

EARTH OBSERVATION SYMPOSIUM (B1)
Interactive Presentations (IP)

Author: Mr. Andrew J. Steen
The Ohio State University, United States

Dr. John M. Horack
The Ohio State University College of Engineering, United States
Mr. Steve Lee
Astrosat Ltd, United Kingdom

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.