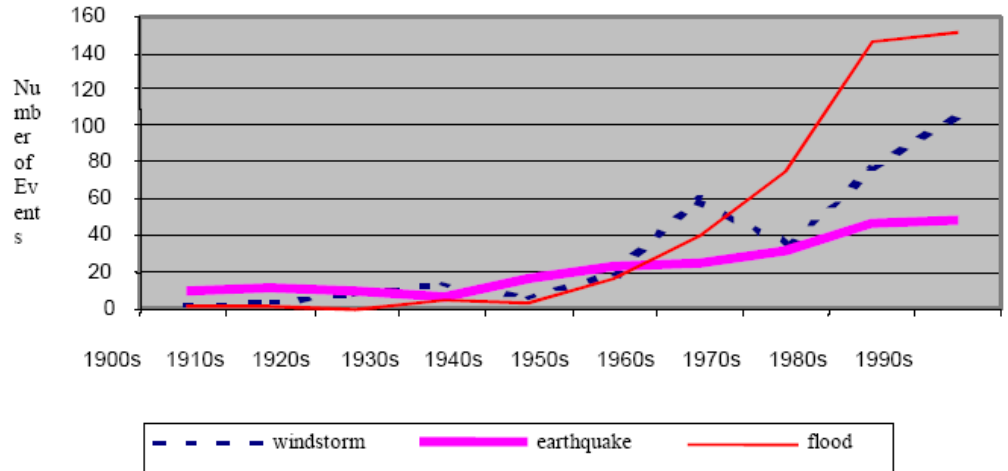


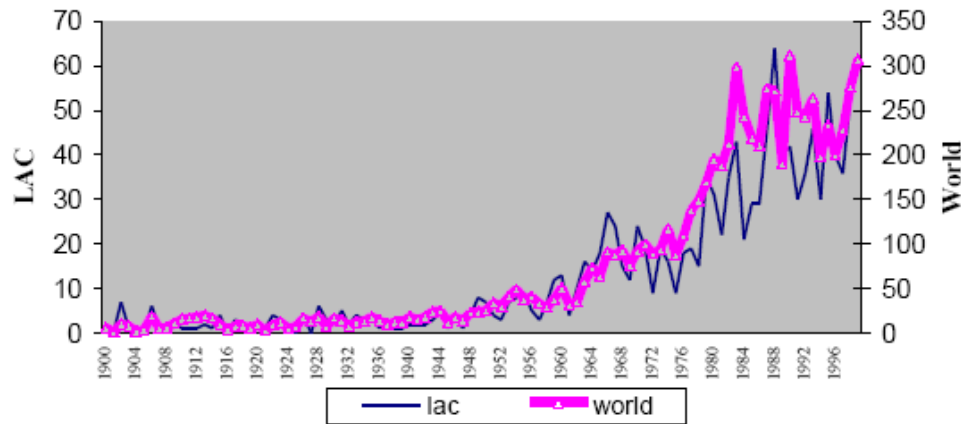
Panel Discussion on Climate Methods and Tools: availability, applicability, accessibility and training opportunities

A summary of recommendations of the
Background Paper on “Impacts,
Vulnerability and Adaptation to Climate
Change in Latin America”

Occurrence of Natural Disaster Events in Latin America and the Caribbean : Trends by Disaster Type (1900-99)



Annual Occurrence of Natural Disaster Events in Latin America and Caribbean and the World (1900-99)



Climate Data Availability in Latin America

- Climate data availability is severely limited in Latin America. The Global Climate Observing System (GCOS) receives, on average, only 119 surface stations and 23 altitude stations from all of Latin America. There is a significant gap in observational coverage and the problem is more acute for some regions, mainly the higher elevations along the Andes Cordillera.
- National Meteorological services Websites, in general, do not make available datasets to allow studies of detection and attribution of climate change. There are just a few countries in Latin America which have active climate change programs.
- It is extremely urgent to implement a plan for investments in meteorological information and to improve Latin American countries' capabilities and knowledge to undertake and maintain systematic, long-term, climate observational programs, along with the capacity to undertake analyzes of climatic information.

