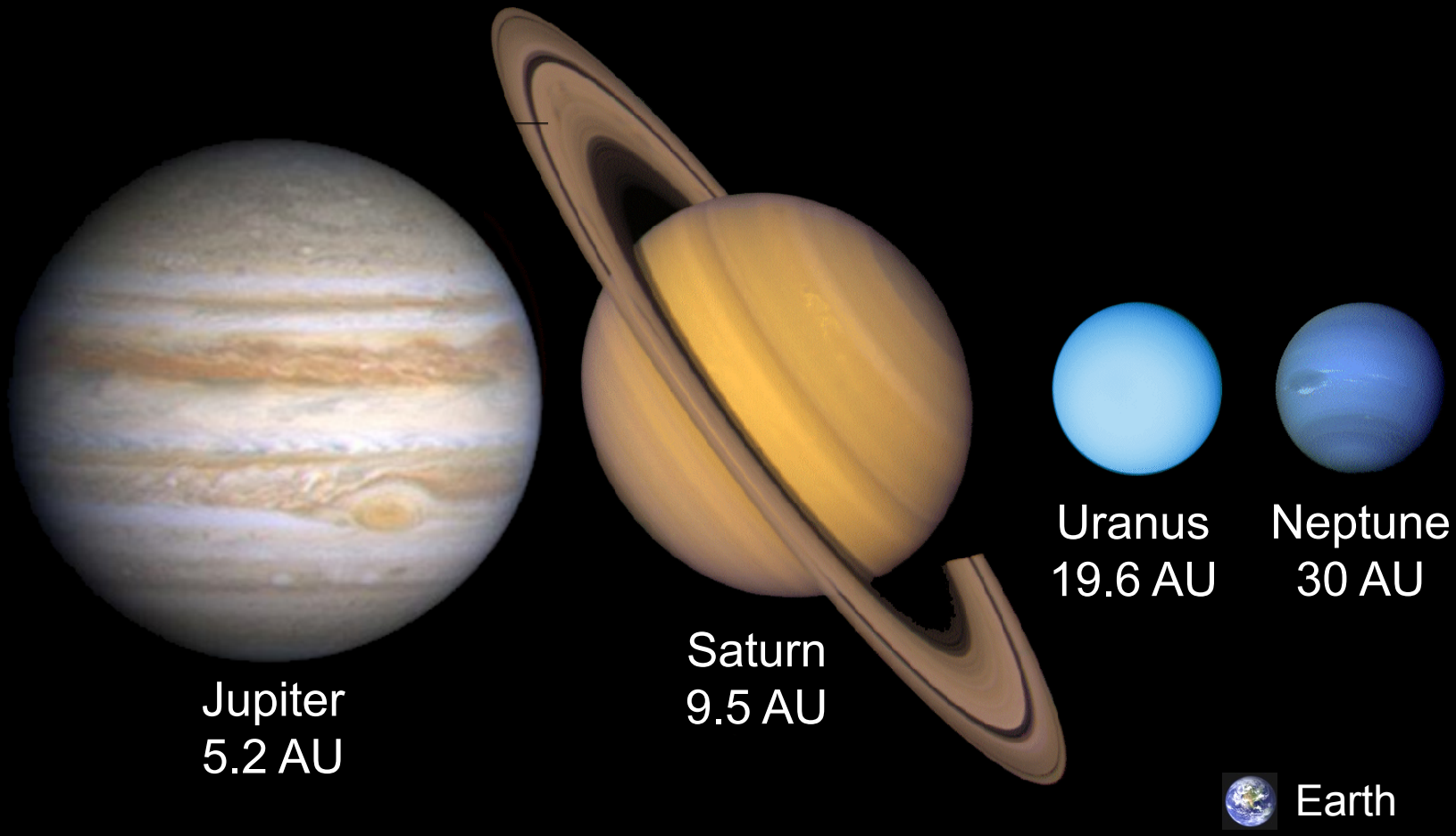
