READING UNIVERSITY
Water Resource Contributions

- Aquatic Environments Research Centre (Penny Johnes, Andy Wade, Paul Whitehead, Danny Butterfield, Maria Shahgedanova)
- Walker Centre (Nigel Arnell and the GCM-MET groups)
- Soil Science (Steve Robinson, Anna Verhoef)
- Applied biology
- Agriculture

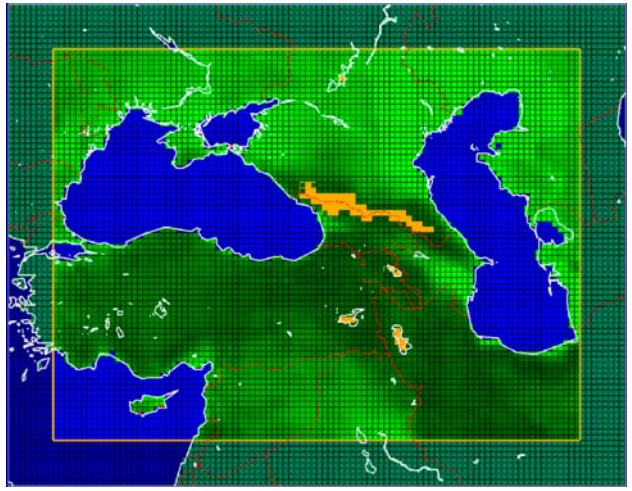
Water Resources

- Hydrology, water quality and ecology
- Euro-limpacs project concerned with impacts of land use change, pollution change and climate change on Rivers, Lakes and Wetlands across Europe
- Development of new models (INCA- Hydrology, N, P, sediments, Carbon (DOC and DIC), Mercury (methyl), Metals and Ecology)
- Process based, dynamic and semi- distributed
- Applied in over 20 countries now (across Europe, Nepal, Brazil, Canada)

Contributions to future Hydra Projects

- Ability to predict future quantity and quality of the resource
- Test the suitability of resource for potable supply, amenity, leisure and conservation
- Issues such a nitrates in water supply, role of P and N in eutrophication, ecological impacts
- cyanobacteria growth in reservoirs, lakes and rivers
- Impacts of climate change, land use change, point and diffuse pollution

Climate Change and Glacier Dynamics in the Caucasus Mountains



- In collaboration with Germany, Russia, Georgia, and potentially Armenia
- Current budget Euro 120,000
- How do glaciers respond to climate change and what are the implications for regional water balance?
- Densely populated area with agriculture dependent on irrigation

- Quantifying the recent past and future climate change
  - Regional climate change scenarios developed using PRECIS (HadRM3) RCM with 25 km horizontal resolution
- How do glaciers respond to climate change
  - Mass and energy balance of individual glaciers leading to modelling of glacier response
  - Use of satellite imagery to assess glacier retreat
- What are the implications of climate change and glacier retreat on regional water balance?
  - HBV-ETH model to assess changes in water balance

Walker Institute

Underlying theme: linking climate science, hydrology and water resources

Effects of climate change on *resource reliability*

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Linking (high resolution) climate models with hydrological and water resources models

Sensitivity to changes in variability (potential changes in frequency of back-to-back dry winters?)

The next 30 years: combining climatic variability and climate change

A global perspective- 3 major initiatives

1 Climate change and global water resources (QUEST-GSI)
- *effect of climate policies*
- *factoring in adaptation*

2 Climate change and water resources in Queensland: comparisons with the UK
- *sensitivity to changes in variability*
- *differences in predictability*
- *management in the face of climate uncertainty*

3 Climate change and agricultural water use
- *irrigation*
- *linking crop and water modelling*