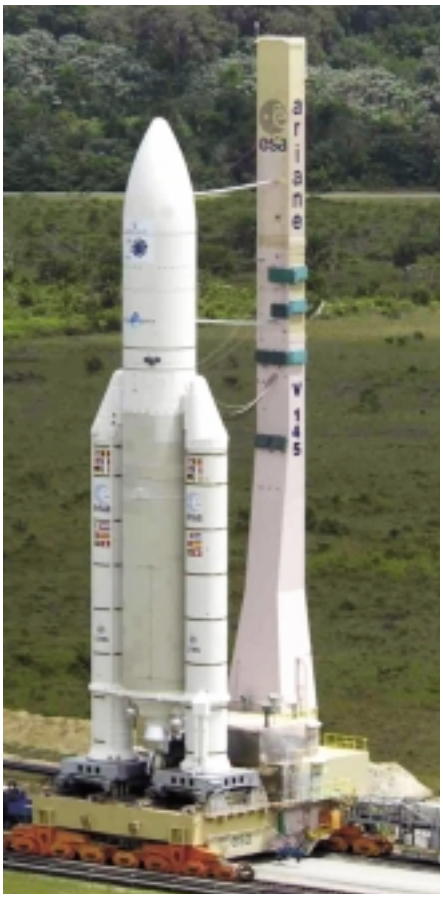
Envisat Safely Launched Europe's

The night launch of Envisat lit up the sky around the Kourou Space Centre. (Source: ESA)

To the great relief of the European Space Agency (ESA), Arianespace and European taxpayers and to the delight of numerous European scientists, Envisat was launched and placed safely into its correct orbit during the early hours of Friday, 1st March. As discussed in the cover story in the last issue of GeoInformatics, the main purpose of Envisat (= Environmental Satellite) is to obtain comprehensive information about many aspects of the Earth's land and sea surfaces and its atmosphere. So basically the huge satellite has been given a truly "green" agenda covering the acquisition of many types of scientific data for global monitoring, which ESA hopes can be collected by Envisat over its designed life of five years. However its AATSR and MERIS optical imagers and its ASAR radar imager should also provide image data that is useful to many people working in the geoinformatics field. Though, within this context, it should be realised that the images acquired by Envisat will only have medium to coarse ground resolution values - since the satellite's instruments are designed mainly to operate on a global, continental or regional scale.

By Prof. Gordon Petrie

"Green" Machine is Now in Orbit!



The roll-out of the Ariane-5 launcher from the Final Assembly Building at the Kourou Space Centre with Envisat mounted on top of the main rocket. (Source: ESA)

The Actual Launch

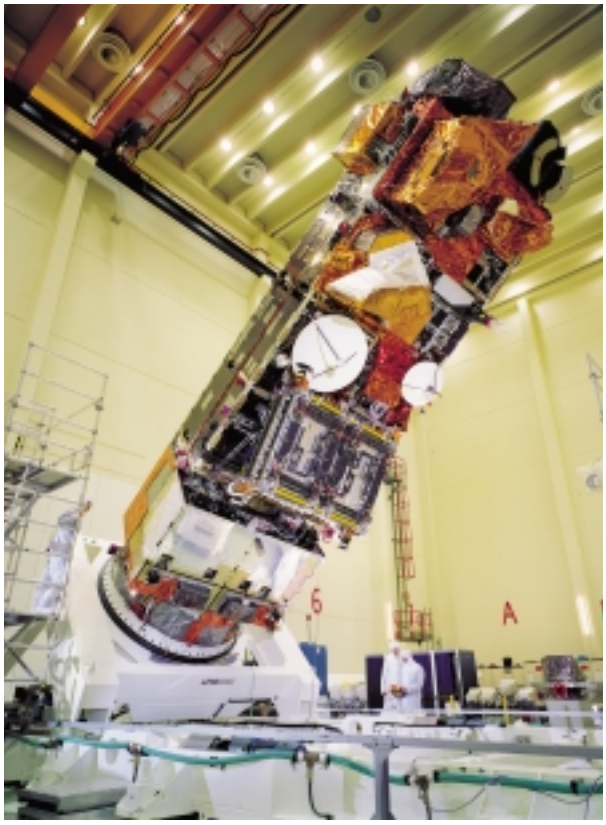
By all accounts, the actual launch went off quite flawlessly. This was a huge relief after all the prior worries over the reliability of the Ariane-5 heavy-duty launcher. Previously this had suffered various failures. These included the explosion just after launch of the first Ariane-5 (in 1996) that destroyed a cluster of four satellites designed to monitor the Earth's magnetic field and the failure last summer (in 2001) of another example to place ESA's Artemis communications satellite and the Japanese B-SAT-2b TV satellite into their intended geostationary orbits. In the event, with Envisat, only a slight problem with a venting duct occurred on this particular Ariane-5 launcher prior to its actual launch. This did mean that the launcher and the attached Envisat had first to be returned along the railway track from the launch pad to the final assembly building for checking and then transported back again to the launch pad. But all was well and the launcher with its precious satellite went off in a near-perfect launch. This was followed by the successful separation of the satellite from the launcher and then by the deployment of Envisat's 70 sq. m. solar panel needed to produce the power required to bring the satellite back to life.

Events Since the Launch

Since then, the Envisat Web site (http://envisat.esa.int/) has been giving daily reports on progress with the commissioning of the satellite. Three days after launch, the all-important (10m long) radar antenna of the ASAR imager was deployed successfully. Since then, each of the satellites's ten instruments has been activated in turn. This is allowing each one first to be calibrated and then to generate data for verification purposes. By 11th March, the 320 individual transmit/receive elements of the ASAR had been tested successfully and trial "wave mode" image data had been received. By 13th March, all ten instruments had been activated and were being tested and checked out. ESA has been so encouraged by the results achieved thus far that it has scheduled a "first image" media event to be held at its ESRIN establishment in Frascati, Italy on 28th March. It is expected that these first images will be from the ASAR and MERIS imagers - since a panel of scientists connected with these particular instruments is being assembled for the occasion.

Longer Term Prospects

Given the long time (10 years) that elapsed while Envisat was being developed, built and tested, already a debate has arisen regarding a possible follow-on programme. Some scientists want a second Envisat with its comprehensive battery of instruments mounted on a single platform to ensure both continuity and directly comparable data. However others are pointing out the huge sums and risks involved in placing so many of ESA's Earth observation eggs into a single very expensive Envisat-style basket. Instead they advocate the construction of a series of much smaller and cheaper satellites that would spread the risk of the possible failure of the launcher and/or the satellite. They note too that SPOT-5 will be the last in its particular series and will be replaced by the Pleiades series of small satellites. In the meantime, it is worth noting that SPOT-5 itself is scheduled to be launched on May 3rd on one of the few remaining Ariane-4 launchers, now that Arianespace has decided to concentrate its future launch programme on the more powerful Ariane-5 series. The SPOT-5 satellite has already been transported to the Kourou Space Centre in French Guyana using one of the huge Beluga freight aircraft belonging to the Airbus company. Stand by for yet another worrying but exciting launch!



Envisat under test. (Source: ESA)

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