Capacity Development

There is a need for training and capacity building, as well as technology transfer from countries that have and are working on climate change modeling to others in the region.

Suggested Training Activities and Internet Resources

- **Training for installation and operation of meteorological networks**
- **Training on freeware visualization packages (GrADS/GEMPACK), statistical analyses of climate and/or regional climate change scenarios and developing analytical and useful products**
- **Training workshops (model: CIMMS' (Cooperative Institute for Mesoscale Meteorological Studies)**
- **Developing a multimedia CD ROM with topics about environment and climate change**
- **Internet use for simple and easy results on climate and/or statistical applications**

Internet resources for simple and user-friendly analyses and climate and/or statistical applications

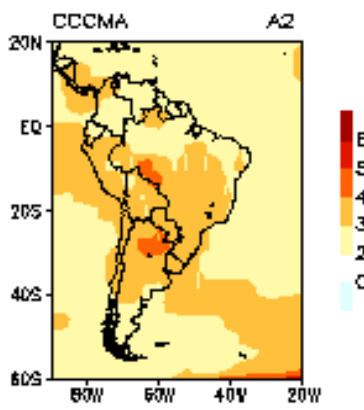
- KNMI Climate Explorer (<http://climexp.knmi.nl/>) - This site allows external users to produce spatial averages of climate variables such as rainfall from global, gridded data sets, and relate these to global data sets such as SSTs and NCEP reanalysis;
- Climate Diagnostic Center (http://www.cdc.noaa.gov/ncep_reanalysis/) - Plots maps, cross-sections and time series based on the NCEP reanalysis dataset. There are options to plot anomalies and compare the data with the GFDL model results dataset and plot the GFDL dataset;
- Virtual Centre for Decadal Climate Variability (<http://www.decvar.org/>) (*Vikram Mehta - Univ. of Maryland*). Provides access to long-term data sets integrated with analysis and visualization software, and allows community-wide planning of experiments and analyses;
- Interactive statistics pages (<http://members.aol.com/johnp71/javastat.html>) (*StatPages*). Lists pages with programs for calculating confidence intervals, Bayesian methods, interactive tutorials, etc.;
- WebStat (<http://www.stat.sc.edu/webstat/>) On-line statistics, including multiple regression;
- Hyperstat Online (*David Lane*). (<http://davidmlane.com/hyperstat/>) Statistics “textbook”;
- Regression explained (*Vijay Gupta*) (http://www.spss.org/wwwroot/TIPS_ADVISE/regression_explained.doc). MS Word document explaining output of multiple regression;;
- Wavelets (*Torrence & Compo*) (<http://paos.colorado.edu/research/wavelets/>);
- A complete interactive course in introductory statistics from [Massey University](#) (*Douglas Stirling*);
- Climate Change Outreach to Youth (<http://edugreen.teri.res.in/>) -
- Resources: PCs or laptops with good internet connection.

