

CRN-055 REPORT OF ACTIVITIES

(Updated to 31 July, 2001)

| I – Project General Information ¹ |
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| <p>Principal Investigator Dr. Mario N. Nuñez (Argentina)</p> |
| <p>Co Principal Investigators Vicente Barros, Guillermo Berri, Matilde Nicolini, Walter Vargas and Carolina Vera (Argentina). Tercio Ambrizzi, Iracema Cavalcanti, Alice Grimm, Jose Marengo, Carlos Nobre, Maria Asuncao Silva Dias and Pedro Silva Dias (Brazil). Genaro Coronel and Benjamín Grassi (Paraguay). Mario Bidegain and Mario Caffera (Uruguay). Hugo Berbery, Henry Diaz and Brant Liebmann (USA).</p> |
| <p>In the Project more than 40 collaborators and students are also participating.</p> |
| <p>Project Title Development of a Collaborative Research Network for the Study of Regional Climate Variability and Changes, their Prediction and Impact in the MERCOSUR Area (IAI CRN-055).</p> |
| <p>Major Institutions Involved ARGENTINA: Centro de Investigaciones del Mar y la Atmósfera (CONICET - UBA) and Departamento de Ciencias de la Atmósfera y los Océanos de la Universidad de Buenos Aires. BRAZIL: Instituto Astronómico e Geofísico de la Universidad de Sao Paulo, CPTEC/INPE and Universidad do Parana. PARAGUAY: Facultad Politécnica and Facultad de Ciencias Exactas y Naturales de la Universidad de Asunción. URUGUAY: Facultad de Ciencias de la Universidad de la República. USA: Climate Diagnostic Center of NOAA and Department of Meteorology of the University of Maryland.</p> |
| <p>Executive Summary A Collaborative Research Network (CRN) has been developed to promote research into the causes of climate variability in the Mercosur region of South America. Scientists from the Mercosur countries (Argentina, Brazil, Paraguay, and Uruguay) are leading the effort, with scientists from the United States also participating. The purpose of the CRN is to support an environment conducive to collaborative research. This is being accomplished by sponsoring scientific visits to each of the participating institutions, holding regular meetings where results are disseminated and discussed, and by encouraging the free exchange of data.</p> <p>Problems involving climate variability and the human response to that variability are quite complex and it is clearly impossible for one group to address even a single one of them effectively. At present, however, there are many barriers to effective collaboration, including the physical separation between groups, a lack of communication between disciplines, an historical resistance to the open exchange of data, and language barriers. It is believed that by providing an environment conducive to collaboration, the barriers will be reduced and the pace of research will accelerate more rapidly. These will result in developing a predictive capability and an understanding of how to make best use of those predictions, ultimately resulting in a benefit to the population within the region.</p> <p>The proposed CRN was designed through a series of meetings and workshops involving the participating institutions. Three themes have been identified as the priorities to be addressed:</p> <ul style="list-style-type: none">• Physical and dynamical processes related to climate variability in southeast South America.• Tropical - extratropical interactions related to circulation and precipitation variability over southeast South America.• Impacts of climate variability on sectors of social and economic importance in the Mercosur region. |

Relevant publications related with the Project (Authors are COPIs, collaborators and students, participating in the CRN).

Grimm, A. M., S. E. T. Ferraz, V. R. Barros and M. B. Dorelo, (2000): Intraseasonal variations of the South America summer monsoon. *CLIVAR Exchanges*, 5, 2, 13-17.

Müller, G. V., M. N. Nuñez and Marcelo E. Seluchi (2000): The relationship between ENSO cycles and frost events within the Pampa Húmeda region. *International Journal of Climatology*. 20, 1619-1637.

Saulo, C.A, M. Nicolini and S. C. Chou, (2000): Model characterization of the South American low-level flow during the 1997-1998 spring-summer season. *Climate Dynamics*, Vol. 16, 867-881.

Vera, C., P.K. Vigliarolo and E. H. Berbery, (2000): Cold season synoptic scale waves over subtropical South America. (submitted to *Mon. Wea. Rev.*).

Marengo, José A., B. Liebmann, V. E. Kousky, N. P. Filizola, and I. C. Wainer, (2000): Onset and End of the Rainy Season in the Brazilian Amazon Basin. *Journal of Climate* (in press).

Barros, V., M. Gonzalez, B. Liebmann, and I. Camilloni, (2000): Influence of the South Atlantic Convergence Zone and South Atlantic Sea Surface Temperature on Interannual Rainfall Variability in Southeastern South America. *Theoretical and Applied Climatology*, 67, 123-133.

Liebmann, Brant, and J. A. Marengo, (2001): Interannual Variability of Rainfall and the Rainy Season in the Brazilian Amazon Basin. Submitted to *Journal of Climate*.

Berbery, E. H., y E. A. Collini, 2000: Springtime precipitation and water vapor flux over southeastern South America. *Mon. Wea. Rev.*, 128, 1328-1346.

