



## The Copernicus Climate Change Service ‘European Climatic Energy Mixes’

Alberto Troccoli (1,2), Clare Goodess (1), Phil Jones (1), Lesley Penny (1), Steve Dorling (1,2), Colin Harpham (1), Laurent Dubus (3), Sylvie Parey (3), Sandra Claudel (3), Duc-Huy Khong (3), Philip Bett (4), Hazel Thornton (4), Thierry Ranchin (5), Lucien Wald (5), Yves-Marie Saint-Drenan (5), Matteo De Felice (6), David Brayshaw (7), Emma Suckling (7), Barbara Percy (8), Jon Blower (7,8)

(1) UEA, School of Environmental Sciences, United Kingdom (alberto.troccoli@wemcouncil.org), (2) World Energy & Meteorology Council, Norwich, United Kingdom, (3) EDF, Paris, France, (4) Met Office, Exeter, UK, (5) ARMINES, Sophia-Antipolis, France, (6) ENEA, Casaccia (Rome), Italy, (7) University of Reading, Reading, UK, (8) Institute of Environmental Analytics, Reading, UK

The energy sector is undergoing a major transformation. This transformation in the energy sector is taking place against a variable and changing climate. Given the weather-and climate-dependency of both renewable energy and demand (even in the case of large storage uptake), it is important to develop robust climate-based tools to advise energy planners and policy makers.

The EU Copernicus Climate Change Service (C3S) European Climatic Energy Mixes (ECEM) is producing, in close collaboration with prospective users, a proof-of-concept climate service, or demonstrator, whose purpose is to enable the energy industry and policy makers to assess how well different energy supply mixes in Europe will meet demand, over different time horizons (from seasonal to long-term decadal planning), focusing on the role climate has on the mixes.

This presentation will provide details about the calibration of climate variables over the historic period (last ca. 40 years) derived from reanalyses that was necessary in order to reduce the bias in variables relevant to the energy sector, such as wind speed and solar radiation. The conversion of climate variables into energy variables for wind power, solar power and hydropower, by means of both statistical methods and physical methods where possible, and for various European countries is also presented. An assessment of seasonal climate forecasts for use by the energy sector over the European domain will also be discussed.

Finally, the C3S ECEM Demonstrator, an interactive and visual tool which allows users to view and explore energy supply and demand profiles for each European country (and for ~100 clusters) and generation type, as well as climate variables, in map and/or time series format will also be displayed. The C3S ECEM Demonstrator is being developed according to user needs and integrates the energy and climate variables being produced in C3S ECEM on historic, seasonal forecast and climate projection timescales. Data can also be downloaded directly from the Demonstrator. The C3S ECEM Demonstrator may also be made available during the session/conference for testing purposes.