Regional Dataset

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http://www.claris-eu.org/

CLARIS (2004-2007)

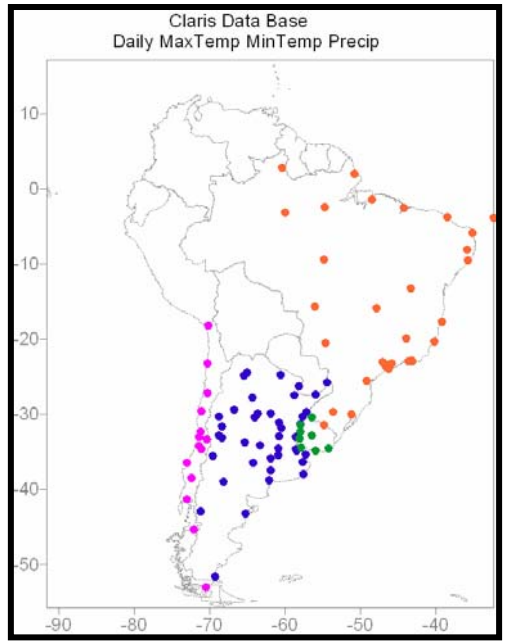
A Europe-South America Network for Climate Change Assessment and Impact Studies

http://www.claris-eu.org

The second objective of CLARIS is to create a South American ***high-quality climate database*** for studies in extreme events and ***long-term climate trends***.

CLARIS: longest series

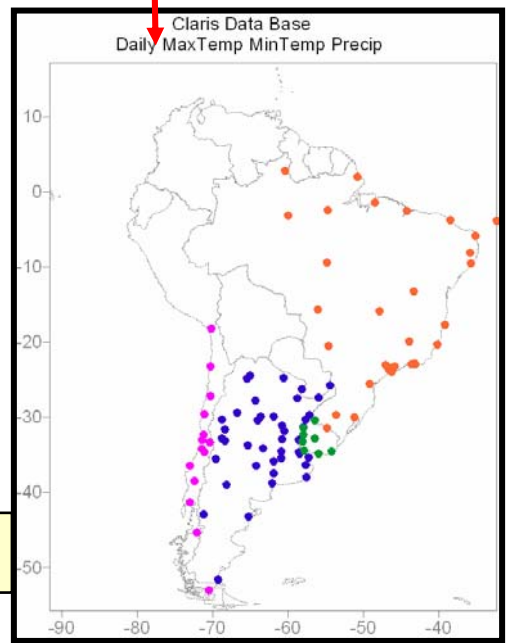
http://www.claris-eu.org/



CLARIS LPB (2008-2011)

A Europe-South America Network
for Climate Change Assessment and Impact Studies
in La Plata Basin (CLARIS LPB)

Task 3.1. *Collect daily information originating from different institutions and local cooperatives to improve CLARIS digitally available record of daily weather data over LPB, improving CLARIS daily data base over La Plata Basin region.*



CLARIS LPB - Variables:

