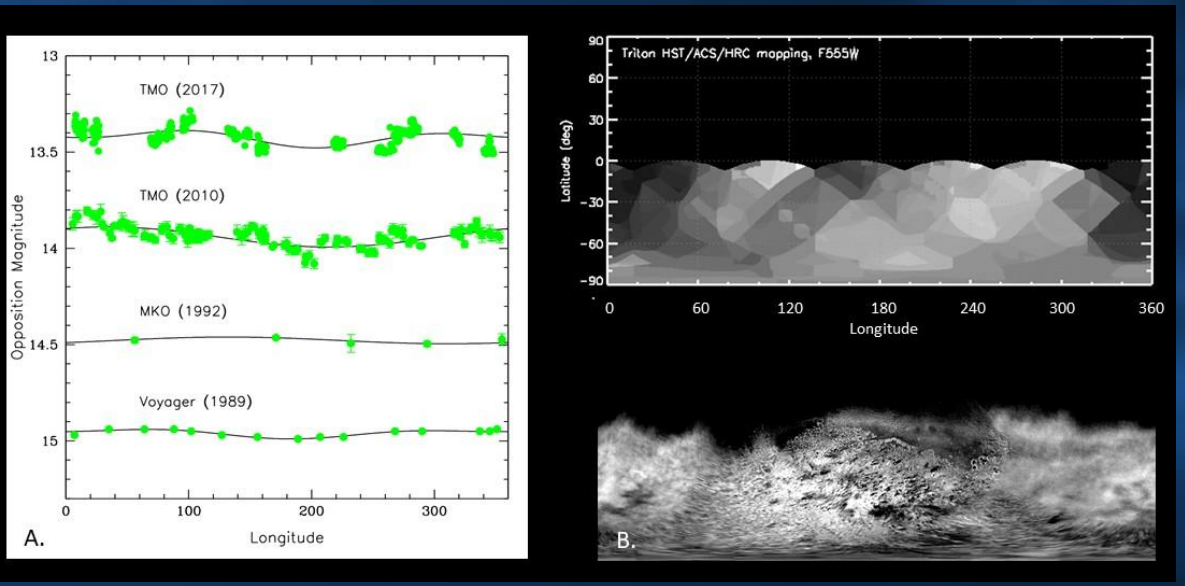
Neptune's Moon Triton: Is volatile transport still occurring?

The Voyager 2 spacecraft showed Triton to be an active world with numerous geysers and probable seasonal volatile transport. This large moon of Neptune is now believed to be both a captured Kuiper Belt Object and an ocean world.

- A recent study worked to observe and analyze Triton's current rotational lightcurve, which yields a picture of its volatile distribution, to understand whether transport is still occurring.



A. Lightcurves of Triton through time, with the results from this work on top. TMO is Table Mountain Observatory and MKO is Mauna Kea Observatory. **B.** The existing maps of Triton (with *Voyager 2*'s on the bottom and the *HST* map on top) show substantial volatile transport (Bauer et al. 2010).

- This study used data acquired at the Table Mountain Observatory (TMO) 24-inch telescope, located near Wrightwood, California, and the BVR filter set.
- Results showed that Triton is an active world, exhibiting both current geologic activity and ongoing transport of volatiles, which is likely seasonal and that the northern polar cap of Triton is small or non-existent.
- Further analysis showed that not only is volatile transport continuing on Titan's surface, but there are also similarities between Triton's polar caps to those of the Earth and Mars.
- Moreover, all three bodies exhibit the same asymmetry: one polar cap is larger than the other, which may indicate similar dynamic processes at work throughout the solar system.

Hicks, Buratti, and Dombroski (2022) *The Planetary Science Journal*