

# QUESTIONS ABOUT MESSENGER AND THE SOLAR ACTIVITY CYCLE

In the summer of 2004, NASA will launch a spacecraft called MESSENGER (<http://messenger.jhuapl.edu/>) to study the planet Mercury. After one flyby of Earth, two flybys of Venus, and three flybys of Mercury, it will go into orbit around Mercury in March 2011. It will remain in orbit for one Earth year.

One of the concerns for the mission designers is the high levels of ionizing radiation from the Sun to which the spacecraft will be exposed. The amount of solar radiation depends on the phase of the Sun's activity cycle (see Figure S1).

During what part of the solar cycle does the MESSENGER mission take place?

What effects will this have on the radiation environment the spacecraft is likely to encounter?

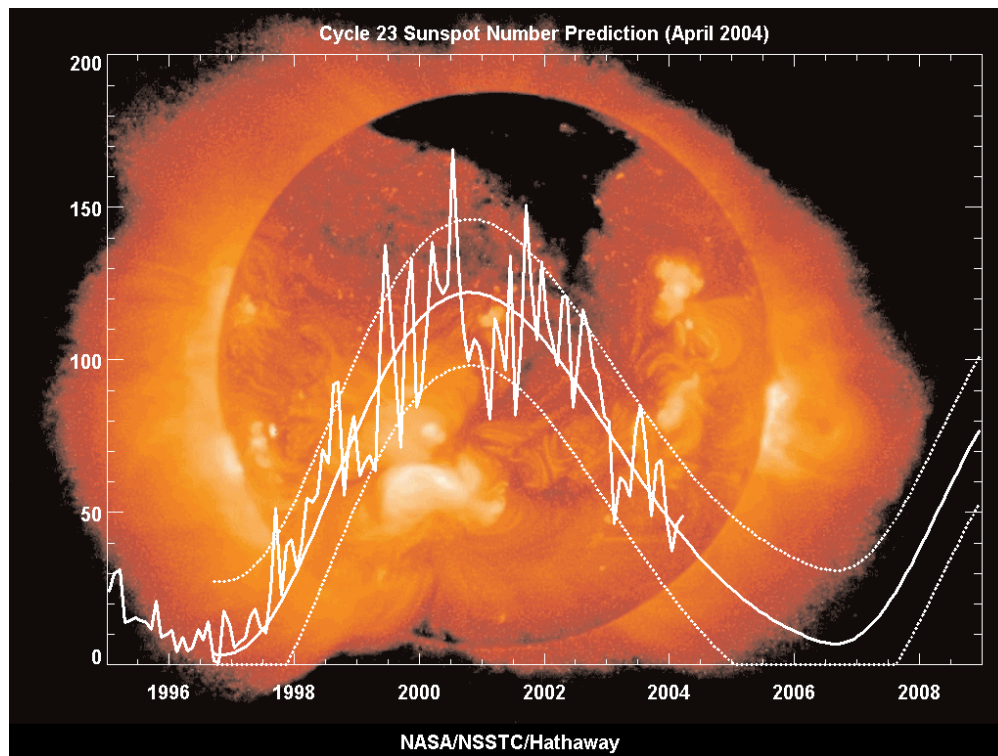


Figure S1. Solar activity cycle as followed by the number of sunspots on the surface of the Sun. The 11-year cycle has major effects on the radiation environment on Earth as well as for the spacecraft venturing into the inner Solar System, such as the MESSENGER mission to Mercury. (Picture credit: [http://science.nasa.gov/ssl/pad/solar/images/ssn\\_predict\\_1.gif](http://science.nasa.gov/ssl/pad/solar/images/ssn_predict_1.gif))

