Climate change estimations of fluvial discharge from the main Andean rivers

Exploring the use of CORDEX data

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Introduction

- Use **CORDEX** data to generate an estimation of the projected changes in river discharge
- Force **ORCHIDEE** IPSL GCM land model with CORDEX data in off-line mode
- ORCHIDEE model provides a full representation of the surface water process via a **routing** and **floodplains** scheme
- First analysis over whole South America on CORDEX-SA domain (0.44°) from **Univ. Cantabria WRF** run (1950-2100) focus on Andean rivers
- **'Cheap'** computational effort with full potential

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Methodology

1. CORDEX resolution is higher than original river-basin data set (0.5°), thus there is a need to use a new version of the model which is prepared to use HydroSheds *[Lehner, Eos, Transactions, 2008]* data-set ($1\ km$). Floodplains are not operative yet at higher resolutions (under development)
2. Prepare CORDEX data to meet ORCHIDEE requirements (only attributes and single year files)
3. Run the model over the entire period
4. Perform the analysis

NOTE: Technical issues do not allow to finish the simulations on time. Still working on it

South America rivers (0.5°)