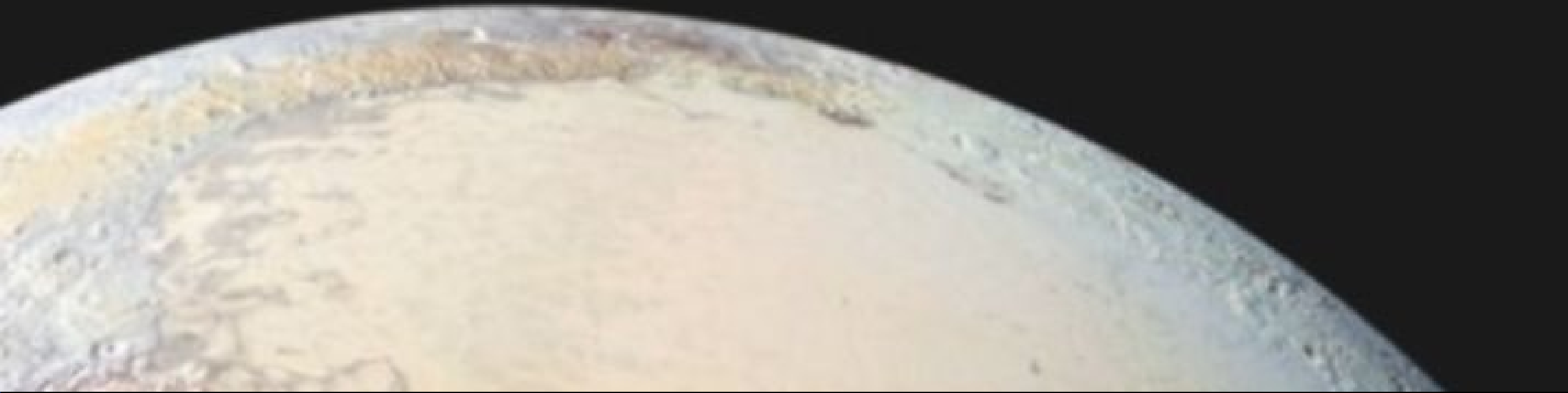


# Unraveling True Polar Wander on Pluto

**Oliver White**

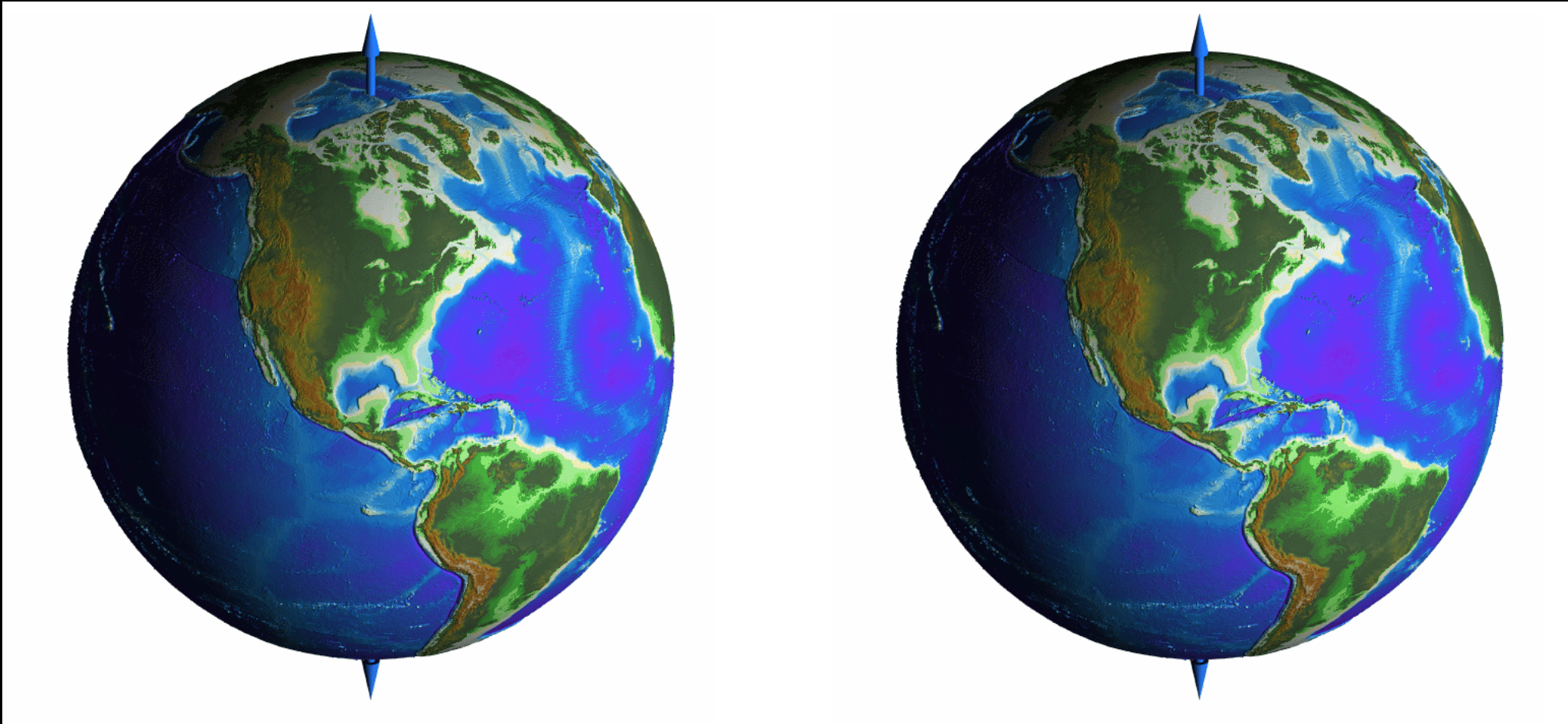
**New Horizons Co-Investigator, SETI Institute/NASA Ames Research Center**



