IAF EARTH OBSERVATION SYMPOSIUM (B1)
International Cooperation in Earth Observations (1)

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NASA'S EARTH SYSTEM OBSERVATORY FORMULATION PROGRESS

Abstract

The 2017 Earth Science Decadal Survey by the National Academies of Science, Engineering, and Medicine identified five foundational observations, or designated observables (DO), to be implemented as missions by NASA. To address these five DO areas – Surface Biology and Geology; Mass Change; Aerosols; Surface Deformation and Change; and Cloud, Convection, and Precipitation – NASA is developing the Earth System Observatory (ESO) as an array of Earth-focused, interconnected satellite missions. The ESO will build on the strong history of international partnerships in Earth Science, with initial participation and collaboration on these missions across space agency partners including the Japanese Aerospace Exploration Agency (JAXA), Centre National D'Etudes Spatiales (CNES), Canadian Space Agency (CSA), Deutsches Zentrum für Luft- und Raumfahrt (DLR), and Alenia Space Italia (ASI).

Targeting launch dates in the late 2020s and early 2030s, the ESO will work as a single observatory, with each satellite in the ESO delivering its own valuable information, but taken together, the data and imagery will provide the global community with a 4D, holistic view of Earth. The information gathered from the ESO missions will provide critical knowledge to guide policymakers and stakeholders in efforts related to climate change, disaster mitigation, fighting forest fires, and improving real-time agricultural processes.

This paper will provide an overview of the ESO development activities as well as an update on the individual ESO missions currently in formulation – the Atmosphere Observing System, Mass Change, and Surface Biology and Geology – including current mission architectures and concepts; international

partner collaboration; science community engagement, and applications efforts as well as how ESO data will be accessible to users all over the world.