Satellite-based research - Geo-Science

Chris Atherton
Research Engagement Officer
EAPEC 2019
YEREVAN, ARMENIA

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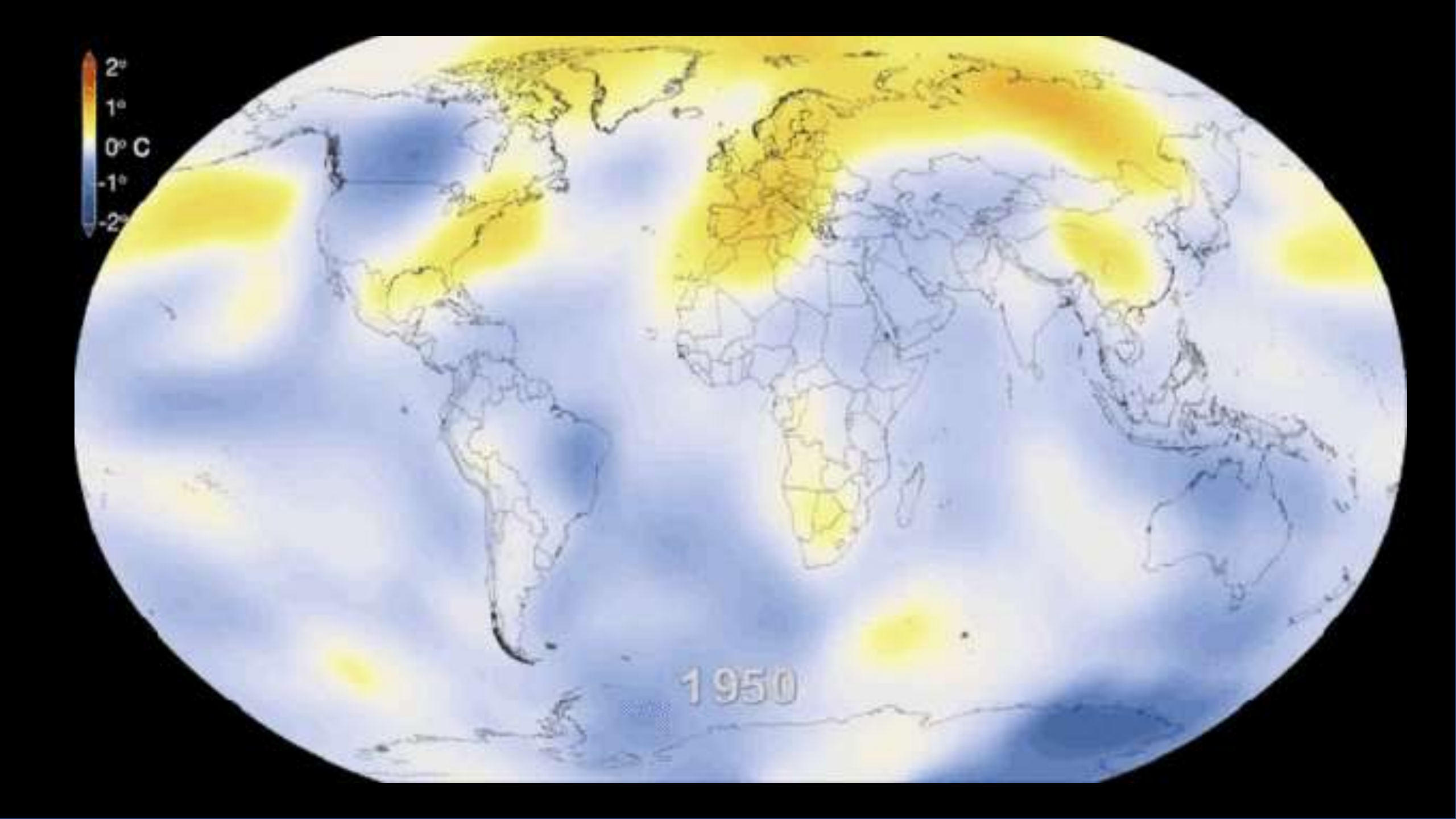
So what?

