

# **EO** for Society

Yves-Louis Desnos et al

**Data Applications Division** 

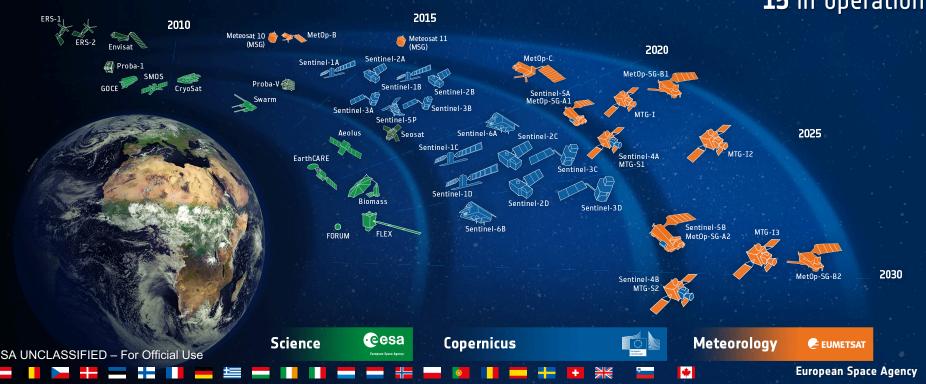
10 March 2020

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## **ESA-Developed Earth Observation Missions**

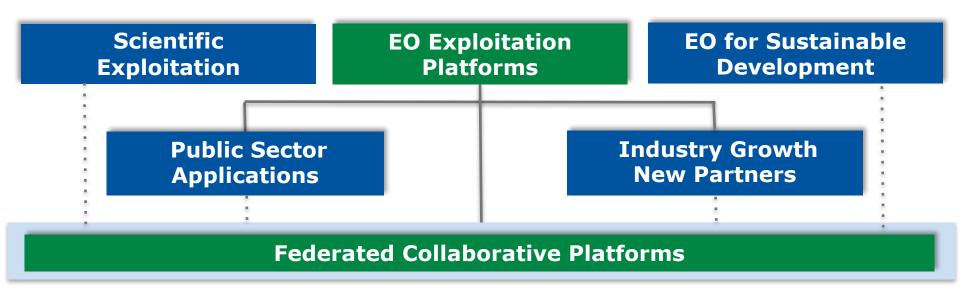


**Satellites 25** under development **15** in operation



#### **EOEP5 - EO Science for Society - Key Components**





**New:** Some 10% of the total budget will be assigned via **open calls** to support industry/users initiatives.

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#### How we work?

# esa

#### Interaction and animation of the user community





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ESA/PB-EO(2019)65, rev.1 Att.: Annex 1 Paris, 4 December 2019 (Original: English)

#### EUROPEAN SPACE AGENCY

EARTH OBSERVATION PROGRAMME BOARD

#### Earth Observation Envelope Programme

EOEP-5 - Development and Exploitation Component

Work Plan for 2020

#### Summary

In accordance with the procedure outlined in the Programme Implementing Rules, Programme Participants will find, for approval, the draft work plan for the activities to be carried out in 2020 under the Development and Exploitation (D&E) component of the Fifth Period of the Earth Observation Envelope Programme. This document is built on the Elements of the work plan presented at the 179<sup>th</sup> PB-EO meeting (ESAPPS-EO(201945)

The proposed D&E work plan for 2020 is in line with the specific objectives of the fifth period of the Programme (as per Declaration) and consistent with the orientations provided in the EOEP-5 Implementation Plan (ESA/PB-EO(2017)18).

The present revision takes into account the comments provided by DOSTAG (see T/C on pages 19 and 20), which otherwise positively reviewed the draft.

#### Required Actions

Participating States to EOEP-5 are invited to approve the draft EOEP-5 D&E work plan for 2020.

