

The importance of time scale for communicating projections of future climate

David Sexton[†]; Glen Harris

[†] Met Office, United Kingdom

Leading author: david.sexton@metoffice.gov.uk

A major part of any climate service, whether it is delivering a seasonal forecast or a long-term climate projection, is that the information is a) decision-relevant, b) allows the user to assess the level of confidence in the information and c) delivered in a way that does not obscure important details. We contend that all three requirements are better achieved by presenting information at a greater temporal resolution than is typically used. We demonstrate this by presenting probabilistic climate projections for England and Wales on two time scales: 1-year and 30-year means; the latter are from UKCP09 (UK climate projections made publicly available in 2009). We show that the 30-year mean projections show a clear climate change signal towards drier summers with a 5% chance of seeing a 30-year mean summer that is wetter than the 1961-90 norm. The 30-year mean result has important consequences for water management, but the 1-year mean projections show that they hide the equally important information that the frequency of an individual summer being very wet (>20% above normal) hardly changes over the 21st century. The 1-year mean projections require credible simulations of climate variability by current climate models. We show how the 1-year projections also allow one to verify the climate projections. We conclude that the amplitude of climate variability over the UK is reasonably well simulated by current climate models, but this is not say that they capture the detailed processes well. Consequently, it is important that we continue to develop and improve the climate models.