3 Big challenges

Arul Sea


2°
1°
0° C
-1°
1950

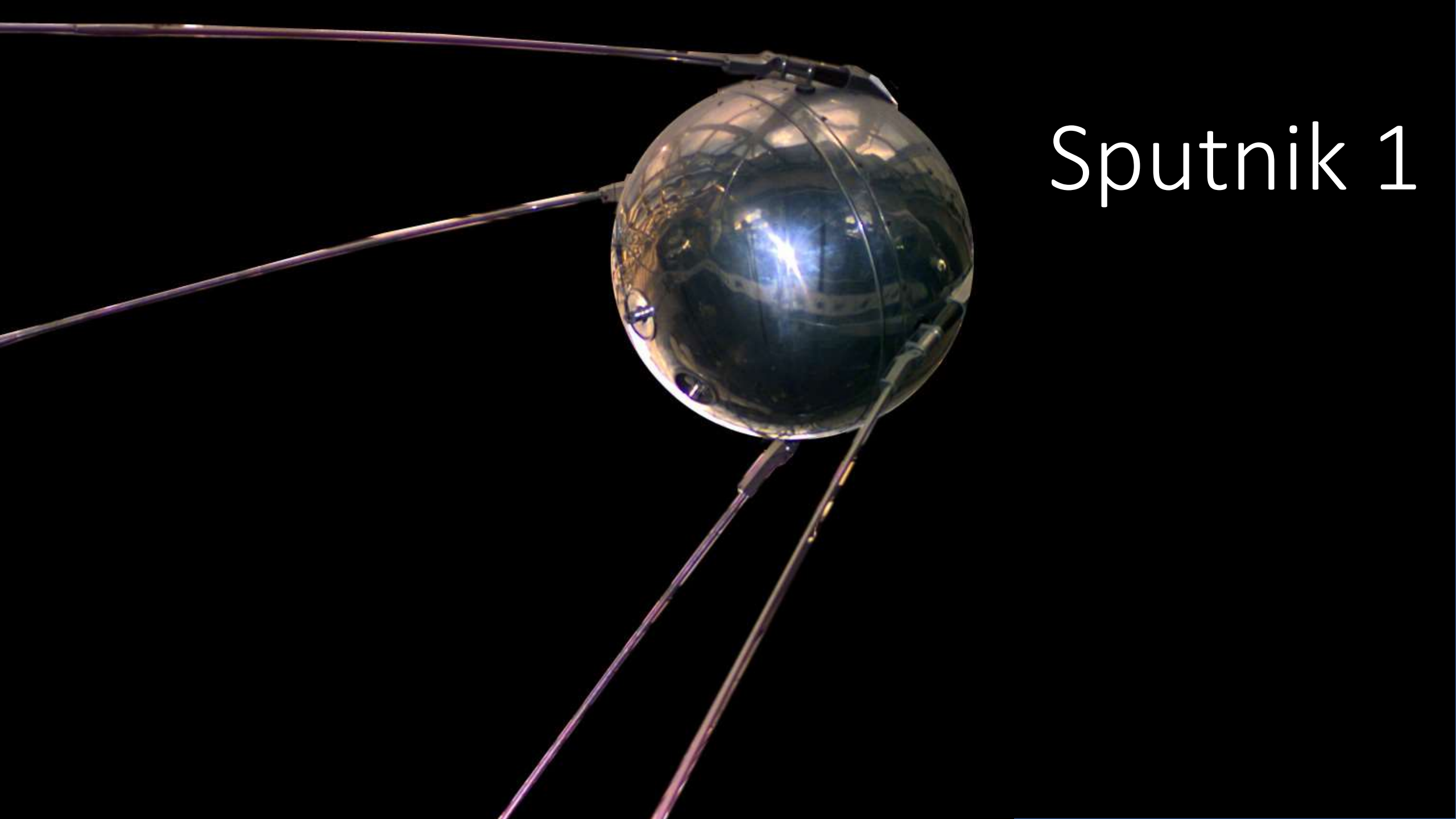
Better Information
=
Better decisions

“Everything even down to the smallest detail on the Earth's surface could be detected from space…”