# True Polar Wander on Earth

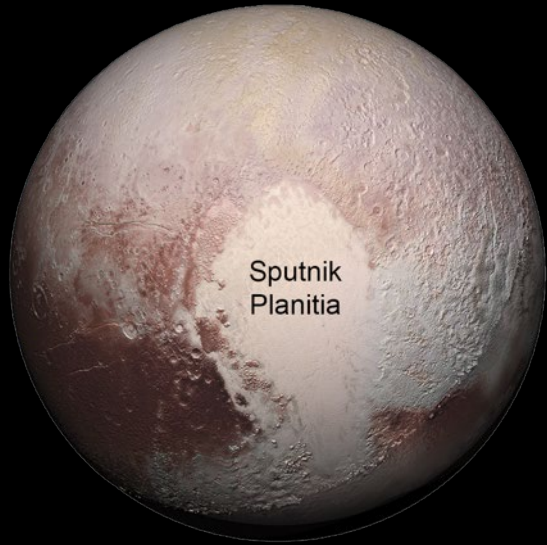
A “positive mass anomaly” like a bulge will reorient the planet to be closer to the equator.

A “negative mass anomaly” like a basin will reorient the planet to be closer to the pole.

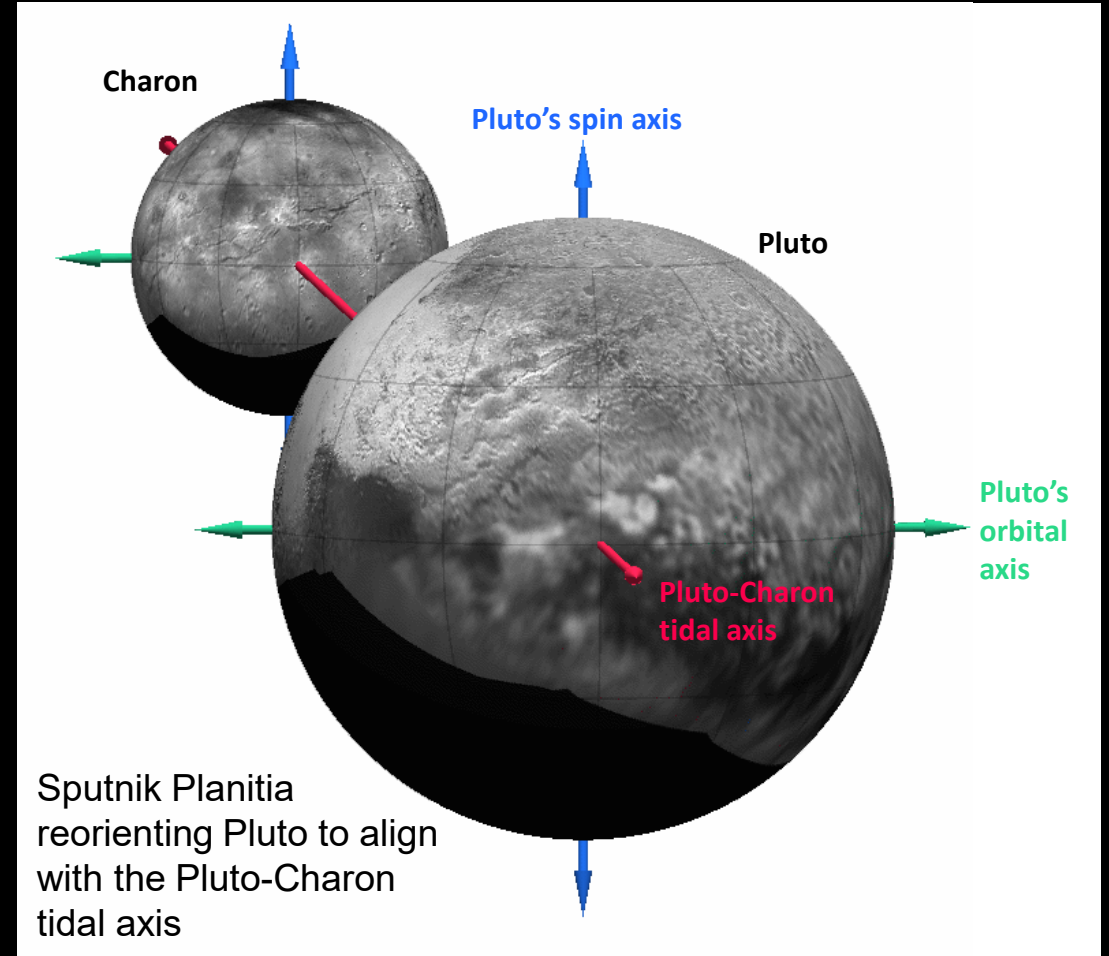
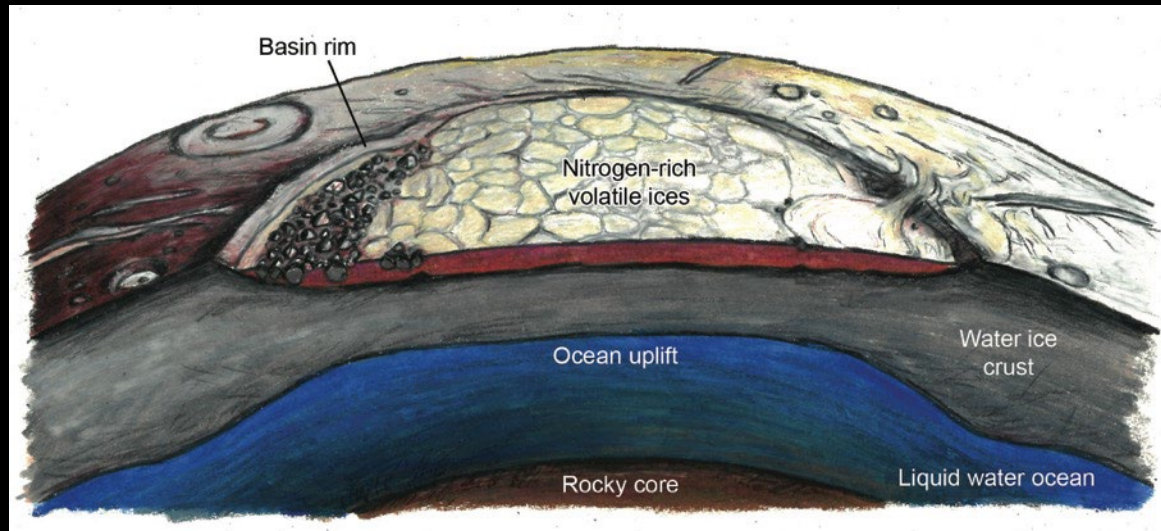
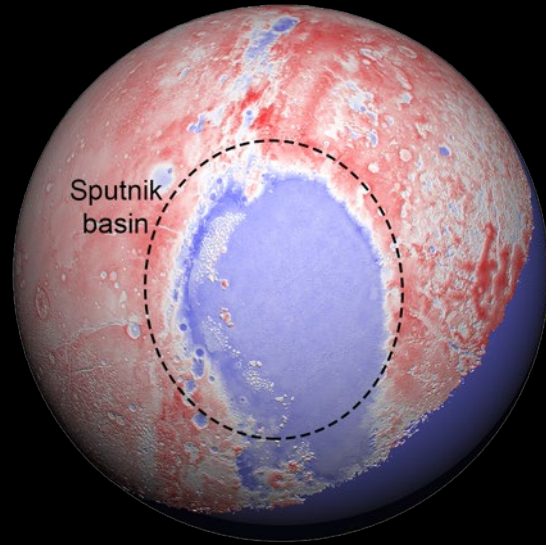


