



# NOAA Space Weather (SWX) Program: Academy Infrastructure Workshop

Lawrence Zanetti

NESDIS/OPPA

Community Meeting on NOAA Satellites  
Informing the Future of NOAA Satellite Observations  
September 30, 2020

# September 2020 Status

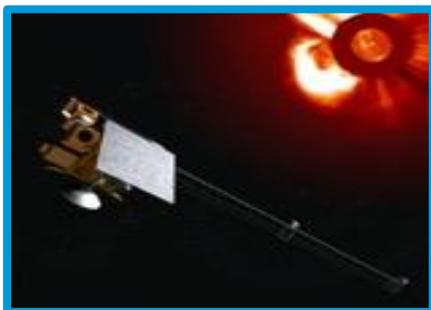


- The National Academies of Science, Engineering and Medicine (NASEM) has conducted the *Space Weather Operations and Research Future Infrastructure Workshop*
- Charter summary: maintain and improve critical observations as input to the space weather prediction and notification system
- The NASEM ad hoc organizing committee developed the agenda and organized the space weather experts' participation
- The workshop was conducted in two parts (100+ participants in each part):
  - Part 1 – 16 -17 June 2020 (virtual, records and notes provided)
  - Part 2 – 9 -11 September (virtual, notes in progress)
- Report (only, no recommendations) is expected by the end of 2020
- A follow-on workshop (NASA- and NSF-supported), planned to be held in Spring 2021, will be conducted to address out-of-scope issues encountered in the first workshop, as well as R2O2R and to address knowledge and research gaps with regard to the advanced understanding of the Sun-Earth system.



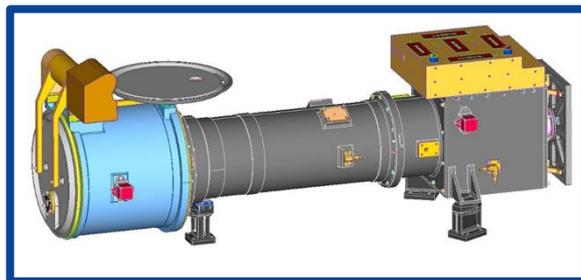
# Start Point – 2025 Program of Record

3-Axis  
Stabilized ESPA  
Class  
Spacecraft



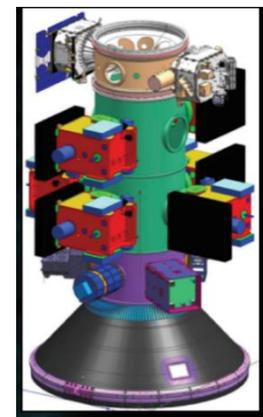
NOAA SpWx Observing Program  
of Record 2025:  
Starting point for the  
Infrastructure Workshop

Compact  
Coronagraph  
(CCOR)

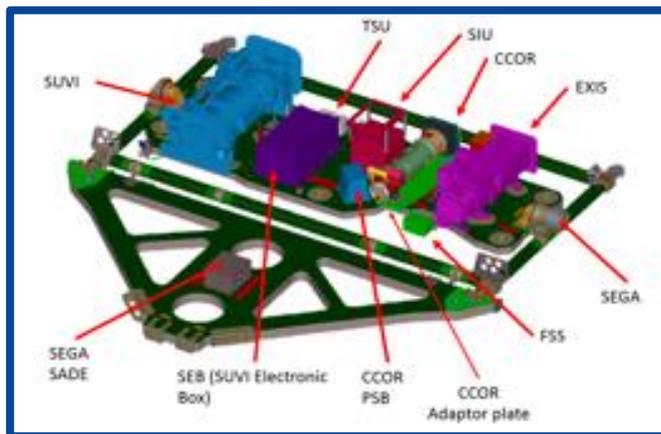


GOES-U Solar Pointing Platform (SPP)

SWFO – L1  
platform  
GOES – U  
COSMIC-2  
GOLD  
Metop – C  
ESA – L5



CCOR +  
SUVI +  
EXIS



What's next for  
2030 and beyond?

# Example from Infrastructure

## Workshop Part 1 – 16 June 2020



### National Space Weather Strategy and Action Plan - Optimizing Space Weather Observations



Bill Murtagh  
Space Weather Prediction Center  
National Weather Service  
National Oceanic and Atmospheric Administration

Space Weather Operations and Research Infrastructure Workshop  
National Academies of Sciences, Engineering, and Medicine  
16 June 2020

