

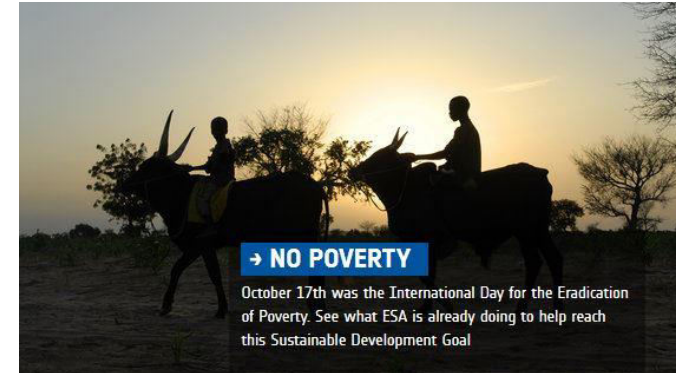
# ESA Catalogue of activities supporting UN SDGs

Isabelle Duvaux-Béchon, Head of Member States Relations & Partnerships Office, ESA

UN/Austria symposium, 5 September 2017, Graz, Austria

# Addressing the global challenge of sustainable development

- Supporting ESA Member States and stakeholders to :
  - in the long-term, support the **economic development** and stability of the countries of origin, transit or destination of migrants (supporting the UN Resolution on the 2030 Agenda for Sustainable Development)
  - Wherever possible, address **migration flows** to alleviate human suffering and avoid loss of life
- By:
  - Identifying the potential users
  - Better promoting our assets
- In view of
  - Using more efficiently assets developed with public funds
  - Identifying new lines of action

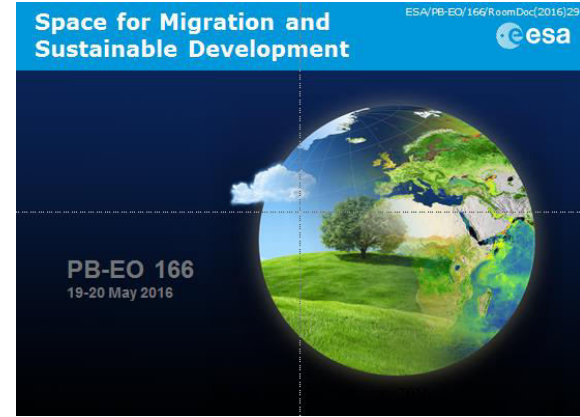


# The idea of a “Coordination Platform”

- The issue of sustainable development (and migration in many cases) is **a top concern** as confirmed at Council at Ministerial level in December 2016
- **“Users”** on the ground are often **unaware** of what space can offer, or of the applications available.
- Many **activities and services already available** in approved programmes
- In 2016 ESA proposed to MS a non binding **“Coordination Platform for the Use of Space Technologies to support Sustainable Development Goals (including Migration)”**
- Proposing a “window” (a catalogue) to **facilitate the identification** of what may be offered and **promote collaboration** between space agencies, operators and service providers

# The project presented in 2016

- The idea was presented to and discussed at ESA Council and Boards concerned
- As the concept was new, there was a wish expressed at that time to better understand what it could be, the political nature (or not) of the project and the commitment for ESA
- Request by MS in Council (June 2016) that ESA:
  - Builds its catalogue as a “technical” offer to show what are the activities considered
  - Starts discussing with UN for the “political” side



# Actions taken in 2016

- Project re-oriented towards Sustainable Development
- 2016 Draft catalogue and associated brochure on line November 2016:
  - Organised along UN SDG
  - Presenting a selection of ESA activities addressing each goal
- Discussions started with UNOOSA to ensure consistency with their projects and build partnership



# Catalogue organised by SDG: [www.esa.int/SDG](http://www.esa.int/SDG)



### END POVERTY IN ALL ITS FORMS EVERYWHERE

**Support to Sustainable Oil Palm Production in Papua New Guinea**

ESA's satellite-based monitoring system is helping to improve the sustainability of oil palm production in Papua New Guinea. The system allows the palm growers to monitor their crops from space, providing them with valuable information on crop health and growth. This helps them to optimize their production and reduce the risk of crop failure.

### CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

**Treaty Enforcement Services Using Earth Observation - Marine Pollution (MARPOL Convention)**

ESA's Marine Pollution Monitoring (MPM) service is helping to enforce the MARPOL Convention, which aims to prevent pollution of the world's oceans and seas. The service uses satellite-based monitoring to detect and track marine pollution, such as oil spills and illegal dumping. This helps authorities to take action and prevent further damage to the marine environment.

### ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

**Innovators III Vector**

The objective of the suggested project is to develop satellite-based methods for the detection of malaria in coastal areas. This is done by using satellite data to monitor the health of the vegetation, which is a key indicator of the presence of the malaria parasite. The project aims to improve the accuracy of malaria detection and to help authorities to take action to prevent the spread of the disease.

### REDUCED COASTAL WATER MONITORING FOR MED (MEDITERRANEAN SEA)

**ESA Scientific Exploration of Operational (SEM) Programme SenZCar**

The SEM Programme SenZCar is the generation of a set of satellite-based methods for the monitoring of coastal water quality. The programme aims to improve the accuracy of coastal water quality monitoring and to help authorities to take action to prevent pollution of the coastal environment.

### SHARE

The objective of SHARC (Share Satellite High-performance ARCS) is to demonstrate the use of satellite-based monitoring for the detection and tracking of marine pollution. The project aims to improve the accuracy of marine pollution detection and to help authorities to take action to prevent further damage to the marine environment.

### ANNEX

For more details and information please contact: [sg@esa.int](mailto:sg@esa.int)

| Project                    | Status   | Contact       | Website     |
|----------------------------|----------|---------------|-------------|
| Agri-chemical              | On going | Ola Graub     | WFI Project |
| CO2RIS                     | Open bid | Espen Skjold  | ZDF Project |
| Crop yield production      | On going | Ola Graub     | WFI Project |
| Orphan agriculture         | On going | Ola Graub     | WFI Project |
| Innovator III MELLIS       | On going | Berjamin Katz | ZDF Project |
| Intensify water management | On going | Ola Graub     | WFI Project |

| Project  | Status   | Contact                          | Website                      |
|--|----------|----------------------------------|------------------------------|
| Bats   | ARCS     | Berjamin Katz                    | Preparing for the launch     |
| Innovator III Wilcom   | On going | Berjamin Katz                    | ESA Project                  |
| Human Physiology research  | On going | Manu Heppner                     | Human Spaceflight Activities |
| MARCS  | On going | Christophe Lemaire/Berjamin Katz | Space Engineering Technology |
| ESA Cholesterol Lowering Technology  | On going | Christophe Lemaire/Berjamin Katz | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |

### Support to Sustainable Oil Palm Production in Papua New Guinea

ESA's satellite-based monitoring system is helping to improve the sustainability of oil palm production in Papua New Guinea. The system allows the palm growers to monitor their crops from space, providing them with valuable information on crop health and growth. This helps them to optimize their production and reduce the risk of crop failure.

### CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

**Treaty Enforcement Services Using Earth Observation - Marine Pollution (MARPOL Convention)**

ESA's Marine Pollution Monitoring (MPM) service is helping to enforce the MARPOL Convention, which aims to prevent pollution of the world's oceans and seas. The service uses satellite-based monitoring to detect and track marine pollution, such as oil spills and illegal dumping. This helps authorities to take action and prevent further damage to the marine environment.

### ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

**Innovators III Vector**

The objective of the suggested project is to develop satellite-based methods for the detection of malaria in coastal areas. This is done by using satellite data to monitor the health of the vegetation, which is a key indicator of the presence of the malaria parasite. The project aims to improve the accuracy of malaria detection and to help authorities to take action to prevent the spread of the disease.

### REDUCED COASTAL WATER MONITORING FOR MED (MEDITERRANEAN SEA)

**ESA Scientific Exploration of Operational (SEM) Programme SenZCar**

The SEM Programme SenZCar is the generation of a set of satellite-based methods for the monitoring of coastal water quality. The programme aims to improve the accuracy of coastal water quality monitoring and to help authorities to take action to prevent pollution of the coastal environment.

### SHARE

The objective of SHARC (Share Satellite High-performance ARCS) is to demonstrate the use of satellite-based monitoring for the detection and tracking of marine pollution. The project aims to improve the accuracy of marine pollution detection and to help authorities to take action to prevent further damage to the marine environment.