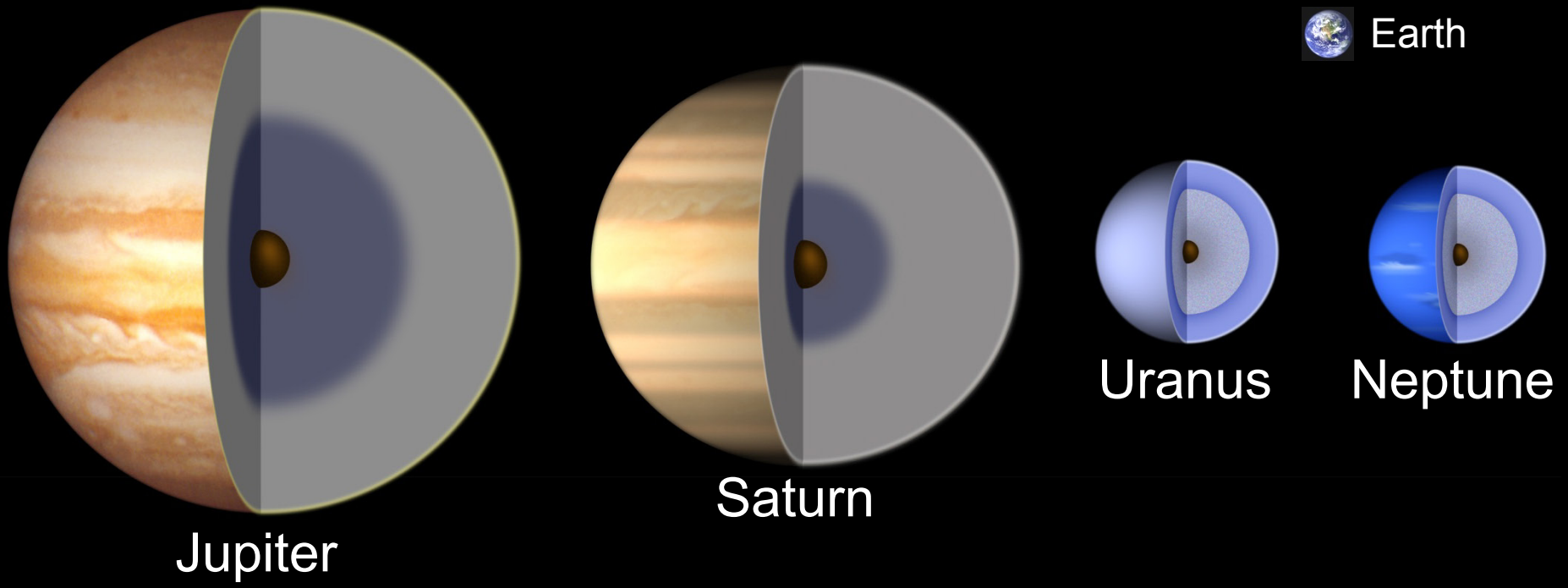
The Jovian Planets