Climate Modeling Capabilities in Latin America

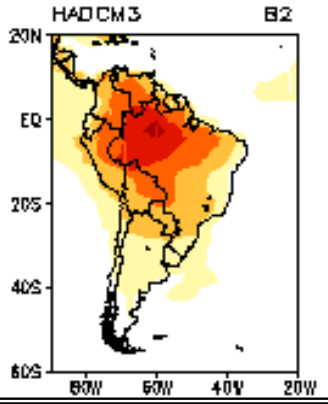
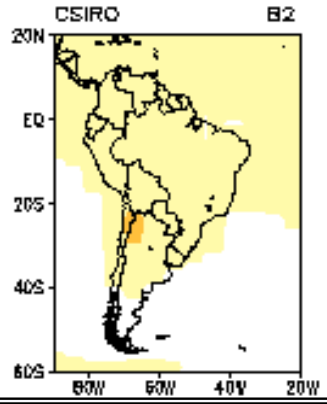
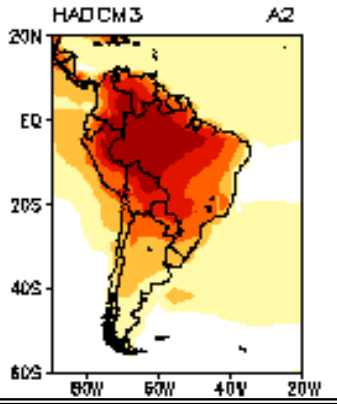
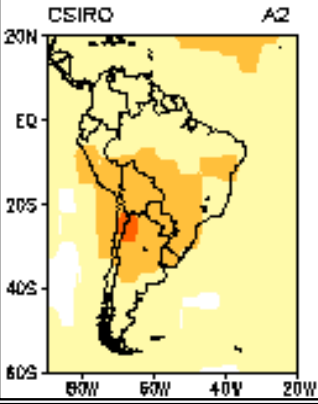
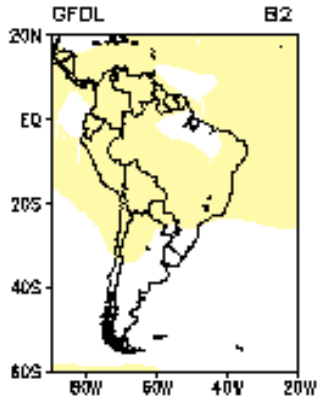
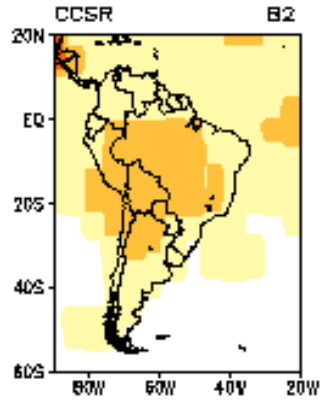
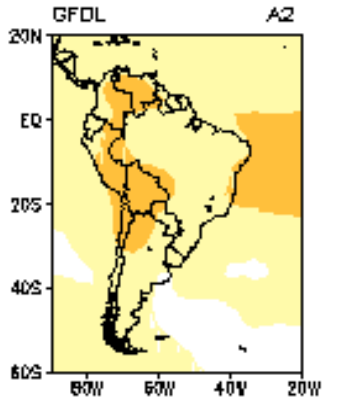
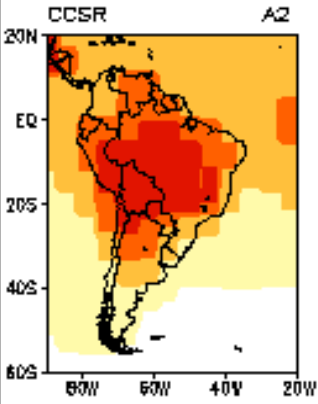
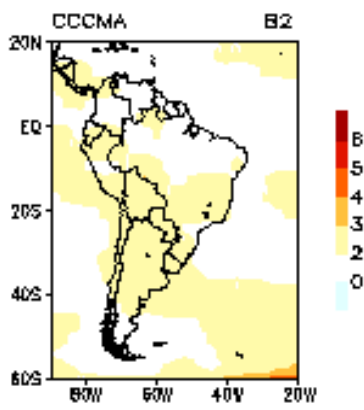
- The development of climate modeling capability for climate change studies confronts a knowledge gap in Latin America, and is particularly important with regard to detailed regional climate scenarios in developing areas of the world.
- The availability of future climate change scenarios from both global and regional models provides crucial information for the definition of policies for adaptation to climate change, especially coming from regional or statistical models.
- In Latin America, some groups have developed the capacity to use dynamic and statistical downscaling techniques using Global Climate Model-generated climate scenarios over a region.