Grimm, A.M., I.F.A Cavalcanti, Y.Pscheidt y C. C. Castro. Contribuição de anomalias de temperatura da superfície do mar à ocorrência de eventos extremos de precipitação no sul do Brasil em Novembro. Anais do IV Diálogo das águas, Foz do Iguaçu, sep. 2001.

Rusticucci, M. and W. Vargas. Cold and warm events over Argentina and their relationship with the ENSO. *Int.J.of Climatology* (accepted).

Berbery, E. H., 2001: Sources of moisture for the South American monsoon at regional scales. Presented at the Symposium "Monsoon Systems around the World" at the IAMAS Assembly, Innsbruck, July 2001.

Berbery, E. H. and V. R. Barros, 2001: The Hydrologic Cycle of the La Plata basin in South America. Manuscript to be submitted to the *J. of Hydrometeorology*.

Vera, C. S., P. K. Vigliarolo and E. H. Berbery, 2001: Cold season synoptic scale waves over subtropical South America. Submitted to the *Monthly Weather Review*.

Vera, C. S. and E. H. Berbery, 2001: Influence of South Atlantic conditions on cyclogenesis over the Southeastern coast of South America. To be presented at the Symposium "Role of Ocean on Climate Variability over South America" which is part of the IAPSO Assembly, Mar del Plata, October 2001.

Marengo, J. A., Douglas, M. and Silva Dias, P. The South American Low-Level Jet East of the Andes during the 1999 LBA-TRMM and LBA-WET AMC campaign. Submitted *J. Geophys Res.*

Coelho, C. and T. Ambrizzi. The influence of the tropical Pacific and Atlantic SST on the precipitation patterns over South America during ENSO. Submitted to *J. of Climate*.

Waylen P., R. Compagnucci and R.M Caffera, 2000. *Interannual and Interdecadal Variability in Stream Flow from the Argentine Andes*. *Physical Geography*, Vol 21, N°5, pp 452-465.

Nicolini, M. and C. Saulo, 2000. Implications of strong low level jets east of the Andes for enhanced precipitation over subtropical South America. *Exchanges*, 16, special issue featuring VAMOS, 11-12.

Papers presented to the PROSUR First CoPIs workshop, Boulder, Co., USA, July 10-12, 2000.

See PROSUR WEB Site: <http://www-cima.at.fcen.uba.ar/prosur/default.htm>

Papers presented to the IX Congreso Latinoamericano e Iberico de Meteorología y VIII Congreso Argentino de Meteorología, hold in Buenos Aires, 7-11 May 2001 (authors belong to different participating laboratories). Published on the CD of the Conference.

Cavalcanti, I.F.A., A.M. Grimm, e V.R. Barros, 2000: Variabilidade interanual da precipitação sobre a região sul/sudeste da América do Sul simulada pelo modelo de circulação global da atmosfera CPTEC/COLA.

Cavalcanti, I.F.A.; J.A Marengo; M. N. Nuñez; M. Sanches. Análise do desempenho do MCGA CPTEC/COLA na previsão sazonal da região sul/sudeste da América do Sul nos anos de 1998 a 2000.

Marengo, J., M. Nicolini, P. Silva Dias, M. Douglas. Casos de Estudio de Jets de Bajos Niveles (LLJ) y de Jets del Sur (SJ) al este de los Andes durante el verano de 1999.

Solman, S. A., C. Menéndez, M. N. Nuñez, I. Cavalcanti y C. Nobre. Estudio preliminar sobre la predicción climática regional en la Pampa Húmeda.

Collini, E. A. y E H. Berbery, 2001: Pronósticos de Mesoescala para Sudamérica con énfasis en Argentina.

Rusticucci, M. y M. Barrucand. Variabilidad interanual de temperaturas extremas en la República Argentina.

Pezza, A. and T. Ambrizzi. Cold waves propagation over South America and the cyclones and anticyclones tracks: A climatological study.

Drumond, A. R. and T. Ambrizzi. GCM numerical simulations during Southern Oscillation negative events over South America.

Bidegain M. and P. Krecl. *Anomalías de la presión de vapor en el Sudeste de Sudamérica (Uruguay) asociadas al fenómeno ENSO.*

Bidegain M. and M. Renom.. *Distribuciones de temperaturas mínimas diarias condicionadas según fase del fenómeno ENSO en Uruguay*

Caffera, R.M. *Caracterización de las rachas de sequía sobre Uruguay en la segunda mitad del siglo veinte mediante quintiles de precipitación.*

[Scientific Visits to laboratories.](#)

Carolina Vera to CDC, Boulder, CO. USA. July 2000.

Carlos Nobre to CIMA/Dpto de Ciencias de la Atmósfera y los Océanos, Buenos Aires, Argentina. July 2000.