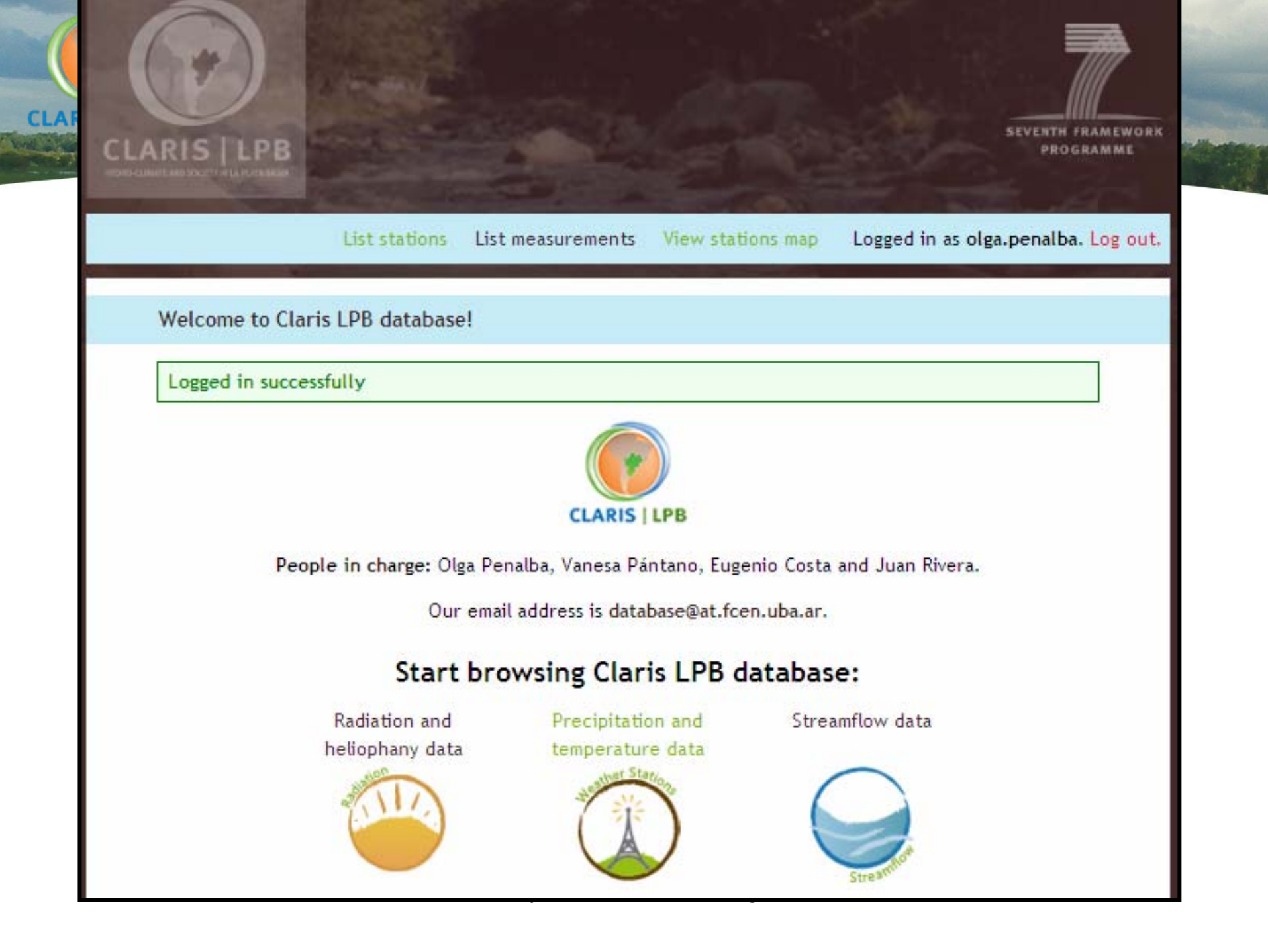
max and min temperatures

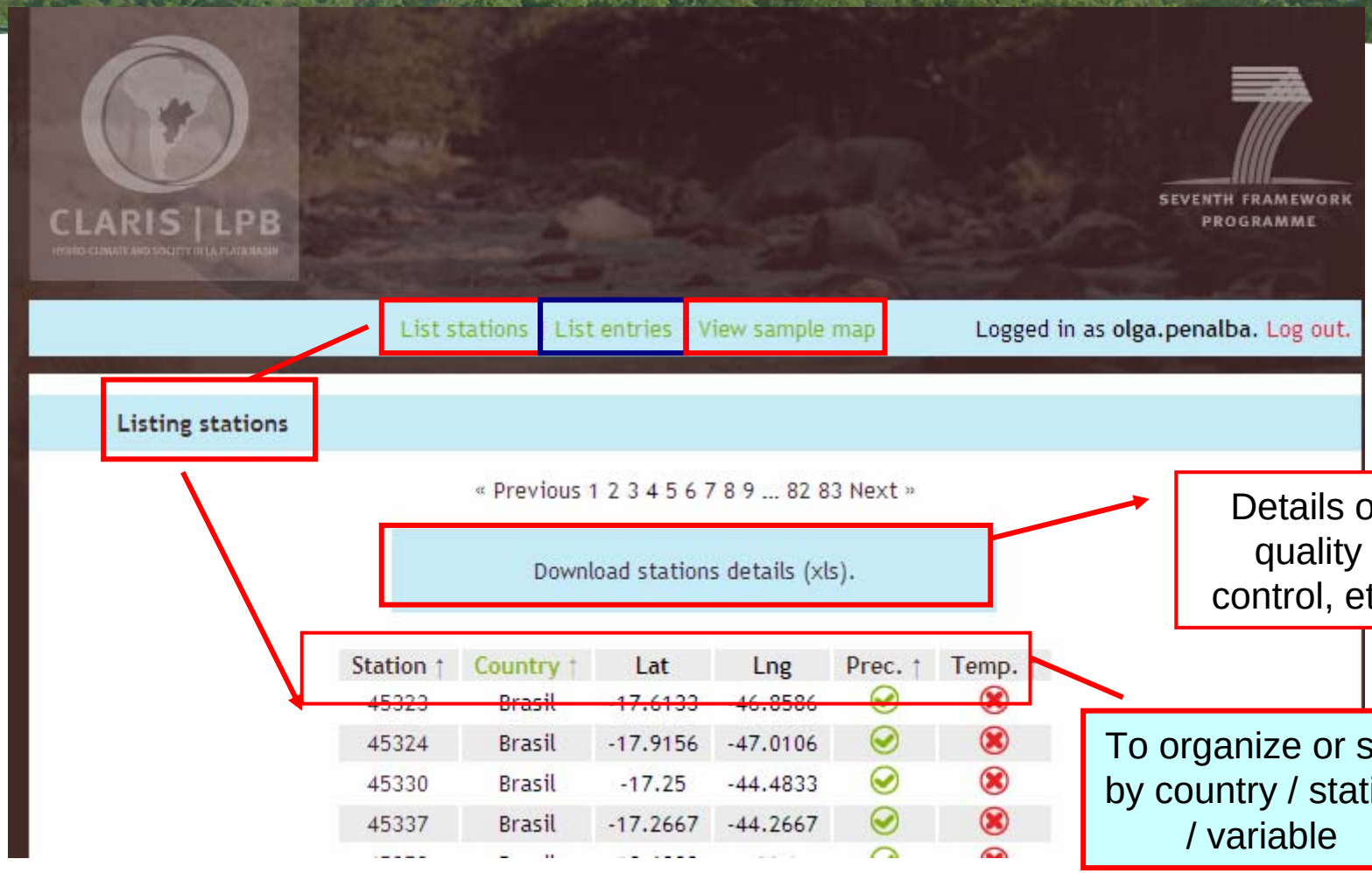
precipitation

radiation

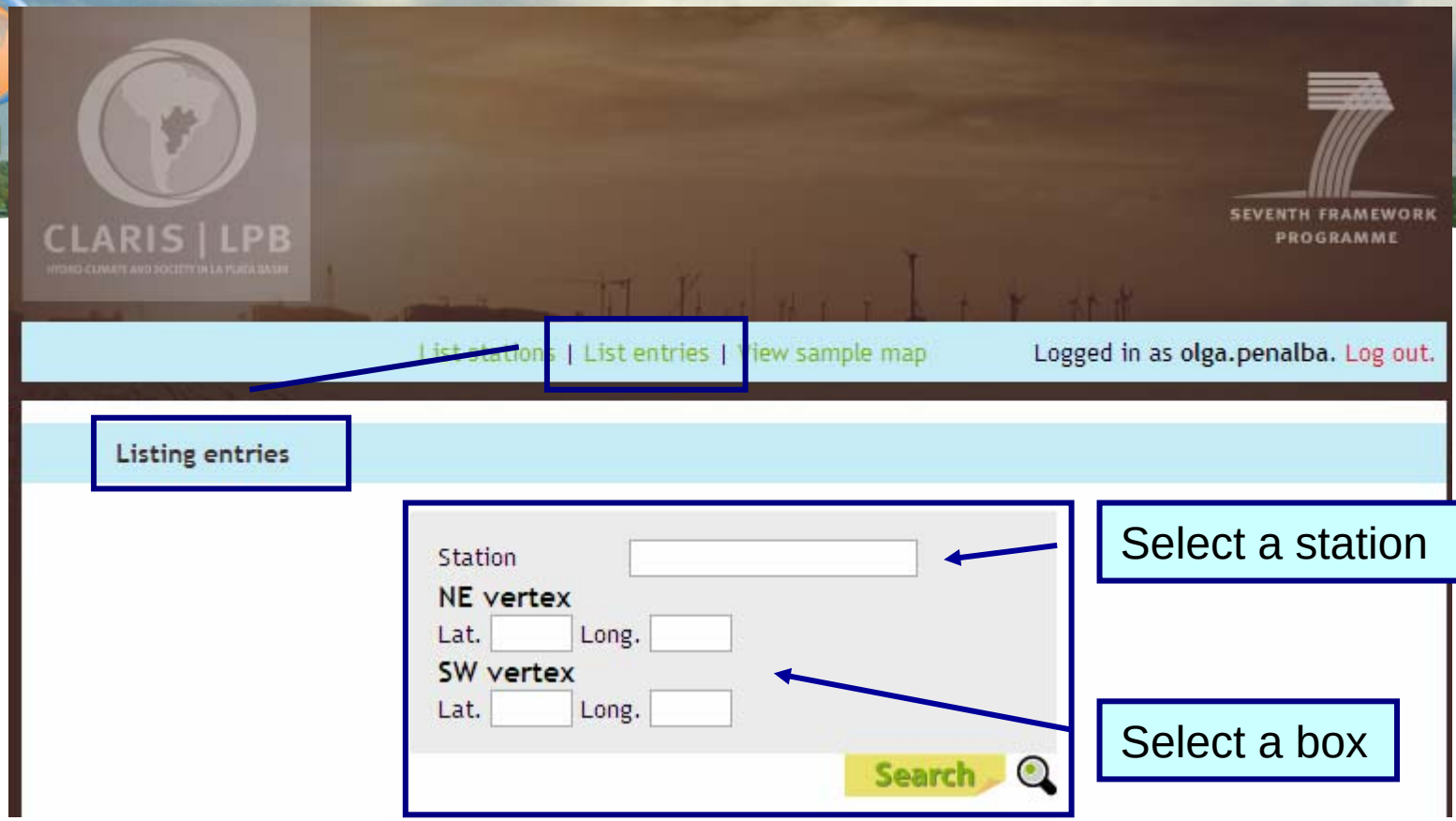
streamflow

CLARIS: longest series


CLARIS | LPB
SEVENTH FRAMEWORK PROGRAMME
List stations
List measurements
View stations map
Logged in as olga.penalba. Log out.
Welcome to Claris LPB database!
Logged in successfully
CLARIS | LPB
People in charge: Olga Penalba, Vanesa Pántano, Eugenio Costa and Juan Rivera.
Our email address is database@at.fcen.uba.ar.
Start browsing Claris LPB database:
Radiation and heliophany data
Precipitation and temperature data
Streamflow data
Radiation
Weather Stations
Streamflow



