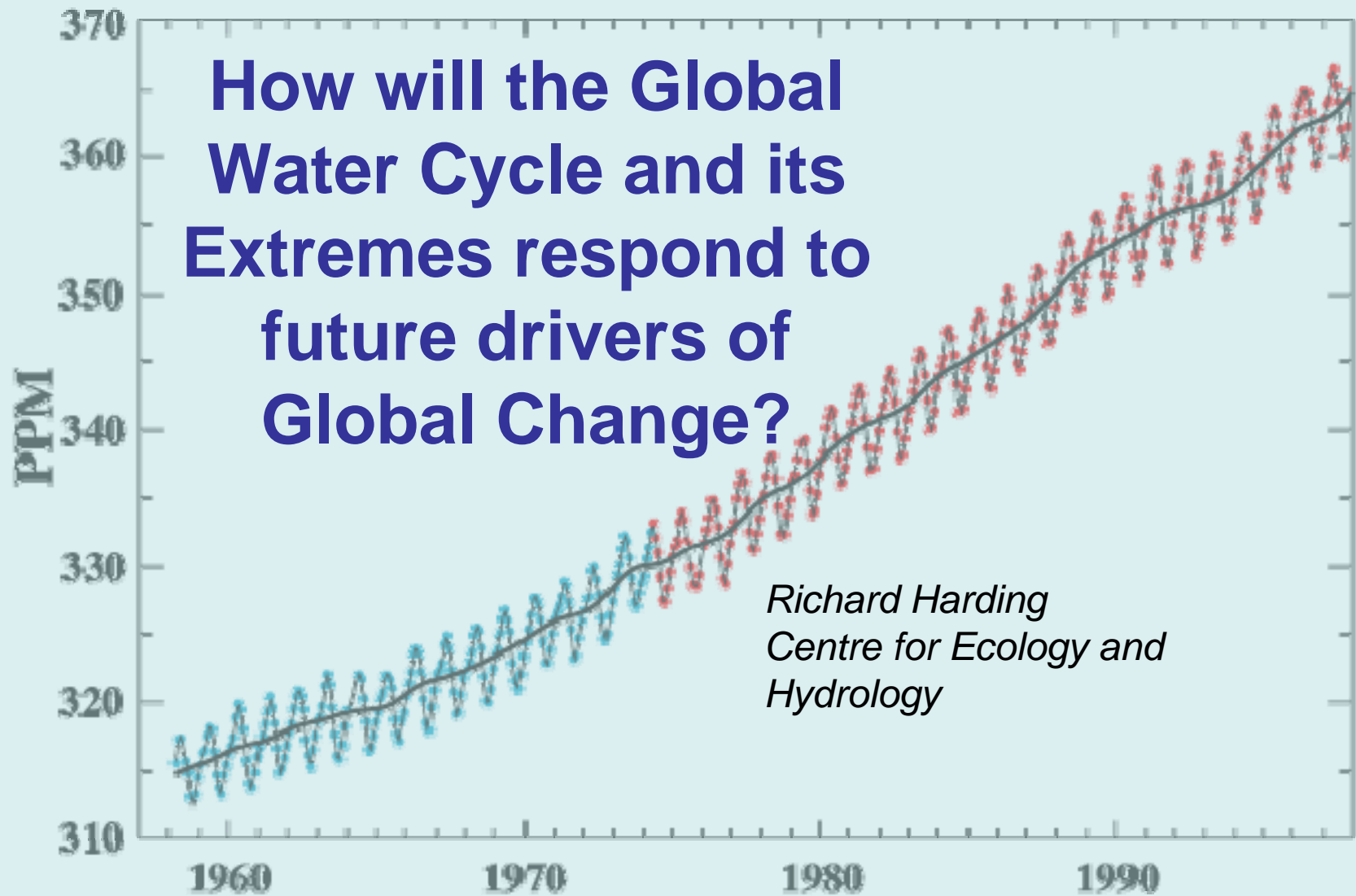
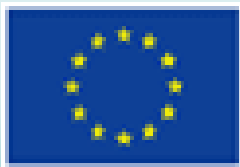


