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ECLand: an ECMWF land surface modelling platform

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The ECMWF operational land surface model, based on the Carbon-Hydrology Tiled ECMWF Scheme for Surface Exchanges over Land (CHTESSEL) is the baseline for global weather, climate and environmental applications at ECMWF. In order to expedite its progress and benefit from international collaboration, an ECLand platform has been designed to host advanced and modular schemes. ECLand is paving the way toward a land model that could support a wider range of modelling applications, facilitating global kilometer scales testing as envisaged in the Copernicus and Destination Earth programmes. This presentation introduces the CHTESSEL and its recent new developments that aims at hosting new research applications.

These new improvements touch upon different components of the model: (i) vegetation, (ii) snow, (iii) soil hydrology, (iv) open water/lakes (v) rivers and (vi) urban areas. The developments are evaluated separately with either offline simulations or coupled experiments, depending on their level of operational readiness, illustrating the benchmarking criteria for assessing process fidelity with regards to land surface fluxes and reservoirs involved in water-energy-carbon exchange, and within the Earth system prediction framework, as foreseen to enter upcoming ECMWF operational cycles.

Reference: Souhail Boussetta, Gianpaolo Balsamo*, Anna Agustí-Panareda, Gabriele Arduini, Anton Beljaars, Emanuel Dutra, Glenn Carver, Margarita Choulga, Ioan Hadade, Cinzia Mazzetti, Joaquín Muñoz-Sabater, Joe McNorton, Christel Prudhomme, Patricia De Rosnay, Irina Sandu, Nils Wedi, Dai Yamazaki, Ervin Zsoter, 2021: ECLand: an ECMWF land surface modelling platform, MDPI Atmosphere, (in prep).