

Is there another Earth?

By Wendy McCorry, Science Communicator

The search for habitable planets will take an important turn in the next few weeks, with the launch of the COROT satellite. COROT (COncvection, ROtation and planetary Transits) is a mission led by the French Space Agency (CNES) in conjunction with the European Space Agency (ESA) and partners from other countries. The purpose of the mission is to search for Earth-like planets orbiting stars outside our Solar System.

Planets existing beyond our Solar System are called exoplanets. Up until now, the only exoplanets to be discovered have been gas giants similar to Jupiter. These giant planets have been detected by ground-based telescopes, through observation of the 'wobbling' effect they have on their parent star due to gravity. Smaller rocky planets do not have such a marked effect on the star they are orbiting, as they have a much weaker gravitational pull. Therefore, the detection of these rocky exoplanets is much more difficult, and can only be achieved using a space telescope, where all distorting effects of

the Earth's atmosphere are removed.

Using a 27cm diameter telescope and camera to monitor the brightness of stars, COROT will be able to detect the occurrence of micro-eclipses caused by a small rocky planet passing in front of its parent star. Astronomers expect to find a new class of exoplanet, several times larger than the Earth (our biggest rocky planet) but not as large as the gas giants. It is estimated that COROT will discover between 10-14 of these rocky worlds in each starfield image, and possibly dozens more of the giant gas bodies. Every 150 days, as the sun's rays begin to affect the telescope's observations, COROT will turn through 180 degrees to observe a new region.

“COROT's first target will be towards Orion”

Whilst observing a star, COROT will also be able to detect its mass, age and chemical composition using asteroseismology. Similar to the way in which seismologists can detect the composition of the Earth by monitoring earthquakes, COROT can gain information on the internal structure of stars through studying 'starquakes'. These internal acoustic waves travel outwards from the centre of the star, causing ripples to spread across its surface. It is these ripples that can then be recorded.

COROT is due to be launched on a Soyuz 2 rocket at Baikonur, Kazakhstan on 27th December 2006. After launch, it will be set onto a polar circular orbit around Earth. Its first target region will be towards the constellation Orion, followed 150 days later by a change in direction to point towards the centre of the Milky Way. It's possible the search will uncover other planets just like Earth – so watch this space.



Image Credit: CNES 2006 - D. Duricos

Earth Search An artist's view shows the COROT satellite, consisting of a 30 centimetre space telescope to be launched in late 2006. Powered by a pair of solar panels, the satellite weighs 630 kg, is 4.10 m long and is nearly 2 m in diameter.