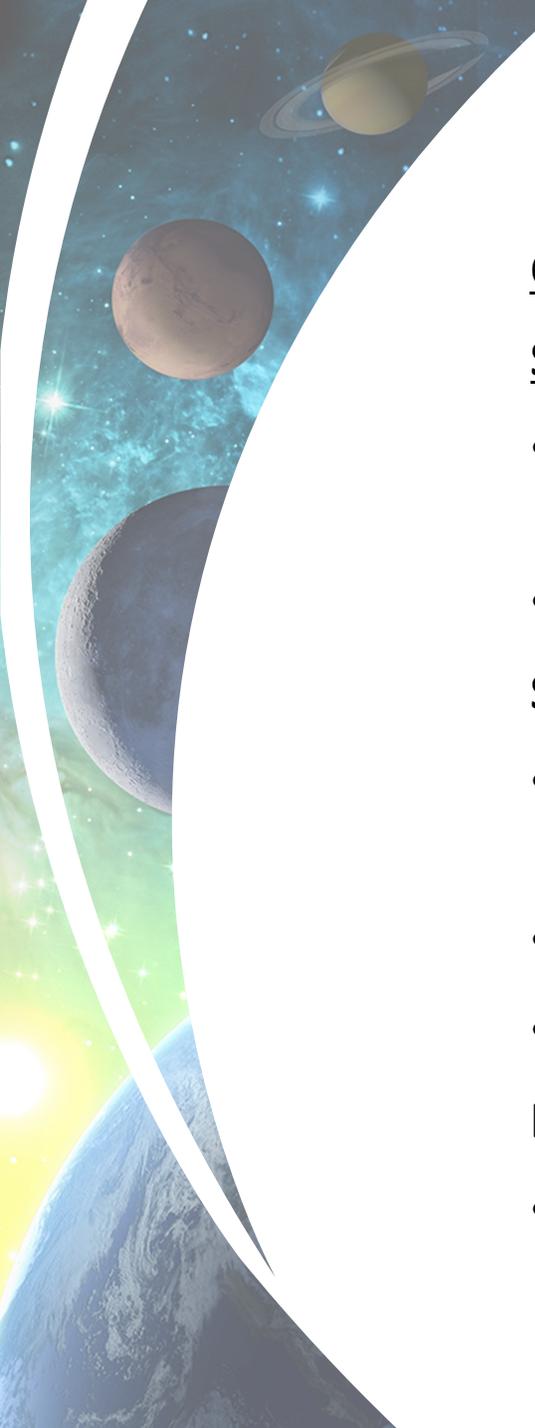# EXPLORE
SOLAR SYSTEM&BEYOND
R2O2R Town Hall

James Spann, Space Weather Lead,

Jamie Favors, Space Weather Deputy for Programs

Genene Fisher, Space Weather Deputy for Science

Heliophysics Division, NASA HQ

Space Weather Program ROSES Activities.

Competed Research

SBIR

- 2018 Phase I, Phase II-E Oct. 2021: Automated Radiation Measurements for Aerospace Safety – Dual Monitor (ARMAS-DM)

- 2022 Phase-II SBIR, 2 of 4 Heliophysics selections are Space Weather

Space Weather Research to Operations to Research (R2O2R)

- One ROSES-23 focused topic:
    - Data Assimilation for Neutral Density Forecasting

- And a ROSES-23 *Open Call*

- *Step-1 Due 4/28, Step-2 Due 6/28*

**Heliophysics Supporting Research (HSR)**

- Two ROSES-23 Special Topics:
    - Heliophysical Transfer Functions
    - Environmental Signatures of Objects

Coordination with Federal Agencies on Space Weather R2O2R

- NASA works with partner agencies such as NOAA, NSF, and DAF to determine the Space Weather ROSES review topic each year
  - During the review and selection process, NASA meets with our partner agencies to discuss which proposals are recommended for selection
    - This enhances the federal space weather enterprise's insight in the R2O2R pipeline, provides an avenue for feedback into selections while further maintaining close integrity of the agencies are how any given Space Weather ROSES topic is addressed

- Partner agencies have option to fund non-selected proposals based
  - NASA provides the proposal with all relevant review information. The partner agency funds the proposal via its own internal funding mechanism.
  - Transition Step - The intent of this step is to focus the efforts of those selected awards to get ready for or to transition into, a testbed process.

