

EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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ADVANCES IN THE DEVELOPMENT OF FUTURE ESA EARTH OBSERVATION MISSIONS

Abstract

Over the last three decades the European Space Agency (ESA) has developed a world-leading programme for the observation of the Earth from space. This has been done with a two-pronged approach, namely translating innovative technologies into novel observation capabilities and on the other hand preparing and developing strategies and space systems to observe our planet in a systematic, application-oriented manner, in close partnership with other institutions. Strong synergies have been realized between these action lines, using the first one to demonstrate powerful new tools later used for the second line. Substantial successes have been achieved in particular for the new meteorological systems, operated and exploited by the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), and for the service-oriented Copernicus system (formerly GMES: Global Monitoring for Environment and Security) for the European Union (EU), where many of the earlier research-driven ESA missions have been assured data continuity thanks to a wide constellation of satellites, which apply proven observational concepts enhanced through the most up-to-date technology. Ultimately the success of this approach rests on a strong collaboration between data users, Earth scientists, technology experts, European industries and national Agencies, against the backdrop of over half century of European cooperation in space.

The paper will briefly recall the salient aspects of this collaboration, with special reference to the role that research efforts played in enabling ESA – sometimes in unexpected ways – to develop major operational capabilities and to foster industrial competitiveness. The paper will then provide a review of the current developments in ESA’s preparatory activities for Earth observation, complemented by illustrative examples of the technological activities associated to them.