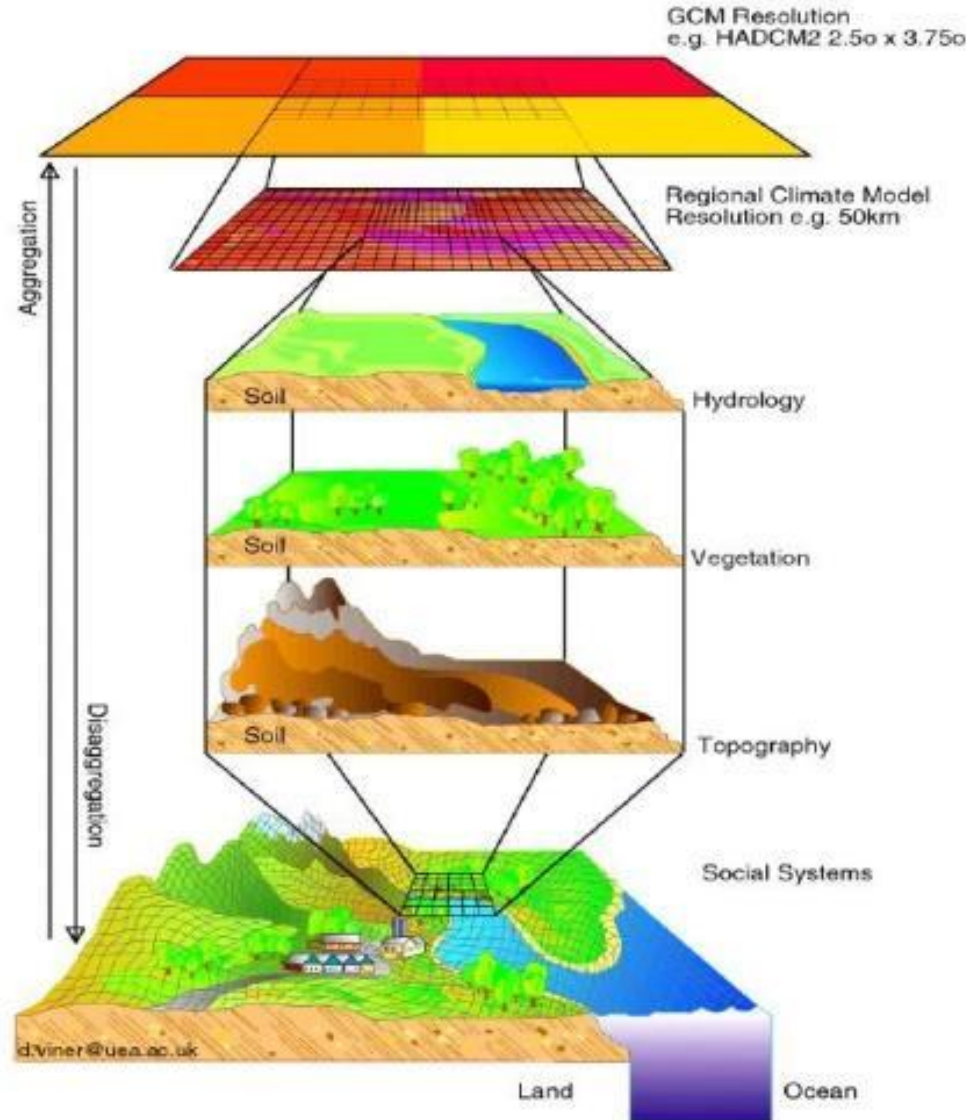
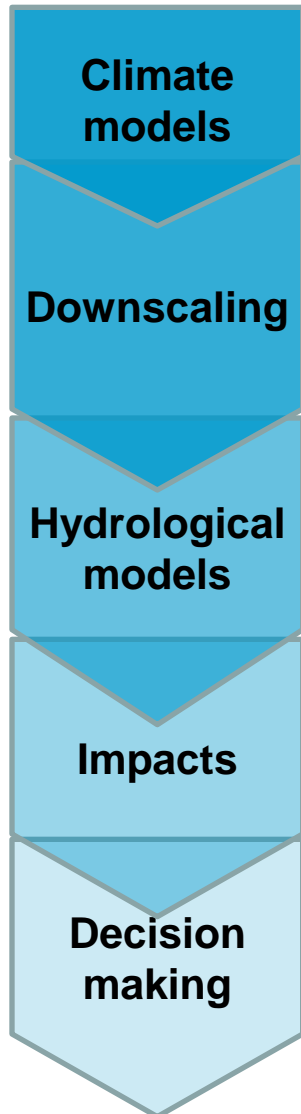


