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# GOES-R+ (R and S and T and U) Extreme Ultraviolet Sensor (EUVS)

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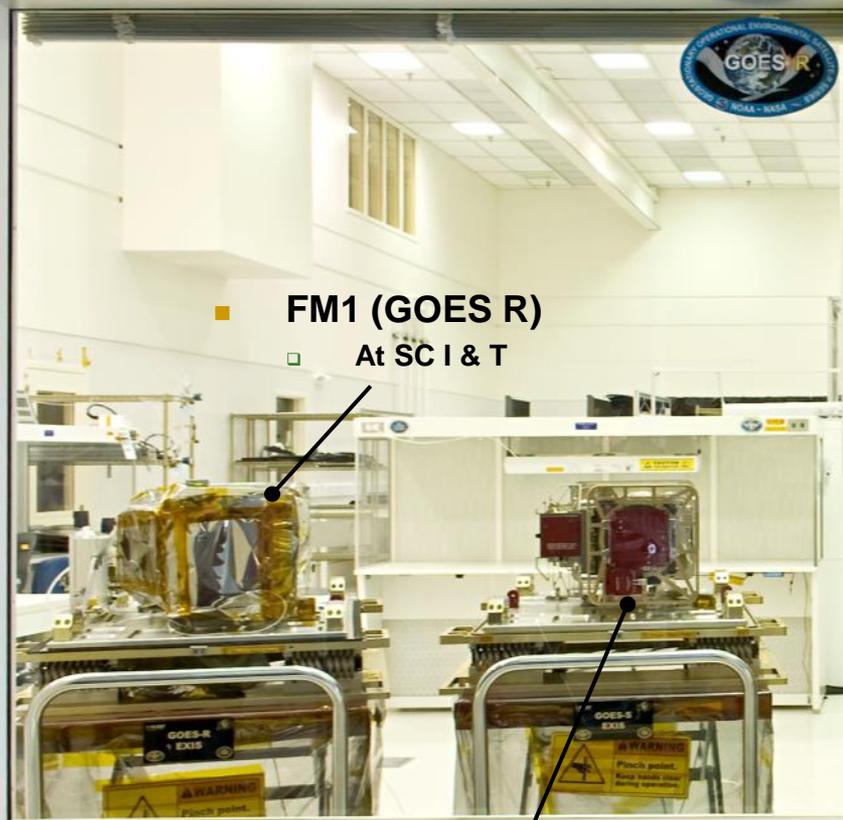
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# GOES-R+ EXIS: All 4 Flight Models Built



- **FM1 (GOES R)**
  - At SC I & T



- **FM3 (GOES T)**
  - In pre-delivery storage

- **FM2 (GOES S)**
  - In pre-delivery storage (Delivery Summer 2015)

- **FM4 (GOES U)**
  - Just finished pre-environmental SURF calibration

# GOES-R+ EXIS (EUV and X-ray Irradiance Sensors)

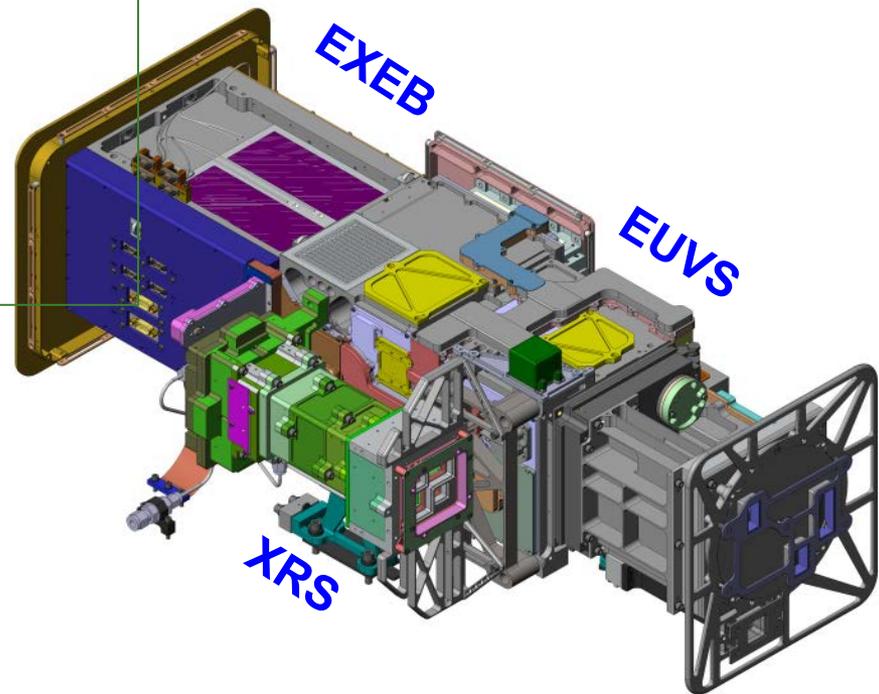


- Formulation Phase: 2004-2006
- Implementation Phase Awarded: 2007
- Critical Design Review: 2009
- FM-1 (GOES-R) Delivered 2013