The R2O/O2R Process
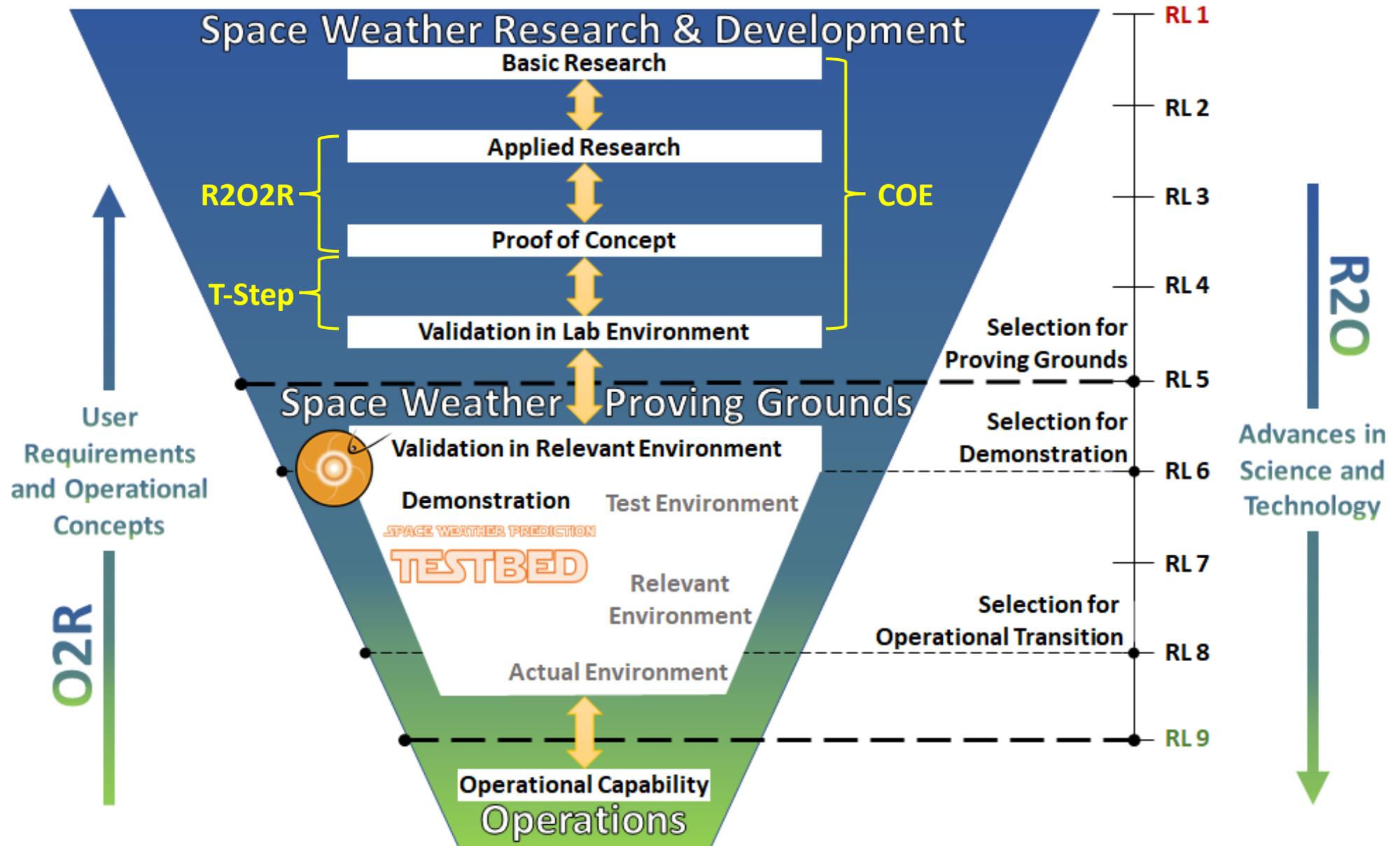
Space Weather Centers of Excellence