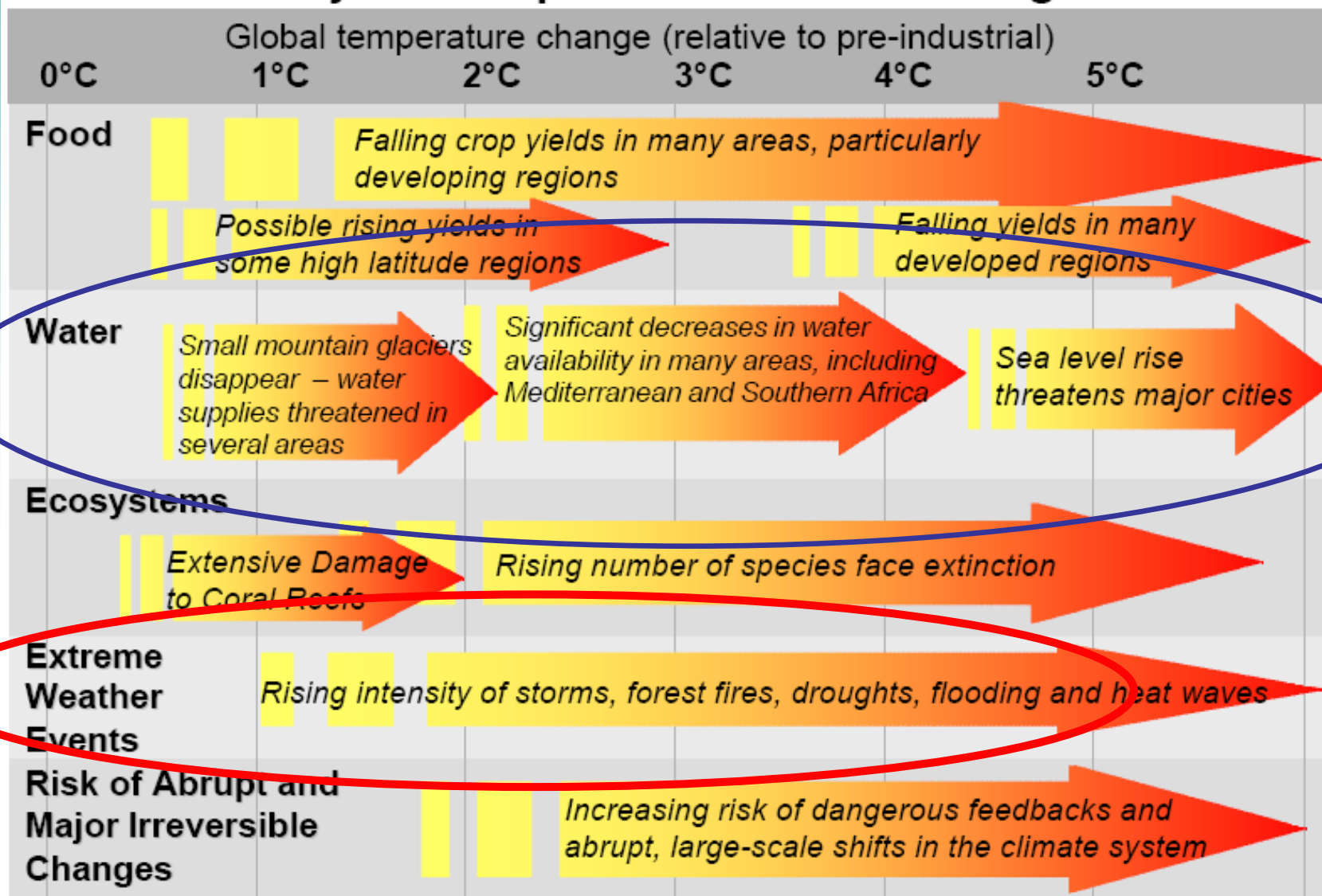
How will the Global Water Cycle and its Extremes respond to future drivers of Global Change?