http://www.claris-eu.org/

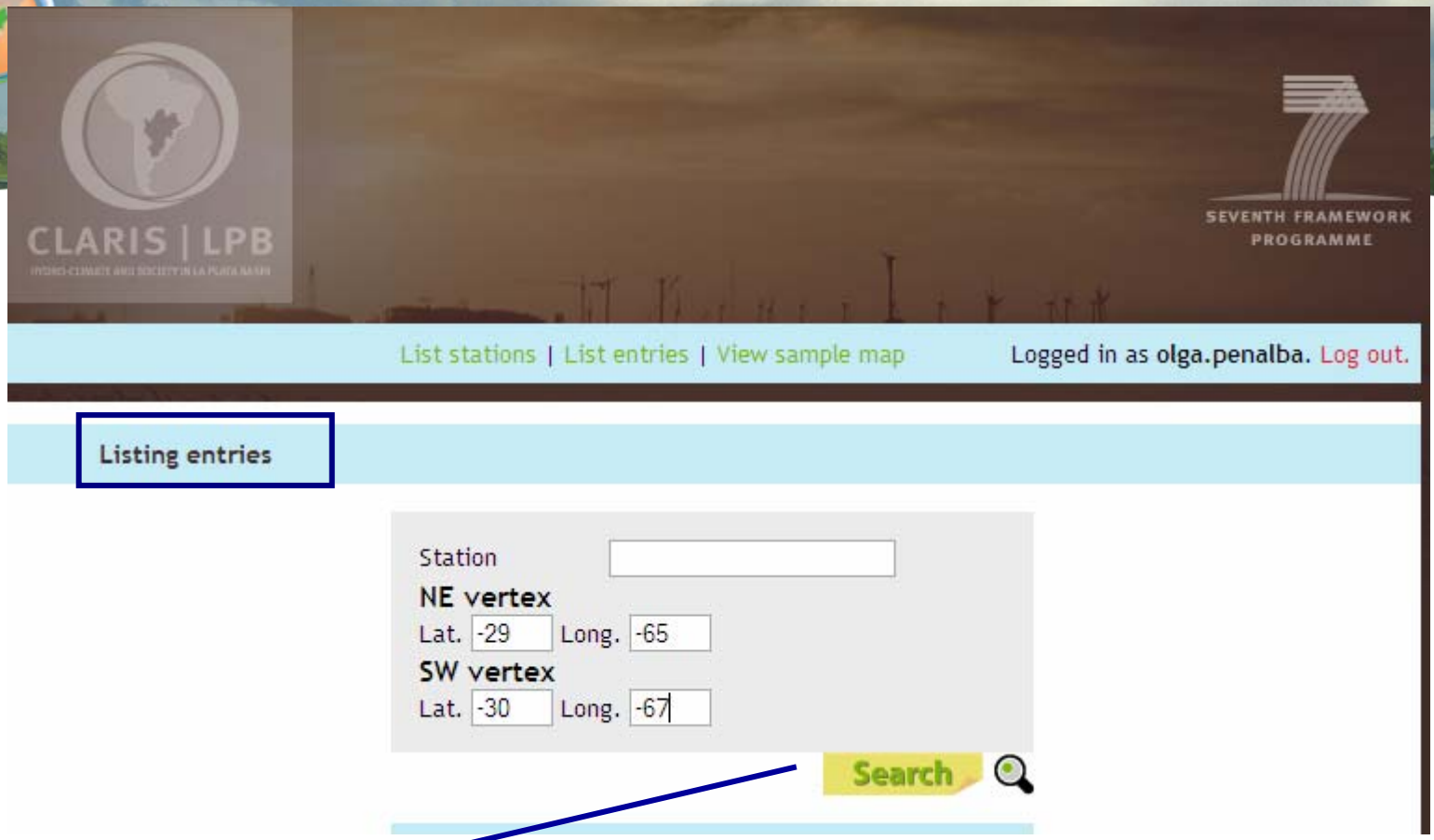


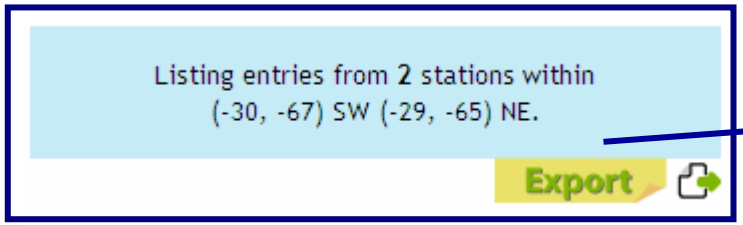
Listing entries from all stations.