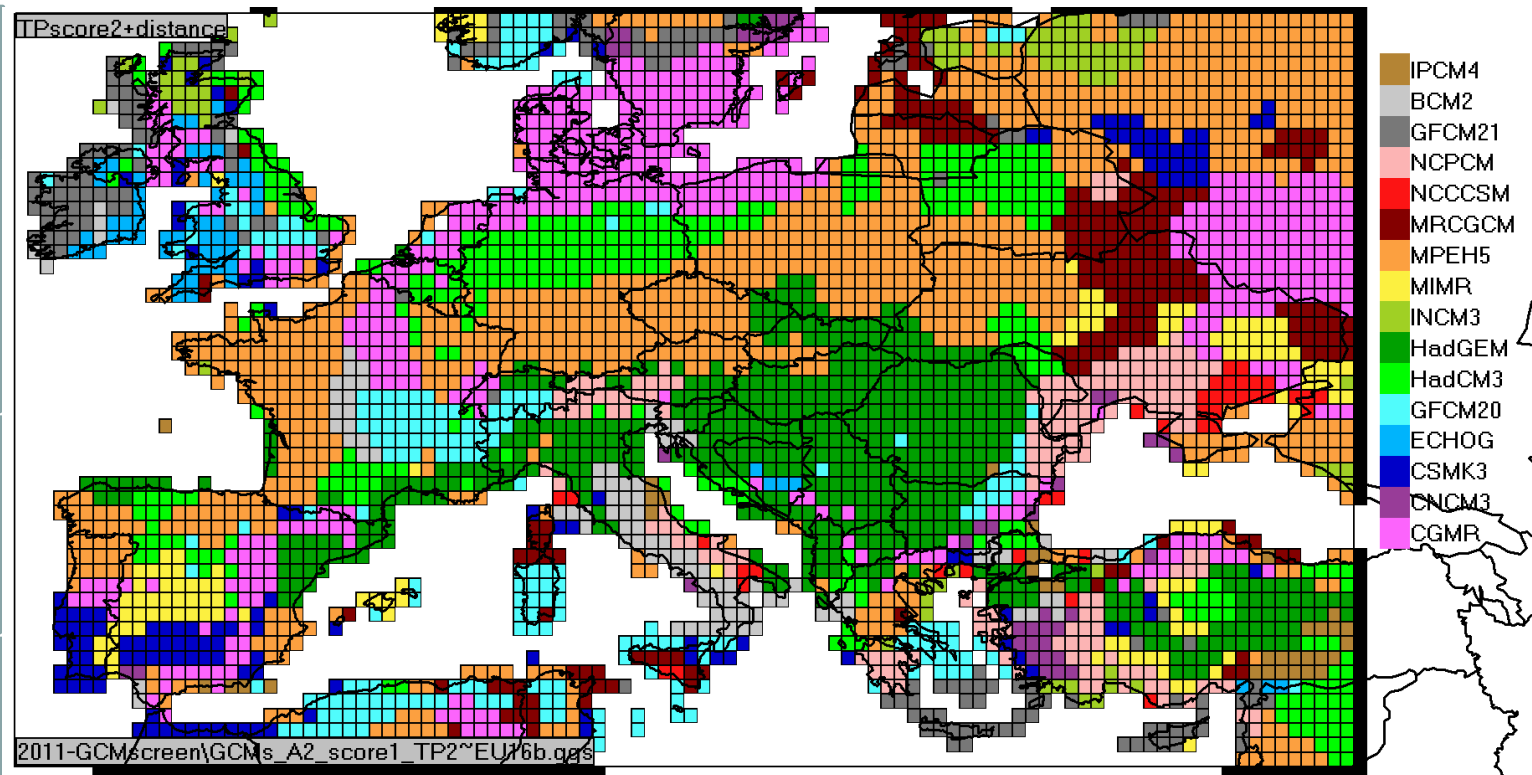
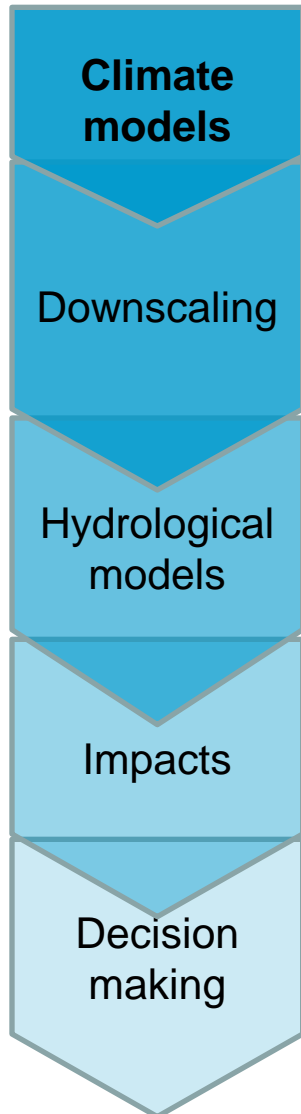
# Making the most of current research – A Researcher's Point of View