Vicente Barros to Universidad Federal do Paraná, Curitiba, Brazil. September 2000.

José Marengo and J. Tomassella to CIMA/Dpto de Ciencias de la Atmósfera y los Océanos, Buenos Aires, Argentina. September 2000.

Hugo Berbery to CIMA/Dpto de Ciencias de la Atmósfera y los Océanos, Buenos Aires, Argentina on two occasions: March 2001 and August 2001.

Mario Caffera to University of Buenos Aires, Buenos Aires, Argentina. Visits as a Ph.D. Student. Several times during the year 2000.

Between 2 and 4 May 2001, the working group “Studies of precipitation extreme events over La Plata

River Basin” (Ambrizzi, Liebmann, Penalba, Vargas and Vera), met at the CIMA/Department of Atmospheric and Oceanic Sciences of the University of Buenos Aires in Buenos Aires.

Between 2 and 4 May 2001, the working group “Studies of daily temperature extreme events over Southern South America” (Ambrizzi, Rusticucci and Vargas), met at the CIMA/Department of Atmospheric and Oceanic Sciences of the University of Buenos Aires in Buenos Aires.

Between 3 January to 28 February of 2001, C. Vera stayed at CDC working as a Visiting Scientist.

During the beginning of May 2001, B. Liebmann stayed at CIMA working as a Visiting Scientist.

Celeste Saulo stayed at CPTEC working with Marcelo Seluchi, supported by the PROJETA Project, during February 2001 to start cooperation in the study and model simulation of regional processes (topographic influences, thermal low, LLJ).

During August 29-31, 2001, Grimm, Ambrizzi and Vera acted as members of a Selection Committee for a Professor position at the IAG/USP in Sao Paulo, Brazil.

Fellowships

Marcelo Seluchi, member of the CIMA staff (Argentina), holds a post-doctoral fellowship from INPE (Brazil). Dr Seluchi is currently doing research at CPTEC, Cachoeira Paulista, Brazil.

During 2001 3 doctoral fellowships are been granted by the CRN (2 in Argentina and 1 in Brazil).

Research Activities.

All PROSUR research lines are under development according to those Research Lines indicated in our web page.

Other Activities.

A PROSUR Web site has been established (see <http://www-cima.at.fcen.uba.ar/prosur/default.htm>).

A Human Dimensions PROSUR workshop has been organized and hold in Buenos Aires, at the end of February 2001. A complete Report of the Workshop can be seen at the CRN PROSUR web site. A second Human Dimension PROSUR Workshop will be held at Rio de Janeiro, Brazil, during October, 2001.

The working Plan for the year 2000 has been successfully accomplished. The 2001 Working Plan is currently under way.

A Pilot Project on Paraná Plata Basin floods was developed and is currently under way as an initiative within the IAI CRN-055 Project (see our web site).

Participation in Meetings and Congress.

Santiago, Chile (April 2000). Meeting of the PI and CoPIs participating at the Sixth International Conference on Southern Hemisphere Meteorology and Oceanography.

Boulder, Co. USA (July 2000). First official CoPIs of the CRN-055 Project Meeting (all CoPIs).

Buenos Aires, Argentina (September 2000). X Foro Regional de Perspectiva Climática para el Sudeste de Sudamérica. Presentation by Dr. Nuñez of the talk “The CRN-055: Development of a collaborative research network for the study of regional climate variability and changes, their prediction and impact in the Mercosur area”.

Sao Paulo, Brazil (September 2000). Meeting and participation in an Evaluation Ph.D. Committee by some CoPIs (Grimm, P. Silva Dias, M. A. Silva Dias, I. Cavalcanti and C. Vera).

Piriapolis, Uruguay (December 2000). South Atlantic Climate Change Workshop. Presentation by Dr. Berbery of the talk “The CRN-055: Development of a collaborative research network for the study of

regional climate variability and changes, their prediction and impact in the Mercosur area”.

Montevideo, Uruguay (February 2001). 4th Session of the CLIVAR VAMOS Panel (Participants from CRN- 055: Barros, Nicoli, Vera, Berri, P. Silva Dias, Marengo, Grassi, Bidegain and Nuñez).

Buenos Aires, Argentina (May 2001). IX Congreso Latinoamericano e Ibérico de Meteorología y VIII-Congreso Argentino de Meteorología.

[Miscellaneous.](#)

The CRN-055 is now an affiliated Program of the VAMOS (VAMOS: Variability of the American Monsoon Systems which is a component of CLIVAR under the auspices of WCRP).

¹The effective starting date of the Project was July 2000. The first efforts were directed to organize it reaching consensus on activities for the first two years. Though there are already scientific results that are reflected in the publications listed in the present Report, the main stress of this first report is in describing the work plan, the pilot project, the timetable and collaborative activities. In the Asuncion meeting in October 2001, it will be discussed at length the scientific achievements of the project until those date which will be resumed in the next report.