- The purpose of these Centers is to provide significant long-term investment in research and infrastructure development to address major challenges in space weather in an integrated multidisciplinary fashion, explicitly and fundamentally incorporating R2O and O2R.
  - Proposed Center efforts are highly ambitious and address critical challenges in space weather.
  - This program supports research that cannot be effectively done by individual investigators or small teams, and requires the synergistic, coordinated efforts of a research center.
  - First solicited as part of ROSES-22
  - Anticipate making announcements of selections in May
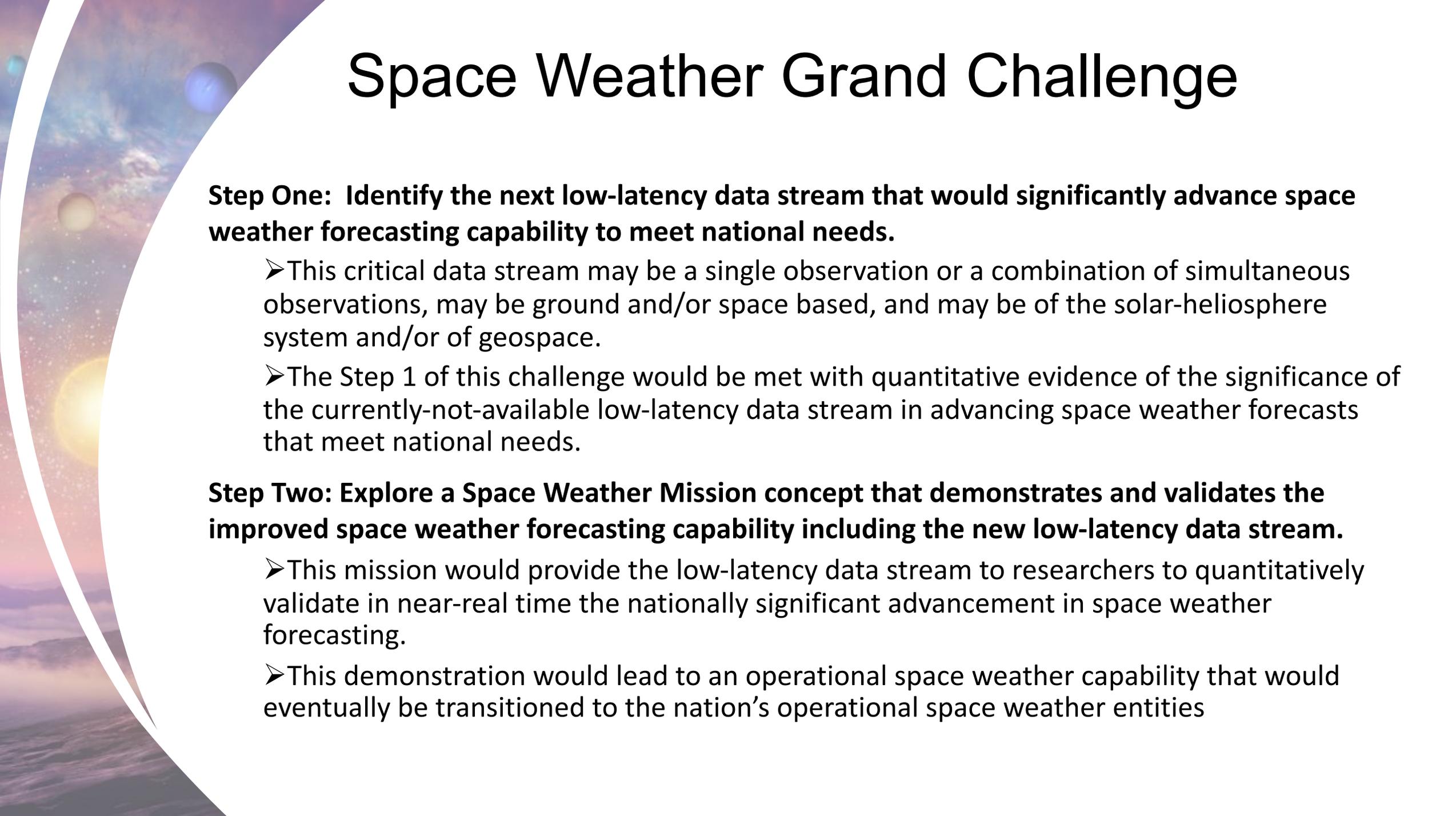
Space Weather Grand Challenge

Step One: Identify the next low-latency data stream that would significantly advance space weather forecasting capability to meet national needs.

➢This critical data stream may be a single observation or a combination of simultaneous observations, may be ground and/or space based, and may be of the solar-heliosphere system and/or of geospace.

➢The Step 1 of this challenge would be met with quantitative evidence of the significance of the currently-not-available low-latency data stream in advancing space weather forecasts that meet national needs.

Step Two: Explore a Space Weather Mission concept that demonstrates and validates the improved space weather forecasting capability including the new low-latency data stream.

➢This mission would provide the low-latency data stream to researchers to quantitatively validate in near-real time the nationally significant advancement in space weather forecasting.

➢This demonstration would lead to an operational space weather capability that would eventually be transitioned to the nation's operational space weather entities