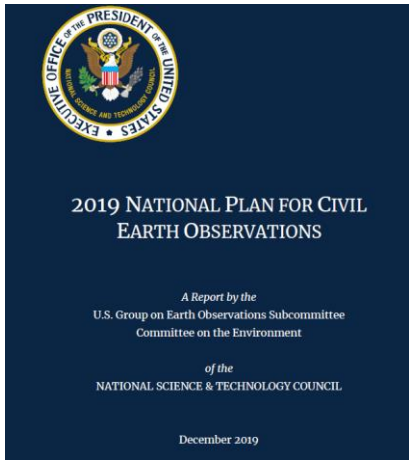
*2023 plan out for public comment soon

## 2014




*Introduced Framework of Sustained and Experimental Observations*

## 2019





### Goals

1. *Support & Balance the Portfolio of Earth Obs.*
2. *Engage the Earth Observations Enterprise*
3. *Improve the Impact of Earth Obs.*

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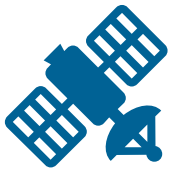
## *Working Groups & Task Teams*

**Details: https://usgeo.gov/**

***Assessments***



***Satellite Needs***

***Data Management***

***International Activities***

***Task Teams:***

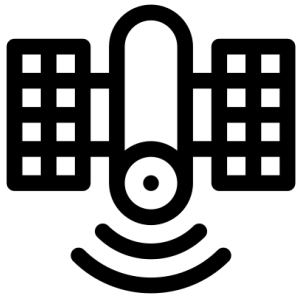
*EO Enterprise Engagement – completed 2020*
*Framework – completed 2021*
*Innovation (Incubators & Accelerators) – completed 8/2021*
*Wildfires Rapid Assessment – 2021-2022*
*Commercial Data – completed 9/2022*

# Satellite Needs Working Group (SNWG)

Through the Satellite Needs Working Group (SNWG), NASA coordinates with other U.S. Government satellite data providers including USGS and NOAA to identify, communicate, and address Earth observation needs of federal agencies.

SNWG surveys federal agencies every two years to identify what Earth observation data they need to fulfill their mission.

Started in 2016, the SNWG has identified and developed (or is actively developing) several data products and provided support for agencies looking to integrate existing products into their workflows.



**Learn More: earthdata.nasa.gov/esds/impact/snwg**

- 2016 cycle:
  - *Harmonized Landsat Sentinel-2 (HLS) surface reflectance products*
  - *Catalog of Archived Suborbital Earth Science Investigations (CASEI)*
- 2018 cycle:
  - *ICESat-2 quick look products*
  - *Observational Products for End-Users from Remote Sensing Analysis (OPERA)*
- 2020 cycle:
  - *Tropospheric Emissions: Monitoring Pollution (TEMPO) near real-time products*
  - *Harmonized Landsat Sentinel 2 (HLS)-derived vegetation indices*
  - *Expansion of Pandora Project air quality network and air quality forecasts*
  - *Merged atmospheric sounder/Global Navigation Satellite System (GNSS) radio occultation planetary boundary layer product*
- 2022 cycle:
  - *Assessment of submitted needs is in progress*

# Data Management Working Group

- Developing recommendations for EO Data Management in the Cloud as a follow-up to the Common Framework for Earth Observation. Goal is to tackle existing roadblocks and promote consistent approaches. Topics include:
  - Data Transfer
  - Metadata
  - Cloud Framework, Monitoring, Metrics
  - Application Development Metadata
  - Cost Management
  - Data Integrity
- Assessing the requirements for inter-agency commercial data buy repository focused on capturing the information around the commercial and private data purchased, licensing agreements, and usage requirements.
- US government's Federal Geographic Data Committee is in the process of updating our National Spatial Data Infrastructure (NSDI) Strategic Plan (see https://www.fgdc.gov/nsdi-plan/index_html)
- Part of the US government's open science efforts include adopting Creative Commons 0 (CC0) as the license for its data, which is a standard open data license recommended by GEO's new data licensing guidance.

