

EARTH OBSERVATION SYMPOSIUM (B1)
Interactive Presentations (IP)

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INVESTIGATION OF SATELLITE CONSTELLATION CONFIGURATION FOR EARTH
OBSERVATION USING SIERRA NEVADA DREAM CHASER® SPACECRAFT FOLLOWING
LAUNCH TO ISS

Abstract

We present here initial results from an investigation into the use of multiple Sierra Nevada Corp. Dream Chaser® platforms, following their launch to the International Space Station, as a distributed constellation for remote sensing and disaster response. The payload capability and delta-V ability of these spacecraft, combined with their reusability and prior launch to ISS under a commercial cargo delivery contract, opens up a unique and compelling method to provide significant global earth observation during quiescent times, as well as the ability to respond rapidly - including through significant spacecraft maneuvering - when disasters strike around the globe. Our paper documents initial orbital dynamics calculations, optimizations, and alternatives for a variety of configurations. We explore ground coverage and various response modalities when presented with specific-case disasters across the surface of the globe.