### ANNEX

For more details and information please contact: [sg@esa.int](mailto:sg@esa.int)

| Project                    | Status   | Contact       | Website     |
|----------------------------|----------|---------------|-------------|
| Agri-chemical              | On going | Ola Graub     | WFI Project |
| CO2RIS                     | Open bid | Espen Skjold  | ZDF Project |
| Crop yield production      | On going | Ola Graub     | WFI Project |
| Orphan agriculture         | On going | Ola Graub     | WFI Project |
| Innovator III MELLIS       | On going | Berjamin Katz | ZDF Project |
| Intensify water management | On going | Ola Graub     | WFI Project |

| Project  | Status   | Contact                          | Website                      |
|--|----------|----------------------------------|------------------------------|
| Bats   | ARCS     | Berjamin Katz                    | Preparing for the launch     |
| Innovator III Wilcom   | On going | Berjamin Katz                    | ESA Project                  |
| Human Physiology research  | On going | Manu Heppner                     | Human Spaceflight Activities |
| MARCS  | On going | Christophe Lemaire/Berjamin Katz | Space Engineering Technology |
| ESA Cholesterol Lowering Technology  | On going | Christophe Lemaire/Berjamin Katz | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |

### Support to Sustainable Oil Palm Production in Papua New Guinea

ESA's satellite-based monitoring system is helping to improve the sustainability of oil palm production in Papua New Guinea. The system allows the palm growers to monitor their crops from space, providing them with valuable information on crop health and growth. This helps them to optimize their production and reduce the risk of crop failure.

### CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

**Treaty Enforcement Services Using Earth Observation - Marine Pollution (MARPOL Convention)**

ESA's Marine Pollution Monitoring (MPM) service is helping to enforce the MARPOL Convention, which aims to prevent pollution of the world's oceans and seas. The service uses satellite-based monitoring to detect and track marine pollution, such as oil spills and illegal dumping. This helps authorities to take action and prevent further damage to the marine environment.

### ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

**Innovators III Vector**

The objective of the suggested project is to develop satellite-based methods for the detection of malaria in coastal areas. This is done by using satellite data to monitor the health of the vegetation, which is a key indicator of the presence of the malaria parasite. The project aims to improve the accuracy of malaria detection and to help authorities to take action to prevent the spread of the disease.

### REDUCED COASTAL WATER MONITORING FOR MED (MEDITERRANEAN SEA)

**ESA Scientific Exploration of Operational (SEM) Programme SenZCar**

The SEM Programme SenZCar is the generation of a set of satellite-based methods for the monitoring of coastal water quality. The programme aims to improve the accuracy of coastal water quality monitoring and to help authorities to take action to prevent pollution of the coastal environment.

### SHARE

The objective of SHARC (Share Satellite High-performance ARCS) is to demonstrate the use of satellite-based monitoring for the detection and tracking of marine pollution. The project aims to improve the accuracy of marine pollution detection and to help authorities to take action to prevent further damage to the marine environment.

### ANNEX

For more details and information please contact: [sg@esa.int](mailto:sg@esa.int)

| Project                    | Status   | Contact       | Website     |
|----------------------------|----------|---------------|-------------|
| Agri-chemical              | On going | Ola Graub     | WFI Project |
| CO2RIS                     | Open bid | Espen Skjold  | ZDF Project |
| Crop yield production      | On going | Ola Graub     | WFI Project |
| Orphan agriculture         | On going | Ola Graub     | WFI Project |
| Innovator III MELLIS       | On going | Berjamin Katz | ZDF Project |
| Intensify water management | On going | Ola Graub     | WFI Project |

| Project  | Status   | Contact                          | Website                      |
|--|----------|----------------------------------|------------------------------|
| Bats   | ARCS     | Berjamin Katz                    | Preparing for the launch     |
| Innovator III Wilcom   | On going | Berjamin Katz                    | ESA Project                  |
| Human Physiology research  | On going | Manu Heppner                     | Human Spaceflight Activities |
| MARCS  | On going | Christophe Lemaire/Berjamin Katz | Space Engineering Technology |
| ESA Cholesterol Lowering Technology  | On going | Christophe Lemaire/Berjamin Katz | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |
| ESA Long distance atmospheric monitoring for aviation, non meeting forecasts | On going | Philip Katt                      | Space Engineering Technology |