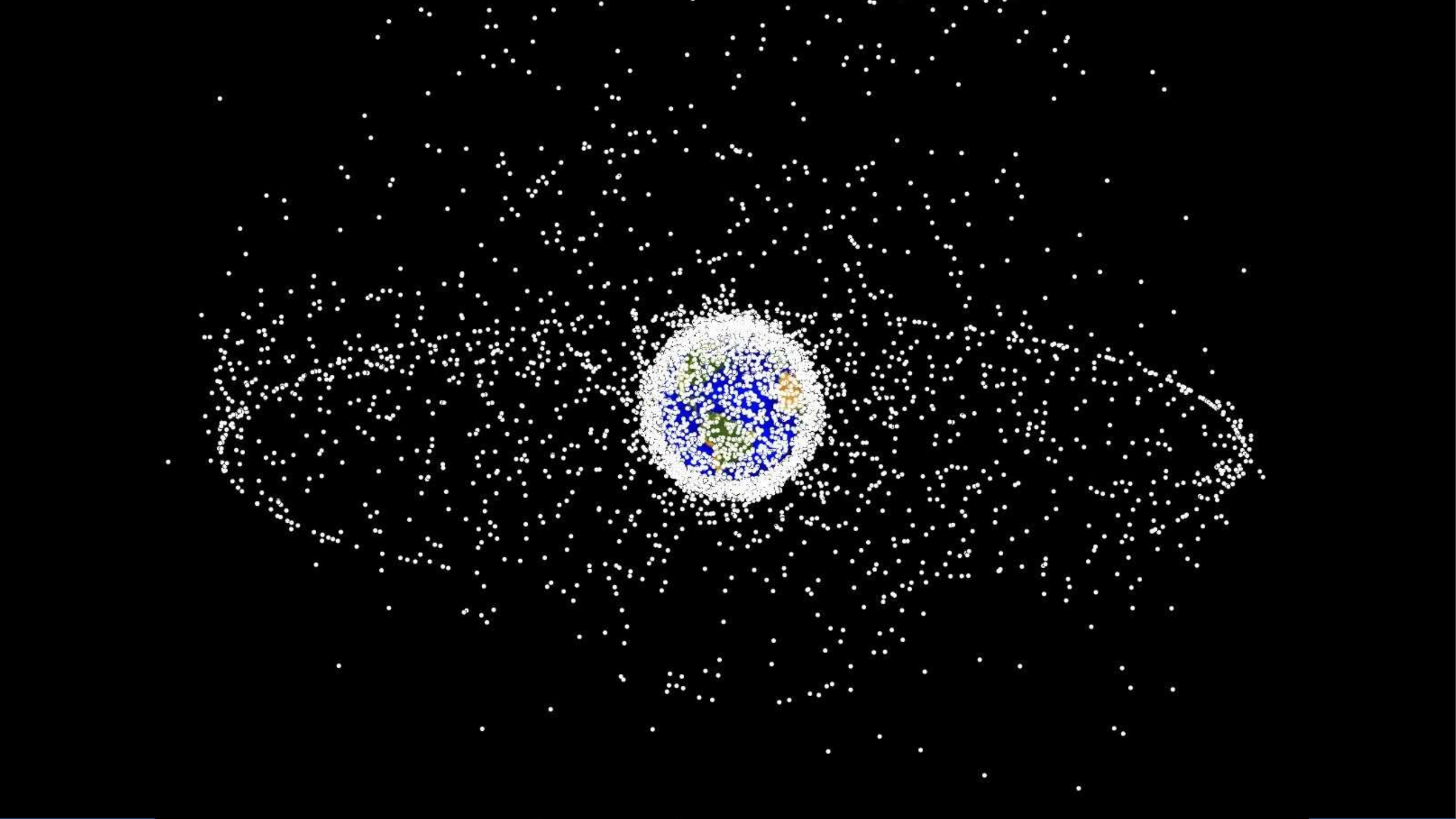
The problem of space travel
1928

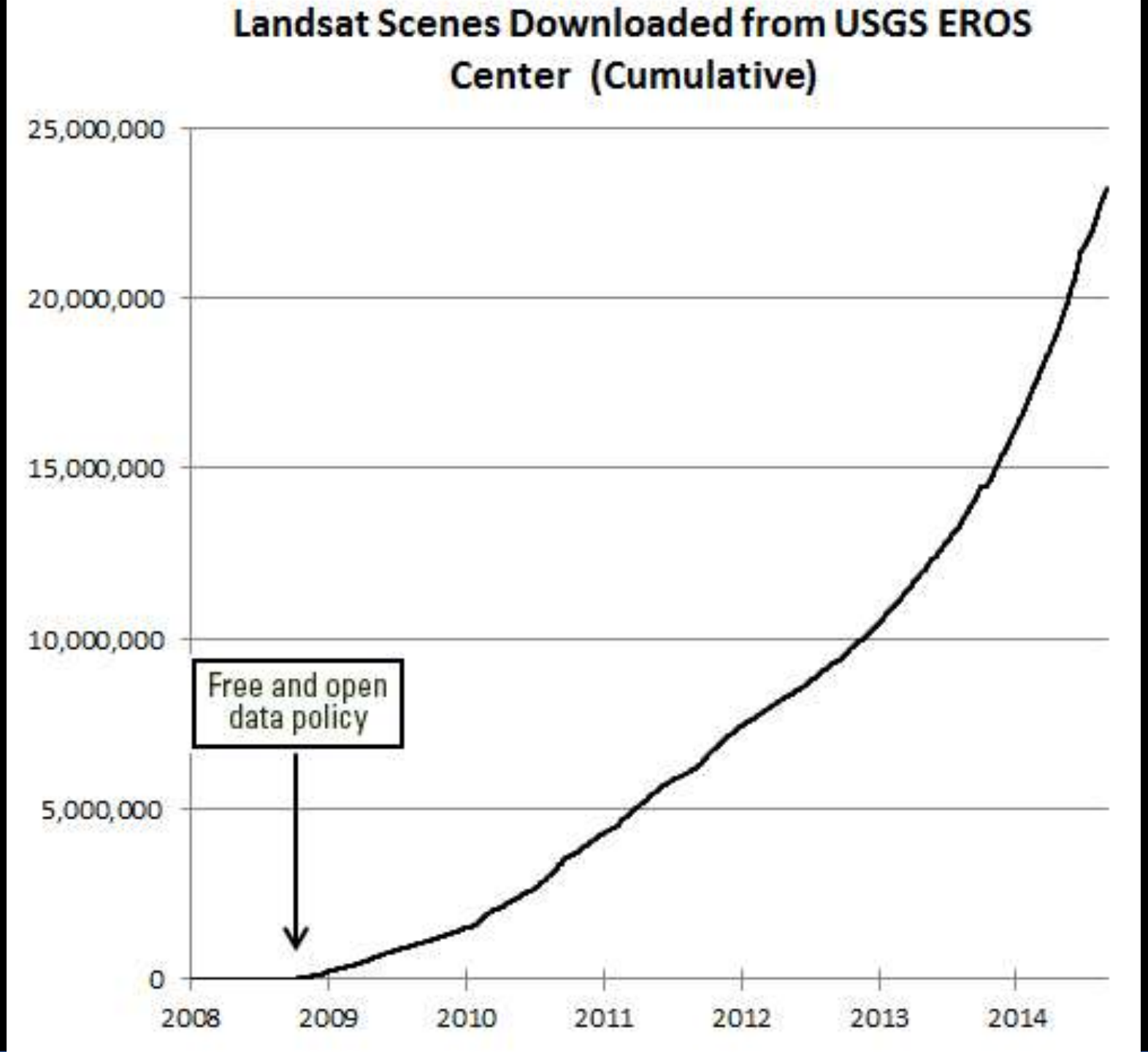
Herman Potočnik

1892 – 1929
Vienna

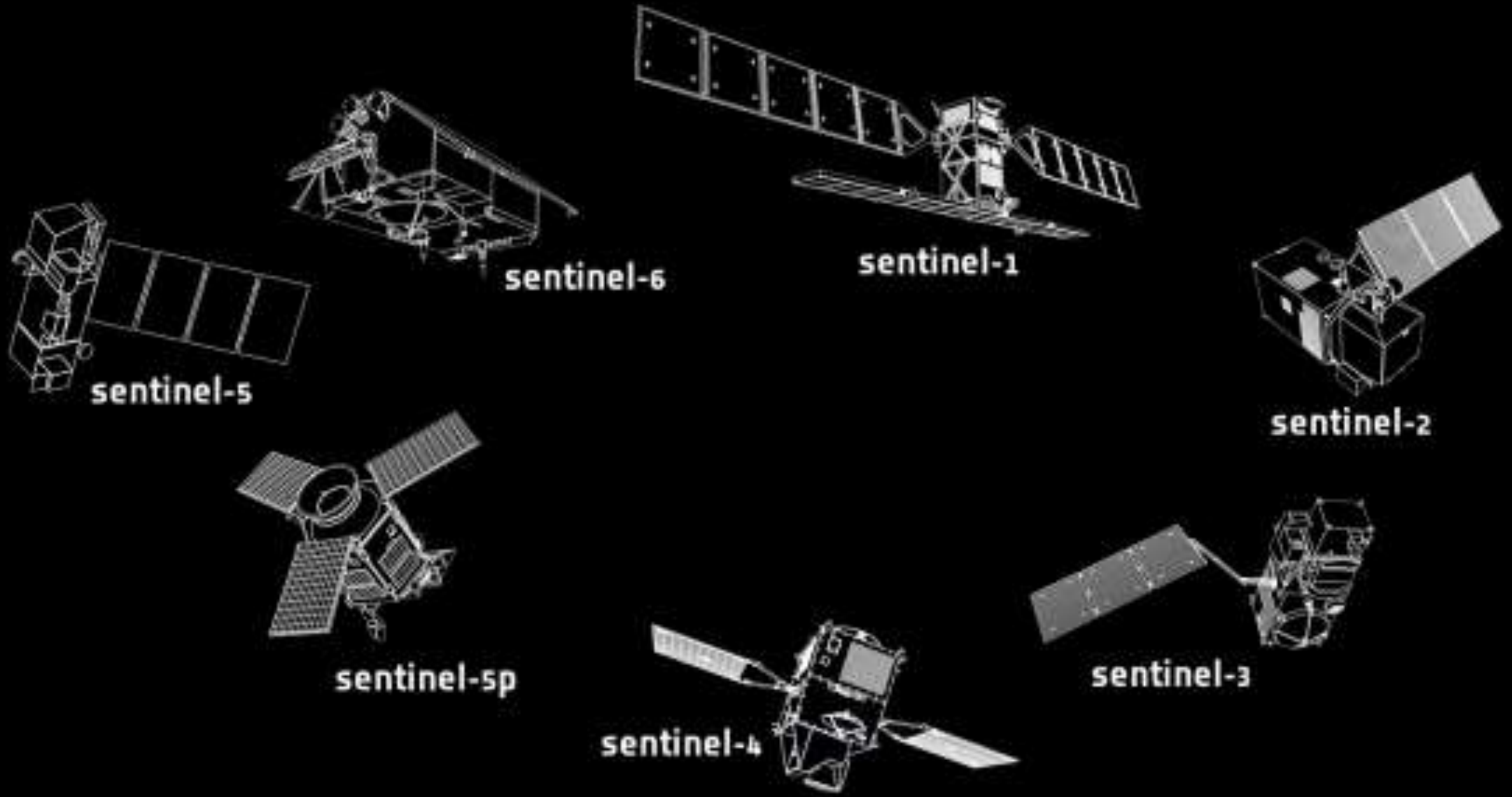


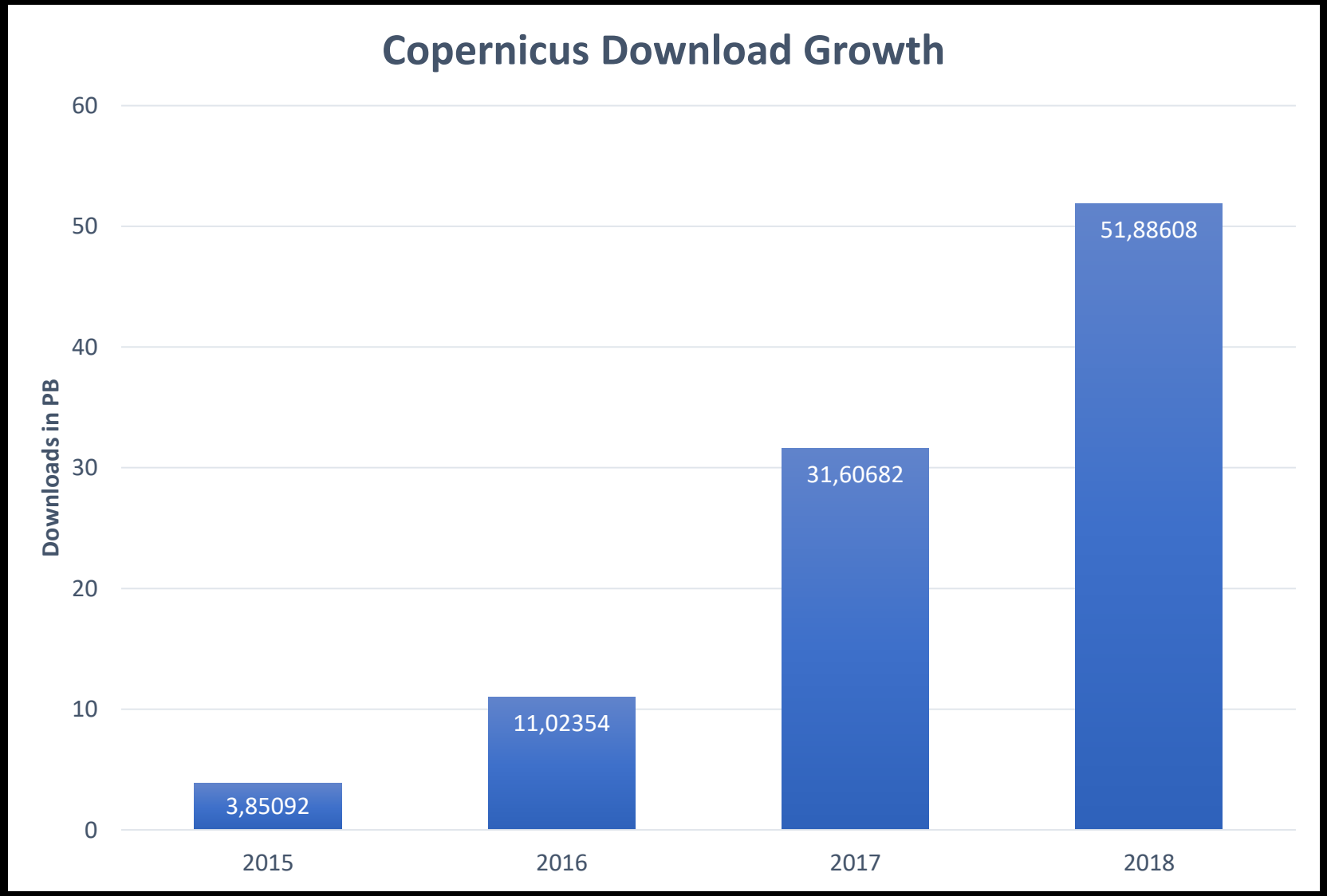
Sputnik 1



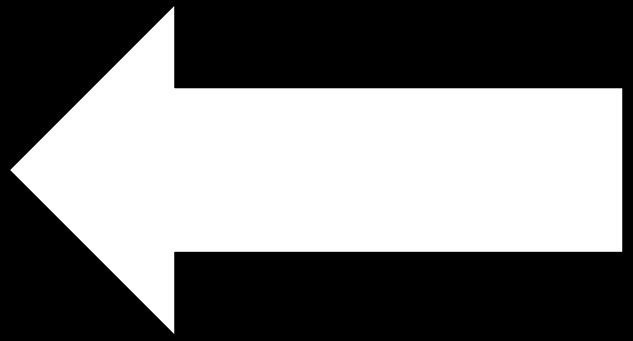

