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ECMWF 2016-2025 strategy: moving towards seamless ensembles

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The last decades have seen major advances in the prediction of large-scale phenomena also thanks to advances in data assimilation and the use of ensembles based on coupled land, ocean (including 3-dimensional dynamical, waves and sea-ice models) and atmosphere models. Today, ECMWF uses coupled land, ocean and atmosphere models to generate medium-range, sub-seasonal and seasonal forecasts, and in data assimilation to improve the estimation of past climate variability. In the next 10 years, ECMWF plans to further improve and exploit coupled models to initialize and extract predictable signals from its ensembles. Key for this to happen is that the ECMWF scalability program delivers improved and more efficient assimilation and forecast models. In this talk, firstly the operational suites used at ECMWF will be briefly reviewed. Then, the ECMWF plans to move towards seamless ensembles and reanalyses based on more complete Earth-system models and assimilation systems and the key aspects of the ECMWF scalability program will be discussed.