



SCIENCE

# Outer Planets and Ocean Worlds

Dr. Curt Niebur  
Lead Program Scientist  
NASA Headquarters



# Overview



- Outer Planets and Ocean Worlds (OP&OW) is not a standalone program such as Discovery or New Frontiers, but rather a theme that has some programmatic elements
  - Some parts have a steady funding source, others do not
  - Consists of missions, technology development, instrument development, and research
- The OP&OW theme includes:
  - Europa Clipper
  - JUICE
  - Europa Lander
  - Technology Development
  - SESAME
  - Instrument Development
  - Cassini Data Analysis



# OP&OW Priorities and Strategy



- Priorities for OP&OW are
  - 1) Flight mission development
  - 2) Research
  - 3) Future mission investment, specifically
    - Landing on poorly characterized surfaces
    - Accessing an ocean sample
    - Analyzing an ocean sample
- Because much of the portfolio does not have a steady funding source, the execution strategy is to be nimble and quickly respond to opportunities
  - Frequently use Picasso and Matisse



# Status



- Europa Clipper: currently in Phase C, Dr. Glaze discussed its status
- JUICE: instrument deliveries are underway for 2022 launch
- Europa Lander: remains in pre-phase A and is currently focused on maturing payload accommodation (e.g., working with ICEE 2 selectees), sampling system, landing system, and autonomy
- SESAME: mission and technology formulation work on deep subsurface access; competitively selected efforts are ongoing
- Surface Technology: some past/completed technology efforts directed to centers
- Instrument Development
  - ICEE and COLDTech: competitively awarded work completed
  - ICEE 2: competitively awarded funded work ongoing, working with Europa Lander team
  - Picasso/Matisse/PSTAR/etc.: a wide variety of competitively awarded work is finishing up; new selections pending funds availability
- Cassini Data Analysis: continuing with new proposals competitively selected each year