Composed of mostly H & He and ices, with no solid surfaces

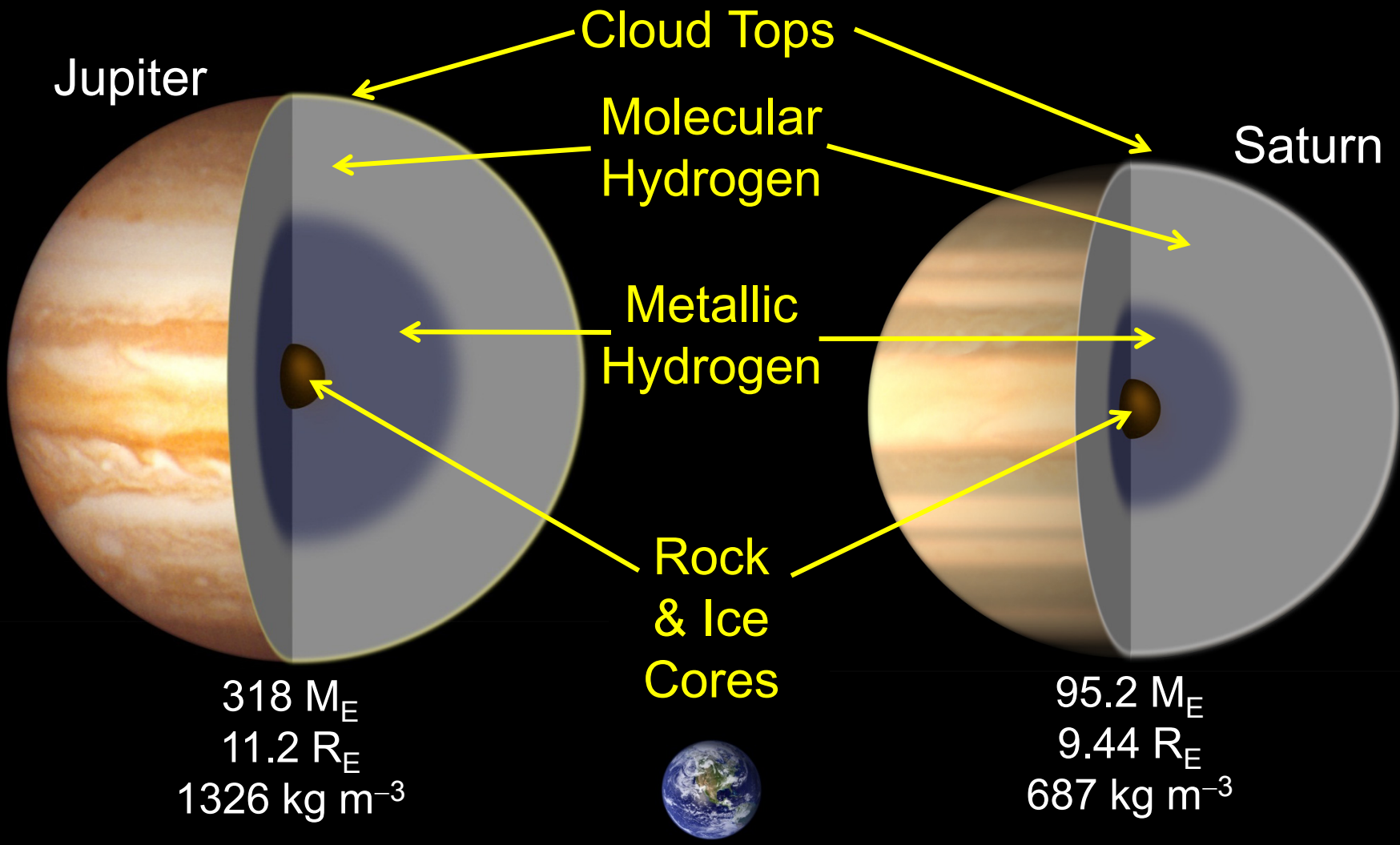
The Jovian Planets have no solid surfaces, and atmospheres dominated by Hydrogen Chemistry