# Council at Ministerial level – December 2016

## Resolution “Towards Space 4.0 for a United Space in Europe” :

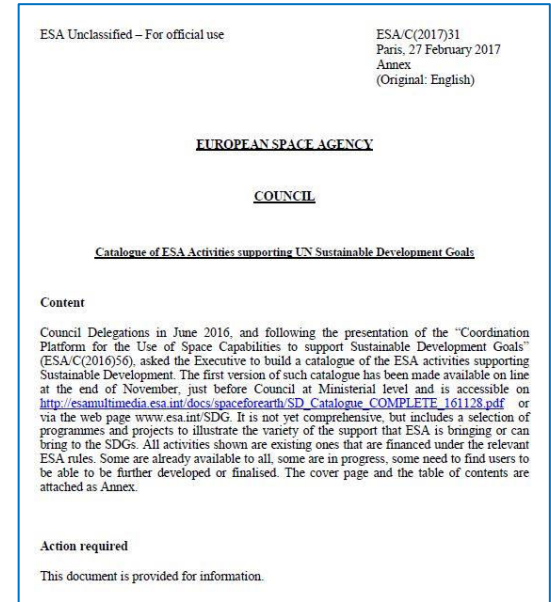
“[...]RECOGNISES that space serves societal needs, responds to European and global challenges and offers opportunities, **notably those related to the attainment of sustainable development goals** and socioeconomic growth, [...]

and therefore INVITES the Director General, acting in close coordination with the Member States, the European Union and other European public and private actors, to **ensure that ESA’s activities and programmes properly contribute to satisfying these societal needs [...]**”



# Council and Boards in 2017

- Catalogue presented to Council in March
- Concept presented to International Relations Committee, Telecommunications and Earth Observation Boards
- Well received – still questions to be answered
- Next steps:
  - Online full database
  - Cooperation with UNOOSA to be finalised





# The 2017 version of the Catalogue

- Includes additional relevant projects / activities from all Directorates
- Structured in a “universal” way so that it could be extended to other Agencies or service providers and fit UNOOSA Solutions Compendium project
- More than 550 ESA activities / projects already identified across all domains
- Aim for ESA database live before end 2017



