Changes in Hadley cell strength in the CMIP3 climate model database

Question: What do climate models say about future Hadley cell strength in a global warming scenario?

In a future, warmer climate, tropical overturning circulations are expect to weaken. Climate models show this happening for the Walker cell, while the Hadley cell has not been studied. You will look at Hadley cell strengths in present and future climate model simulations in the CMIP3 database and examine the nature and robustness of the changes.

- Background study:
    - Key concepts and tools: Climate models, performance index, CMIP3 project, global warming scenarios, Hadley and Walker cells, python language, NetCDF data format.
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- Data analysis:
    - You will compare the 20th century simulations with the SRES1AB scenario. Relevant data for these runs is available on augie.ucd.ie.
    - For each model, season and case, compute mean Hadley cell strength.
    - Plot and discuss results. Do all models give the same qualitative results? What about the subset of models with the highest performace indices?

- Prepare report, including introduction to the problem, review of previous studies, description of datasets and methods, presentation and discussion of data analysis results, conclusions.

- Prepare 10 minute oral presentation summarizing the topic and the work you have done.