#### Majority required and Voting Rights

In PB-EO, simple majority of the Participants to EOEP-5 (AT, BE, CZ, DK, EE, FI, FR, DE, GR, HU, IE, IT, LU, NL, NO, PL, PT, RO, ES, SE, CH, UK, SI and CDN), representing at least half of the contributions to the programme period.

#### Legal Rasis

- Art 2 ( c ) of the EOEP Implementing Rules, ESA/C/CXL/Rules 1, rev.5 (final)
- DOSTAG ToR, bullet e), ESA/PB-EO(2010)129
- PB-EO ToR, bullet 1, ESA/C(98)41

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**European Space Agency** 

#### What we do



MISSION: Foster EO data exploitation to advance earth science, pioneer new applications, develop downstream sector using latest ICT tools and collaborative platforms in the Space 4.0 era

- Maximize scientific impact of Sentinels & Earth Explorers
- Pioneer new applications and engage new users
- Engage with downstream industry to foster use of EO data
- Develop & Exploit EO Platforms ecosystem
- Pioneer and Consolidate Regional Initiatives
- Promote and develop international cooperation initiative



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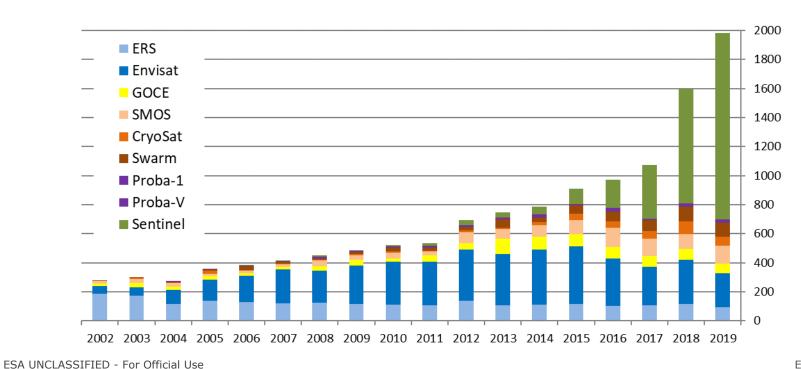


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### **Scientific Impact**



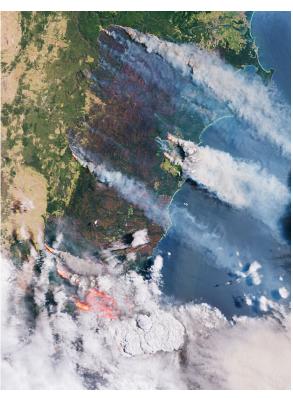
#### Number of scientific publications (SCOPUS database)



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### **AUSTRALIA BUSHFIRES from S2-S5P and S3**









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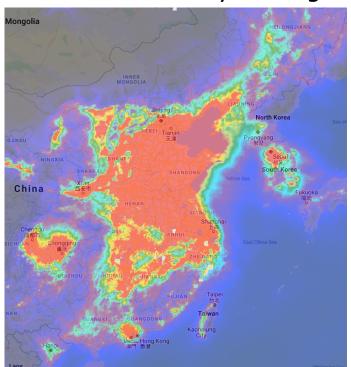