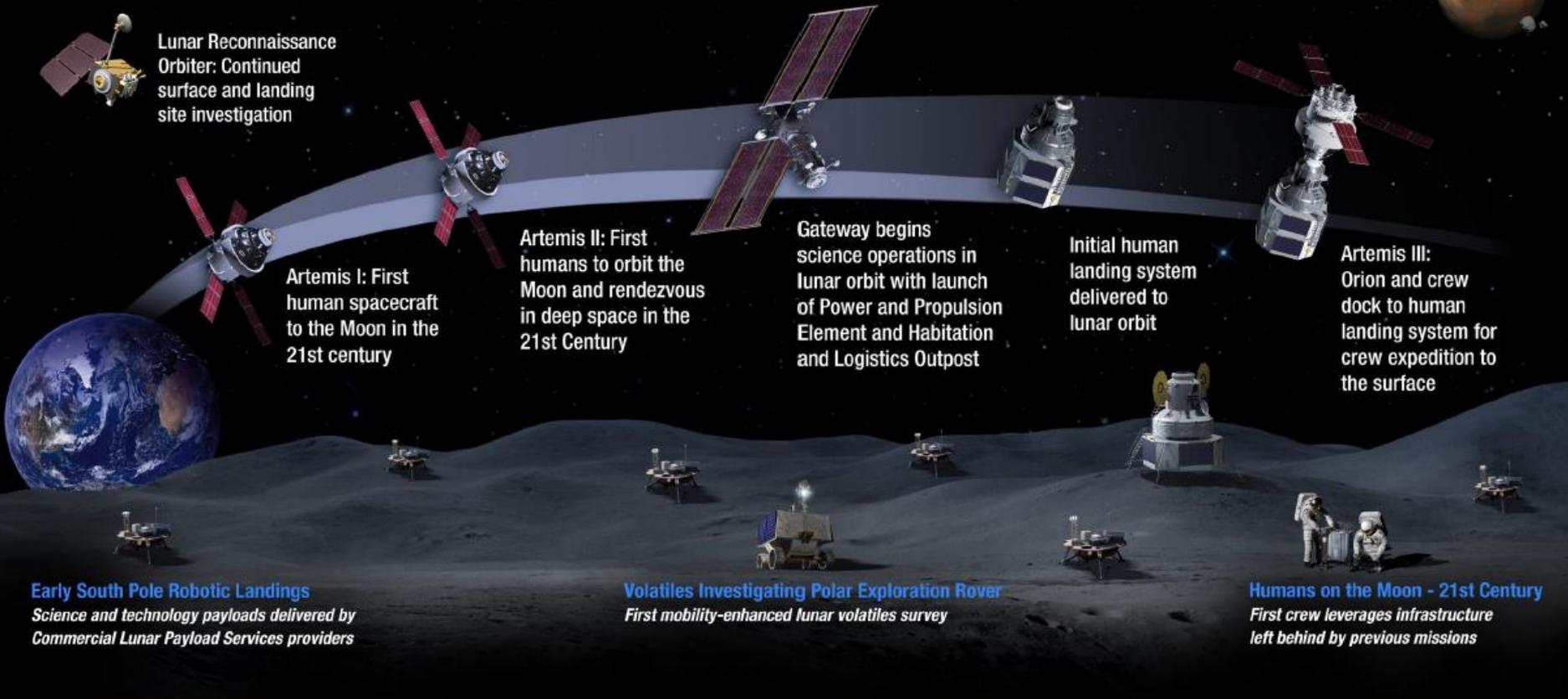




# Example from Infrastructure Workshop Part 2 – 9 September 2020



## ARTEMIS : Landing Humans on the Moon in 2024



### LUNAR SOUTH POLE TARGET SITE



# National Space Weather Strategy and Action Plan - Actions for Observational Systems

Action 2.1 and 2.2: Identify and ensure baseline ground-based, sea-based, air-based, and space-based operational observation capabilities

- Sustain baseline observation capabilities and identify opportunities to increase their reliability
  - Utilize new technologies
  - Reduce cost through partnerships with the private sector academia, and international partners



# 23 July 2012 – Near miss!

SPACE.com

News Tech Spaceflight Science & Astronomy Search For Life

Space is supported by its audience. When you purchase through links on our site, we may earn an

## Huge Solar Storm of 2012 Would Have Sparked Calamity on Earth

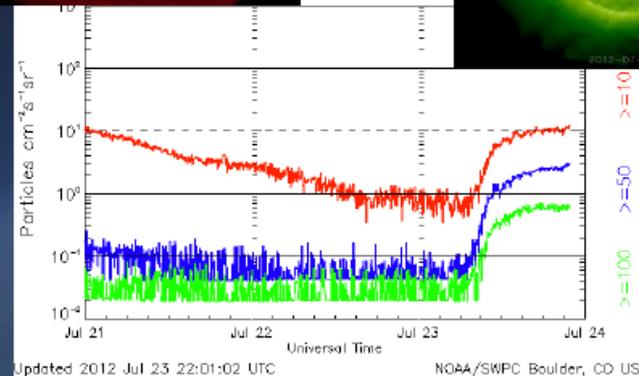
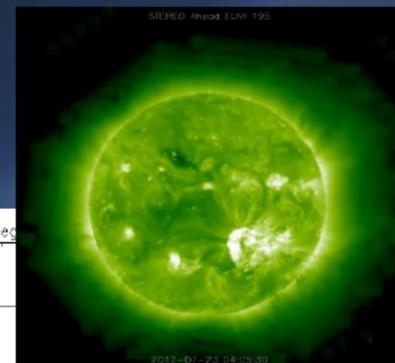
By Elizabeth Howell July 29, 2014 Science & Astronomy

### How a solar storm two years ago nearly caused a catastrophe on Earth

BY JASON SAMENOW July 23 at 9:48 pm



(data) Bec



**“Using a well-proven geomagnetic storm forecast model, we find the 23-24 July event would have produced a geomagnetic storm that was comparable to the largest events of the 20th Century.”** *Baker et al. 2012*

# Possible Report Products



- The National Academies via an appointed ad hoc committee conducted a workshop that considered options for continuity and future enhancements of the space weather operational infrastructure. Example report chapters include:
  - Review current and planned U.S. and international space weather-related observational capabilities;
  - Review space weather observational needs;
  - Identify programmatic and technological options to ensure continuity of the baseline, the Program of Record (POR) 2025, giving particular attention to options to extend the NOAA Space Weather (SWX) Program; and
  - Consider options for technology, instrument, and mission development to support in situ and remote sensing space weather observations from either ground- or space-based vantage points, the latter including L-1, L-5, L-4, L-2, 1-AU coverage, sub-L1, Tundra, GEO, GEOtransfer, and LEO among others.