Landsat Scenes Downloaded from USGS EROS Center (Cumulative)
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
Free and open data policy
2008
2009
2010
2011
2012
2013
2014


FULL, FREE AND OPEN
ACCESS TO DATA
ATMOSPHERE MONITORING
MARINE ENVIRONMENT MONITORING
LAND MONITORING
CLIMATE CHANGE
EMERGENCY MANAGEMENT
SECURITY
opernicus
Europe's eyes on Earth

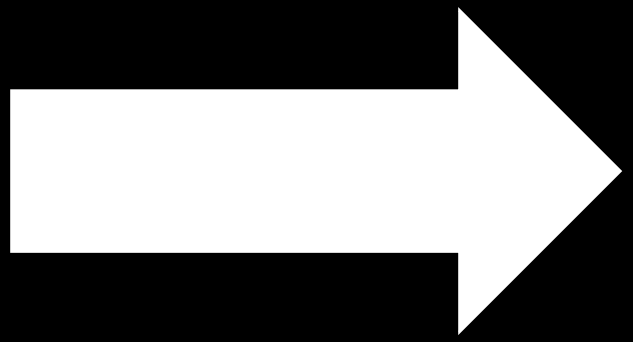

sentinel-6
sentinel-1
sentinel-5
sentinel-2
sentinel-5p
sentinel-3
sentinel-4

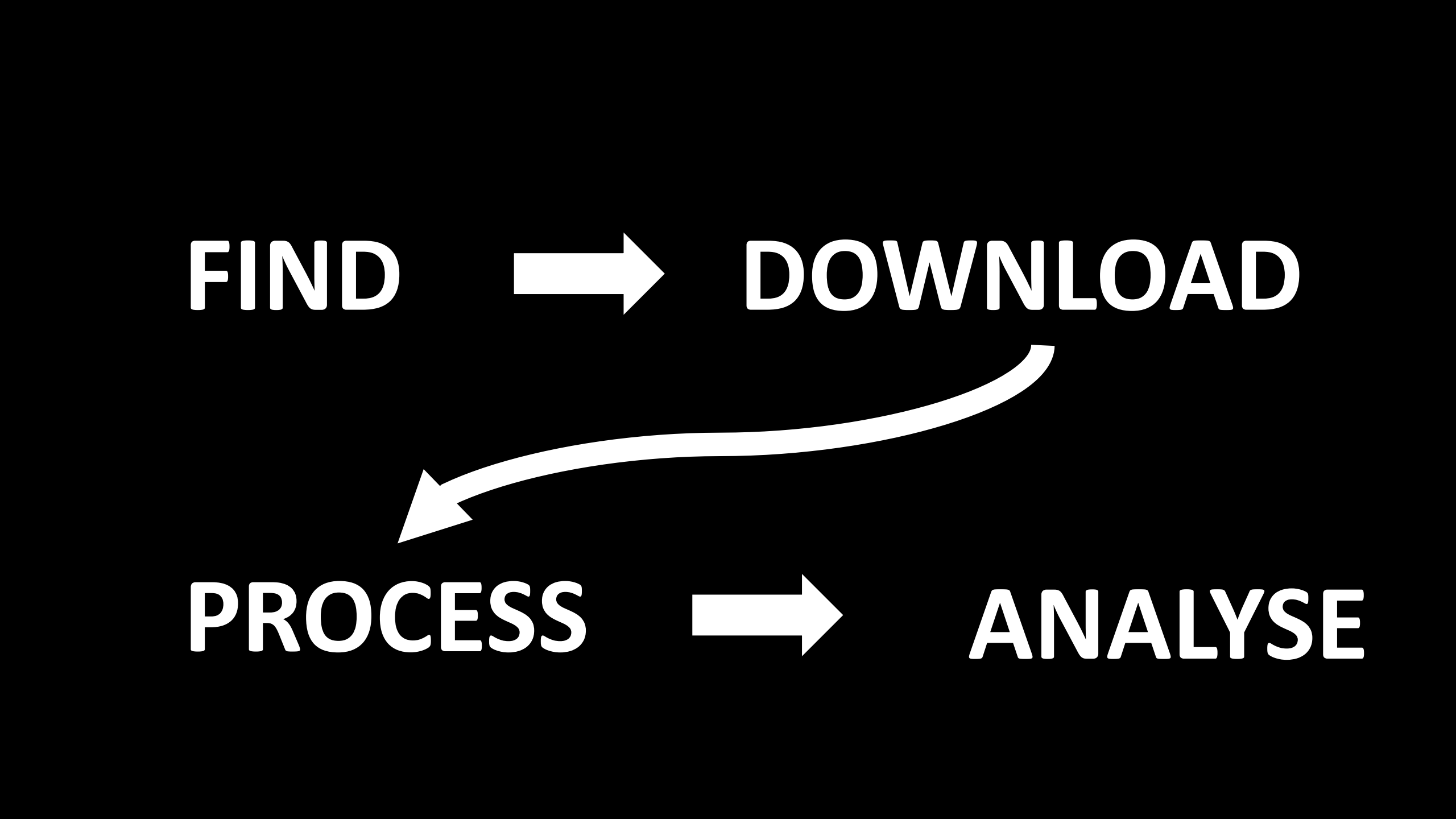

Copernicus Download Growth
Downloads in PB
60
50
40
30
20
10
0
3,85092
11,02354
31,60682
51,88608
2015
2016
2017
2018

