Geophysical Research Abstracts
Vol. 14, EGU2012-13671, 2012
EGU General Assembly 2012

Decision support for dutch drought management and climate change with the Netherland Hydrological Modeling Instrument

j. hunink (1), j.c. hoogewoud (1), g. prinsen (1), and a. veldhuizen (2)
(1) Deltares, Netherlands (j.hunink@deltares.nl;jacco.hoogewoud@deltares.nl), (2) Alterra, Netherlands

Netherlands Hydrological Modeling Instrument
Decision support for dutch drought management and climate change.

J. Hunink , J.C.Hoogewoud , A. Veldhuizen , G. Prinsen ,

The Netherlands Hydrological modeling Instrument (NHI) is the center point of a framework of models, to coherently model the hydrological system and the multitude of functions it supports. Dutch hydrological institutes Deltares, Alterra, Netherlands Environmental Assessment Agency, RWS Waterdienst, STOWA and Vewin are cooperating in enhancing the NHI for adequate decision support. The instrument is used by three different ministries involved in national water policy matters, for instance drought management, manure policy and climate change issues.

The basis of the modeling instrument is a state-of-the-art on-line coupling of the groundwater system (MODFLOW), the unsaturated zone (metaSWAP) and the surface water system (MOZART-DM). It brings together hydro(geo)logical processes from the column to the basin scale, ranging from 250x250m plots to the river Rhine and includes salt water flow.

The NHI is validated with an eight year run (1998-2006) with dry and wet periods and is updated every year. During periods of water scarcity the NHI is used for operational forecasting and decision support system for the National Board of water Distribution. It provides data on nationwide calculated water demands, development of water levels in reservoirs and possible los of yield in agricultural area's.

For the exploration of the future of fresh water supply in the Netherlands an extensive study is set up using the NHI. In this study different climate scenarios are being evalueated. In the first phase the focus is on describing the range of possible effects, the second phase focuses on adaptive measures and preparing for decisions how to alter the hydrological system. Results from the first phase show that in future scenario's fresh water may not be available to current water users.

Important decisions about the water management cannot be made by national policymakers without support from other levels and stakeholders. Therefore a great effort has been made to involve: local waterboards in the modelingproces; stakeholders in the way hydrological results are translated to values with the toolkit that comes with the NHI.