Temperature Anomalies (°C) for 2091-2100

A2 High GHG Emissions Scenario

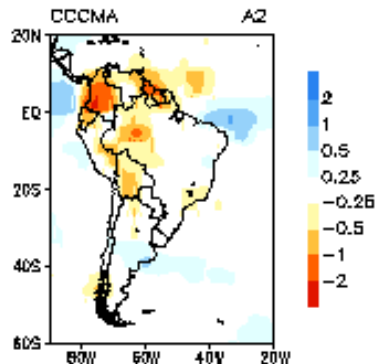


B2 Low GHG Emissions Scenario

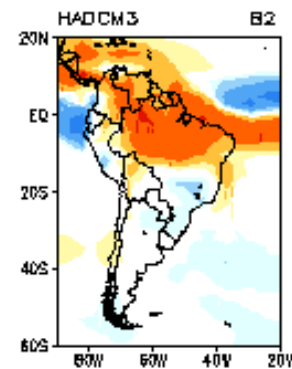
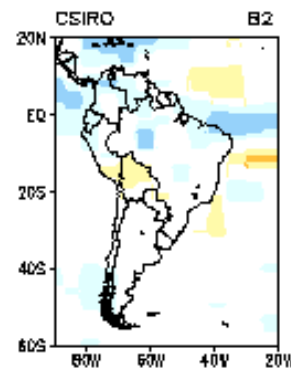
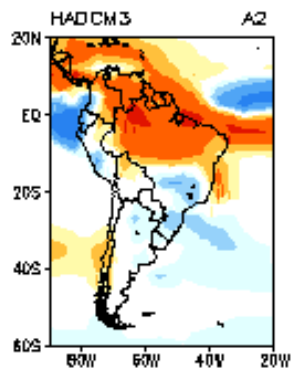
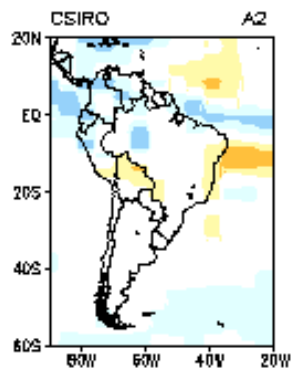
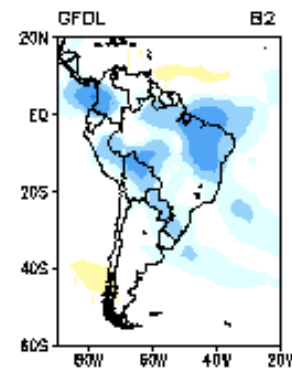
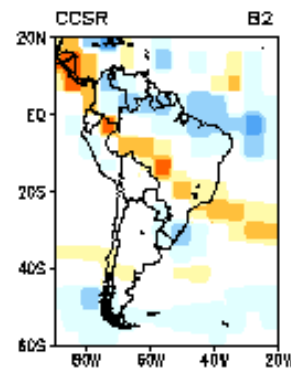
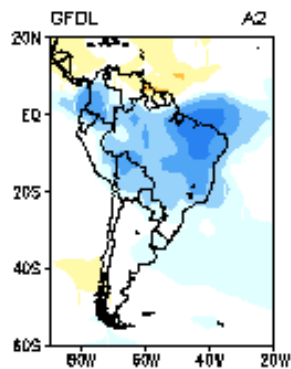
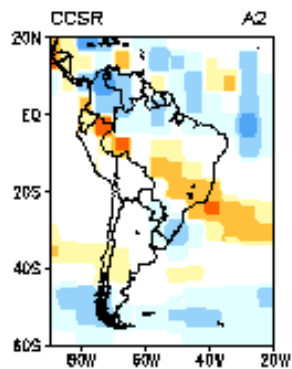
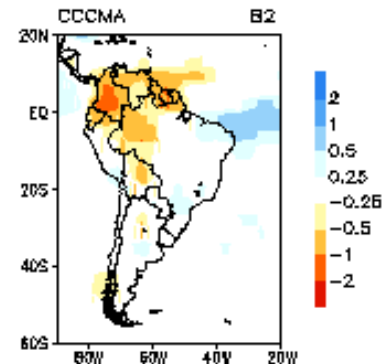