Old way of EO



New way of EO




FIND
DOWNLOAD
PROCESS
ANALYSE

FIND

- Open access Hub
- Collaborative hub
- DIAS

DOWNLOAD

Open Access hub

SCIHUB.COPERNICUS.EU

PROCESS

Download SNAP

step.esa.int/main/download

ANALYSE

Free resources online

User guides

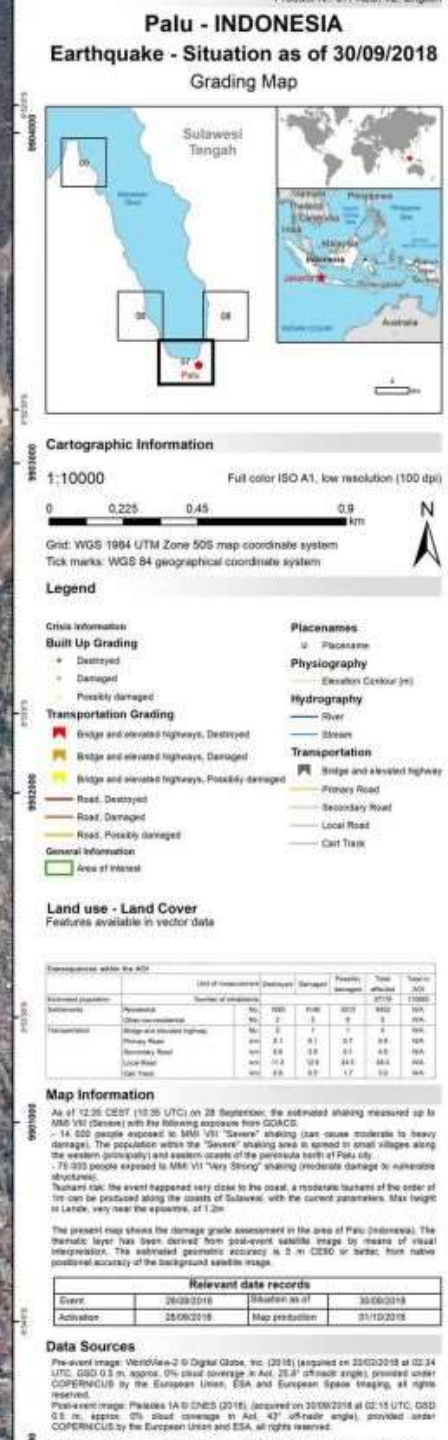
Collaborative hubs

DIAS

Data and systems getting better

We’re not there yet!

EARTHQUAKES



Palu - INDONESIA

Earthquake - Situation as of 30/09/2018

Grading Map

Cartographic Information

1:10000

Full color ISO A1, low resolution (100 dpi)

0 0,225 0,45 0,9 km

N

Grid: WGS 1984 UTM Zone 50S map coordinate system

Tick marks: WGS 84 geographical coordinate system

Legend

Crisis Information

Built Up Grading

Destroyed

Damaged

Possibly damaged

Transportation Grading

Bridge and elevated highways, Destroyed

Bridge and elevated highways, Damaged

Bridge and elevated highways, Possibly damaged

Road, Destroyed

Road, Damaged

Road, Possibly damaged

General Information

Area of interest

Placenames

Placename

Physiography

Elevation Contour (m)

Hydrography

River

Stream

Transportation

Bridge and elevated highway

Primary Road

Secondary Road

Local Road

Cart Track

Land use - Land Cover

Features available in vector data

Map Information

As of 12:35 CEST (10:35 UTC) on 28 September, the estimated shaking measured up to MMI VIII (Severe) with the following exposure from GDACS:

- 14 000 people exposed to MMI VIII "Severe" shaking (can cause moderate to heavy damage). The population within the "Severe" shaking area is spread in small villages along the western (principally) and eastern coasts of the peninsula north of Palu city.
- 75 000 people exposed to MMI VII "Very Strong" shaking (moderate damage to vulnerable structures).

Tsunami risk: the event happened very close to the coast, a moderate tsunami of the order of 1m can be produced along the coasts of Sulawesi, with the current parameters. Max height in Lande, very near the epicentre, of 1.2m