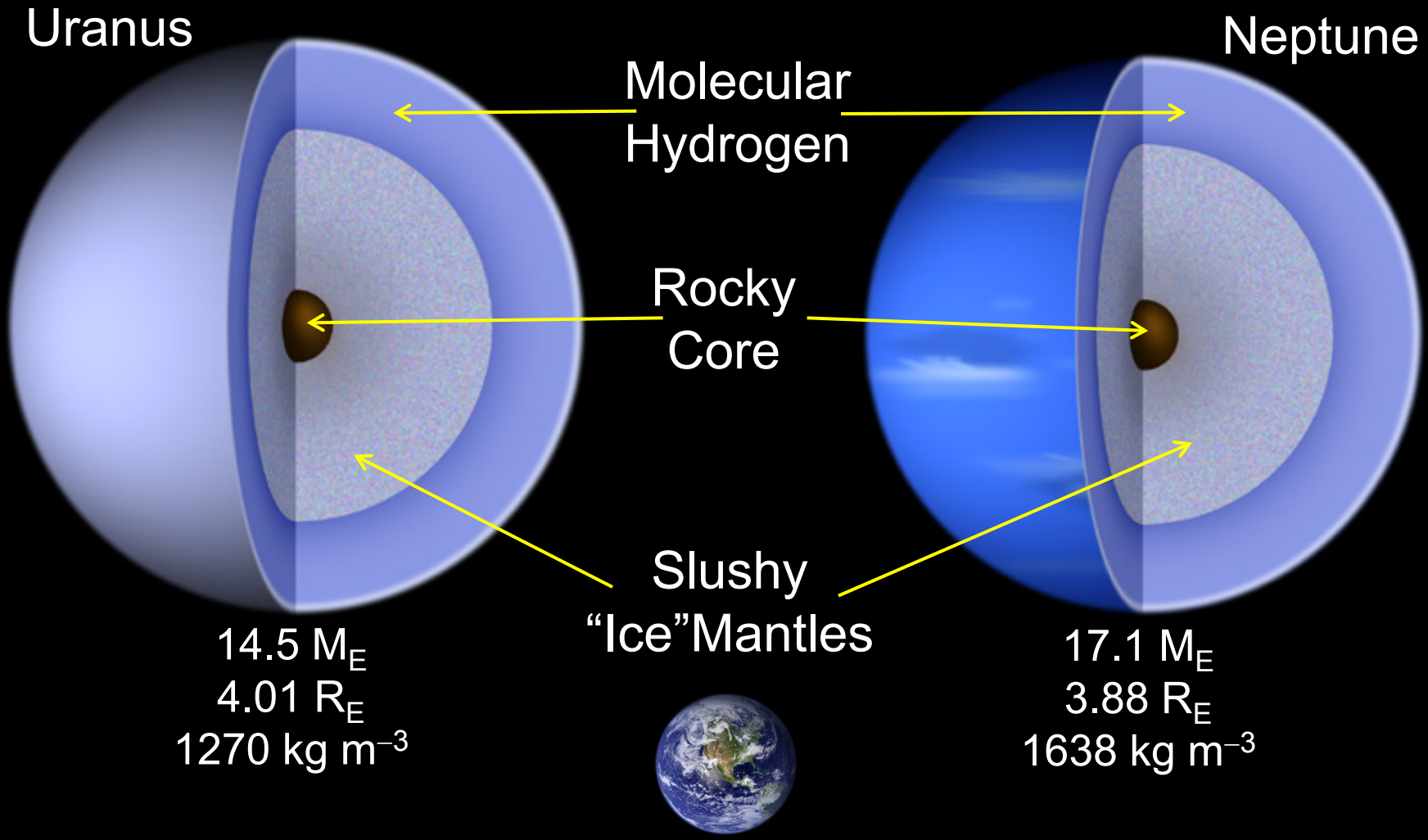
Reducing Atmospheres rich in H_2, H_2O, CH_4, NH_3 and He

By contrast, Terrestrial Planets have Oxidizing Atmospheres rich in H_2O, CO_2, and N_2 (O_2 on Earth).