Precipitation Anomalies (mm.day⁻¹) for 2091-2100

A2 High GHG Emissions Scenario

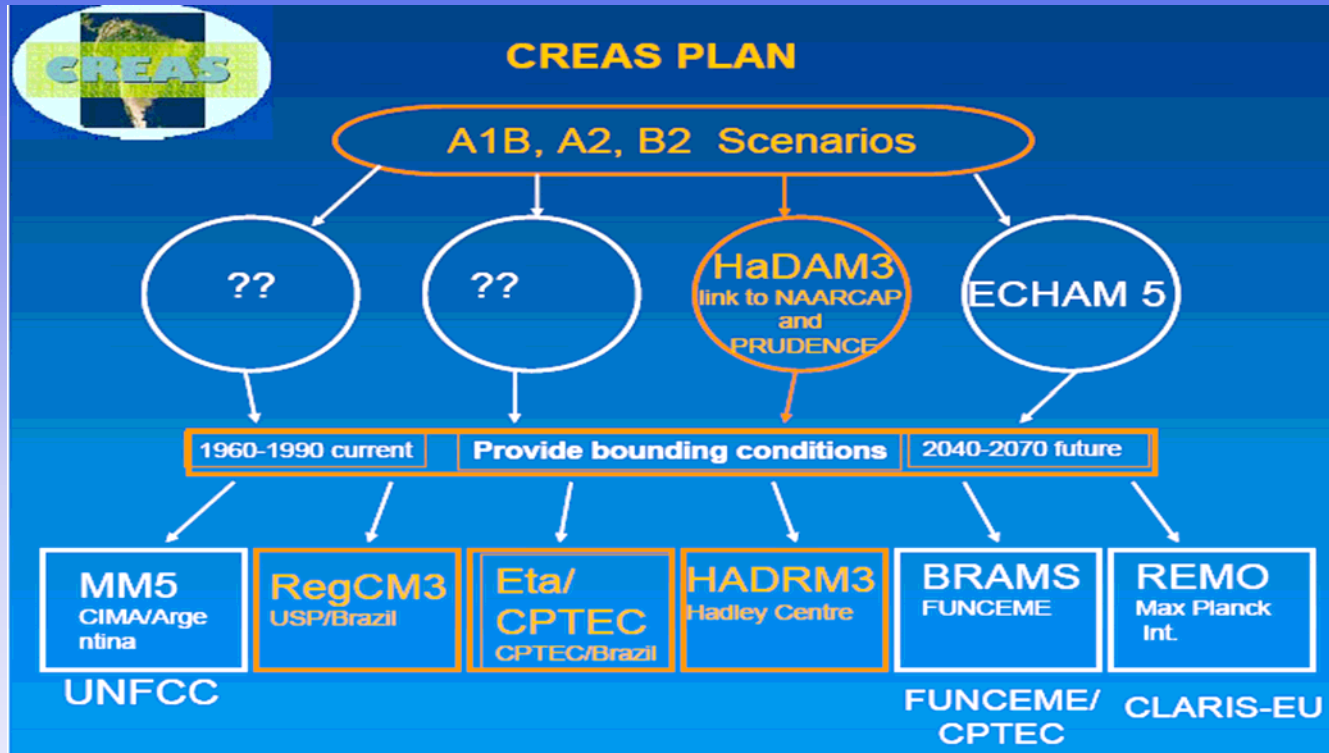


B2 Low GHG Emissions Scenario



Dynamic Downscaling of GCM in Argentina and Brazil

Regional Climate Change Scenarios for South America (CREAS)



Similar efforts in Chile, Colombia, Costa Rica, Mexico, Perú, etc.

