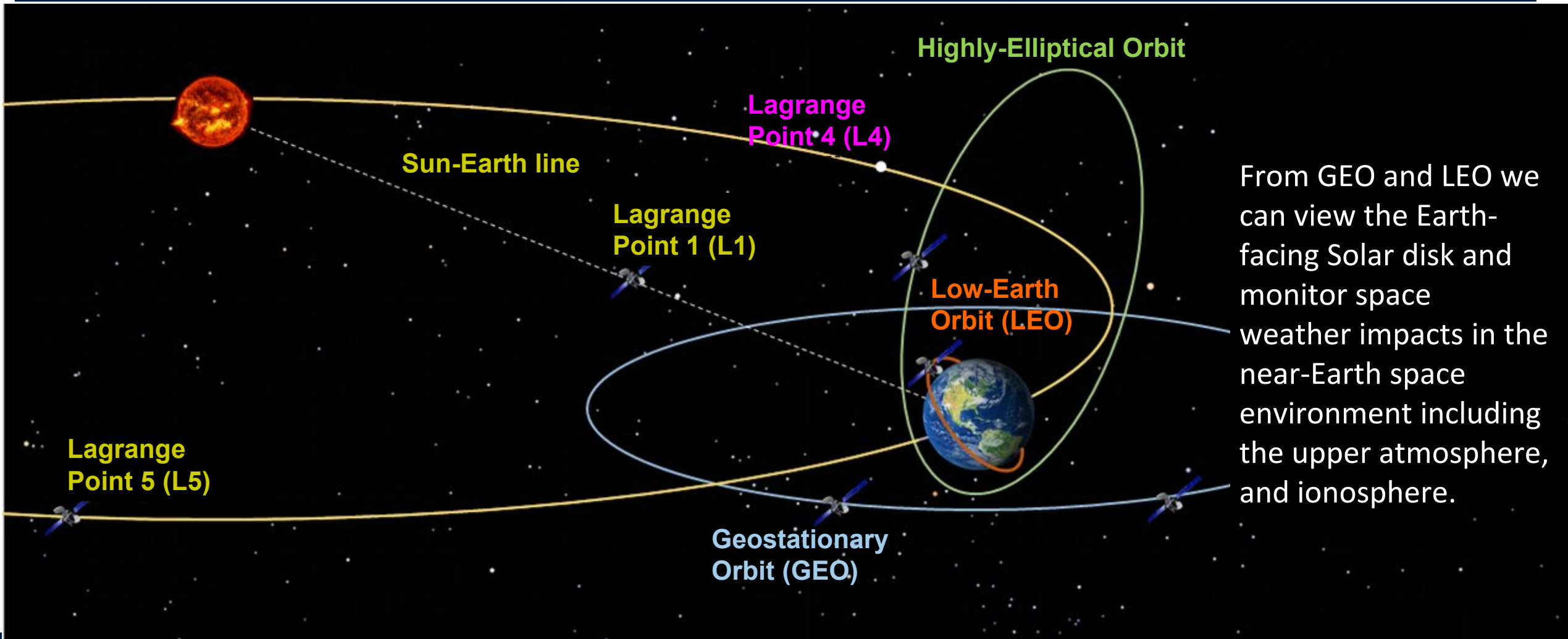


Pre-Formulation Activities for SW Next GEO and LEO Observations

Erin Lynch, Irfan Azeem, Joanne Ostroy

Space weather observations are collected everywhere





SW Next Observations

To provide continuity for current space weather forecast and monitoring capabilities, as well as enhancements, the SW Next program includes the following observation objectives:

Category	Data Products
Solar Observations	Photospheric Magnetograph Imagery (SEL)
	Solar EUV Imagery (SEL)
	Solar X-ray Irradiance (SEL)
	Solar EUV Irradiance (SEL)
Magnetospheric Observations	Magnetic Field (GEO)
	Energetic Particle Flux (GEO)

Category	Data Products
Ionospheric and Thermospheric Observations	Electron Density Profiles
	Total Electron Content
	Ionospheric Irregularities (Scintillation)
	Ion Drift Velocity
	Auroral Imagery
	Energetic Particle Differential Flux
	Upper Thermospheric Density
	Thermospheric O/N2 Ratio
	Thermospheric Neutral Winds



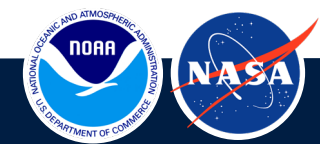
Current Observing System for GEO and LEO

SW Next observations will provide critical data continuity and enhancements beyond current capabilities through a combination of NOAA satellites and hosted instruments

Plans are notional and subject to appropriations.

