Project: **527**

Project title: **CLARIS LPB A Europe-South America Network for Climate Change Assessment and Impact Studies in La Plata Basin**

Principal investigators: **Daniela Jacob and Armelle Reca Remedio**

Report period: **2017-01-01 to 2017-12-31**

Text: maximum of two pages incuding figures.

MPG was a project partner of the CLARIS-LPB, an EU FP7 Collaborative Project with Priority Area 1.1.6.3 Global Change and Ecosystems for the Hydroclimate and Society in La Plata Basin. The project duration was four years from 2008-2012. We contributed to the following deliverables:

- WP5 – an ensemble of regional climate scenarios and uncertainties for climate impact studies and;
- WP6 – analysis of extreme events of precipitation and temperature over the La Plata basin based on observational datasets and ensembles of 20th and 21st century regional model simulations.

High resolution simulations over the whole continent of South America were performed using REMO. The important simulations that require long-term storage are listed in Table 1.

Table 1. Experiment List 2009-2012.

Experiment ID	Description	Status	Total No. of Months
REMO_CORRECTEDALB (exp007)	- used the correct albedo values since a bug was found on the interpolation of these values to the 0.44° domain - 1989 to 2008, modified REMO driven by the ERA INTERIM, 0.44° horizontal resolution	done	240
REMO_SOILEXPS (exp008, exp009, exp010, exp011, exp012, exp029, exp030)	- modified soil properties to reduce the warm bias over the Amazon basin - short sensitivity tests	done	7 x 24 mos.
REMO_MODIFIEDPWP (exp013)	- reduced the warm bias over the Amazons during winter - 1989 to 2008, modified REMO driven by the ERA INTERIM, 0.44° horizontal resolution	done	240
REMO_A1B_ECHAM5 (exp014)	- climate change run using EH5OM-R3 A1B scenario - 1950 to 2100, REMO driven by ECHAM5/MPI-OM A1B Run3 CMIP3 simulation, 0.44° horizontal resolution	done	1,680
REMO_RCPs_CMIP5 (3 RCPs: exp017, exp018, exp019)	- 950 to 2100, 3 additional REMO simulations driven by MPIESM run1 using different rcp scenarios , 0.44° horizontal resolution	done	5,040

Papers published using the simulations:

1. E. M. de Jesus, R. P. da Rocha, M. S. Reboita, M. Llopart, L. M. Mosso Dutra, and A. R. C. Remedio. Contribution of cold fronts to seasonal rainfall in simulations over the southern La Plata Basin. Climate Research, February 2016.

2. E. Sánchez, S. Solman, A. R. C. Remedio, H. Berbery, P. Samuelsson, R. P. Da Rocha, C. Mourão, L. Li, J. Marengo, M. de Castro, and D. Jacob. Regional climate modelling in CLARIS-LPB: a concerted approach towards twentyfirst century projections of regional temperature and precipitation over South America. Climate Dynamics, January 2015.

3. S. A. Solman, E. Sanchez, P. Samuelsson, R. P. da Rocha, L. Li, J. Marengo, N. L. Pessacg, A. R C Remedio, S. C. Chou, H. Berbery, H. Le Treut, M. de Castro, and D. Jacob. Evaluation of an ensemble of regional climate model simulations over South America driven by the ERA-Interim reanalysis: Model performance and uncertainties. Climate Dynamics, 41(5-6):1139–1157, 2013.

4. N. L. Pessacg, S. A. Solman, P. Samuelsson, E. Sanchez, J. Marengo, Laurent Li, A. R. C. Remedio, R. P. Rocha, C. Mourão, and D. Jacob. The surface radiation budget over South America in a set of regional climate models from the CLARIS-LPB project. Climate Dynamics, August 2013.

5. C. Teichmann, B. Eggert, A. Elizalde, A. Haensler, D. Jacob, P. Kumar, C. Moseley, S. Pfeifer, D. Rechid, A. R. C. Remedio, H. Ries, J. Petersen, S. Preuschmann, T. Raub, F. Saeed, K. Sieck, and T. Weber. How Does a Regional Climate Model Modify the Projected Climate Change Signal of the Driving GCM: A Study over Different CORDEX Regions Using REMO. Atmosphere, 4(2):214–236, June 2013.

6. A. R. C. Remedio. Connections of low level jets and mesoscale convective systems in South America. PhD thesis, Universität Hamburg, 2013.

7. J. Marengo, S. Chou, C. Mourao, S. Solman, E. Sanchez, P. Samuelsson, R. P. Rocha, L. Li, N. Pessacg, A. R. C. Remedio, A. F. Carril, I. F Cavalcanti, and D. Jacob. Simulation of rainfall anomalies leading to the 2005 drought in Amazonia using the CLARIS LPB regional climate models. Climate Dynamics, 41(11-12):2937–2955, August 2013.

8. A. F. Carril, C. G. Menéndez, A. R. C. Remedio, F. Robledo, A. Sörensson, B. Tencer, J.-P. Boulanger, M. Castro, D. Jacob, H. Treut, L. Z. X. Li, O. Penalba, S. Pfeifer, M. Rusticucci, P. Salio, P. Samuelsson, E. Sanchez, and P. Zaninelli. Performance of a multi-RCM ensemble for South Eastern South America. Climate Dynamics, 39(12):2747–2768, October 2012.

9. D. Jacob, A. Elizalde, A. Haensler, S. Hagemann, P. Kumar, R. Podzun, D. Rechid, A. R. Remedio, F. Saeed, K. Sieck, C. Teichmann, and C. Wilhelm. Assessing the Transferability of the Regional Climate Model REMO to Different COordinated Regional Climate Downscaling EXperiment (CORDEX) Regions. Atmosphere, 3(4):181–199, February 2012.