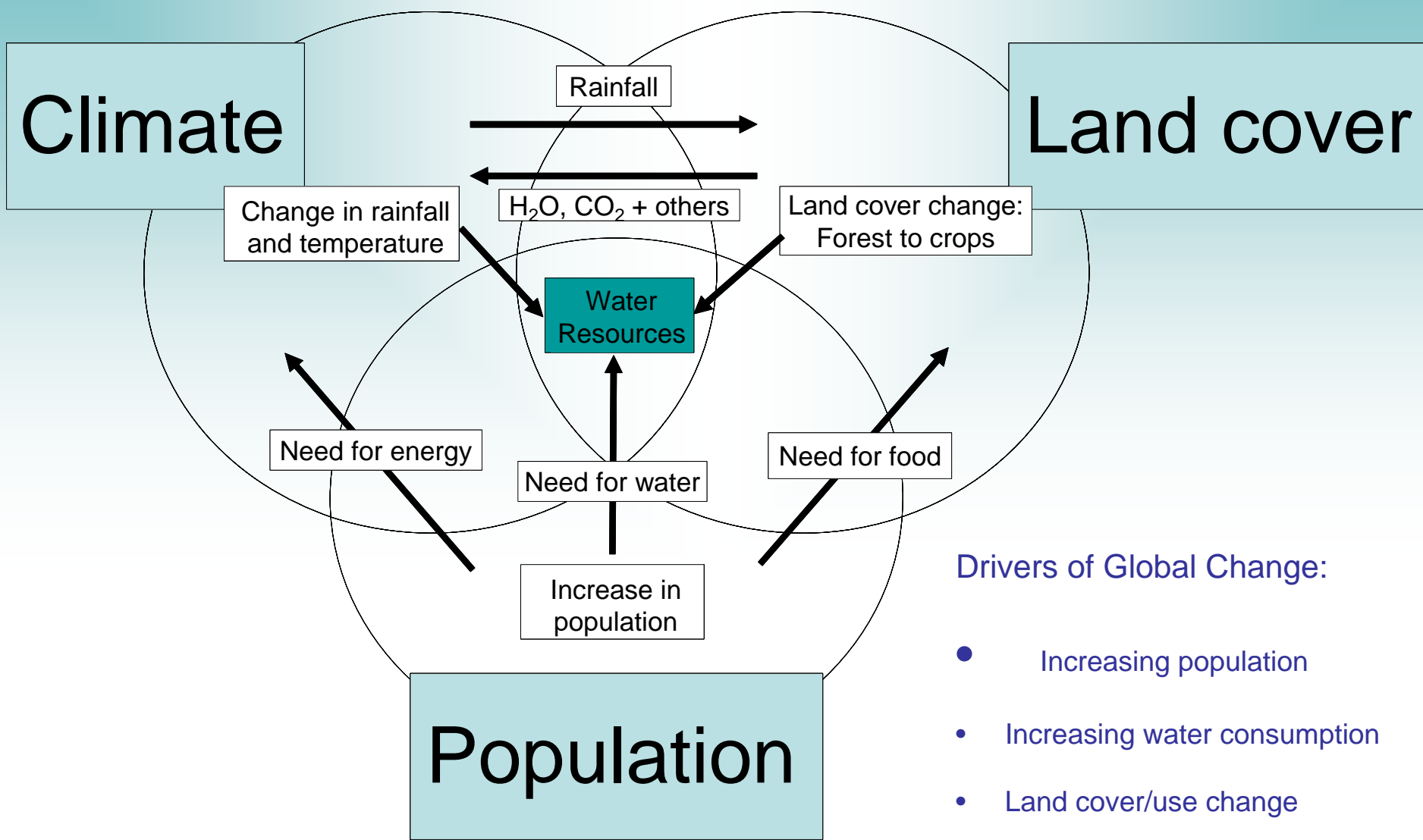
*Richard Harding
Centre for Ecology and
Hydrology*



Projected Impacts of Climate Change



Stern Review (2006)

