The fact that satellites can cover the Earth in just a few hours or observe certain points on the globe on a permanent basis, makes them an extraordinary tool for monitoring the planet’s health.

Their extremely precise measurements enable us to determine the planet’s current status, and to learn more about its ongoing evolution and the interactions between its component envelopes, from the Earth’s core abiding satellite observations with in situ measurements (from the ground, balloons, aircraft and buoys, etc.) and physical models enables forecasts to be made of certain geophysical phenomena, such as in meteorology or oceanography with the Mercator sea-state forecasting system. The issues of human impact on the environment, climate change, the management and mitigation of major catastrophes, etc. are just some of the challenges faced by current and future generations, and satellites play an essential role in this quest for knowledge and for sustainable management of the environment.

CNES, alongside its European and international partners, contributes through multilateral cooperation by participating in major European programmes such as GMES (Global Monitoring for Environment and Security) and through international coordination activities, particularly within CEOS (Committee on Earth Observation Satellites), the space component and ‘strong arm’ of the major international GEOSS programme (Global Earth Observation System of Systems).
This covers the period from 2011 to 2013 and is accompanied by specific GMES funding, for both the services and space components.

**Mission operations**

Data from the SPOT, Jason, PARASOL, CALIPSO, IASI (on METOP), GRACE, GOCE, SMOS and Cryosat missions continues to be exploited. DEMETER was deactivated in late 2010, thus ending more than six years in operation. The theme-based clusters, which enable scientific communities to join forces to analyse satellite and in situ data, offer a number of unique products for the international community, among which are Ice (for the investigation of clouds, aerosols and radiation) and Ether (for the study of atmospheric chemistry). Furthermore a ‘continental land masses’ cluster is being formed and discussions are in progress in the solid Earth sciences community about introducing a new field to investigate the Earth’s shapes and movements.

**Future prospects**

**A ESA ministerial council of the utmost importance**

In November 2012, decisions will be taken about the future of three fundamental Earth Observation programmes: METOP-SG, the second generation of European polar meteorological satellites; GMES-3, the third segment of the GMES space component (see below) and EOEP-4, the fourth phase of the Earth Observation Envelope Programme which in particular incorporates implementation and operation of the Earth Explorer research missions under the ‘Living Planet’ scientific programme.

**GMES, developments continue**

ESA is continuing development of Sentinels 1 to 4, Units A and B, which were given the green light at the ministerial councils of Berlin in 2005 and The Hague in 2008, as well as the Sentinel 5 precursor satellite and preparatory studies for Sentinel 5 and JASON-CS, missions that will be submitted for decision at the next ESA Ministerial Council. However, the issue of long-term financing for GMES, particularly for sentinel operations, remains unresolved. In 2012 the following launches will take place: SARAL (an Indo-French satellite carrying a Argos instrument and the AltiKa altimeter, which will measure the level of the oceans and inland waters); SWARM, which will enable a better understanding of the Earth’s magnetic field through three satellites flying over it at different altitudes and local times; METOP-B, which will carry the second IASI instrument developed by CNES in partnership with Eumetsat; and Pléiades 2.

**Preparing the future**

Three missions have been selected for phase A of ESA’s Earth Explorer programme. They are Biomass, to study forest biomass and its role in the carbon cycle; PREMIER, to understand the processes at the boundary of the troposphere and stratosphere, a region crucial to the study of climate change; CORE-H₂O, to estimate water resources from snow cover and sea ice. One mission will be selected in early 2013. Two other missions are competing for selection: FLEX, for measuring vegetation fluorescence and Carbonsat for measuring CO₂ in the atmosphere. The choices will be made in early 2014.

Development of CNES projects (VENμ5, CFOSAT) continues, as well as the Phase A studies in partnership with EUMETSAT for IASI-NG. This instrument will be carried on the Post EUMETSAT Polar System (Post-EPS) and will provide meteorologists with atmospheric humidity and temperature profiles, and researchers with valuable data on the chemical composition of the atmosphere and the climate. MISTIGRI, designed for measuring surface temperature and exchanges of energy between vegetation and the atmosphere, has completed its Phase A, whereas SWOT, a cooperation mission with NASA whose aim is to measure the level of oceans and inland waters with unprecedented accuracy, continues its phase A with the help of financing from a future-investment funding programme, under the major loan process initiated by the French government.