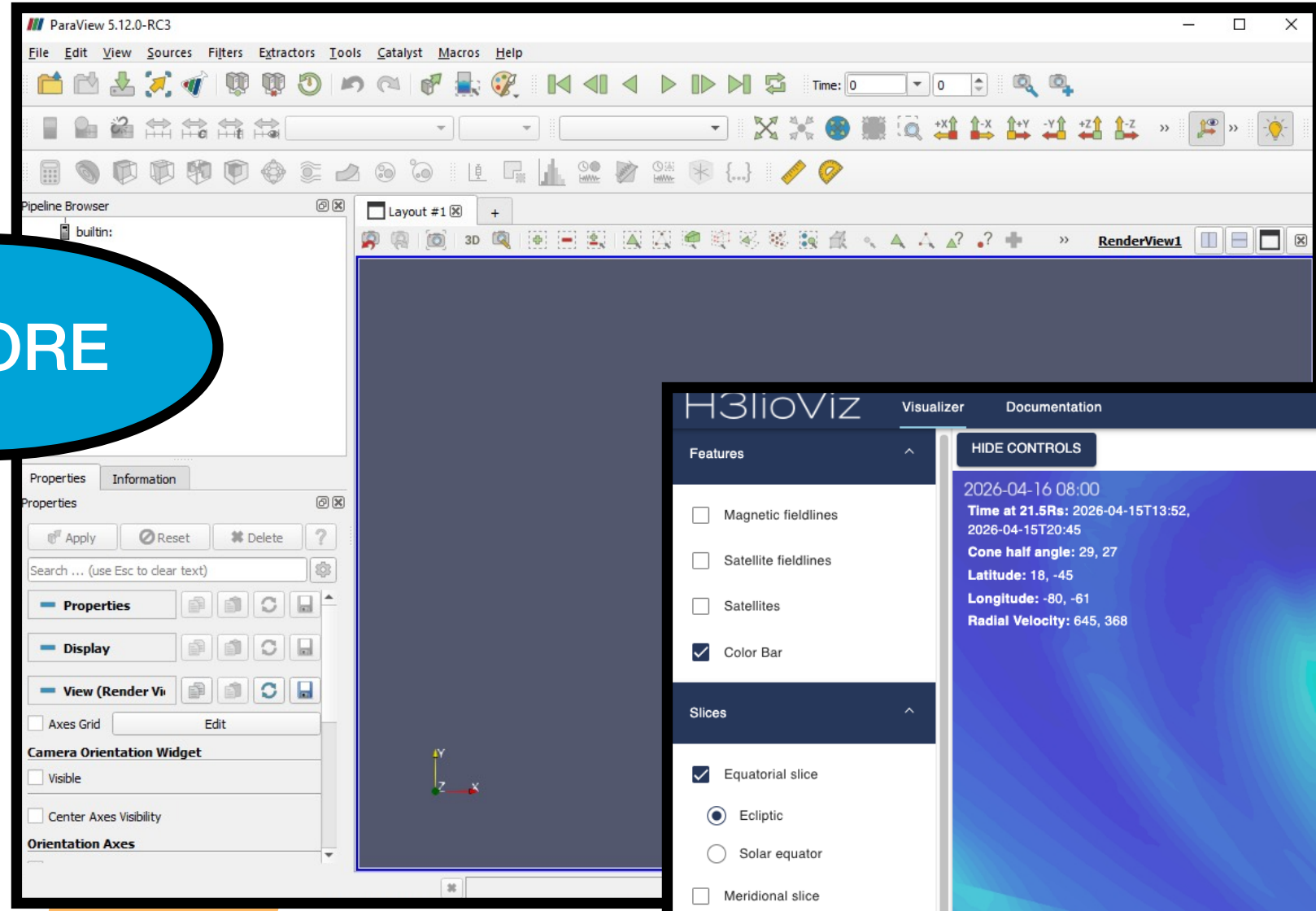


The H3lioViz R2O2R Project: a web application using co-production to enhance both research and operations

Jenny Knuth, [1][3][4]; Greg Lucas, [1][3][6]; Brian McClellan, [3][4]; Eric Adamson, [2]; Mark Miesch, [2][3][5]; Scott Longmore, [2][3][5]
 [1] SWx TREC; [2] NOAA/SWPC; [3] University of Colorado, Boulder; [4] LASP; [5] CIRES; [6] Rocket Lab

