Paper ID: 34581
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EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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NEXT GENERATION OF SAR SERVICES: CAPABILITIES AND APPLICATIONS OF THE MISSION "HRWS" (HIGH RESOLUTION WIDE SWATH)

Abstract

The geo-information community currently witnesses an evolution of the remote sensing applications and user requirements, in order to face the socio-economic challenges of the 21st century. In addition, the Earth Observation Market is changing, more and more constellations (optical, radar or mixed) are announced. Increasing information requirements implicitly require synergies between optical and multi-frequency radar imagery. As a consequence operational monitoring of the terrestrial and maritime environment, is of a great importance to be competitive.

1. Program Evolution

A growing number of applications that provide valuable socio-economic benefits require higher resolution and coverage capability than the market offers today. Following the bandwidth extension by the ITU at the last WRC15 in Geneva, this higher resolution is now possible. The HRWS mission aims to address user needs by adding a very high resolution capability, up to 0.25 m, and large area maritime surveillance, with specific maritime modes. This achievement leads to an improvement of 16 time of the resolution.

2. HRWS Mission Capabilities

Launched in 2007, the TerraSAR-X mission provides X-Band data and services on an operational basis. Recent improvements and evolutions of the program comprise the introduction of new SAR imaging modes and the upcoming constellation with the Spanish PAZ satellite. The HRWS mission, implemented as a commercial and civil program, constitutes the next step in the German X-Band SAR roadmap and is designed to guarantee the TerraSAR-X data and service continuity for commercial and public end-users well beyond the year 2030. Designed for an operational system lifetime of at least 10 years, HRWS will bring improved system capabilities compared to the current mission in all different components.

3. Main applications

The HRWS mission aims to bring to an unprecedented level of accuracy the measurements necessary for surface motion monitoring, maritime and environmental monitoring, key services for oil and gas, as well as for Defence matters. Achieving 25cm resolution with a high signal quality will help institutions, public and private customers to better monitor their territories and infrastructures.

4. Conclusion

The paper will present the new applications that this mission will make possible, with an increase of the resolution in X-Band radar. In addition, the paper will, present the objectives and the characteristics of the HRWS program, unique from a technological and commercial point of view.