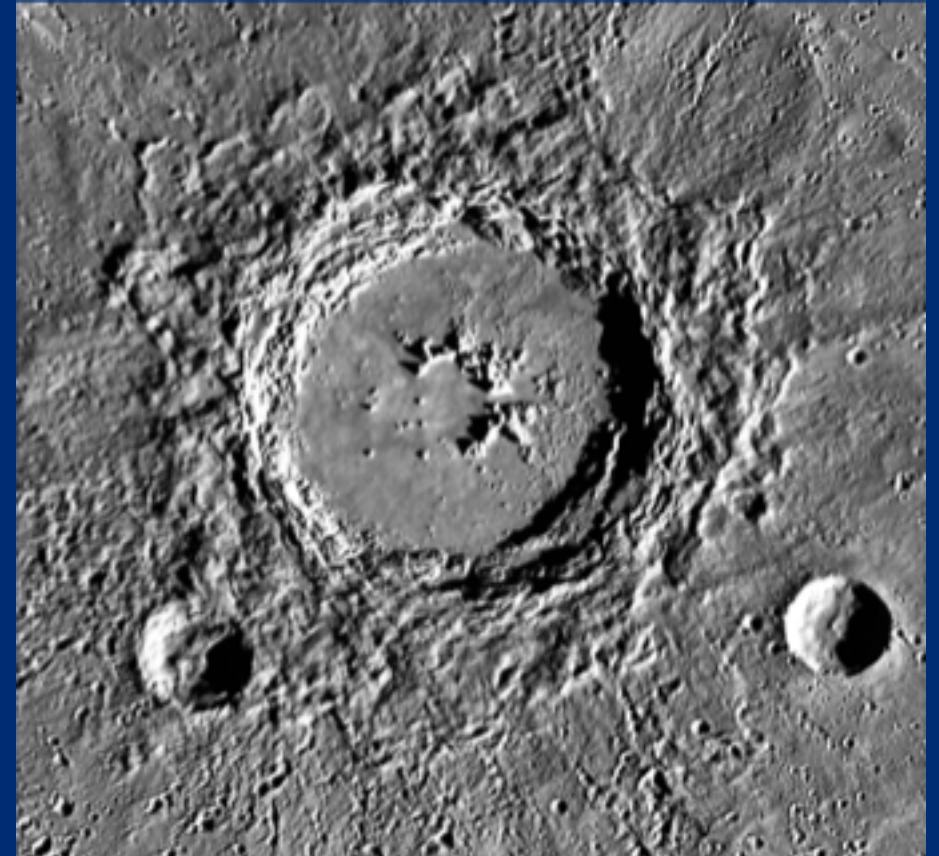


How did Mercury get its ice?

- Mercury has vast deposits of water ice trapped in permanently shadowed regions at the poles. This observation is in stark contrast with similar regions on the Moon, which have very low abundances of ice.
- One potential explanation is that a large comet recently struck Mercury and deposited the ice that we observe today. Such an impact would have left behind a large crater as evidence.
 - Hokusai crater is the best candidate source crater for Mercury's water ice if it was delivered by a single recent (<100 Myr) impact event.
 - The Hokusai impact was recent and oblique, and the impactor is estimated as between 6–31 km in diameter, depending on the assumed projectile composition and impact velocity.
 - These impact traits and the calculated size of a water-rich projectile are consistent with the delivery of the amount of ice that is presently observed at Mercury.



Hokusai Crater, 97 km in diameter

The Hokusai impact could be the source of Mercury's water ice!