Suggested Training Opportunities and Internet Resources

- Training activities in the use of regional climate model output for future climate in studies of impacts and assessments: From PRECIS to new training initiatives
- A proposal for training activities and capacity development on climate change modeling and downscaling in Latin America (**“Downscaling of Climate Change Scenarios Working Package”**)
- Internet resources for access to model climate projections

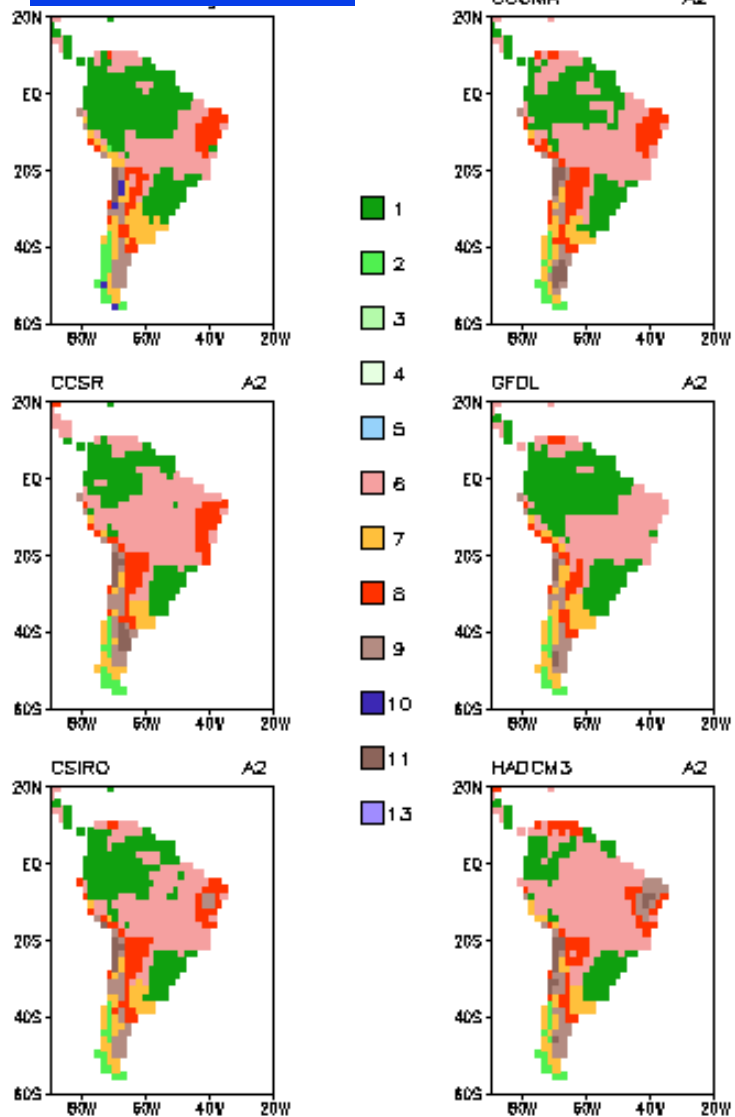
Internet resources for access to model climate projections

- -IPCC DDC for TAR models (in the UK, with links to the Max Planck Institute for Meteorology and the Columbia University Socio Economic data): <http://ipcc-ddc.cru.uea.ac.uk>.
- -PCMDI access to IPCC AR4 data (there is a need for registration and data can be downloaded for free): http://www-pcmdi.llnl.gov/ipcc/about_ipcc.php
- -PRUDENCE web site (regional projections Europe): <http://prudence.dmi.dk/>
- -NAARCAP web site (regional projections for North America): <http://www.narccap.ucar.edu/index.html>.
- -CREAS web site (regional projections for South America), available in July 2006: www.cptec.inpe.br/mudancadeclima/CREAS
- -AIACC web site (for projects on climate change in Latin America): <http://sedac.ciesin.columbia.edu/aiacc/>.
- -UNFCCC web site (for access to the National Communications): www.unfccc.int

A2 High GHG Emissions Scenario

B2 Low GHG Emissions Scenario

Natural Vegetation



Natural Vegetation