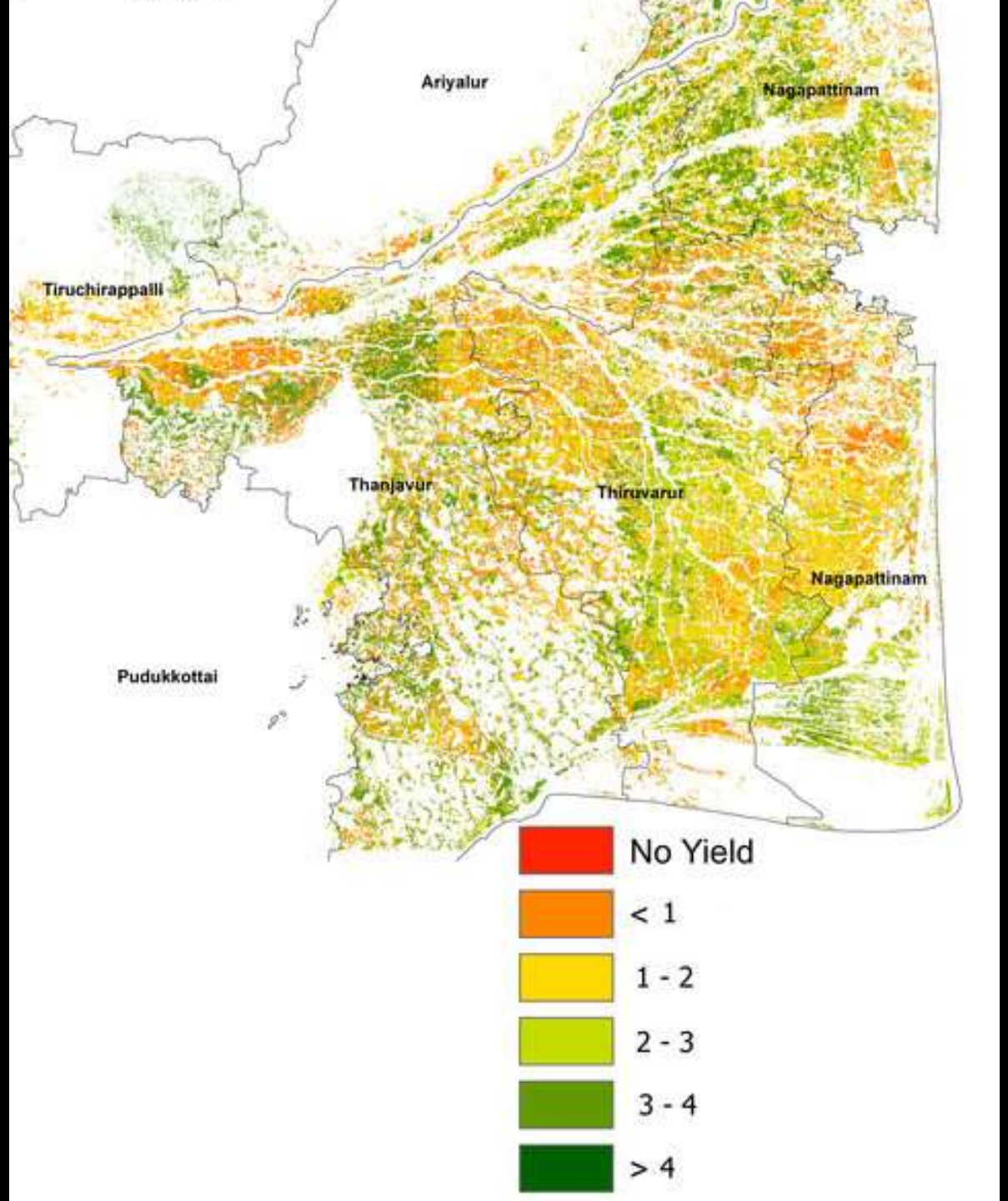
The present map shows the damage grade assessment in the area of Palu (Indonesia). The thematic layer has been derived from post-event satellite image by means of visual interpretation. The estimated geometric accuracy is 5 m CE90 or better, from native positional accuracy of the background satellite image.

Relevant date records			
Event	28/09/2018	Situation as of	30/09/2018
Activation	28/09/2018	Map production	31/10/2018