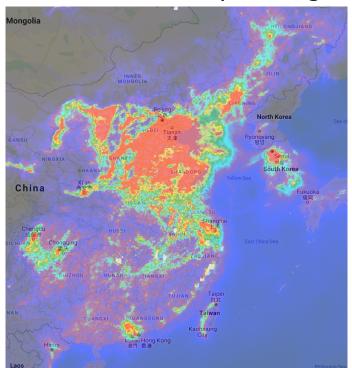
### Nitrogen Dioxide (NO2) over China

### **Copernicus Sentinel-5p Data**

Jan 2019 monthly average



#### Jan 2020 monthly average



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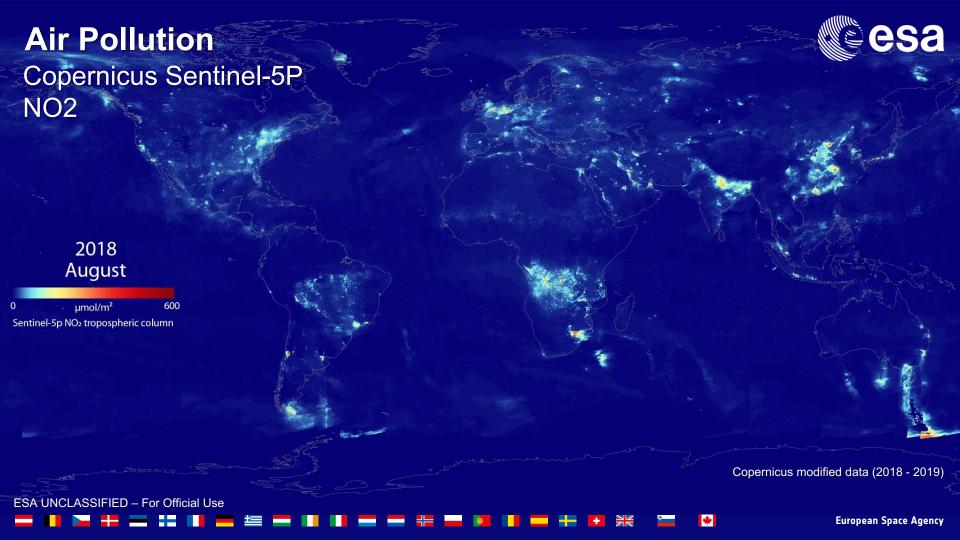














#### **HIGHLIGHTS**



**European Space Agency** 

- The Living Planet Symposium 2019 (lps19.esa.int) took place successfully in Milan, 13-17 May, ESA and ASI. 3064 Scientific Papers from 64 countries, 1120 oral and 1944 poster presentations, 187 sessions in 11 parallel rooms, 526 worldwide scientists involved in the review, Over 4200 participants (34% LPS16) from 80 countries worldwide, Over 2100 kids and teenagers as part of the Educational Programme
- Φ-Week 2019 9-13 September 2019: with ~600 Participants from 34 countries, 3990 online views for the web streaming, 150 Poster and 78 Oral presentations, 22 side events, 23 Exhibitors and 143k Twitter impressions.

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# AI focus -> Phi week in numbers