Capability	Orbit	Calendar Year												
		23	24	25	26	27	28	29	30	31	32	33	34	35
Solar Disk Imaging and Irradiance	GEO	GOES-16		GOES-U								SW Next GEO		
		GOES-18												
Magnetic Field	GEO	GOES-16		GOES-U								SW Next GEO		
		GOES-18												
	LEO													LEO Hosted
Energetic Particles	GEO	GOES-16		GOES-U								SW Next GEO		
		GOES-18												
	LEO	POES	WSF-M Series											LEO Hosted
		Metop-B/C	Metop-SG-A1/B1											
Thermospheric O/N2 Ratio	GEO	GOLD												SW Next GEO
Electron Density Profiles (EDP) & Total Electron Content (TEC)	LEO	Metop-C		Metop-SG-A/B										
		COSMIC-2		Commercial Data Buys										
Neutral Density	LEO													LEO Hosted
Auroral Imagery	HEO													HEO Hosted
	LEO	DMSP												LEO Hosted
Ion Drift Velocity	LEO	COSMIC-2												LEO Hosted

Beyond Planned Life
Operational or Planned
Partner
SW Next

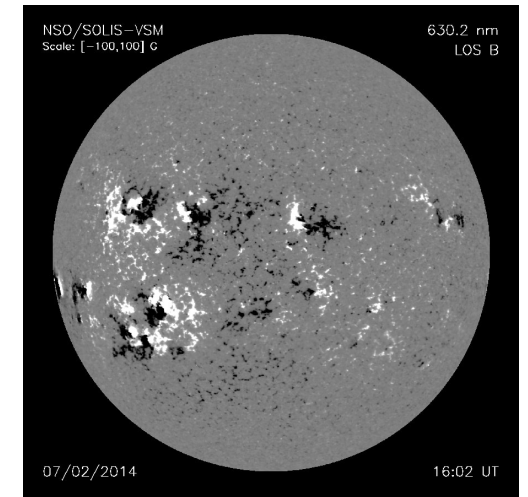
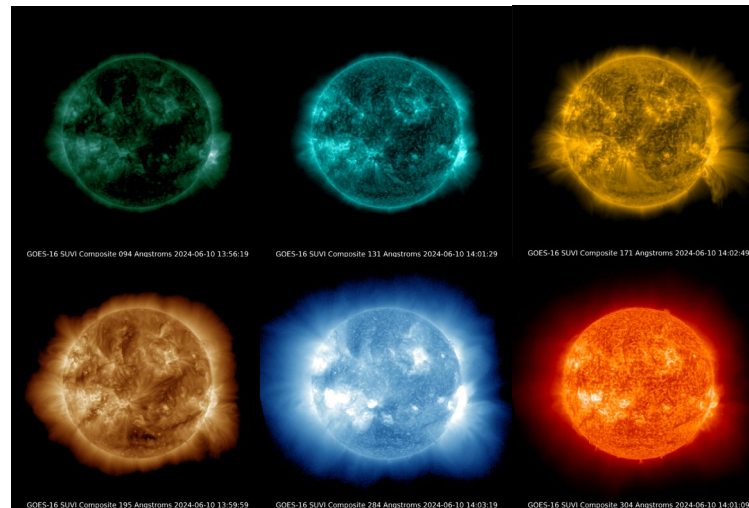
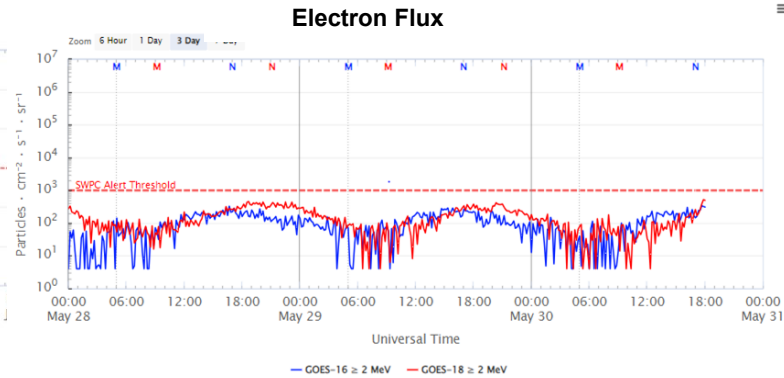
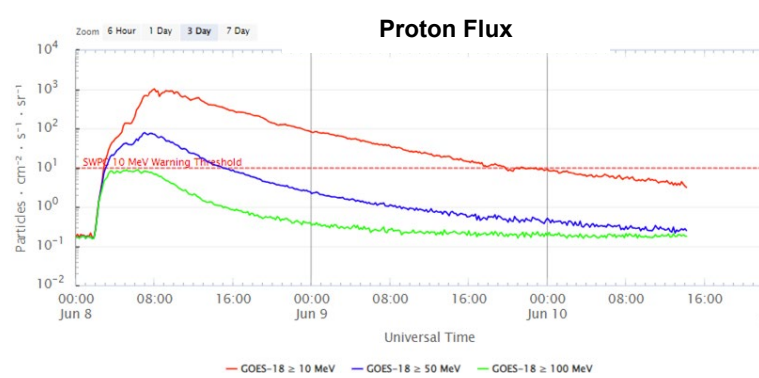




