2. Climate scenarios

- High resolution (0.5° latitude/longitude) climate scenarios are produced by pattern-scaling GCM-generated patterns of global climate change (Climgen; Osborn et al. 2008).
- Scenarios are designed to explore three aspects of uncertainty in projected climate change:
  1. Greenhouse gas emissions
  2. Climate sensitivity
  3. GCMs

3. Methods

- Hydrological models are calibrated for the 1961-90 period using CRU TS 3.0 gridded climate data (at 0.5° latitude/longitude resolution).
- All models are semi-distributed.
- Liard and Mekong use SLURP model.
- Mitano, Xiangxi and Huangfuchuan use SWAT model.
- Okavango uses Pitman model.
- Grande uses MGB-IPH model.

5. Results: SRES A1b for 2040-69

- Liard: Mackenzie
- Mitano: Nile
- Grande: Parana
- Okavango

6. Summary

- Substantial variation occurs in projected changes in river discharge between the seven different GCMs.
- No overall consistency in the direction of change for all river basins.
- Variation between GCMs at the monthly level is replicated for average annual runoff.
- Variation between GCMs is generally a function of differing precipitation totals (rather than temperature).
- The potential evapotranspiration method used by each model is also a substantial source of uncertainty.