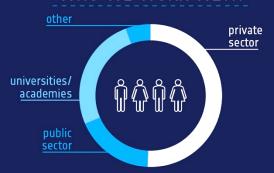




## **EOEP Block 4 dashboard**



#### WHO WE WORK WITH





#### INNOVATION





#### FOCUS ON SMES



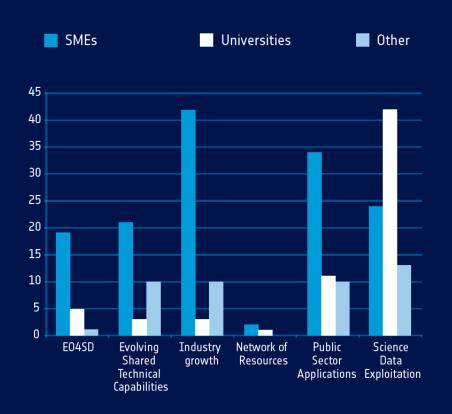
of industrial contractors are SMEs

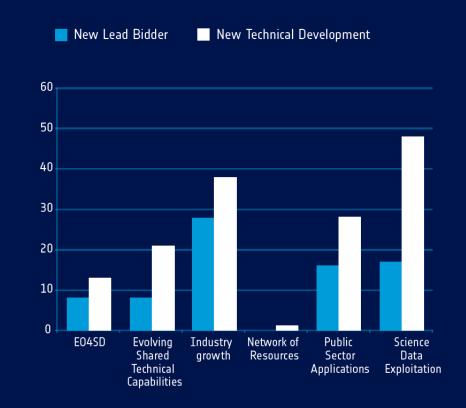
of all industrial spend with SMEs



### Dashboard 2: further breakdown over domain areas







TYPE OF LEAD BIDDER PER DOMAIN

NEW ACTORS/ACTIVITY PER DOMAIN

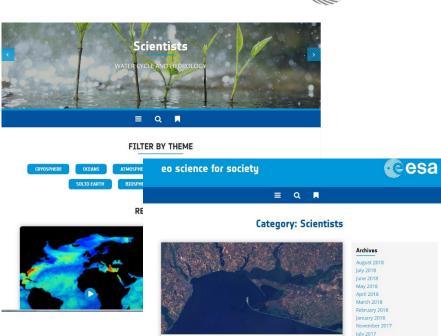
#### **New website**

### eo4society.esa.int









EO Industry Invitations to Tender Regional Initiatives Scientists

Intended Invitation to Tender: "Black

Sea and Danube Regional Initiative -

This Activity aims at contributing to the new ESA Black Sea and Danube Initiative, with the ultimate goal to foster a coordinated approach to advance

EO-based science, novel applications and data exploitation infrastructures

serving the specific needs of the Black Sea and Danube basin community through a strong collaboration among institutions and related national and ...

Science"

March 2017

agriculture alps

applications atmosphere blosphere

black sea and danube carbon cycle

climate change coastal zone

ecosystems/vegetation EGU GFT

Tags



## **Block 4 – Earth Science for Society**

esa

- Grand Science Challenges (with EC/RTD)
- Resilient Society bring EO Solutions for environmental threats, adaptation and SDG
- Regional Initiatives (Applications and Platforms)
- Pioneer Artificial Intelligence for EO (AI, Blockchain, Big Data)
- Exploit HAPS
- EO AFRICA (users engagement & uptake of EO solutions)
- Develop Civilian Security Applications
- 10% of budget via Open Call to foster innovative projects













# Earth Science for Society



# Exploit leading European EO Capabilities to further realize full potential for the benefit of citizens

- Extending Europe's World-leading EO expertise and competitive advantage;
- Building on Europe's EO ecosystem to address societal needs and global challenges;
- Responding to current and emerging needs of authoritative scientific and operational user communities and downstream industries;
- Seeding, Complementing, cross-fertilizing and enriching relevant activities of ESA MS national programmes, Horizon Europe, Copernicus and other European funding;
- Leveraging and supporting Space 4.0 drivers such as NewSpace actors, Artificial Intelligence, "Big Data" capabilities and Citizen Science;





















# EO Solutions for a Resilient Society: Environmental Threats - Impact



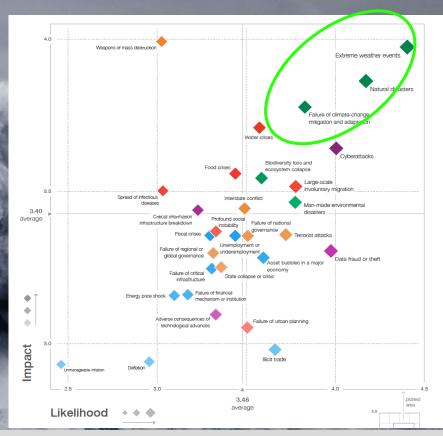


The 5 risks that will have the biggest impact in the next 10 years

	rank
Weapons of mass destruction	1
Extreme weather events	2
Natural disasters	3
Failure of climate change mitigation & adaptation	4
Water crises	5

Source: Global Risks Perception Survey 2017-2018, World Economic Forum

Global risks and trends Copyright World Economic Forum 2018 (https://www.weforum.org/reports/the-global-risks-report-2018)





































Return on European EO Investments

For every

£1 invested

Copernicus

€ 93-191billion (2017-35)

€1 → €10

Meteorology (MetOp-SG) € 16-63 billion (2020-40)

up to €4 return in FutureEO