

## **IPA - Impact of Planetary magnetisation on Atmospheric erosion**

### **Context**

As we explore the solar system and discover more and more exoplanets, the question of planetary habitability is a growing field of investigation. Atmospheric escape into space is one of the key factors that controls the capability of a planet to build and maintain a stable hydrosphere and atmosphere over long time periods and provide conditions favourable to the development of life.

### **Objectives**

The objective of this project is to build a semi-empirical model of atmospheric escape that allows estimating the atmospheric escape of rocky planets (Venus, Earth and Mars) over geological time scales. This model must consider the past evolution of the Sun and of the planetary environment.

### **Conclusions**

We built a semi empirical model of atmospheric escape that accounts for the evolution of the solar wind and solar flux in the ultraviolet and of the planetary magnetic field. This model has been used to estimate the oxygen loss rate of the Earth atmosphere into space during the last 2.5 billion years.

### **Keywords**

Habitability, atmosphere, Venus, Earth, Mars, magnetosphere, Sun, model, data