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# **Recent Activities of the Marshall Space Flight Center Natural Environments Branch Terrestrial & Planetary Environments Team**

October 2019 Natural Environments  
Day-of-Launch Working Group Meeting

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MSFC Natural Environments Branch/EV44



# The Marshall Space Flight Center (MSFC) Natural Environments (NE) Branch is located in the Engineering Directorate.

- The Branch Chief is Glenn Overbey.
- The Branch consists of two teams.
  - The Space Environments Team Lead is Rob Suggs.
    - 8 civil servants
    - 7 contractors
    - The NASA Meteoroid Environment Office, led by Bill Cooke is part of the Team.
      - It is a delegated project office from NASA HQ Office of Safety & Mission Assurance.
  - The Terrestrial & Planetary Environments Team Lead is Barry Roberts.
    - 7 civil servants
    - 5 contractors



**The biggest customer for the Terrestrial & Planetary Environments (T&PE) Team in the MSFC NE Branch are the Exploration Systems Development Division (ESD) programs.**

- There are three programs under ESD at NASA HQ
  - Space Launch System (SLS)
  - Orion Multi-Purpose Crew Vehicle (MPCV)
  - Exploration Ground Systems (EGS)
- ESD also has a Cross-Program function to ensure all the programs are integrated for the Artemis I launch

# Natural Environments supports the ESD Cross-Program function.

## Cross-Program Natural Environments Integration Ad-Hoc Team

SLS-SPEC-159 Cross-Program Design Specification for Natural Environments (DSNE)  
SLS-SPEC-044-07 Cross-Program Vehicle Design Environments Vol. 7: Natural Environments

### MSFC Natural Environments Branch/EV44

**ESD**  
Point of  
Contact  
(Barry Roberts-  
MSFC)

**EGS**  
Natural  
Environments  
Lead  
(Kathy Rice –  
KSC)

**Orion  
MPCV**  
Natural  
Environments  
Lead  
(Karen Altino –  
MSFC)

**SLS**  
Natural  
Environments  
Lead  
(Frank Leahy –  
MSFC)

Exploration Systems Development (ESD)  
Exploration Ground Systems (EGS)  
Marshall Space Flight Center (MSFC)  
Multi-Purpose Crew Vehicle (MPCV)  
Space Launch System (SLS)



## NE Branch T&PE Team is actively involved in the preparation for the Artemis I launch.

- We are supporting the Artemis I Day-of-Launch Initialization-Load Update (DOLILU) development activities.
  - Completed the Profile Envision and Splicing Tool (PRESTO) & finishing development of the Weather Analysis Display (WAND) tool
  - Conducting training & simulations
    - Training through document review, interactive courses, and exercises
    - Started supporting DOLILU simulations
- The weather Launch Commit Criteria (LCC) for SLS have been approved for the Artemis I launch.
- We are currently working on verification of the implementation of natural environments for the hardware, and certification for flight readiness.
- The Artemis I launch is currently planned for November of 2020.

## The T&PE Team is also involved in several other areas.

- Global Reference Atmospheric Model (GRAM) Upgrade Task
  - A second year of funding has been provided to continue working with NASA Langley Research Center to create new planetary GRAM's for outer planets, update current planetary GRAM models (Mars, Venus, Titan, etc.), and Earth GRAM.
    - The working toward all GRAM models having the same core structure.
- The team is continuing to provide in-sight support to Commercial Crew Program.
  - Upcoming flights over the next six months include the Boeing Orbital Flight Test, Space X Demo-2 (crewed) and the Boeing Crewed Flight Test.
- Recently completed updates to the Range Reference Atmospheres for the Range Commanders Council Meteorology Group.
- We continue archive of terrestrial data from KSC/Eastern Range.