## GOAL 1 TARGETS

### 1.1

By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day

### 1.2

By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions

### 1.3

Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable

### 1.4

By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

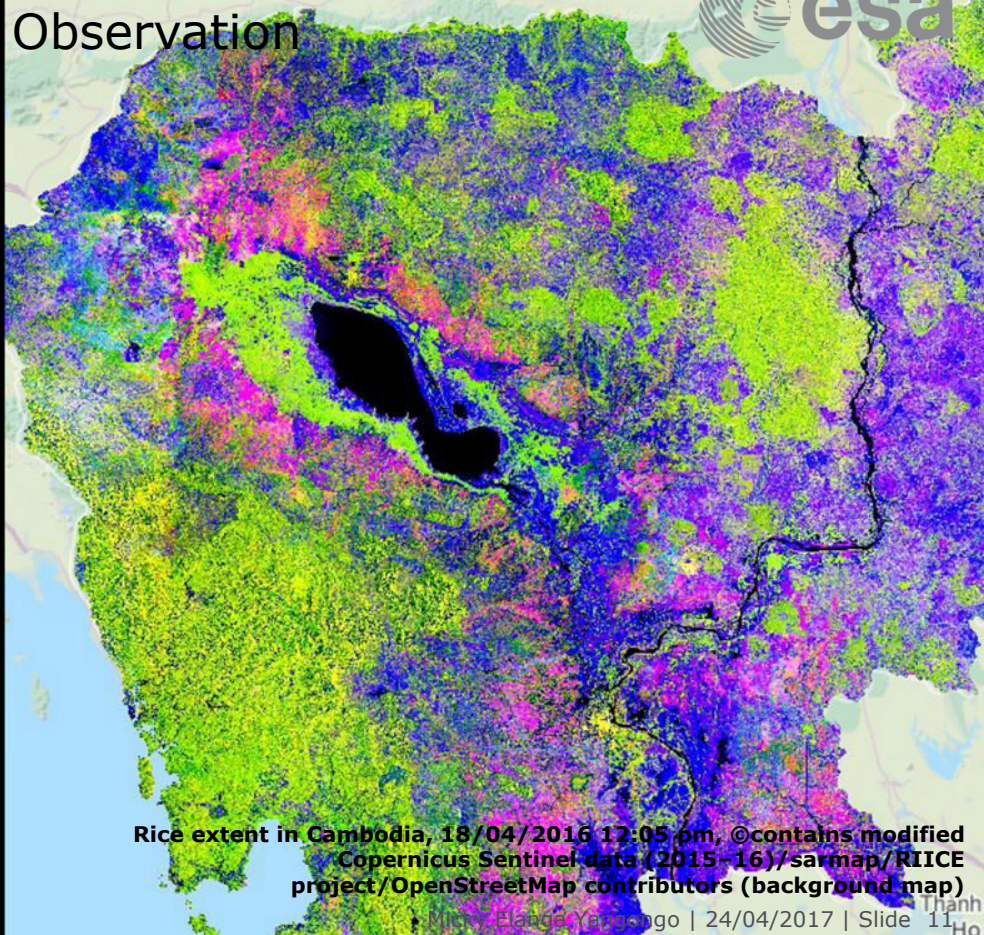


|                               | Content  |
|-------------------------------|--|
| <b>Proposed activity</b>      | Short description  |
| <b>Relevance</b>              | Relevant SDGs and targets<br>Socio-economic aspects<br>Testimonies |
| <b>Status of the activity</b> | Available<br>On-going<br>To be adapted<br>Call for interest        |
| <b>Terms of use</b>           | Free access to data or free service<br>Related costs / price       |
| <b>Contact point</b>          | ESA / Entity in charge or Third party                              |

# Innovators III GEORice Towards Global Earth Observation of Rice (GEORice)

- Contributes to the Asia rice Crop Estimation and Monitoring
- Accurate information on the spatial distribution of rice fields, risk occurrence and annual production projections
- Efficient rice mapping and monitoring methods, leading to production estimation and forecast

Earth  
Observation



# Education

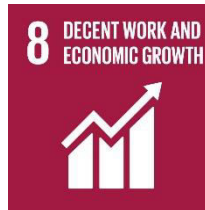
- **Satellite communication** is key to enable access to education in remote and underserved areas.
- ARTES Apps projects ongoing in Sub-Saharan Africa to deploy and validate **eLearning services**
- **“Space 4 Edu”**, started in 2012, has led to the deployment of a **sustainable service**, which is now being **rolled out in 300 schools** in Mpumalanga (South Africa). The Minister of Education in Mpumalanga has formally committed to subscribe to the service from 2017.



Space 4 Edu  
Oneclass



The “Space4Edu” project demonstrated that tele-education can represent a cornerstone in the context of migration prevention, by reducing the technological gap and increasing know-how and education level



# Water treatment facility at the University of Kenitra campus, Morocco



-Uses space technology to filter nitrates out of groundwater

-Builds and controls organic and ceramic membranes with holes 700 times finer than a strand of human hair. These tiny pores can filter out unwanted compounds in water, in particular nitrates.

-Caters for 1200 students. Surplus energy and water generated during school holidays are shared with locals.

- UNOOSA is working on a project with two different elements:
  - A "**space for development profile**" with rating /scoring of countries
  - A "**compendium of solutions**" with appropriate details, that could be proposed to the countries to help them reach improved rating
- This second element is quite close to the idea of the catalogue proposed by ESA, with the details as planned for the 2017 version
- We are discussing with UNOOSA for our catalogue to become the seed of the compendium proposed - elaboration of a **Memorandum of Understanding** for our cooperation on that and possible other matters
- The ESA project is being presented in 2017 at meetings preparing UNISPACE+50 (COPUOS in June, Graz today, IAC...) with an implementation that could be planned for UNISPACE+50 in June 2018

- Elaboration of the 2017 version of the **catalogue**
- Discussion with **UNOOSA** to elaborate in common the “Solutions database / compendium” in terms of aim and content
- Progress regularly presented to ESA **Council** and Boards and discussion with **interested ESA MS** to develop the European “offer” wider than ESA
- Political discussions led by UNOOSA with the support of ESA in order to identify and convince world space agencies, service agencies or service providers to join the initiative