# Sputnik Planitia Holds the Clue to Polar Wander on Pluto

Enhanced Color Imaging

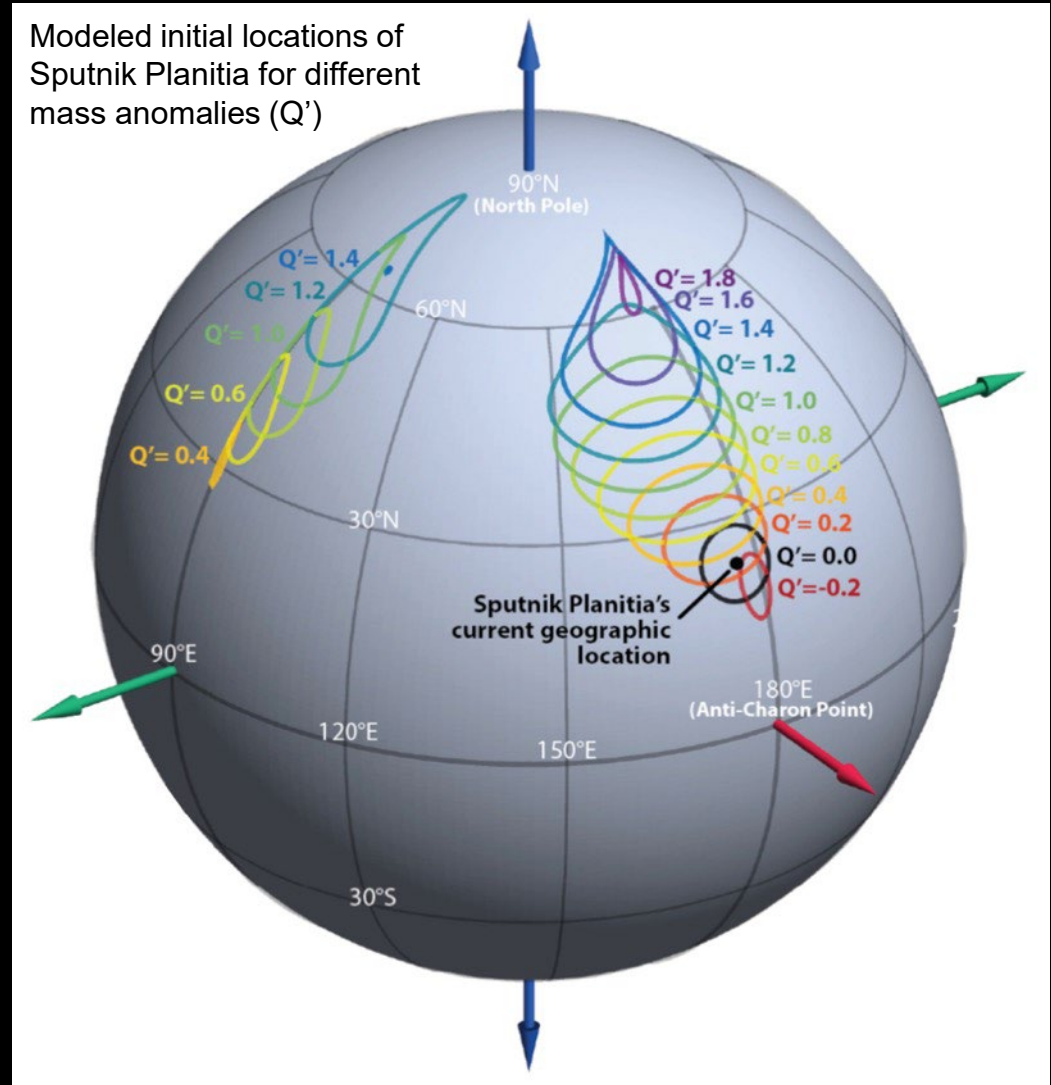


Topography



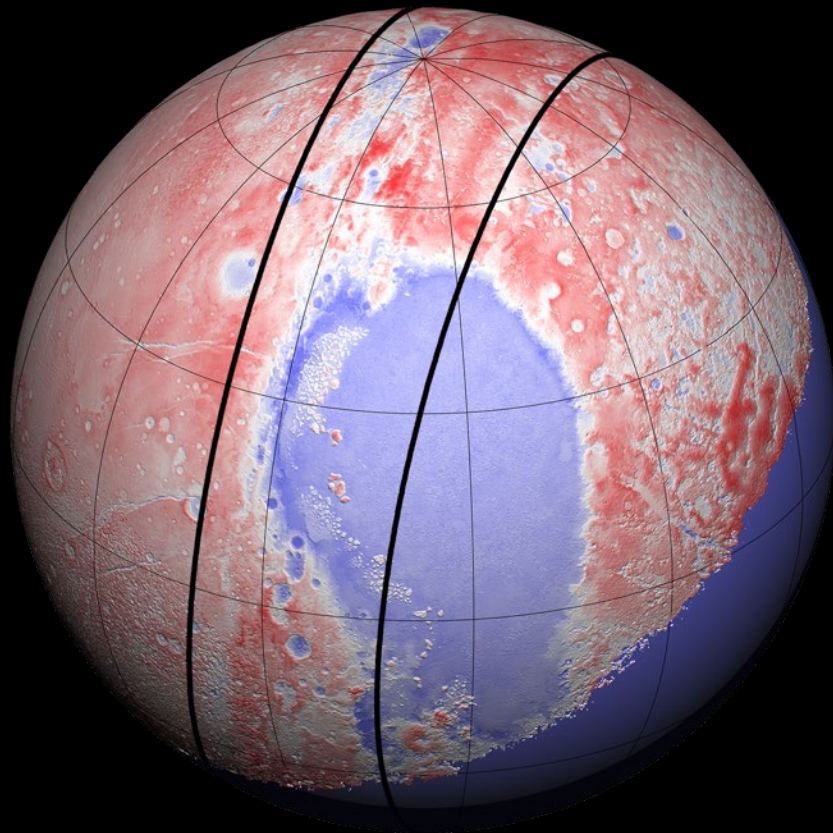
# Factors in True Polar Wander on Pluto

- Pluto's pre-Sputnik orientation.
- The size of Sputnik Planitia's mass anomaly.
- The amount of nitrogen ice filling the basin.
