



## Outstanding challenges limiting the development of climate services in Europe

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Climate services attempt to make the available (or forthcoming) climate knowledge more usable by decision and policy makers in the development of a climate smart society. Since the launch of the Global Framework for Climate Services in 2009 there has been an exponential increase in investment in the development and delivery of climate services, leading to an array of projects and initiatives across Europe.

However, to date little attention has been given to understanding the different ways in which climate services are defined, implemented, and evaluated in Europe. In addition, other aspects such as how to pursue the necessary processes of co-production, which business models to apply, and the implications for the careers of scientists and others involved in the development of climate services are also crucial elements that need to be further examined and discussed. Such aspects are critical to the future development of climate services as they have the potential to significantly constrain the growth of climate services in Europe.

Starting from a set of questions that have arisen within some of the most prominent climate services projects and initiatives in Europe, our paper highlights and expands on the outstanding challenges that need to be resolved by both the scientific community and the funders in order to ensure climate services can prosper and grow in Europe.