Drought Forecasting System of the Netherlands

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During periods of droughts the National Coordinating Committee for Water Distribution of the Netherlands has to decide how the available surface water is used and allocated between different users (agriculture, navigation, industry etc). To support this decision making, real-time information is needed about the availability of surface water, groundwater levels, saturation of the root zone, etc. This real-time information must give insight into the current state of the system as well as into its state in the near future (i.e. 10 days ahead). For this purpose, the National Hydrological Instrument (NHI), running on a daily time step and consisting of a nationwide distribution model and surface water model coupled with a MODFLOW-METASWAP model of the saturated-unsaturated zone of the whole of the Netherlands, driven by measured and forecasted precipitation and evaporation (ECMWF-DET and -EPS), is used to obtain insight into the actual and forecasted states of the surface, ground and soil water in the Netherlands. The tool also gives insight in the actual and forecasted water demands by the different actors. The whole system is operationalised within Delft-FEWS, an operational forecasting system to manage data and models in a real time environment. The surface water and groundwater models can be compared with surface water measurements (discharges and water levels) and groundwater level measurements in real-time. ECMWF reforecasts will be used to gain insight in the performance of the drought forecasting system.