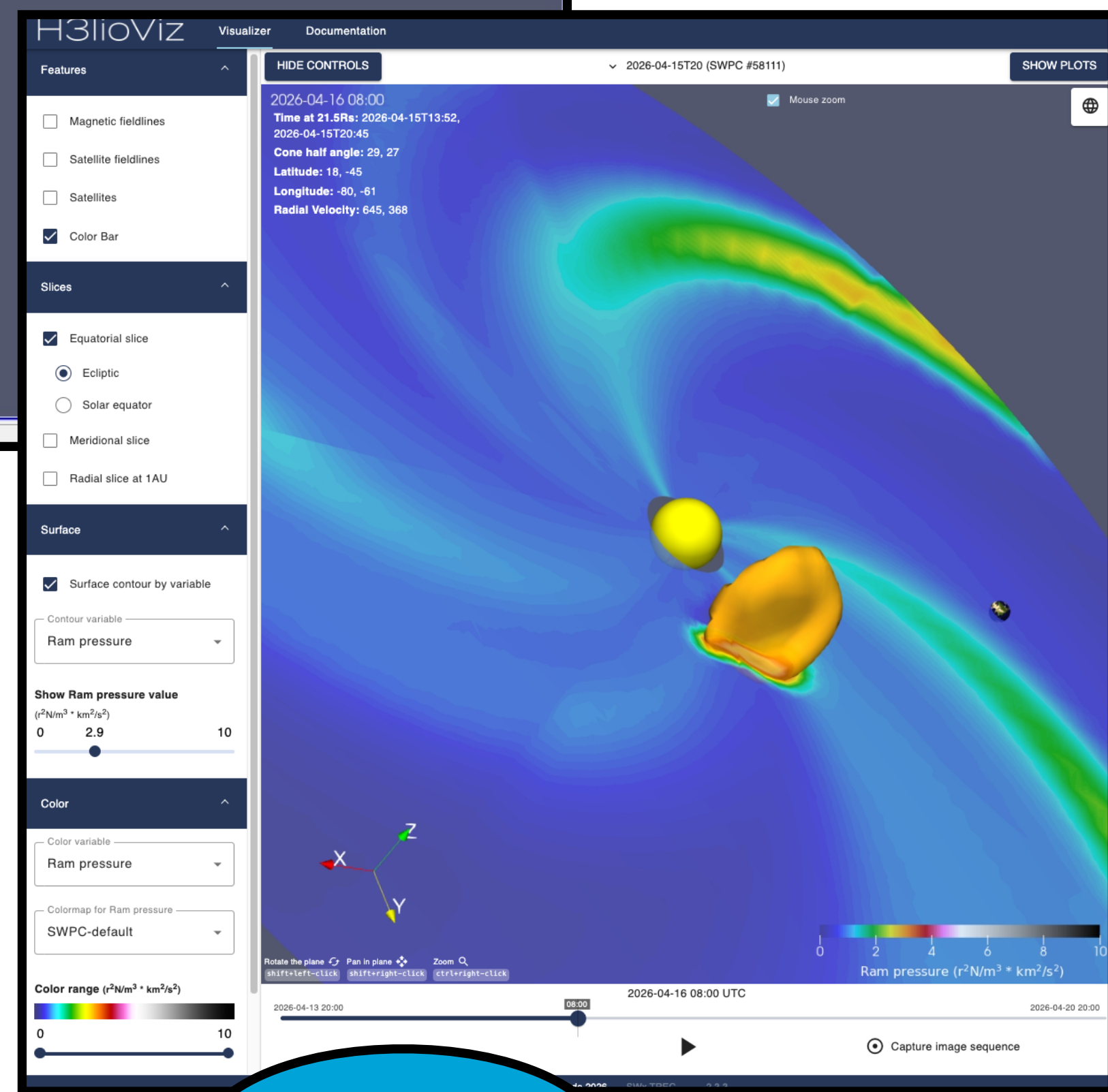
Original ParaView control panel



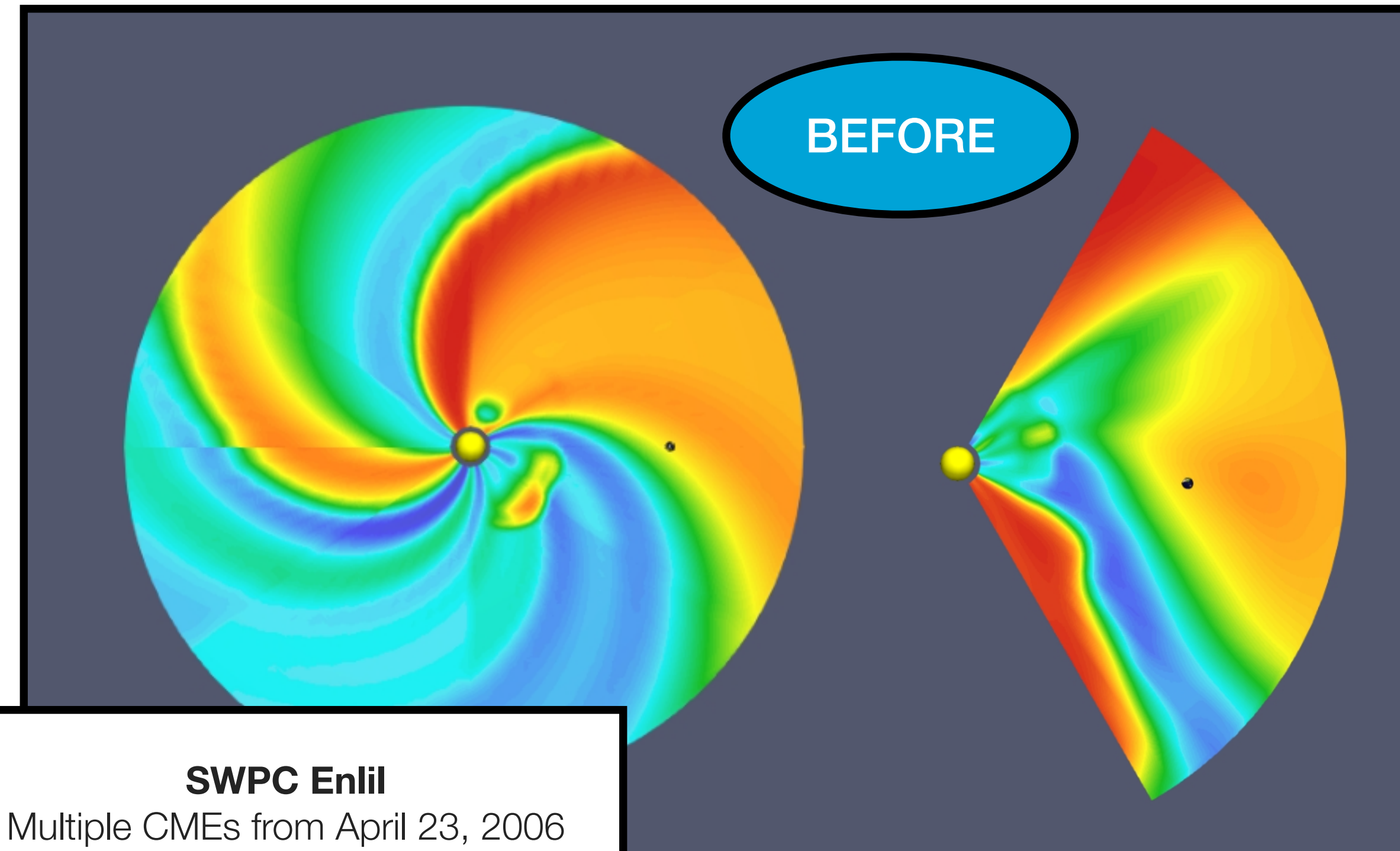
BEFORE

Controls pared down to the essentials via iterative testing and feedback from forecasters and researchers