- The effect of Pluto's axial tilt on infilling of the basin.



# Clues in Pluto's Ancient Geology

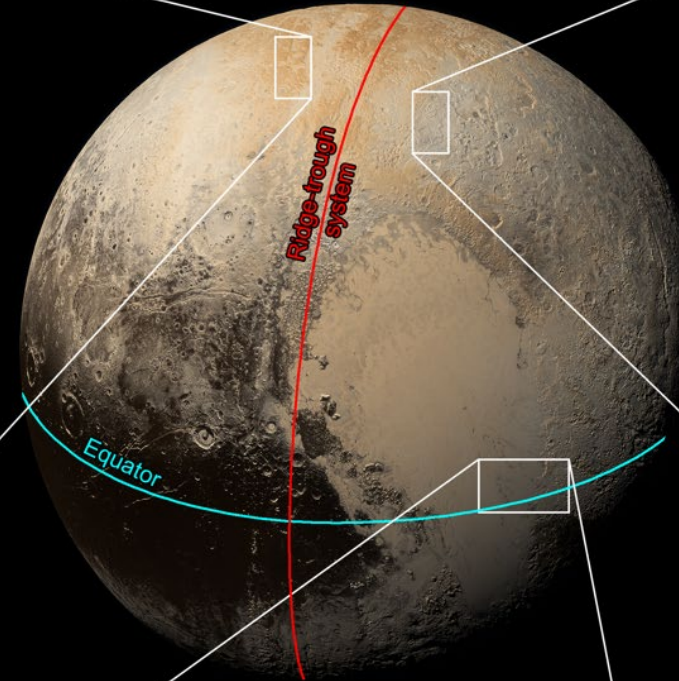
Boundaries of Pluto's  
ridge-trough system



Deeply eroded valley walls  
in Lowell Regio



Dense, branching channel  
networks in Pioneer Terra



Nitrogen ice  
valley glaciers  
flowing into  
Sputnik  
Planitia