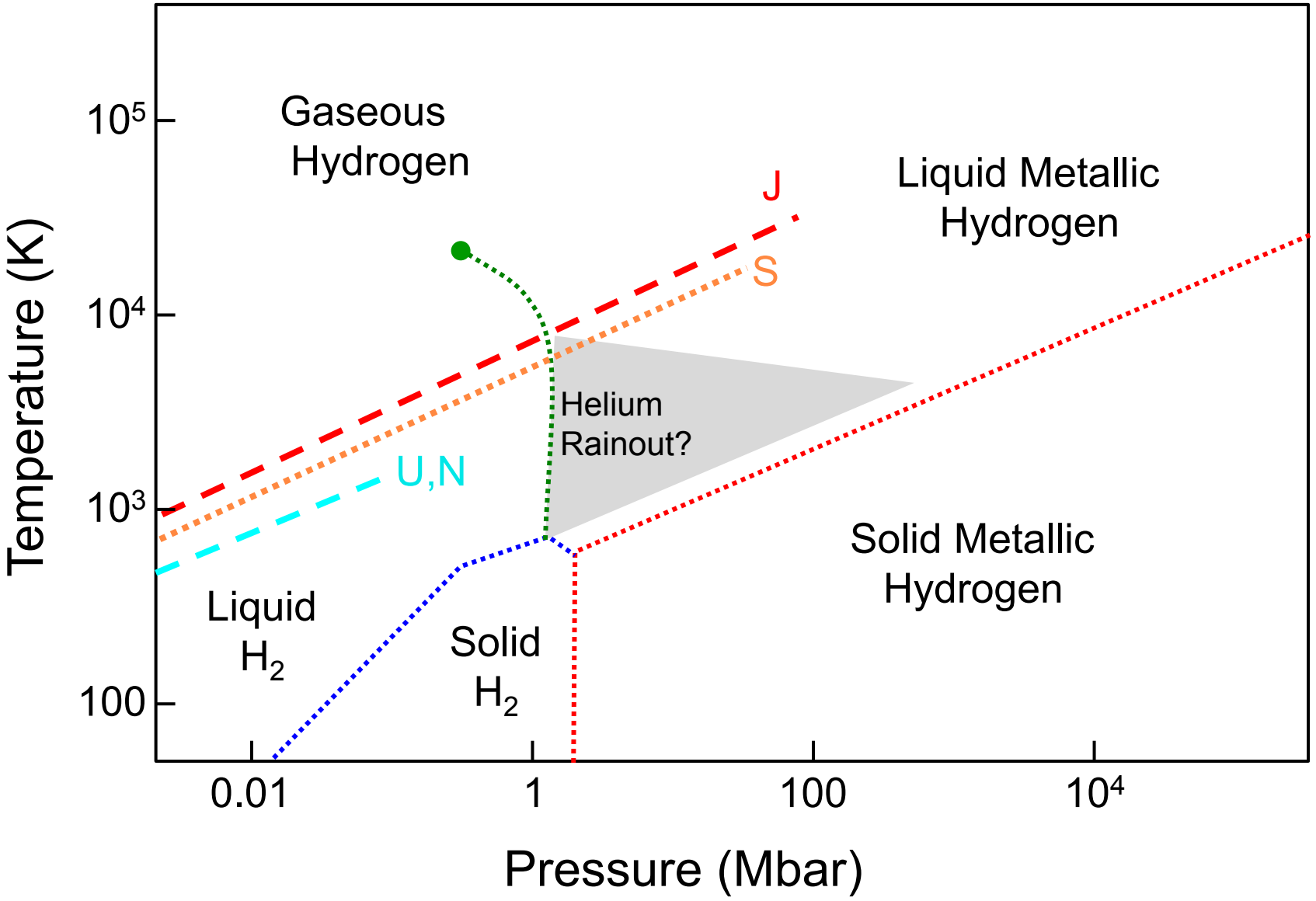
Jupiter and Saturn are Gas Giants: deep H & He atmospheres with metallic hydrogen mantles.

