

## Topics (T)

Earth Observing Missions and Systems to Address Climate Change and Its Impacts [1] (3A)

Author: Dr. Karen St. Germain

National Aeronautics and Space Administration (NASA), United States, karen.m.stgermain@nasa.gov

Dr. Kathleen Boggs

National Aeronautics and Space Administration (NASA), United States, kathleen.a.gallagher@nasa.gov

Mrs. Nicole Herrmann

National Aeronautics and Space Administration (NASA), United States, nicole.b.herrmann@nasa.gov

Dr. Michael Egan

NASA, United States, michael.p.egan@nasa.gov

Ms. Carla Proccacino

NASA Headquarters, United States, carla.t.procaccino@nasa.gov

Mr. Kevin Murphy

NASA, United States, kevin.j.murphy@nasa.gov

Dr. Amanda Whitehurst

NASA, United States, amanda.s.whitehurst@nasa.gov

Ms. Katie Baynes

NASA Headquarters, United States, kathleen.baynes@nasa.gov

Ms. Lacey McCarthy

NASA Headquarters, United States, lacey.g.mccarthy@nasa.gov

Mr. Benjamin Kim

NASA, United States, benjamin.kim@nasa.gov

Ms. Sophie Gossack

NASA Headquarters, United States, sophie.j.gossack@nasa.gov

## NASA'S EARTH SYSTEM OBSERVATORY FORMULATION OVERVIEW

### Abstract

NASA's Earth System Observatory (ESO) is an array of Earth-focused, interconnected satellite missions focused on five study areas: Surface Biology and Geology, Mass Change, Aerosols, Surface Deformation and Change, and Cloud, Convection, and Precipitation. The observatory development follows recommendations from the 2017 Earth Science Decadal Survey and the data gathered from the ESO missions will provide key information to guide efforts related to climate change, disaster mitigation, fighting forest fires, and improving real-time agricultural processes. Targeting launch dates in the late 2020s and early 2030s, each satellite in the ESO will deliver its own valued information, but by working as a single observatory, the data and imagery taken together will provide the global community with a 4D, holistic view of Earth, from bedrock to atmosphere.

The ESO is also building on the legacy of international collaboration 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).

This paper will provide an overview of the ESO as well as an update on the ESO missions currently in formulation – the Atmosphere Observing System, Mass Change, and Surface Biology and Geology –

including current mission architectures, international partner collaboration, science community engagement, and applications efforts as well as how NASA and its partners will make ESO data accessible to users all over the world.