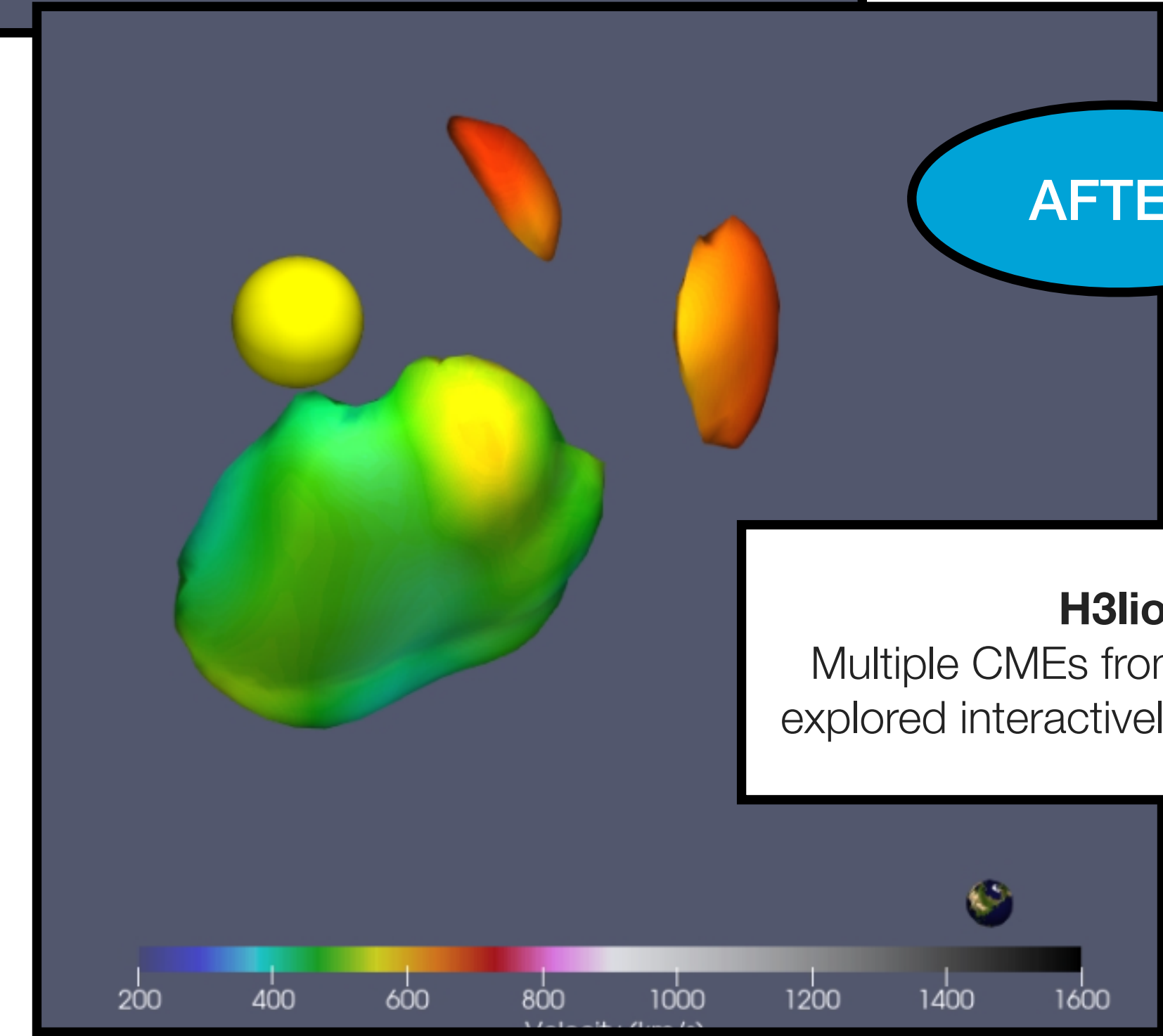
H3lioViz control panel



AFTER



SWPC Enlil
Multiple CMEs from April 23, 2006 viewed in static 2-dimensional planes