Ian Holman

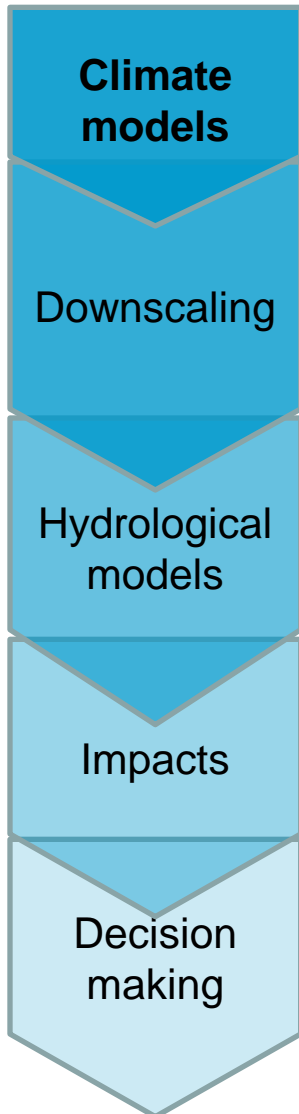
Cranfield Water Science Institute  
Cranfield University



(<http://www.bgs.ac.uk/changingwatercycle/hydef.html>)



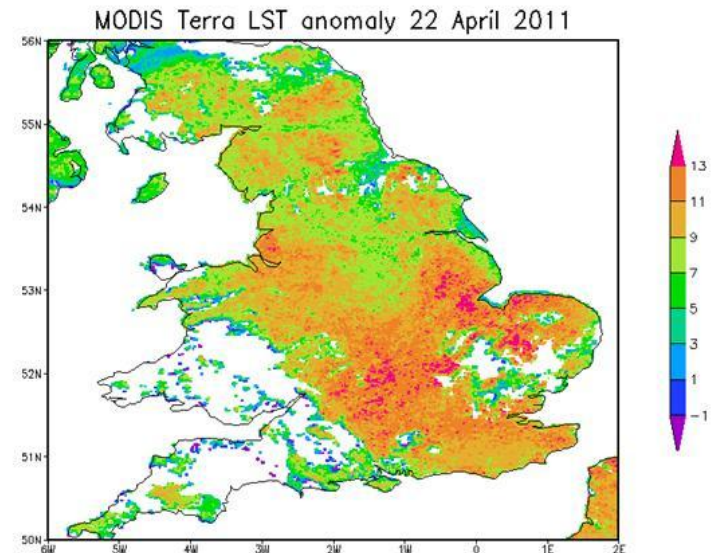
The GCM-based annual cycle of monthly precipitation and temperature means compared with the gridded observed values (CRU CL 1.0) (Dubrovsky et al., 2011)