# The United States White House announces

# 2023: A Year of Open Science

A multi-agency (15) initiative across the US Federal Government to spark change and inspire open science engagement through events and activities that will advance adoption of open science.

✦CDC✦DOC✦DOE✦State✦DoT✦GSA✦NASA✦NEH✦
✦NIST✦NOAA✦NSF✦Smithsonian✦USDA✦USGS✦

Products to date:

✦ 15 Agencies join 2023 A Year of Open Science, representing >$90B in science funding

✦ White House recognizes 2023 as Year of Open Science

✦ White House Fact Sheet

✦ Federal definition of open science

✦ 4 goals for A Year of Open Science

✦ Website: https://open.science.gov/

✦ Nature: https://doi.org/10.1038/d41586-023-00019-y

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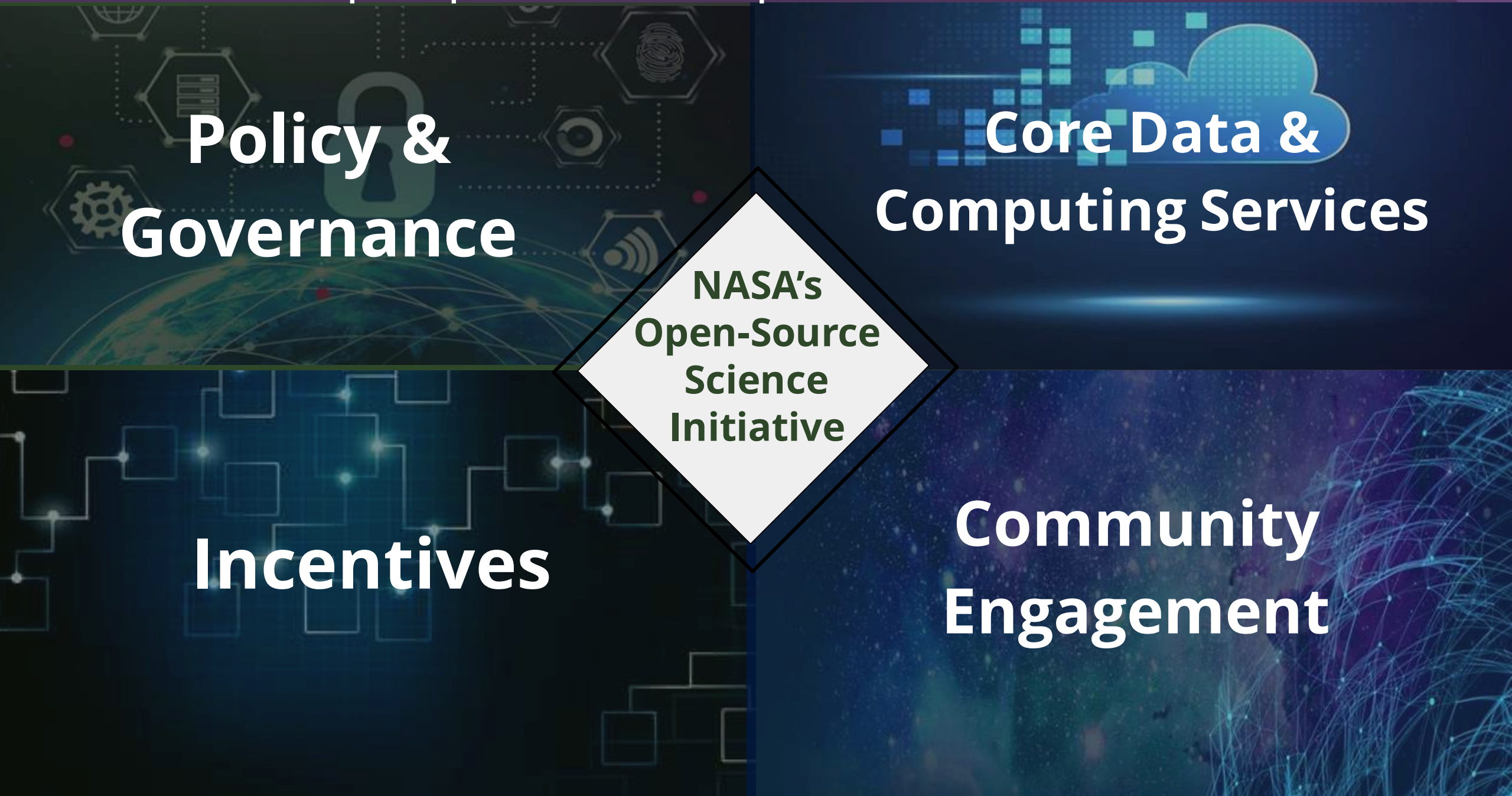
# NASA's method to put Open Science into practice



