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SEAS receiving antenna in French Guiana

Station special issue

SATELLITE FUELLING DEVELOPMENT IN FRENCH GUIANA

Since February, French Guiana has officially acquired a satellite-based technology platform unique in South America and Europe.

The SEAS[1] satellite receiving station was opened in Cayenne in the presence of public and private stakeholders working on this ambitious project (see box). SEAS has the capability to task acquisitions and then receive, store and process data from the SPOT satellites (SPOT 2, 4 and 5) and the ASAR and MERIS instruments on Envisat. SEAS is also the first receiving station where Spot Image is playing an active role in data exploitation. Under the arrangement between the project partners, France's IRD[2] development research institute and Spot Image are co-leading a joint committee in charge of production of imagery from data received by the satellite antenna on Montabo hill in the grounds of the French space agency CNES's Guiana Space Centre (CSG), and by terminals and the processing centre at the IRD unit in Cayenne. Two Spot Image technicians are running these operations on site in French Guiana alongside the IRD team.

An important challenge for French Guiana and the Amazon basin

The SEAS receiving station has several objectives. First of all, it intends to help French Guiana affirm its role as a fertile breeding ground for science. The project will offer the French Guiana university cluster a technology platform providing in-situ expertise needed to exploit satellite imagery. SEAS is also set to nurture a number of application projects associating research laboratories, private industry and local authorities. It will prove a useful tool to support decision-making and development in a region characterized by large-scale environmental phenomena. Scientists, environmental managers and decision-makers need reliable information to gain a closer understanding of certain issues. Be it for monitoring natural habitat dynamics, urban growth, forest management, fishing grounds or environmental change due to deforestation or gold panning, surveillance and collection of reliable data are vital. Where field observations are usually insufficient on their own and often difficult to obtain, satellites provide a broader view from the vantage point of space. But the task is not easy, since French Guiana and neighbouring countries are in a region of the globe where frequent cloud cover means that many acquisition attempts are necessary to build up a clear picture.

1) Surveillance de l'Environnement Amazonien assistée par Satellites haute résolution – High-resolution satellite monitoring of the Amazonian environment
2) Institut de Recherche pour le Développement

A SUCCESSFUL PUBLIC-PRIVATE PARTNERSHIP

The SEAS technology platform was co-funded largely by the French Guiana regional council, CNES, the French government and European funds. It also underpins a close scientific partnership between IRD and satellite operator Spot Image. The other project partners are the French Guiana general council, the Université des Antilles et de la Guyane, the French Guiana university cluster, ESA and the Guyane Technopole association.

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Opening of the French Guiana station

IMAGERY

The SEAS satellite receiving station project is designed to underpin research and innovation in French Guiana, giving it a key tool to fuel economic and social development while preserving the region's natural heritage. Satellite imagery will provide this French overseas territory with insightful information and support for planners and decision-makers.

Better data on land and natural resources

Satellite imagery will enhance knowledge about this huge region that alone harbours the equivalent of 50 per cent of the forest resources in all of metropolitan France. Using new satellite data, authorities are looking to compile more accurate maps for land planning and management. Satellite imagery will also aid French Guiana to overcome the perceived obstacles of its vast expanses. Local authorities have already announced their intention to use this information to build transport infrastructures and to spawn new businesses exploiting natural resources.

French Guiana is also facing a serious challenge from uncontrolled exploitation of its biological and mineral resources. Clandestine gold panning and deforestation are two scourges that need to be looked at more closely. Here, satellite imagery is the ideal tool to obtain a synoptic view and confront these issues. At the same time, French Guiana must devote the requisite means to better understand its forest ecosystems and keep closer track of the evolution of forest cover.

Land and maritime border surveillance

French Guiana needs reliable data to study and track the more or less clandestine influx of populations crossing its land and maritime borders. For example, there are plans to build a bridge across the Oyapock River that marks the border with the North of Brazil. This major project is advancing on both sides of the border with the construction of a road, which will be monitored using satellite imagery.

French Guiana also needs to monitor vessels in its fishing grounds—mainly fishing for prawns—and safeguard the quality of its maritime environment. Satellite data will help to conduct close and regular assessments of sediment and silt washed along the coastline from the Amazon estuary. The authorities must also keep an eye on shipping lanes and traffic for safety reasons, and clandestine boats will be easier to spot using satellite imagery.

Focus on the Amazon

SEAS will serve an even wider range of applications than those already mentioned, including monitoring of health risk zones where satellite imagery can be used for epidemiology. Cooperation projects are also underway with Brazilian entities. Whether for tracking deforestation or studying the hydrological network of the Amazon basin, SEAS is set to extend its reach well beyond French Guiana.

Planned route of bridge over the Oyapock River between Brazil and French Guiana. Subscene of a SPOT 5 image of 30 December 2005