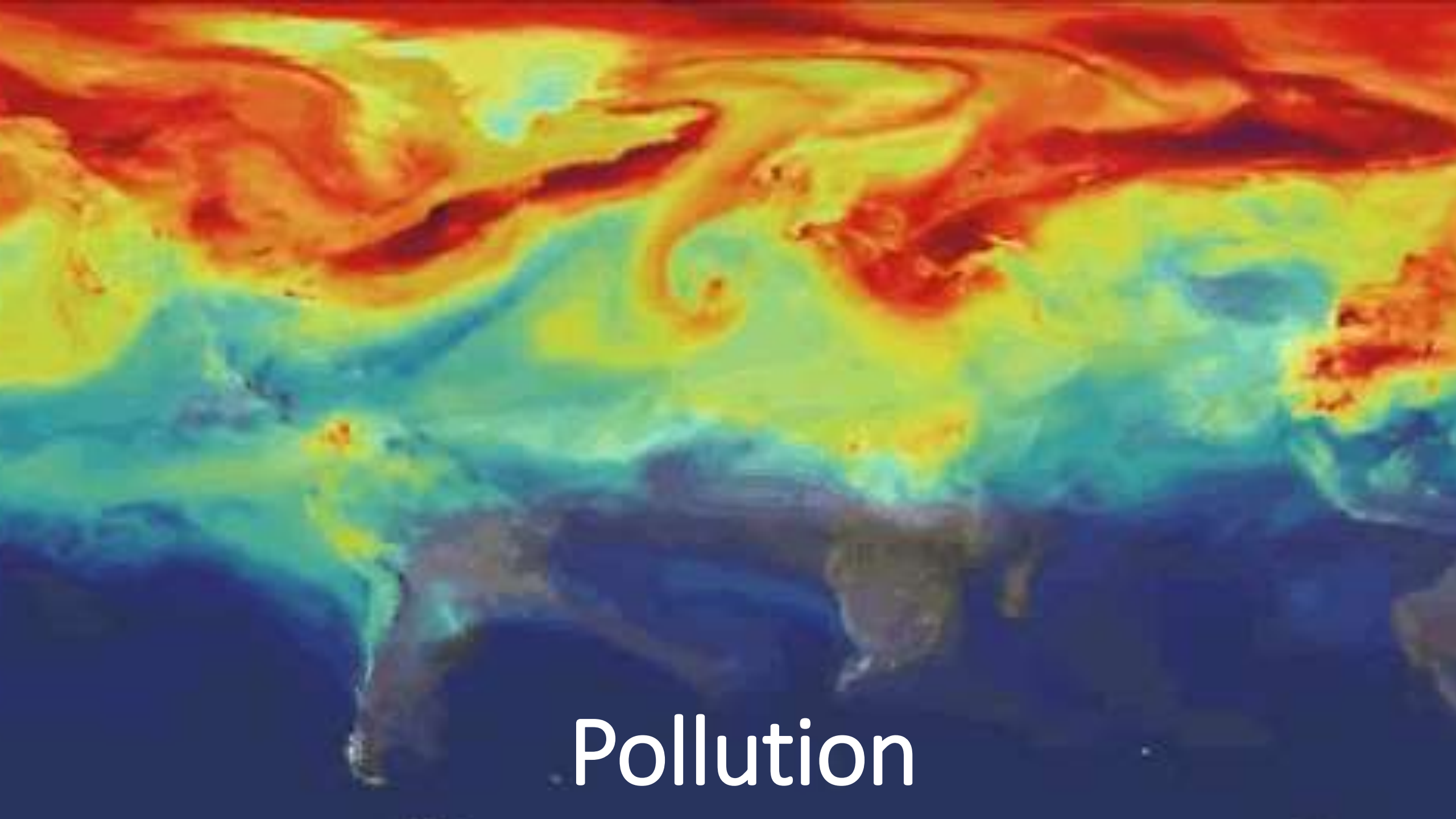
Data Sources

Pre-event image: WorldView-2 © Digital Globe, Inc. (2016) [acquired on 20/02/2018 at 02:34 UTC, GSD 0.5 m, approx. 0% cloud coverage in Act, 25.8° off-nadir angle], provided under COPERNICUS by the European Union, ESA and European Space Imaging, all rights reserved.

Post-event image: Pléiades 1A © CNES (2018), [acquired on 30/09/2018 at 02:15 UTC, GSD 0.5 m, approx. 0% cloud coverage in Act, 43° off-nadir angle], provided under COPERNICUS by the European Union and ESA, all rights reserved.

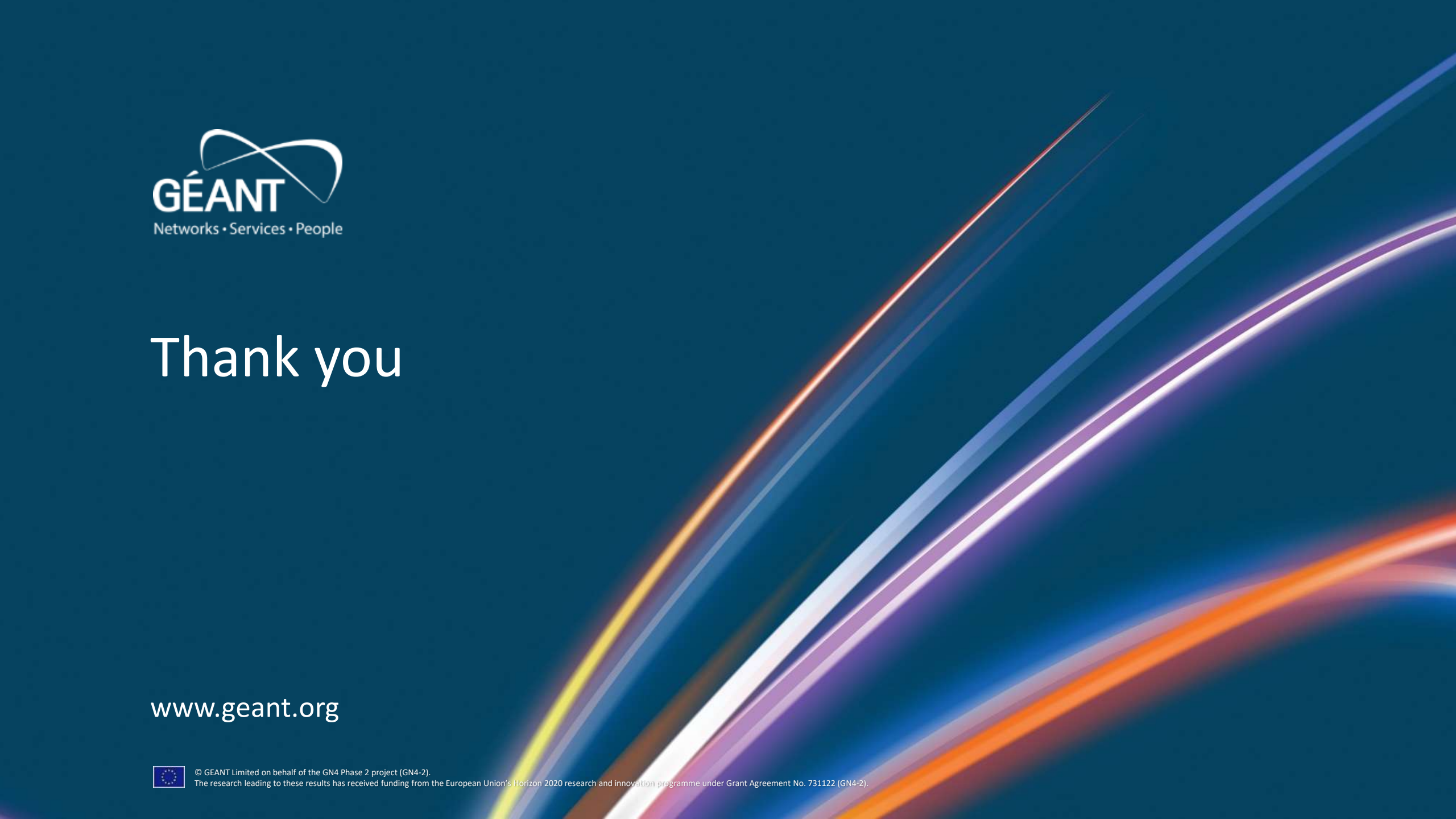

Ariyalur
Nagapattinam
Tiruchirappalli
Thanjavur
Thiruvarur
Nagapattinam
Pudukkottai
No Yield
< 1
1 - 2
2 - 3
3 - 4
> 4

Crop Yield



Pollution

An opportunity



Thank you

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