# NASA's Transform to Open Science (TOPS)

**A $40 million 5-year mission to accelerate adoption of open science**


Objectives:

- Increase understanding and adoption of open science principles and techniques
- Broaden participation by historically excluded communities
- Accelerate major scientific discoveries


Engagement

Resources

Incentives


Coordination

Learn more at: https://nasa.github.io/Transform-to-Open-Science/

# Why get a digital NASA Open Science Certification?

Designed to provide researchers with **core open science skills:**

- Know about open science tools and best practices (e.g. ORCID)
- Data/software management plans best practices & resources
- Grow connections across a community of open science practitioners

Open Science 101: A **community-developed** introduction to open science with inclusivity, accessibility, and diversity at the forefront.

## Enroll now !

# Open Science in Workforce Development

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NASA ARSET trainings and DEVELOP projects provide workforce development training and experiential learning opportunities to build skills and overcome barriers to apply Earth observations to individual and institutional environmental decision making.


## ARSET

- Offers free, online, and easily-accessible training opportunities including instruction using only open-source software and data that is open to the public
- Commonly used software, applications, and data portals include QGIS, Google Earth Engine, Earthdata, and AppEEARS
- Provides training materials (presentations, exercises, and assignments) in English and Spanish
- All ARSET content is open and available for reuse and can be adapted in a variety of formats (MOOCs, LMS, etc.)

**Details at https://appliedsciences.nasa.gov/what-we-do/capacity-building/arset**

## DEVELOP

- Offers participants in USA paid 10-week experiential learning opportunities to build skills in the application of EO
- Project portfolio of 50+ annual projects builds awareness of the capabilities of EO applications
- Offers Software Carpentry workshops to its participants and partners to enhance coding skills
- Projects methodologies are replicable in different geographies and by other organizations
- Project deliverables are all publicly available through the NASA Technical Reports Server (NTRS) archive

**Details at https://appliedsciences.nasa.gov/what-we-do/capacity-building/develop**

# SERVIR Embodies Principles of Open Science

## SERVIR's co-development approach in 4 thematic service areas is:

**Transparent** — SERVIR cultivates a strong GitHub presence and a focus on sharing data, methods, and results

**Accessible** — Services are **demand-driven** and **co-developed** with regional experts

**Inclusive** — SERVIR regularly engages **women**, **indigenous groups** and **youth**

**Replicable** — SERVIR prioritizes trainings and resources to strengthen capacity and foster sustained capabilities

## Open Science enables scaling and global uptake:

- Expanding and tailoring **GEOGLAM** Crop Monitor
- Open access to water data via **GEOGloWS**
- **Collect Earth Online**
- **Replicating Flood Mapping in SE Asia** (HYDRAFloods):

- Detailed **documentation** and **open code** on GitHub
- Peer-reviewed results in **open access journals**
- Capacity building in region and in partnership with the University of Twente (ITC), and GEO for Good

