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Global runoff routing with the hydrological component of the ECMWF NWP system

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A global river routing scheme coupled to the ECMWF land surface model is implemented and tested within the framework of the Global Soil Wetness Project II, to evaluate the feasibility of modelling global river runoff at a daily time scale. Daily runoff over 10 years produced by the H-TESSEL land surface scheme is input into the TRIP2 river routing scheme to generate daily river discharge, which is compared to observations from the Global Runoff Data Centre. Using global sensitivity analysis and GLUE uncertainty analysis on balance the global routing model works within its limitations. The dominant sources of uncertainty and the complexity required in adequately parameterizing the model is evaluated. The potential of this scheme for future applications such as climate impact studies is noted.