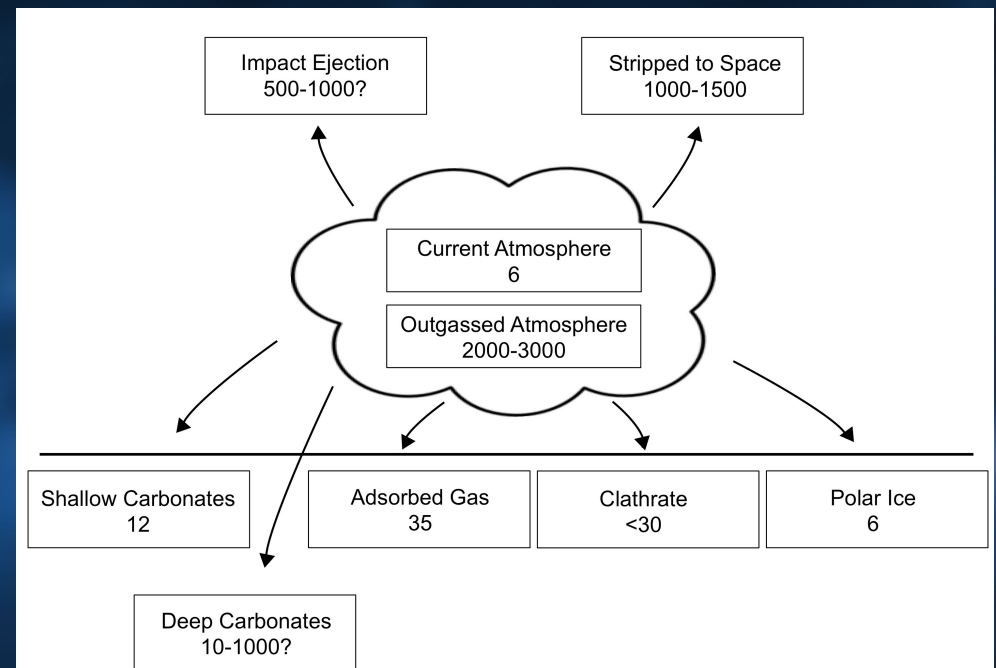


# Mars CO<sub>2</sub> Inventory Determined Using Results From Multiple Spacecraft

**Geological evidence suggests that Mars was warmer and wetter earlier in the past. Was there enough CO<sub>2</sub> on early Mars to have contributed significantly to greenhouse warming of the planet, and where did it go?**

- This study examined identifiable sinks for CO<sub>2</sub> to quantify how much there might have been, using observations from the fleet of spacecraft at Mars, including loss to space (MAVEN observations), formation of carbon-bearing minerals (MRO, MGS, PHX, and MSL) and polar ice (MRO and Mars Express).
- Results (at right) indicate that these sinks could account for loss of a thick early atmosphere (1-2 bar), and that loss to space was the major process for removing gas from the early atmosphere.
- The total CO<sub>2</sub> accounted for would have provided substantial greenhouse warming and contributed significantly to providing an early warm environment



(All amounts in mbar equivalent)

The figure indicates the CO<sub>2</sub> content of the current and lost Martian atmosphere. Boxes indicate how much CO<sub>2</sub> has been either lost to space or is locked up in a potential planetary sink.