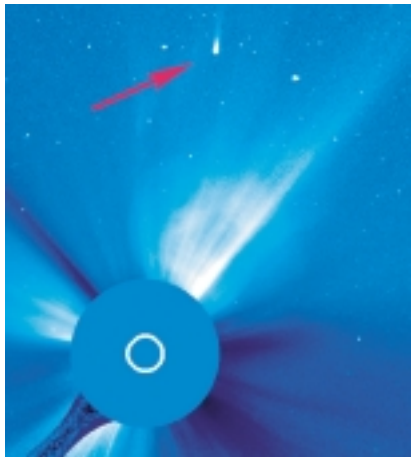
Sun Scout, Weatherman, Comet Hunter

Fig. 1:
LASCO 2 Coronograph photo of 1998 solar eruption (detail).

Fig. 2:
Kudo-Fujikawa comet (arrow).

Fig. 3:
ESA engineers with an Atlas Centaur AC-21 in the assembly hall of the Matra Marconi company prior to launch from the Kennedy Space Center



definition

LASCO

Large Angle Spectrometric Coronograph: similar to a solar eclipse, LASCO observes the outer solar atmosphere from near the solar limb to a distance of 21 million kilometers. This allows visualization of the contents of the sun's corona.

CDS

The Coronal Diagnostic Spectrometer (CDS) records the emission lines of ions and atoms of the corona. The results provide information about the sun plasma at a temperature range between 10,000 to more than 1,000,000°C.

Lagrange point L1

Point where the gravities of the Earth, the Sun and the Moon neutralize each other.

The Solar and Heliospheric Observatory (SOHO) – a joint project of the European Space Agency (ESA) and NASA – was launched in December 1995. It is stationed 1.5 million kilometers away from Earth at the so-called L1 Lagrange point.

From there, SOHO observes the sun in different spectral areas using 12 special instruments. These observations help scientists understand the structure of the sun's core, the mechanisms of corona formation, and the origin and acceleration of solar wind. The equipment on board includes the LASCO and CDS examination instruments. Data on the intensity of the solar wind is also used to forecast the weather in space, e. g. solar storms. Practically as a side effect, almost 500 unknown comets have been discovered so far.

The Kudo-Fujikawa comet discovered in December 2002 orbits the sun. SOHO is pursuing the comet with the cameras of its LASCO wide-angle coronograph. A small cover disk in the cameras creates an artificial eclipse, allowing observation of the corona, which is otherwise blanketed by the sun itself. The trail of the Kudo-Fujikawa comet orbiting our central star as a white spot can only be seen through the use of such an artificial solar eclipse.