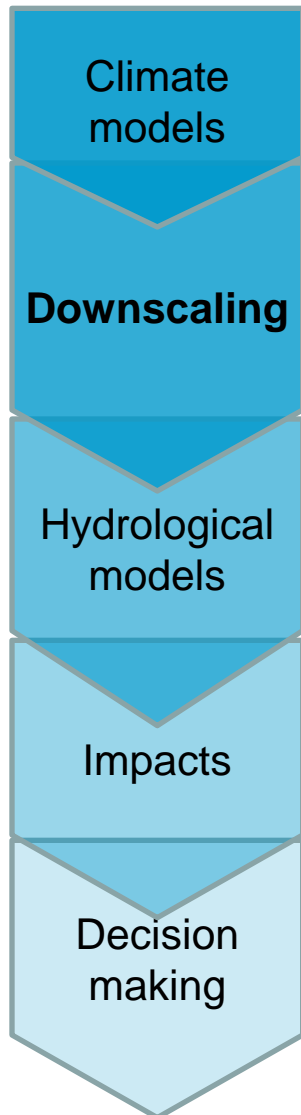


**SWELTER-21** – improving our understanding of how soil wetness influences rainfall within the UK Met Office model used both for climate and seasonal prediction

**HYDRA** - delivering new insight into the coupling between the atmospheric hydrological cycle, sea surface temperatures and sea-ice, and land surface processes

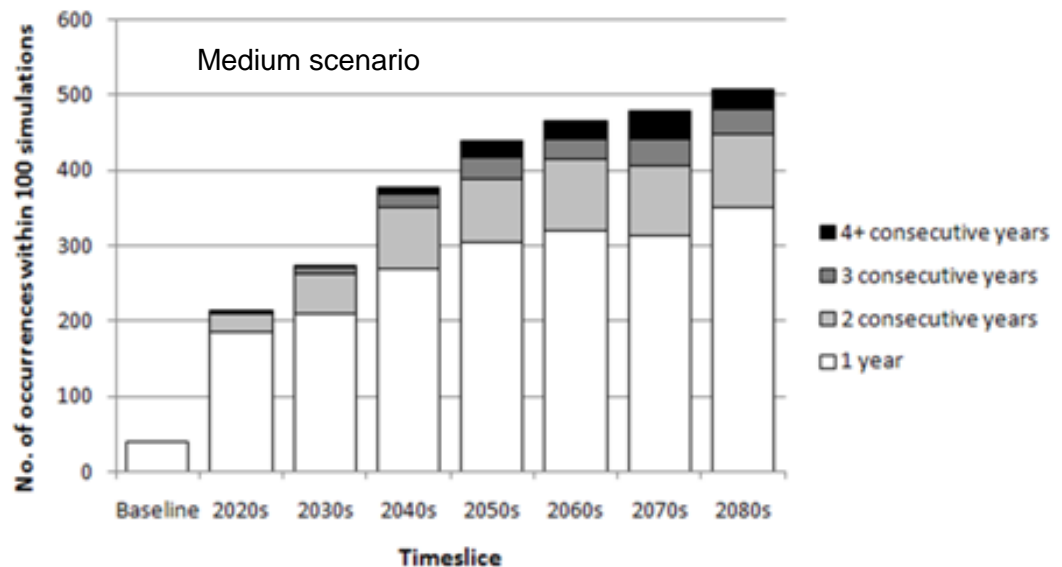
**PAGODA** - evaluating, against observations, the representation of variability and changes in the water cycle in climate models, and identifying the processes responsible for divergence with observations and amongst models





