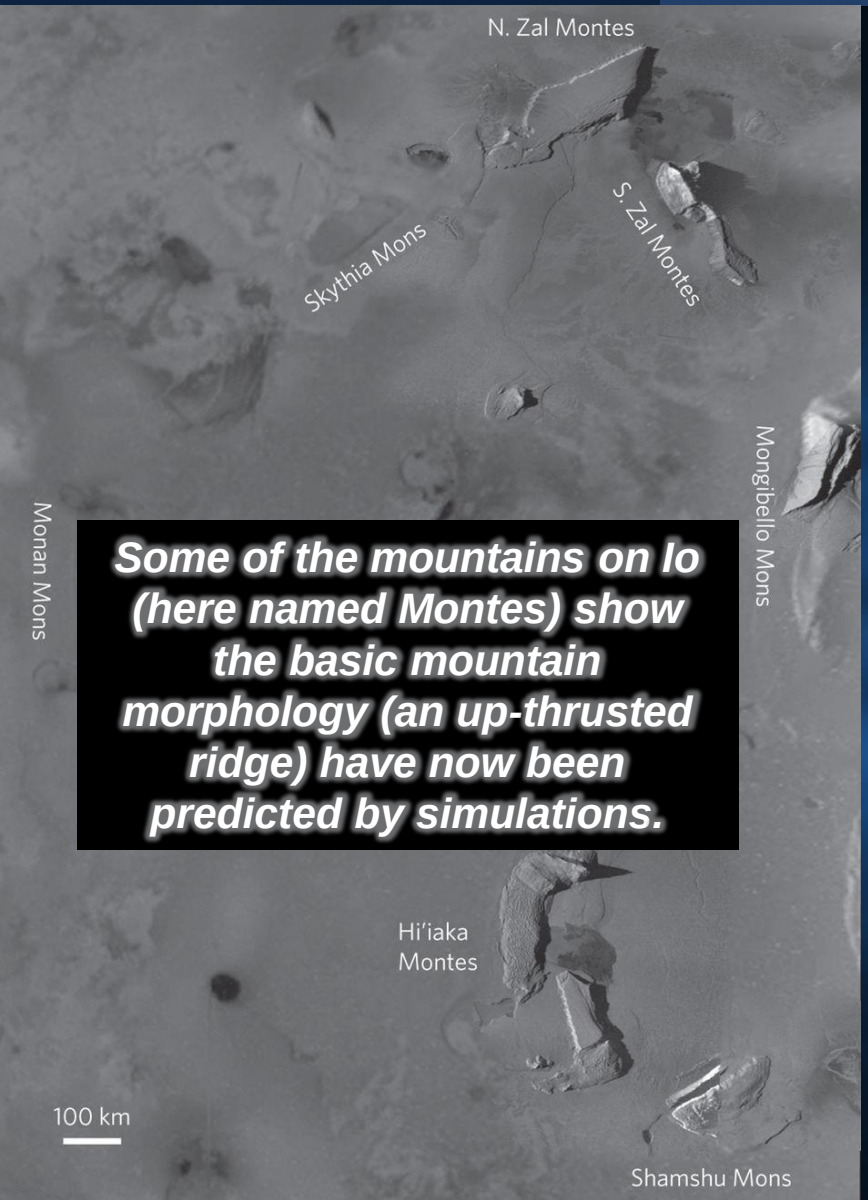
IO'S UNUSUAL MOUNTIANS



Some of the mountains on Io (here named Montes) show the basic mountain morphology (an up-thrusted ridge) have now been predicted by simulations.

The high relief of Io, the Jovian moon, has been shown to be related to the physical stresses in the surface and subsurface as a result of the near-constant volcanic activity.

- New computer simulations of imaging data collected by the Voyager and Galileo spacecraft indicate that the volcanism on Io's surface results in extremely high stresses in the deep subsurface as material is continuously being covered.
- Lower stresses in the surface result in thrust faults that penetrate deep into the subsurface and force large, isolated blocks upward.
- These features are often also associated with volcanic features called patera, which would indicate that the release in stress caused by the mountain-forming fault also allows for a pathway for the magma to erupt.
- A strong lithosphere results in ridge-like mountains and weaker resulting in massifs.
- While this type of mechanism is not seen elsewhere in the solar system, it may be similar to how the earliest land that emerged from the shallow oceans on the early Earth, and providing a window into the past.