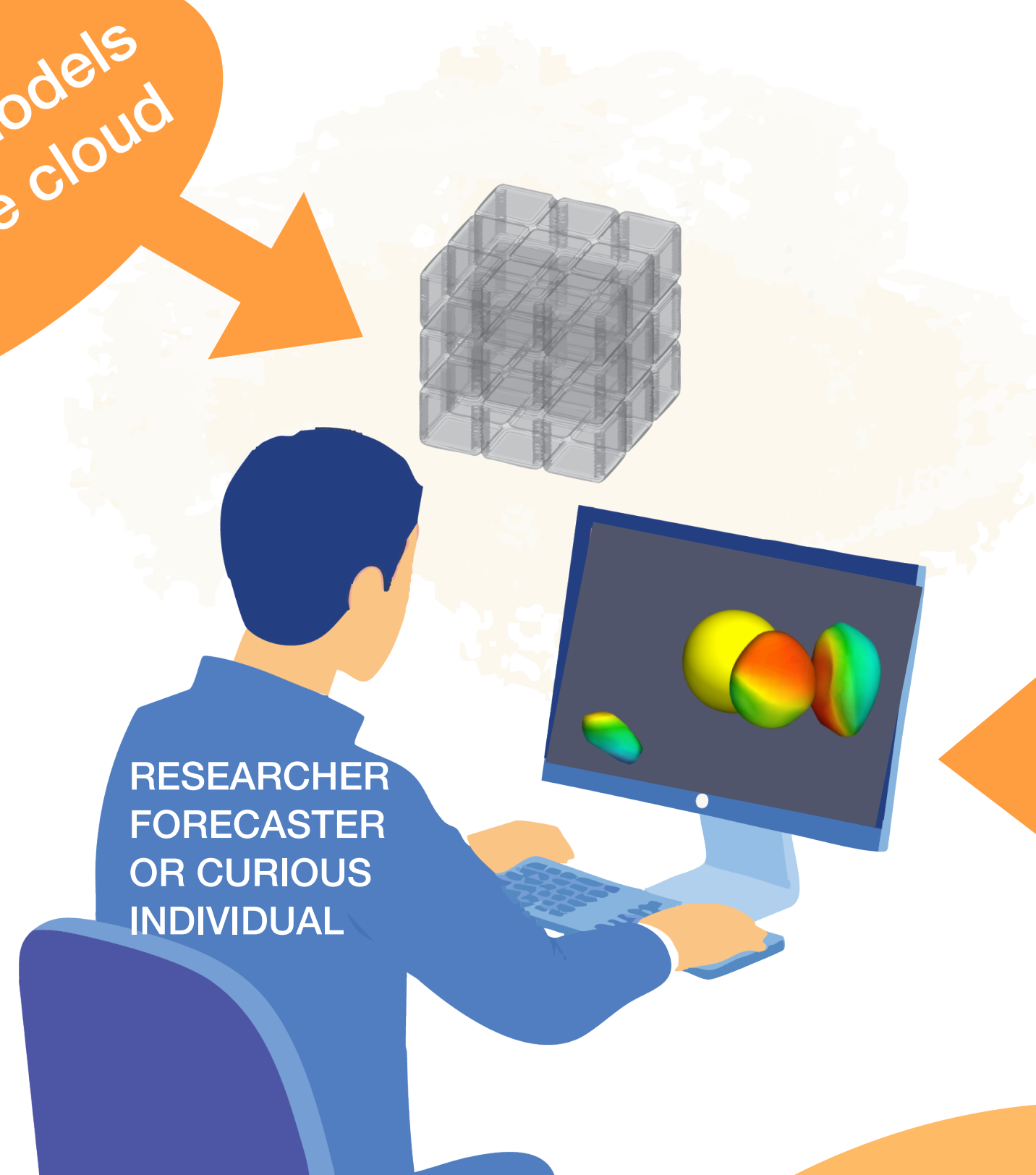
AFTER

H3lioViz
Multiple CMEs from April 23, 2026 explored interactively in 3-dimensions

SWx TREC
<https://swx-trec.com>



Data and models stay in the cloud



RESEARCHER
FORECASTER
OR CURIOUS
INDIVIDUAL

Visualizations available from any browser



Research
Learn from the past
Provide context
Create models
Verify historical simulations

R2O2R
RESEARCH TO OPERATIONS TO RESEARCH

Operations
Provide predictions from current conditions
Understand and run models
Improve forecasts
Protect the public

It takes a village...and many iterations. Thanks to NASA #24-SMDSS24-0082 for the funding and the time and input from **forecasters** at SWPC and the MetOffice, and **researchers** at NOAA, CIRES, MOSWOC, and the CCMC

H3lioViz is currently publicly deployed at <https://swx-trec.com/h3lioviz> and internally at the NOAA SWPC TestBed. Users anywhere—researchers and forecasters alike—can view and explore the latest SWPC Enlil runs in 3 dimensions.