SW Next GEO Project

Primary operational objectives:

- In situ measurements of energetic particles and magnetic fields
 - Characterize the near-Earth radiation environment and potential hazards to spacecraft, aircraft, and human life.
- Solar EUV measurements
 - Detection of solar features
 - Drivers of ionospheric models
- Capability enhancements under consideration
 - Photospheric magnetograph imagery
 - Thermospheric O/N2 ratio

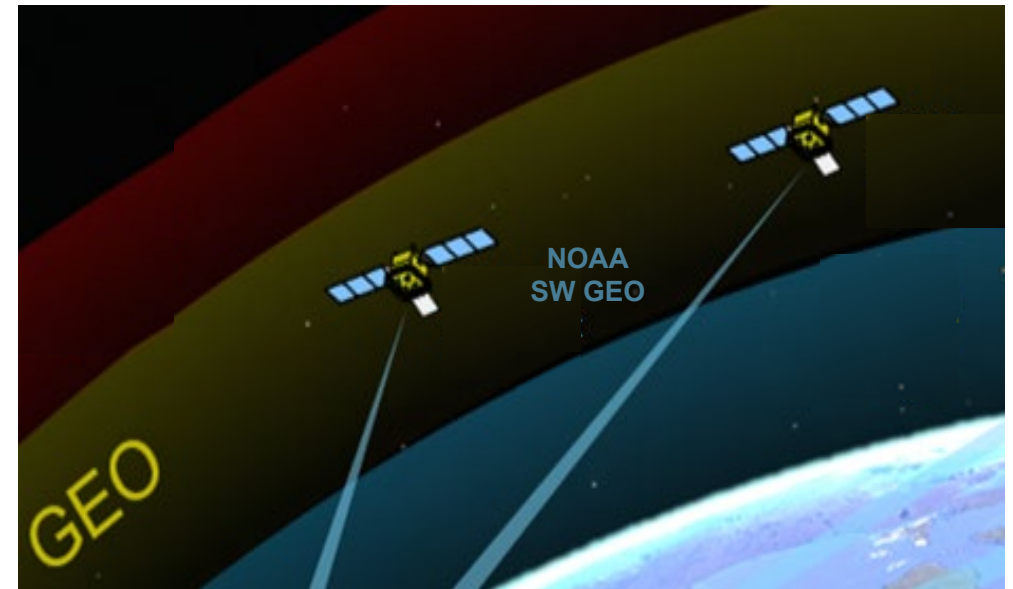


SW Next GEO Formulation

SWO is currently conducting pre-formulation activities to support SW GEO

- Requests for Information (RFIs) to understand instrument capabilities and requirements
- Instrument studies to refine requirements
- Mission design studies to assess implementation options
- Development of requirements and other documentation

