Meeting in Buenos Aires,

November, 03rd-04th 2011

Present:

- Guillermo Berri / Argentina (Servicio Meteorologico Nacional)
- Maria Alejandra Salles/ Argentina (Servicio Meteorologico Nacional)
- Mario Bidegain / Uruguay (Universidad de la Republica - Facultad de Ciencias y Direccion Nacional de Meteorologia)
- Nicolas Maillard / Brasil (Universidade Federal do Rio Grande do Sul - (Instituto de Informática)
- Obidio Rubio / Perú (Universidad Nacional de Trujillo - Facultad de Ciencias Matemáticas)
- Philippe O. A. Navaux (Universidade Federal do Rio Grande do Sul - Instituto de Informática)
- Haroldo F. de Campos Velho / Brasil (Instituto Nacional de Pesquisas Espaciais - Laboratório de Computação e Matemática Aplicada)
- Olivier Richard / France (Laboratoire d'Informatique de Grenoble)

Reviewing the goals of the project:

1. distributed platform with 4 countries,
2. 10 years climatology based on Rio da Prata,
3. 10 years climatology based on the Andes (Peru),
4. international network of trained specialists,
5. setting up of a cluster OAR in Uruguay,
6. School in Grid Computing applied to Climatology.

The item 3 may be the hardest. Let us focus and finish the 5 other, which are well advanced, and in April we tackle the objective 3 (climatology for the Andes).

Mario Bidegain announces that the Meteorological service has bought 2 computers 4-cores, with 1 TeraByte of storage. They could be used to install Linux/OAR. We plan an interaction with R. Kassick, from UFRGS (Brazil), to complete the software installation until December 2011: OAR, BRAMS, MPI.

In Buenos Aires, the SMN has bought a machine made of 4 CPUs Xeon, each one with 4-cores. The storage capacity is 4 TeraBytes. The expectative is that it arrives in January/February 2012. R. Kassick should complete the installation of the software.

In Trujillo, Peru, the cluster is up and running OAR and BRAMS. Basic runs have been done as proof of concepts, to obtain the following simulations:

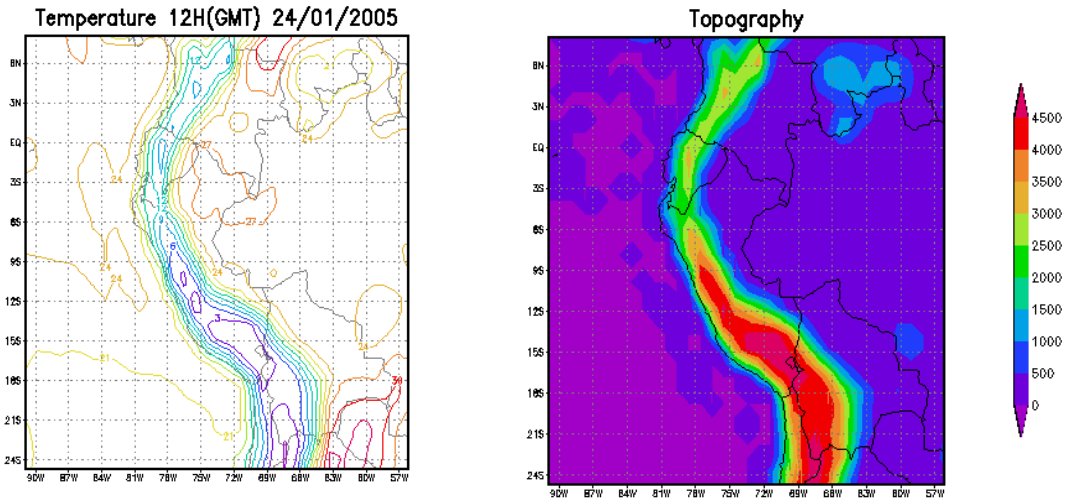

Fig 1. Simulations BRAMS of the Peruvian region – temperature and topography.

For the goal number 2, the last meeting has resulted in the decision to use nested meshes of different resolution: domain-1, 160km x 80 km x 20 km; domain-2, 160x40x8 km. The Figure 2 illustrates these two resolutions and the impact on the runtime of the simulations.

