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## Looking at Catchments in **Colors**

Debating new ways of generating and  
filtering information in hydrology

### Abstracts

Luxembourg, 10 - 12 November 2010

Edited by : L. Pfister, N. Martínez-Carreras, E. Clot & L. Hoffmann

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## EGU Leonardo Topical Conference Series on the hydrological cycle - 2010

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## NON-STATIONARY EFFECTIVE PARAMETERS FOR DISTRIBUTED HYDROLOGICAL MODELING

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Sub-grid parameter variability have been ignored in most hydrological models, that kind of heterogeneity may be significant for runoff production and soil moisture simulation. In this work, we deal with the introduction of sub-grid heterogeneities effect of soil parameters within a distributed hydrological modeling framework by means of non-stationary effective parameters. The difference of model performance was compared with three approaches: taking into account sub-grid spatial heterogeneities using Monte-Carlo simulations, semi-empirical equations with non-stationary effective parameters and stationary effective parameters. The study was restricted to Goodwin Creek Experimental catchment for high and low rainfall events; this catchment has a dense and high quality survey network and let us to carry out intensive spatial validation. The use of Monte-Carlo simulations and non-stationary effective parameters provide a better performance of the hydrological model for low rainfall-runoff events than using stationary effective parameters. On the other hand, significant differences between approaches were found for high rainfall-runoff events. If rainfall magnitude is high related to the magnitude of parameters, then most sub-grids tend to generate flow and the spatial scale effect due to sub-grid heterogeneity is minimized.

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