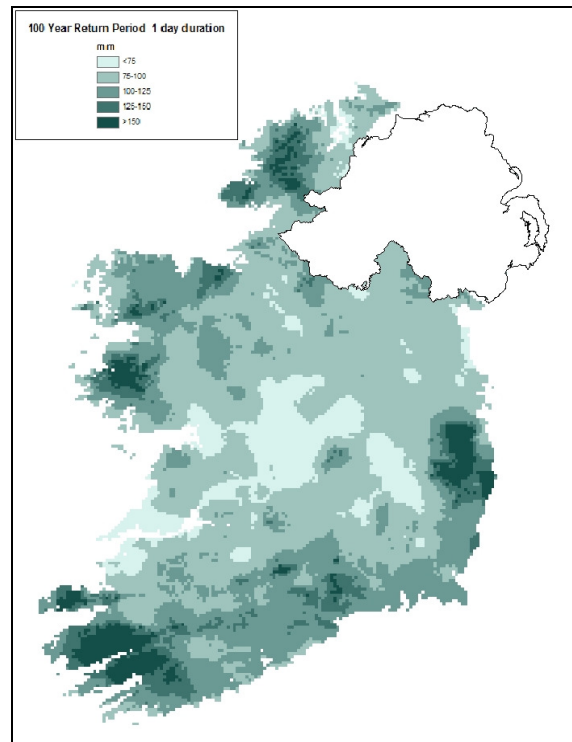


Flood Studies Update: Work Package 1.2 – Rainfall Depth Duration Frequency Analysis

Category: Flood Risk Management



Mapping of 100 year return period 1-day duration rainfall

Description:

As part of the Flood Studies Update (FSU) Programme, Met Éireann, using funding provided by the Office of Public Works (OPW), has developed a depth duration frequency model, which allows for the estimation of point rainfall frequencies for a range of durations for any location in Ireland (Met Éireann, Technical Note 61).

http://www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

The model consists of an index (median rainfall) and a log-logistic growth curve, which provides a multiplier of the index rainfall. Rainfall station data were analysed and an index rainfall extracted, interpolated and mapped on a 2km grid. The model was fitted to series of annual maxima and the growth curve parameters were determined; these were also interpolated and mapped on a 2km grid, and these are now being made available to practitioners in Ireland by the OPW. The model produces consistent estimates of point rainfall frequencies over durations ranging from 15 minutes to 600 hours (25 days) in the form of gridded datasets of 2km resolution. The estimates supersede those provided in Logue (1975) in which the



methods of the FSR (Flood Studies Report, 1975), adapted to Irish conditions, were employed. All the design rainfall outputs are for sliding durations, e.g. an 192- hour value is for 192 consecutive hours and may start at any hour of the day; this contrasts with fixed duration values which commence at a fixed hour, e.g. daily values read at 0900UCT. The associated Technical Report 61 provides an account of the reliability and probable accuracy of the model (Chapter 4) and the probable effects of climate change on extreme rainfalls (Chapter 5).

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:	Met Éireann (www.met.ie)
Main Researcher:	Denis Fitzgerald
GIS specialist:	Seamus Walsh

Dates:

Work Package 1.2 of the Flood Studies Update Programme was completed in August 2007.