Topics (T)
Interactive Presentations (IP)

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ESA'S BUSINESS APPLICATIONS AND SPACE SOLUTIONS TO DEVELOP GREEN AND COMMERCIALLY SUSTAINABLE CLIMATE SERVICES

Abstract

Climate change has an impact in different sectors of the economy. Companies in the energy and utilities, agriculture and food, smart cities, mobility, manufacturing, logistics and other sectors, are exposed to risks due to climate change that can affect their properties, assets, and supply chains. Being able to monitor and understand these risks and derive appropriate mitigation and adaptation actions have become key aspects for businesses worldwide and several services are required in support of such needs. Innovation together with cutting-edge technologies are invaluable instruments to allow society and businesses to adapt to climate changes and to tackle the associated challenges while protecting the environment. There is no doubt that space technologies and satellite applications have an imperative role to play in supporting climate adaptation and mitigation.

ESA's Business Applications and Space Solutions (BASS) have been supporting companies developing commercially sustainable services that make use of space assets such as Earth Observation data, satellite communications, satellite navigation and space flight technology, coupled with terrestrial technology such as digital twin, artificial intelligence and autonomous mobility solutions. Such services have been developed in collaboration with *champion* international stakeholders, from the private and public sector, which have helped in defining the top priorities and the burning issues related to climate adaptation and mitigation. Since its foundation more than 10 years ago ESA BASS have provided tangible support to ESA Member States companies which led to the delivery of more than 200 operational services providing green impact. Companies in ESA Member States can benefit from a portfolio of calls launched by BASS with different funding thresholds and suitable to different maturity stages of the proposed services. These activities, though of different nature, all develop elements which can contribute and can become *seed* for the ESA's 'Space for a Green Future' (S4GF) Accelerator. S4GF is an initiative at ESA level with the objective to respond to the global climate and environmental crisis, in support of a sustainable Green Transition towards a carbon-neutral, resource-efficient and resilient society.

The present paper provides an analysis of the role of space assets in support of sustainable climate services. It showcases different services developed with the support of the programme in sectors such as finance, energy, agriculture and transport, highlighting the added value of space.