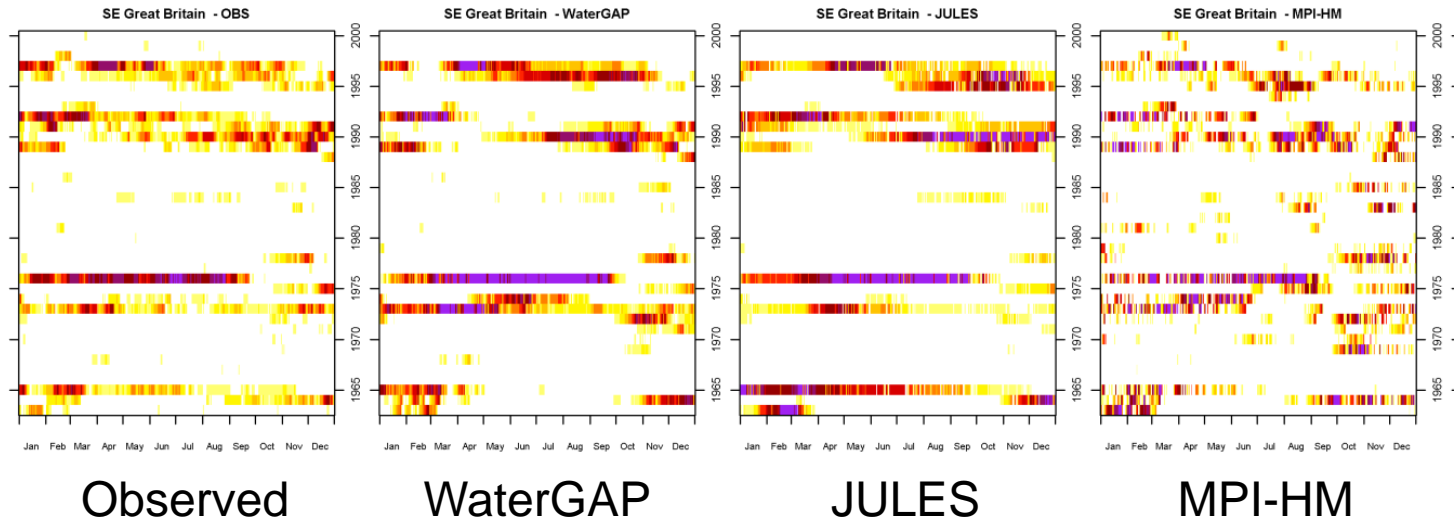
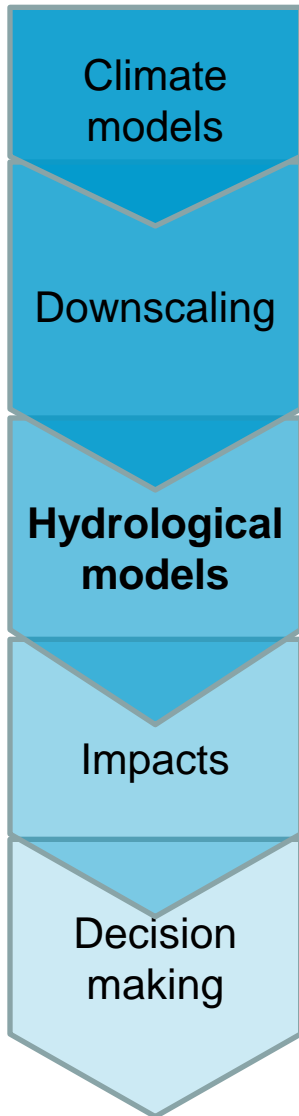
Existing downscaling tools:

