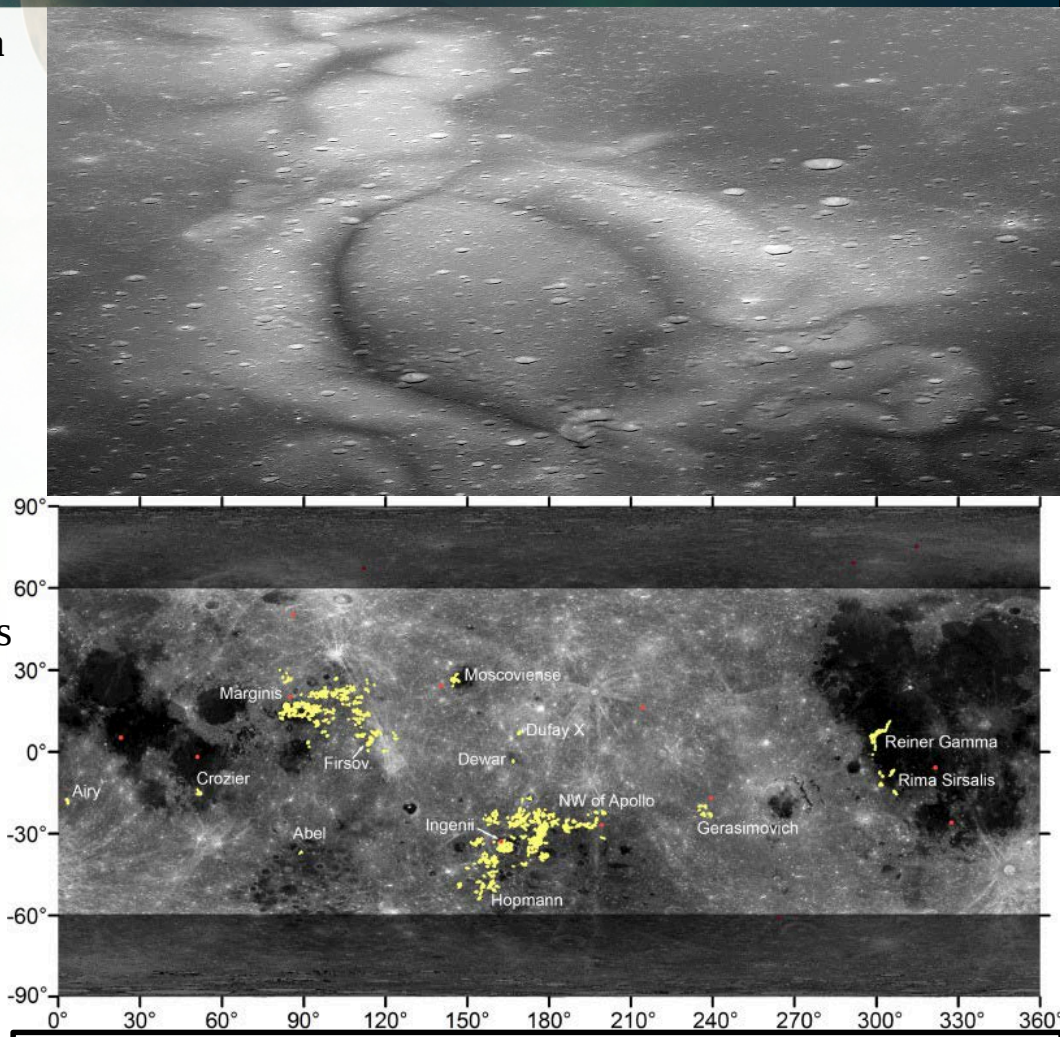
Lunar Swirls: Unraveling the Origin of Mysterious Features

Using data from the LRO Wide Angle Camera (WAC), over 100 individual lunar swirls have been mapped, some for the first time.

- Lunar swirls have long been recognized as unique features, particularly Reiner Gamma (top), yet their origin has been unclear. Data from LRO has been used to create the first global inventory of these features (bottom).
- Notably, this activity has identified two prominent swarms of swirls, one near the equator, and one in northwest portion of the South Pole-Aitken Basin.
- The WAC data has enabled characterization of space weathering near the swirls and shows that areas within swirls weather more slowly than areas outside of them.
- A comparison between the WAC distribution and maps of the magnetic field shows that all swirls are associated with magnetic anomalies, although not all magnetic anomalies are associated with swirls.
- Though this data is not sufficient to discern between formation models for the swirls, it will guide what future studies are needed to better answer this mystery.



Top: LRO Narrow Angle Camera image of the iconic Reiner Gamma swirl. Image is 60 km wide at center. Bottom: Global map of swirls (in yellow), areas poleward of 60ºN/S are greyed out as these areas have low solar illumination, making identification of such features more challenging.

Denevi, B.W., et al (2016) *Icarus.*