SW Next GEO launch NET 2032

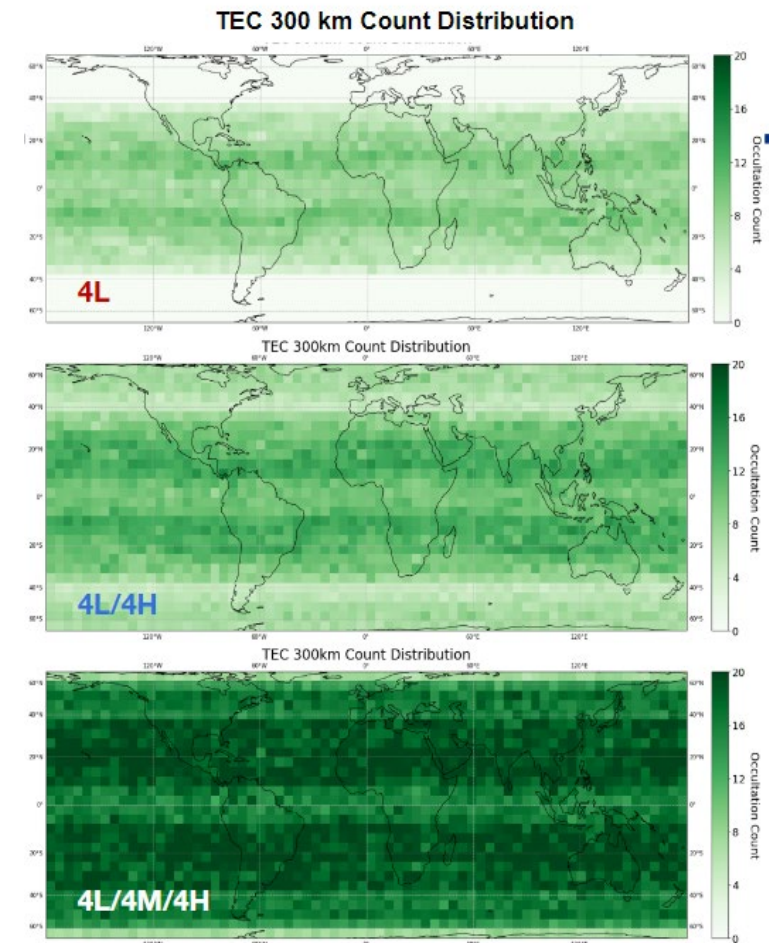
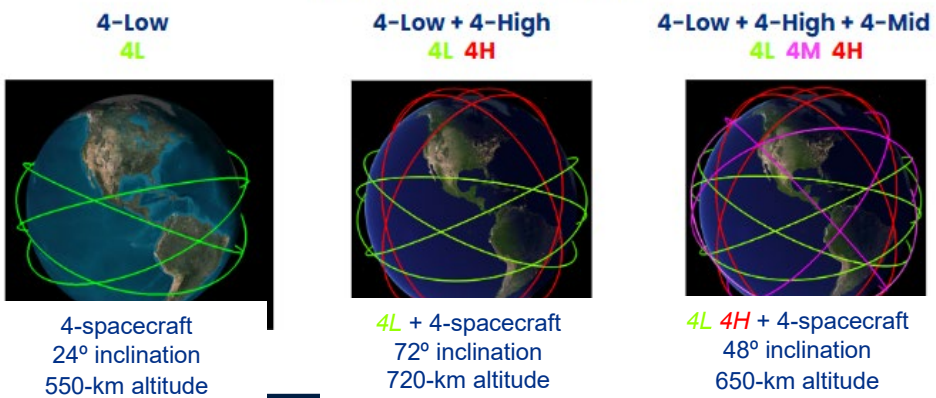




LEO Pre-Formulation

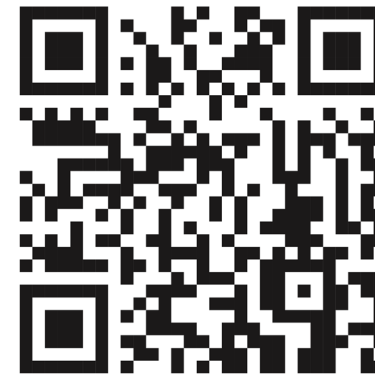
- Discussions with partners about upcoming plans for missions, planned instruments, and potential for hosting opportunities
- Pre-formulation studies for LEO-based observations, like ionospheric radio occultation, to understand architecture requirements
- Technology maturation studies for instruments to prepare for hosting opportunities

Reference Architectures



Summary

- Pre-formulation activities are underway for the SW Next GEO Project to provide continuity for current space weather observations and potential enhancements.
 - Instrument RFI and studies
 - Mission concept studies
- Pre-formulation activities for LEO include architecture studies and instrument studies to refine LEO requirements.
 - Radio occultation architecture study



NOAA Space Weather Products
User Input and Feedback

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