Structure of the Galilean Moons

- The mean density of the moons **decreases** with distance from Jupiter
- The fraction of ice which the moons contain **increases** with distance from Jupiter.
- This is because the heat from 'proto-Jupiter' prevented ice grains from surviving too close to the planet. Thus, Io and Europa are mainly rock; Ganymede and Callisto are a mixture of rock and ice.
- The **surface** of the Moons also reflects the history of their formation:

Io:	surface continually renewed by volcanic activity. No impact craters
Europa:	surface young (< 100 million years), regularly 'refreshed' – hardly any impact craters
Ganymede:	Cooled much earlier than Io and Europa. Considerable impact cratering; also 'grooves' and ridges suggest history of tectonic activity
Callisto:	Cooled even earlier. Extensive impact cratering.