



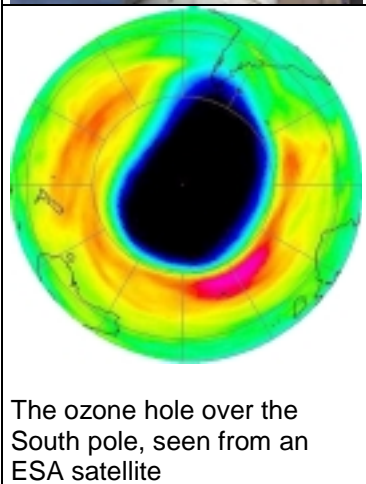
Science: ESA develops and operates spacecraft, telescopes and orbiters to study the solar system and universe. The Hubble space telescope is a project with a big ESA contribution. Four Cluster satellites study the 'solar wind'. The X-ray telescope XMM looks out for black holes. Huygens is on the way to the Saturn moon Titan, while Rosetta will land on comet Wirtanen. Next projects: the gamma-ray telescope Integral and a journey to Mars.
 < Integral spacecraft in an ESA vacuum testing chamber



Telecommunication and navigation: ESA makes the new technologies for telecom satellites, such as data transfer in space per laser. It is testing a new ion propulsion system for satellites. ESA develops the technology for the new navigation system Galileo. Consisting of 32 ultra-modern satellites, Galileo will be providing positioning information with an accuracy of two metres on Earth.

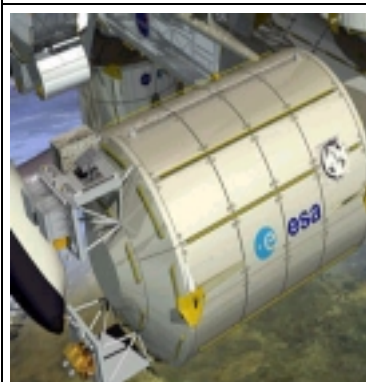


Launchers: The first Ariane launcher took off to orbit in 1979. Since then ESA has continuously improved its capability. Today, the Ariane-5 launcher brings 60% of all civil satellites worldwide into orbit. Currently ESA engineers are working on a new version of the Ariane-5 to increase it's payload capacity to 16-tonnes. The Ariane launchers take of from Kourou, French Guiana.
 < The Ariane-5 launcher towers 50 metres above its launch pad. Under the nose fairing is its 8-tonnes payload Envisat.



The ozone hole over the South pole, seen from an ESA satellite

Environment monitoring: Tracking down polluters, estimating the extent of flooding and slash-and-burn practices in tropical forests, verifying models of the global atmosphere and ocean systems: all of these tasks depend on Earth observation satellites. With Envisat, ESA has launched the most powerful environment satellite into orbit. Envisat tracks Millions of parameters like trace gases in the atmosphere, phytoplankton concentration in the seas, underwater currents in the oceans or fires in very remote areas on land. It will help forecasting earthquakes and volcano eruptions. Some 10.000 scientists worldwide work with Envisat observations to better understand our environment and keep potential perils under observation.



Human spaceflight: European astronauts and cosmonauts have been flying with the US space shuttle and the Russian Soyuz on various missions into space. In 2004, the European research laboratory Columbus will be attached to the International Space Station. Up to three astronauts at a time will be able to conduct unique experiments in physics, chemistry and biology under conditions of weightlessness and vacuum. Fifteen astronauts are currently in training at Europe's astronaut centre in Cologne.

<< ESA's Columbus laboratory for the International Space Station