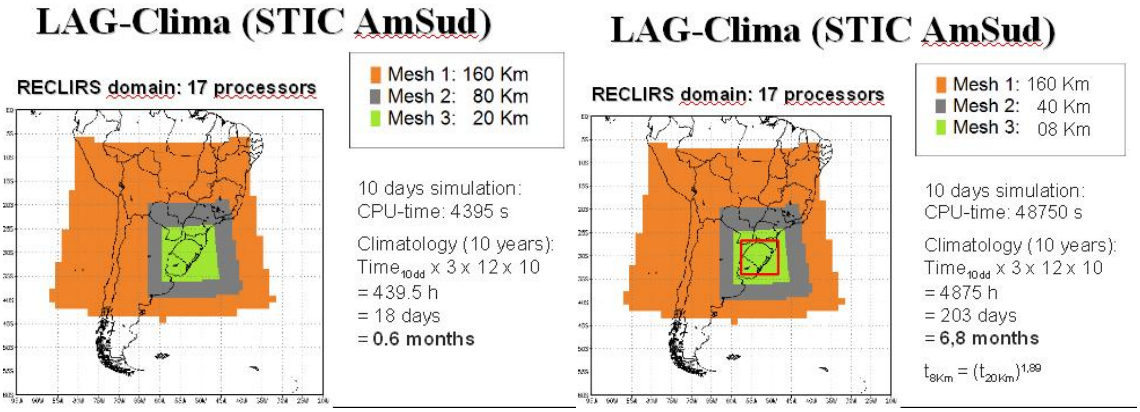

Fig 2. Computing climatologies with two different resolutions, and impact one the simulation time.

The partners have also discussed the next step, after having the simulated climatologies: the validation by meteorologists and climatologists. In order to do so, a database of experimental measurements has to be built. In Argentina, the data are already available. In Uruguay, a set of 12 stations provides reliable measurements.

From the discrete measurements, interpolation will be used to "complete" the climatology. Figure 3 illustrates this technique, and localizes the stations.

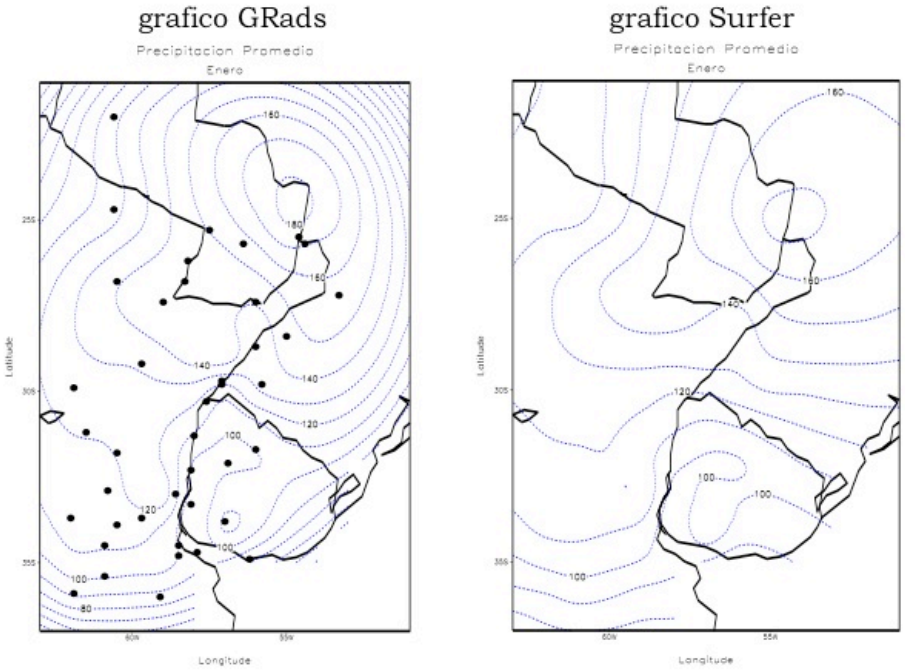

Fig 3. Interpolating the experimental measurements to obtain a climatology

Based on these data-sets, two steps are contemplated to validate the simulation:

1) The average behavior, yearly and seasonally, of the climatology will be obtained and compared to what the BRAMS simulation will have provided.
2) The temporal series of values for each interesting field (temperature, rain…) will be compared in order to establish if the simulation also enables the detection of extreme events (droughts, excessive rain…).

The period 1980 – 2010 will be simulated and compared to the experiments, with 5 members. The Brazilian group will run 2 members (until Feb. 2012), Buenos Aires will run 2 members, and Montevideo will run the 5th one.

Finally, the experimental data should be stored in a database that the project wants to turn public, on a Web Site, as another outcome of our work.

The partners have also worked on a proposal for a call-for-project from the Inter-American Institute for Global Change Research.

The next meeting is scheduled on April, 9-11 2012 in São José dos Campos, SP, Brazil.

Guillermo Berri

Mario Bidegain
Nicolas Maillard

Obidio Rubio

Philippe O. A. Navaux

Haroldo F. de Campos Velho

Olivier Richard