

October 20, 2023
MSE 2101 topics

- Recap: the three main geological factors for habitability
- The requirements for a planetary magnetic field
 - layer of melted metal
 - planet rotation
 - convection in the melted metal layer
- What happens to the planet in the absence of a magnetic field?
- How loss of atmosphere leads to the loss of liquid surface water
- The impact of volcanism, magnetic fields and tectonic plates on long-term habitability of the planet
- The one factor to drive it all: internal heat
- Sources of internal heat
 - Collisions and impacts
 - Gravitational contraction
 - Radioactive decay
- Retaining internal heat
 - Heat capacity proportional to volume
 - Heat emission (loss) proportional to surface area
 - Ratio V/A : heat retention
- Why is Mars no longer habitable?