## EXIS = EUV and X-ray Irradiance Sensors

### The Key Components of EXIS:

- **EUVS** = Extreme Ultraviolet Sensor
- **XRS** = X-Ray Sensor
- **EXEB** = EUVS/XRS Electrical Box



# EUVS Overview

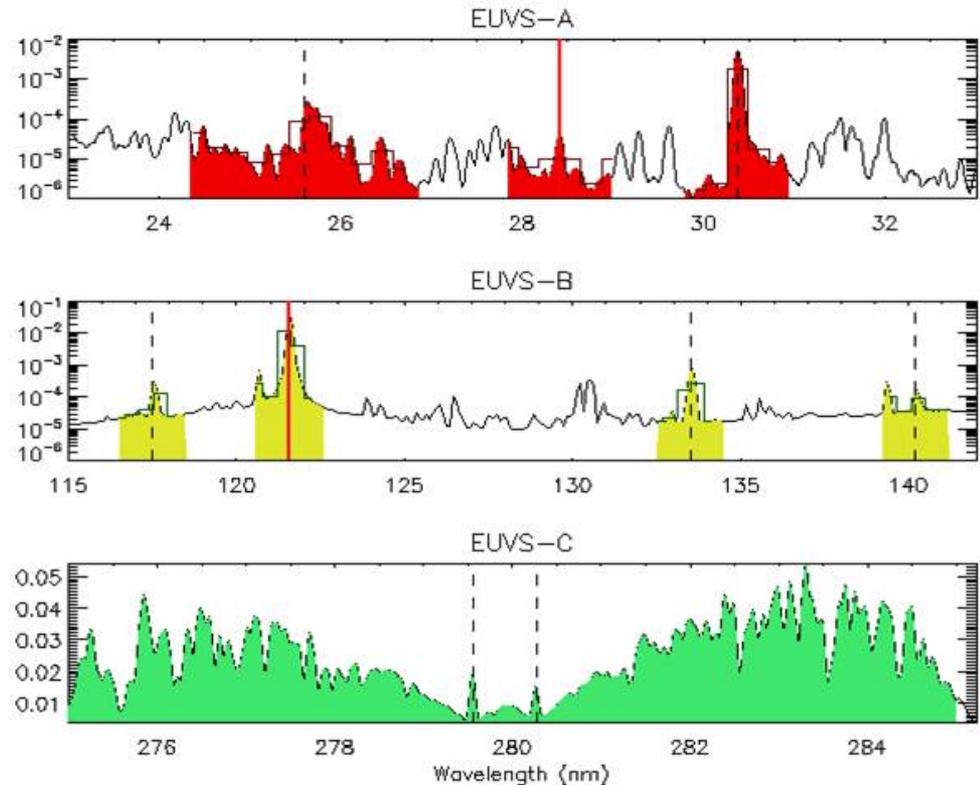


- **EUVS Purpose: Monitor solar variations that directly affect satellite drag / tracking and ionospheric changes, which impact communication and navigation operations**
- Requirement: make measurements to produce a spectral irradiance product in the 5-125 nm range at  $\leq 30$ -second cadence
- Pre-GOES-R EUVS: Transmission grating spectrographs covering five broad bandpasses (first included on GOES-13)
- EUVS for GOES-R+: Three reflection grating spectrographs measuring specific solar emission lines from which full spectrum is reconstructed with a model

# EUVS Measurement Concept for GOES-R+



- Measure proxies that are used to model the full EUV range (5-115 nm in 5-nm and 121.6 nm)
- Three EUVS channels that provide accurate proxies for the emissions from the **chromosphere, transition region, and corona**
- XRS provides fourth proxy for hot coronal continuum emissions during flares
- **EUVS Measurements:**



- **Chromosphere** : MgII C/W (EUVS-C), CIII 117.5 nm and CII 133.5 nm (EUVS-B)
- **Transition Region**: Ly-alpha 121.6 nm and SiIV/OIV 140.5 nm (EUVS-B), HeII 30.4 nm and HeII 25.6 nm (EUVS-A)
- **Corona**: FeXV 28.4 nm (EUVS-A)
- **Hot Corona**: 0.1-0.8 nm and 0.05-0.4 nm (XRS)

# GOES-R+ EUVS Summary



- New design concept measuring lines and MgII C/W rather than broad bands
- Measurement cadence of 1-sec for EUVS-A and B and ~3-sec for EUVS-C (though L1b data product is 30-sec).
- End of Mission Accuracy of L1b product <20%
- Initial EUVS L1b product will be lines and MgII C/W plus model in 5-nm bands from 5-115 nm plus 121.6 nm. Ground Processing Algorithm allows for updates to model.