

# IAF Committee Briefs

November 2021

## IAF EARTH OBSERVATIONS COMMITTEE (EO)

### 1. Introduction

Earth Observations has entered an era of high importance on international political and social agendas due to the twin threats of global climate change and biodiversity reduction. They have also demonstrated their business value for a wide variety of commercially important applications and are attracting new business from both established industry and entrepreneurial firms across all points of the value chain. These developments are underpinned by dramatic advancements in technologies, business models, and science. They result in providing accelerating value to society as threats and impact along with opportunities to provide actionable information for societal decisions all increase. The most noteworthy developments from June 2021 through November 2021 are highlighted.

### 2. Summary

Capella Space announced it will begin installing optical terminals on its SAR imaging satellites to increase volume and speed of data delivery. The US National Reconnaissance Office released a request for bids for commercial imagery from US providers. PlanetIQ launched its Global Navigation and Occultation Satellite (GNOMES-2) on June 30<sup>th</sup> and is raising money to build out a 20-satellite constellation. IceEye officially joined the Copernicus Earth Observation Program after winning a contract to provide data from its SAR satellites. Planet unveiled its Pelican Earth-imaging satellites and infusing SAR data from Sentinel 1 in its Planet Fusion Monitoring Project. The 38<sup>th</sup> Institute of China Electronics Technology Group (CETC) announced it is partnering with Spacety to construct an C and X band SAR constellation of 96 satellites launched into various orbits. Tomorrow.io won a contract from the US Air Force to support a planned constellation of 32 weather satellites with a 1-hour revisit time. NASA's Landsat 9 was launched on September 27<sup>th</sup>. South Korea announced the Satrec Initiative to build a constellation of

high-resolution Earth observation satellites. EUMETSAT made its first commercial data acquisition. NASA and ESA signed a cooperation agreement on climate science cooperation.

### 3. Highlights

The major breakthroughs in the field are primarily coming as a result of industry and Agency application of new technologies developed in other industries and supported by Agency technology programs to adapt them to Space application. Two primary technologies to highlight are optical communications allowing satellite to satellite links that enable reduced data latency, and Machine Learning / Artificial Intelligence which is greatly expanding utility and efficiency of analyzing and producing value added information products from earth observations

### 4. Future Outlook

The main focus in the following years will be three-fold. First, the major driver from society will be climate change monitoring and mitigation, along with associated improvement in weather, ocean, and land forecasting on all time scales. Second, is value added commercial applications across a wide variety of industries that need precision earth information, and third is security spanning national defense, illegal activity, and major societal issues such as disease, famine, oppression etc. We are seeing the emergence of many developing constellations to address these three topics and many more being announced. The World's Spacefaring Agencies are also obtaining increased resources to expand their science and public benefit observations and applications.

### 5. Committee activities

The Earth Observations committee had a very successful IAC 2021 in Dubai with its six technical sessions and one

interactive presentations' session. For the third year in a row, a presenter in the EO IP session won the award for top IP presentation in the B Category on Applications and Operations. Highlights included a session dedicated to celebrating 20 years of one of the most noteworthy international collaborations: The Disaster Charter. Several prominent members of the Charter Agencies provided presentations on past successes, status and future plans. The committee plans to combine the papers along with a summary of the Disaster Charter Highlight Lecture into a special section of Acta Astronautica.

The committee also elected new Officers and reconfirmed members per IAF rules and updated its announcements in the call for papers for IAC 2022 to highlight Green House Gas Monitoring and elicit papers addressing the emerging transformation technologies of Machine Learning and Commercial Ground Services, cloud networking and data analytics. The EOC is working closely with GEOSS to foster new partnerships with Young

Professionals, offer a new slate of Plenary and Special Session proposals and other cooperative activities.



*Highlight Lecture by the Heads of the Three Founding Agencies – ESA, CNES and CSA at IAC 2021 Celebrating the 20<sup>th</sup> Anniversary of the Disaster Charter*