

**Satellites for Climate Services:
Case Studies for Establishing an Architecture for Climate Monitoring from Space**

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The paper describes a number of case studies that demonstrate the direct or indirect value of Earth observation satellites for climate services. Climate services, i.e. climate information prepared and delivered to meet a user's needs (WMO, 2011), are recognized as vital for decision-making in climate-sensitive societal sectors, such as food security, water management, disaster risk reduction, and health. Against a backdrop of human-induced climate change and the need for adaptation and mitigation, reliable, quality-controlled climate information at global level is essential to inform decisions. Satellites are uniquely placed to provide a global perspective on the climate system, to contribute to the monitoring of 26 Essential Climate Variables (GCOS, 2011), as well as to inform regional and local climate analyses.

The 13 case studies described in the paper start from a wide range of end users' perspective and their needs for climate services, including those of farmers, house owners, ecosystem managers, agriculture and health authorities, coastal protection agencies, energy companies, the finance and insurance industry, development fund agencies, and government policy and decisionmakers. The case studies then demonstrate the importance of satellites for preparing the climate services needed by these communities. Satellite-based climate data records provide a critical baseline and input to reanalyses that underpin climate services. In many examples, satellite data records are complemented by climate data records from surface-based observing systems, and other sources of information (models, socio-economic data) to generate the service. The importance to climate services of near-real-time satellite data that do not or only partially meet climate standards is also shown.

Coordination of climate observing and modelling systems, the integrated use of climate data, and effective user-provider feedback mechanisms in all climate-sensitive sectors are therefore essential for advancing the development of climate services.

Target audiences of the [full report](#) are (i) decision-makers, funding agencies, and climate service users, with the objective to demonstrate the value of satellites for climate services, and (ii) satellite agencies, with the objective to demonstrate the need for enhanced coordination within the Architecture that will address the thematic breadth of climate services.

The report supplements the [Strategy Towards an Architecture for Climate Monitoring from Space](#) (Dowell et al., 2013), a joint coordination effort by space agencies and WMO in support of the GFCS, and provides a basis for validating the proposed end-to-end Architecture (and its "logical view") from a user perspective.