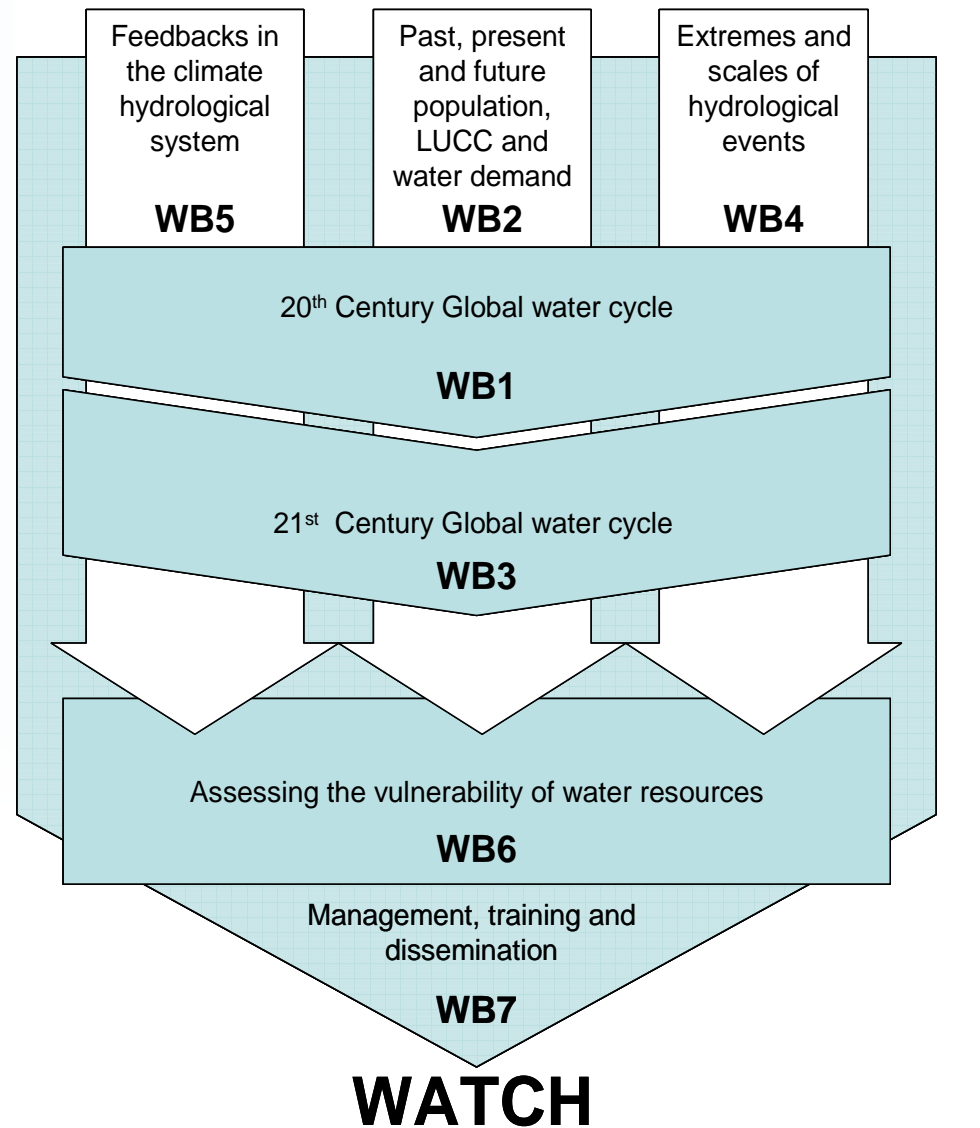


Drivers of Global Change:

- Increasing population
- Increasing water consumption
- Land cover/use change
- Increasing greenhouse gases

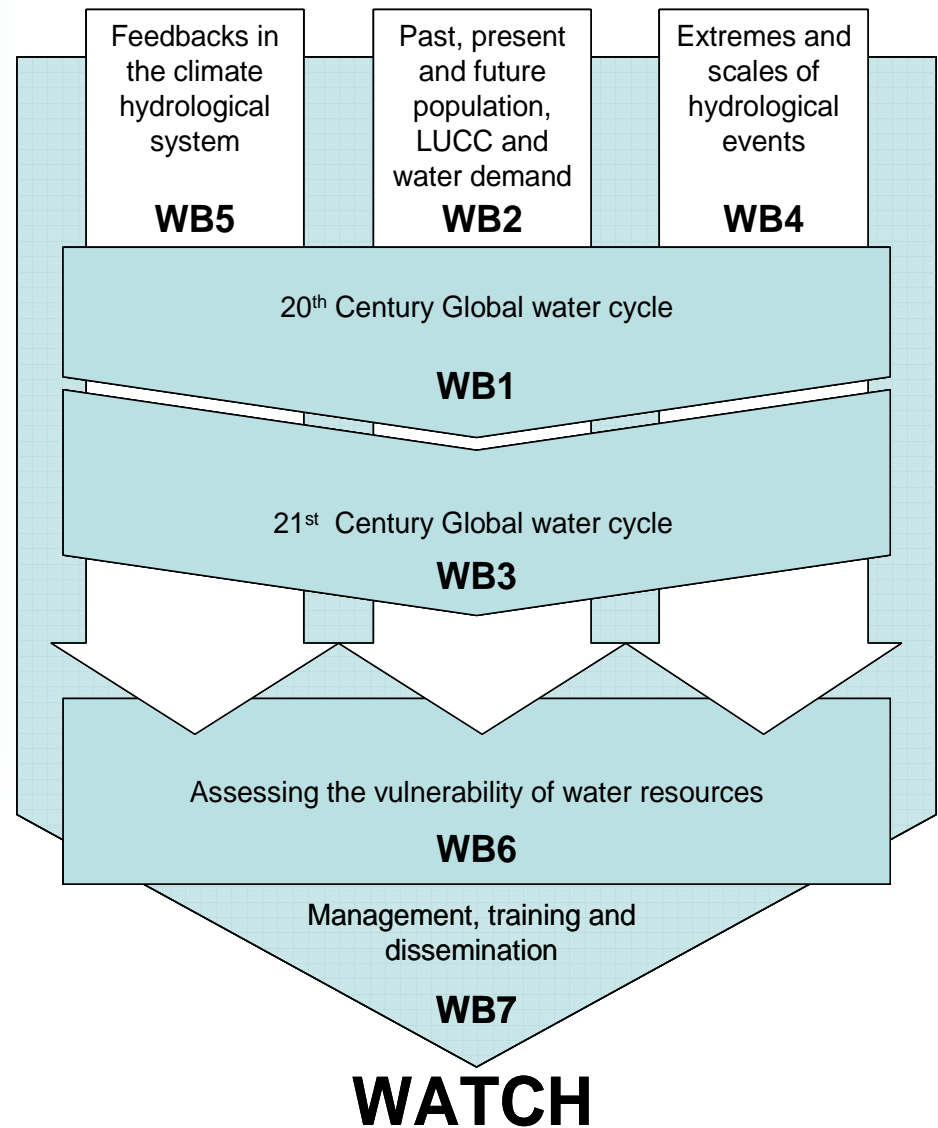
The WATCH Integrated Project:

- analyse and describe the **current** global water cycle
- evaluate how the global water cycle and its extremes respond to **future** drivers of global change
- evaluate **feedbacks** in the coupled system as they affect the global water cycle
- evaluate the **uncertainties** in the predictions
- develop a modelling and data framework to assess the future **vulnerability of water as a resource**



The WATCH Integrated Project:

- 25 European partners:
hydrology, climate and
resource scientists
- 13m euros of effort
- International programme
- research, workshops,
training, dissemination
- Started March 2007



No	Organization	Principle Investigators	Country
1	Centre for Ecology and Hydrology	Dr. R Harding, Dr E Blyth, Dr. JHC Gash, Dr N Reynard, Prof. P Cox	UK
2	Wageningen University and Research Centre	Prof. P Kabat, Dr. H van Lanen, Dr. R Hutjes, Prof. Troch	NL
3	Free University of Amsterdam	Prof. H Dolman	NL
4	Danish Meteorological Institute	Dr J Christensen	DK
5	CEMAGREF	Dr P Kosuth	FR
6	University of Frankfurt	Prof. P Doll	DE
7	ICTP, Trieste	Prof. P Giorgi	IT
8	UK Met Office / Hadley Centre	Dr M Best, Dr R Betts, Dr P Stott	UK
9	Max Plank Institute for Meteorology (MPI-M)	Dr S Hagemann	DE
10	Polish Academy of Science	Prof. Kundzewicz	PL
11	Potsdam Institute for Climate Impact Research	Dr. D Gerten	DE
12	Technical University of Crete	Prof. I Tsanis	GR
13	University of Oslo	Prof. L Tallaksen	NO
14	University of Valencia	Prof J Sobrino	ES
15	University of Oxford	Prof. M Allen,	UK
16	IIASA - Int. Institute	Dr. Fischer, Prof. Hordijk	AT
17	Laboratoire de Meteorologie Dynamique, Paris	Dr. J Polcher	FR
18	University of Lisbon	Dr. P Viterbo	PT
19	Comenius University, Bratislava	Dr. M Fendeková	SK
20	Technical University Catalunya, Barcelona	Prof. J Carrera	ES
21	University of Kassel	Prof. J Alcamo	DE
22	KIWA	Dr. G J Zwolsman	NL
23	CNRS, LERMA Observatoire de Paris	Dr. C Prigent	FR
24	GEWEX European Office (at ESA)	Dr. van Oevelen	
25	International Water Association -IWA	Dr. P Reiter, Mr. K Robertson	Int. org.

WATCH – relevance to JULES

- Improving hydrological component of JULES: groundwater, routing (incl. dams etc), irrigation..
- New validation – runoff, evaporation ..
- Improved driving fields – global 0.5° fields for 20th and 21st century
- Improved land cover/land use fields
- Model intercomparison with GHMs and LSHMs (April 2008)

Thank You