- UKCP09 WG; SDSM, LARS-WG, Ensembles Downscaling portal



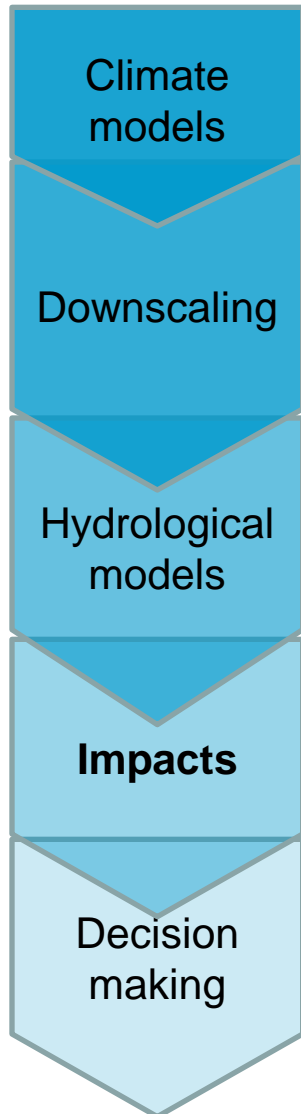
Increasing frequency of consecutive years in which modelled monthly reservoir storage falls below 35% (Warren & Holman, *In Press*)

**HydEF** – developing improved downscaling methods, with model structures informed by physical understanding



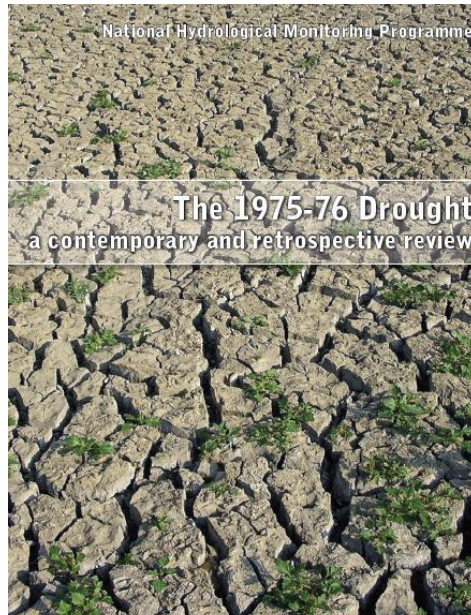
Reproduction of historic drought characteristics using selected large-scale hydrological models (Prudhomme et al., 2011)

- Improving groundwater representation within hydrological and land surface models (e.g. **HydEF**)
- Groundwater drought research (Jackson et al., 2011)



Models tend to simulate change in State (river flows, groundwater levels, crop yields etc)

People, businesses, food production, habitats etc are Impacted

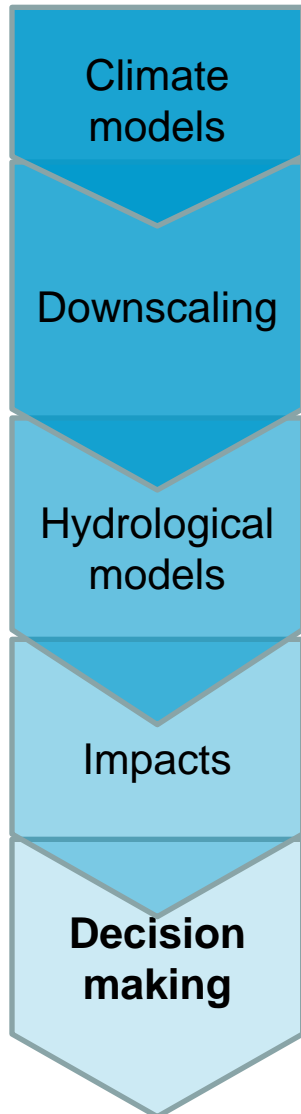


- Historical precedents – the 1975-76 Drought
- **ARCC-Water** – water resource system vulnerability
- **Drought & Demand 2006** – sociological study (ESRC)
- **EQUIP** WP6 (NERC)



- FP7 ie. **CLIMSAVE, MEDIATION**





## Making decisions under uncertainty

- **CRANIUM**: Climate change Risk Assessment: New Impact and Uncertainty Methods (EPSRC)
- **CREW**: Community Resilience to Extreme Weather (EPSRC)
- **PREPARED** (FP7) – water and sanitation in cities

## Communication

- Understanding consumer response to drought (**Drought and Demand in 2006**)

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# Channel 4 News

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## The wettest drought on record?

Sunday 29 April 2012

Much of the UK awoke to another miserable rainy day with winds strong enough to fell trees, snow in the hills and 113 flood warnings - in the midst of an official drought. What is going on?