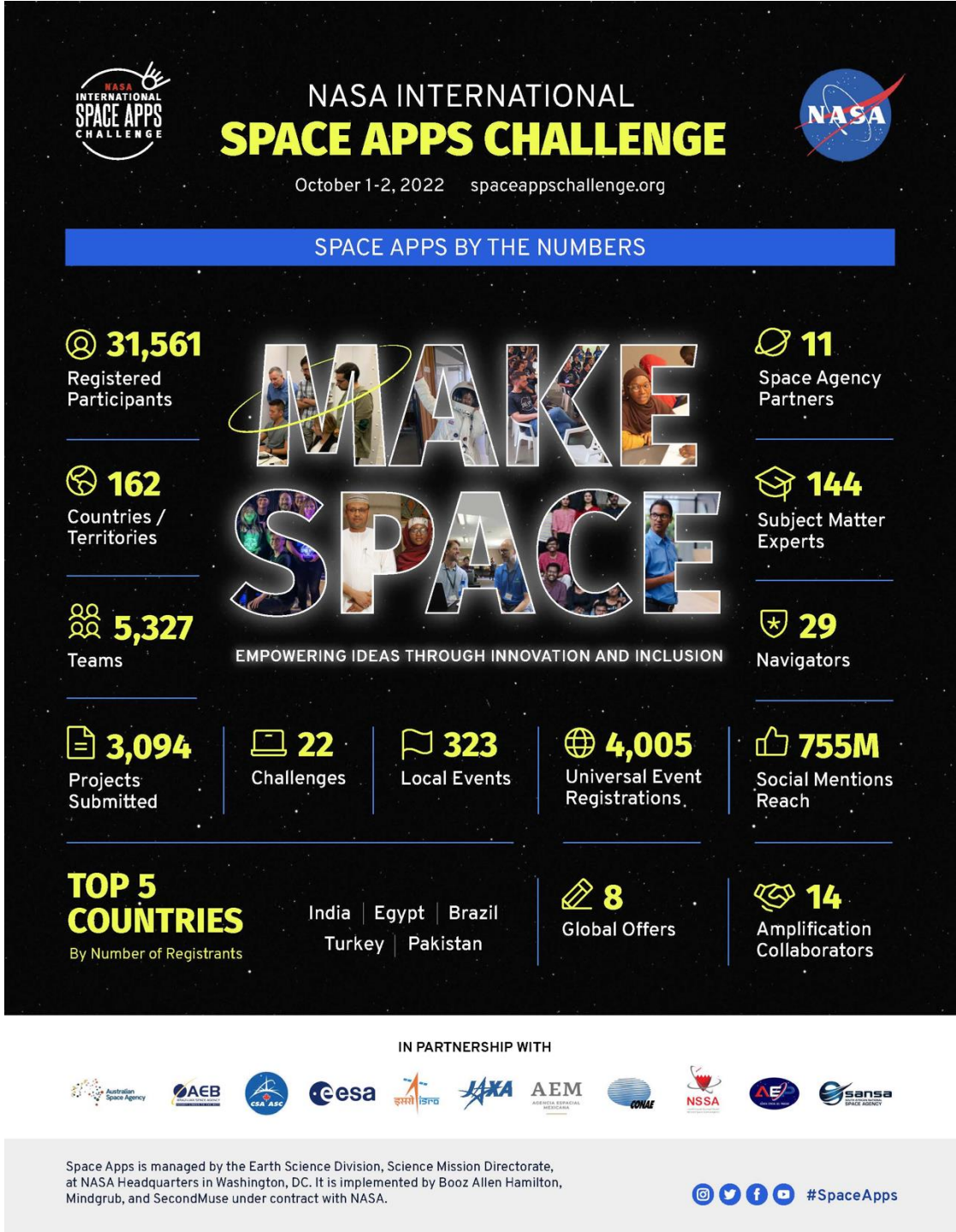
# Open Science in Crowdsourcing

Prizes and Challenges engage solution-seekers from different disciplines and backgrounds around the world in utilizing NASA's open data and resources to investigate real-world questions with us.

## SPACE APPS CHALLENGE

- Largest annual global hackathon on Earth
- Goals: raise awareness of open data and open science; inspire creativity and collaboration; foster interest in Earth, space science; nurture interest in STEAM within the next generation.
- Participants are 30,000+ coders, scientists, designers, storytellers, business people, makers, builders, technologists … no matter their background, age, or skills.
- **Taking place October 7-8, 2023 at any of the 300+ local or in-person events worldwide**

Details at [www.spaceappschallenge.org](http://www.spaceappschallenge.org)



# CONTACT DETAILS

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Thanks!