EPOS for Coordination of Asynchronous Sensor Webs

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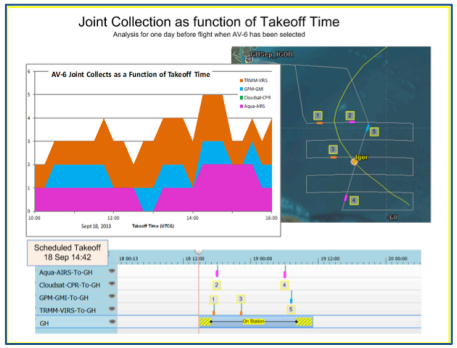
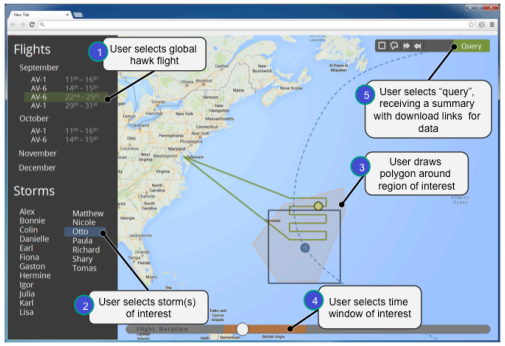
Objective

- Develop Draper's Earth Phenomena Observation System (EPOS) to coordinate asynchronous, distributed missions by optimizing observation planning across multiple Earth observing sensor systems to improve science data acquisition.
- Infuse EPOS into NASA Earth science missions including HS3 and EO-1.
- Demonstrate the resulting integrated "system of systems" targeting science and disaster management.

EPOS for Current Ops



Coordination Manager for HS3 Global Hawk Flights



Data Access Tool for HS3 Global Hawk Flights

Accomplishments

- Developed concepts of operations for use of EPOS for the current operating environment (EPOS for Current Ops) and for the use of EPOS for a future operating environment with a larger number of taskable and pointable platforms (EPOS for Future Ops).
- Updated and modified EPOS:
  - Developed mathematical models of the systems, decisions, benefits/values and constraints for the target missions.
  - Developed optimized planning and execution tools to support coordination of sensor systems on air and space platforms.
  - Implemented two software versions: EPOS for Current Ops and EPOS for Future Ops.
- Conducted a series of structured demonstrations of EPOS with HS3 and EO-1 to illustrate benefits of coordinated approach.
- Integrated EPOS for Current Operations with HS3 mission information system.

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TRL_{in} = 3 TRL_{out} = 6

ESTO Earth Science Technology Office