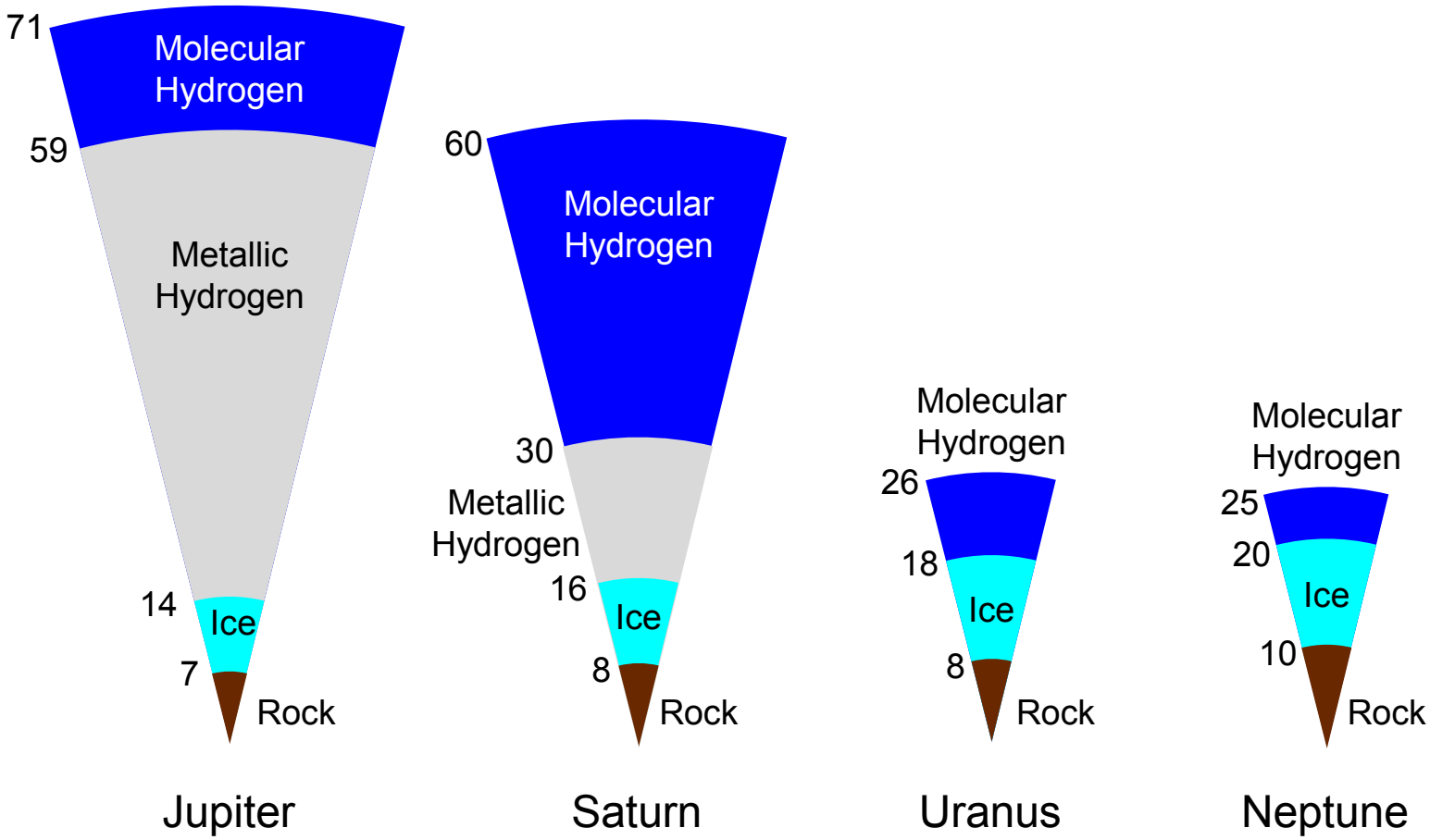


Uranus and Neptune are Ice Giants, with deep, slushy mantles of H_2O, NH_3, and CH_4 ices.



Hydrogen Phase Diagram

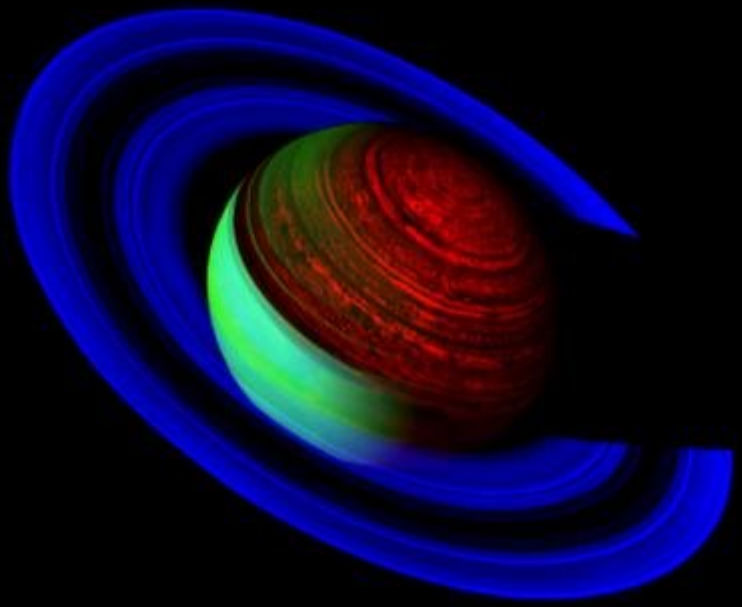




= depth in 1000 km

Jupiter and Saturn radiate more energy than they receive from the Sun.

Slowly contracting under their own weight.



Gravitational contraction releases energy that heats their interiors and powers their weather.