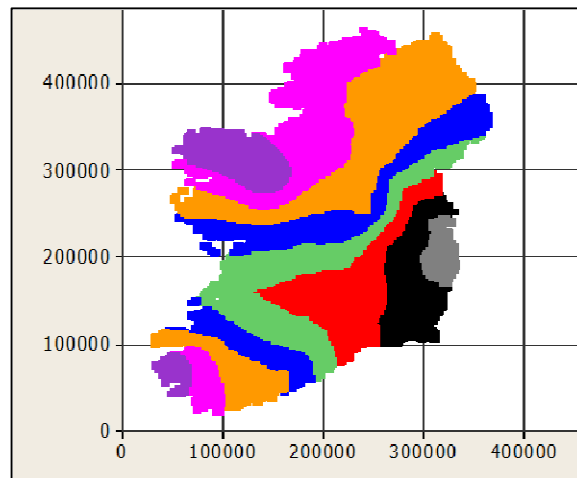


Flood Studies Update: Work Package 5.4 – FLATWET – A descriptor of Typical Catchment Wetness

Category: Flood Risk Management



Mapping of FLATWET across Ireland.

Description:

An index of wetness is relevant to catchment characterisation in the Flood Studies Update. The variable *FLATWET* is the proportion of the time for which soils can be expected to be typically quite wet.

Meteorological agencies produce standard estimates of soil moisture deficit (SMD) based on climate data. Heavy rainfall that occurs when SMD is close to zero tends to produce significant flood runoff. This is less often the case when heavy rainfall occurs when a marked soil moisture deficit persists. SMD is measured as mm of rainfall deficit, i.e. the depth of rain required to bring soil moisture to a saturated condition.

In Work Package 5.4, *FLATWET* has been evaluated from Met Éireann estimates of soil moisture deficit at 14 premier climatological stations. The SMD estimates are based on the so-called Hybrid model. This model replaces the Makkink model previously used by Met Éireann.

The index has been evaluated from 26 years of data (1981 to 2006). A spatial interpolation method has been devised to map the index across Ireland, so that a value of *FLATWET* can be inferred at any site or (with appropriate overlay) averaged across any catchment.



Three sets of SMD estimates were supplied to the work-package. Those designed to represent Well Drained (WD) and Poorly Drained (PD) soils were principally considered. [The third set – representing Moderately Drained soils – was discarded once it was realised that they yielded identical values of *FLATWET* to the WD case.]

An auxiliary index of catchment wetness behaviour, $CVWET_{WD,8.5}$, was also investigated. *CVWET* is the coefficient of variation of the length of wet periods, and is a measure of the degree of irregularity in wet/dry sequences at the site.

For further information about this work, please contact: oliver.nicholson@opw.ie

Design Team:

The OPW is responsible for the specification, procurement and direct management of the Flood Studies Update Programme, with technical direction provided by a Technical Steering Group, comprising representatives of the primary state / semi-state organisations involved with hydrology, hydrometric monitoring and associated research in Ireland, viz. OPW, Met Éireann, Environmental Protection Agency, Electricity Supply Board, IHP / ICID National Committee, and has two technical experts.

Construction Team:

Research Contractor: DWR Consult,
Dr. Duncan Reed.
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Dates:

Work Package 5.4 of the Flood Studies Update Programme was completed in March 2007.