Export

« Previous 1 2 3 4 5 6 7 8 9 ... 748547 748548 Next »

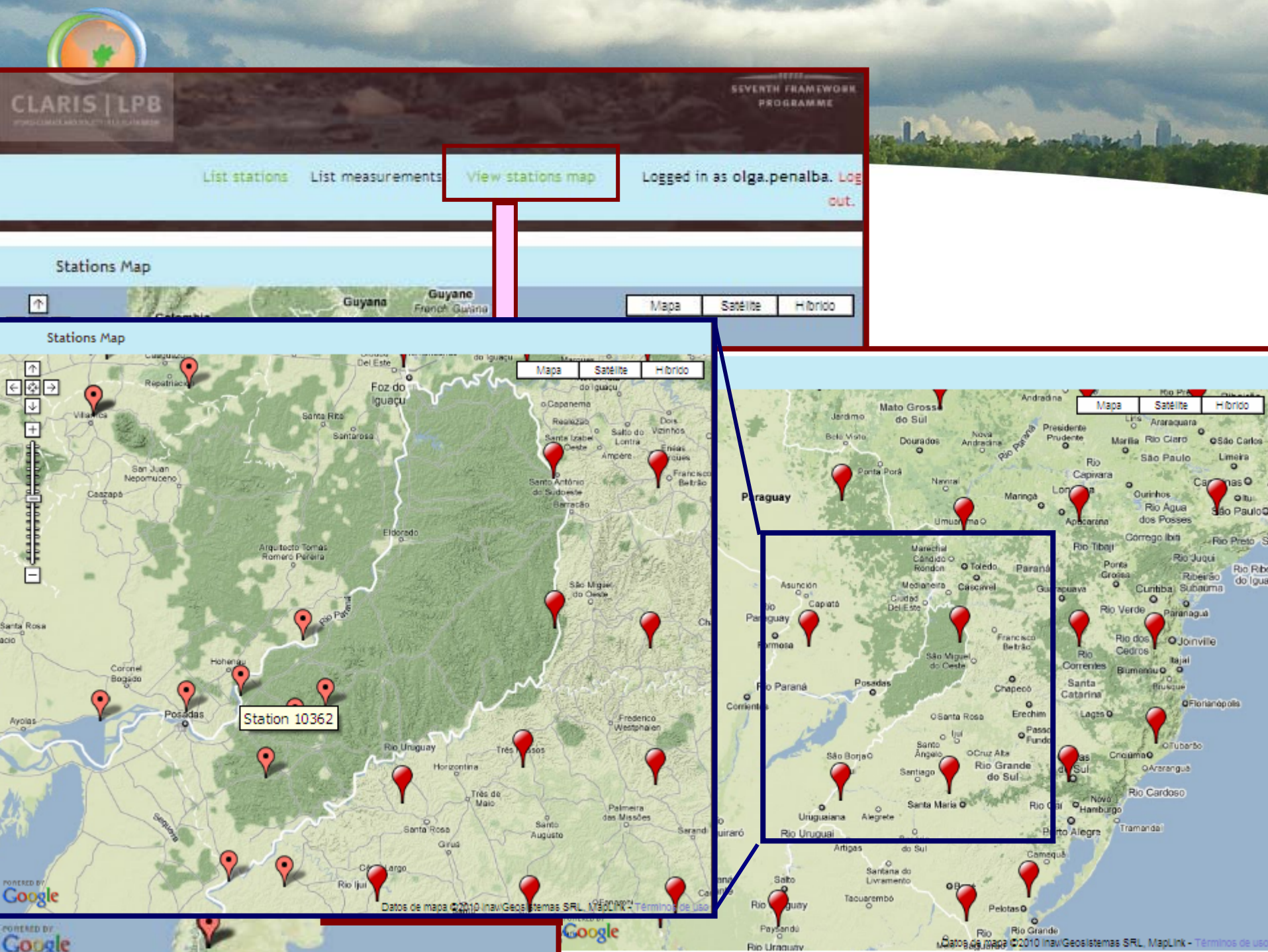
Station	Date	Prec	Max	Min
410371	1980-05-18	0.0	-99.9	-99.9
410371	1980-05-19	0.0	-99.9	-99.9
410371	1980-05-20	0.0	-99.9	-99.9
410371	1980-05-21	45.4	-99.9	-99.9
410371	1980-05-22	0.0	-99.9	-99.9



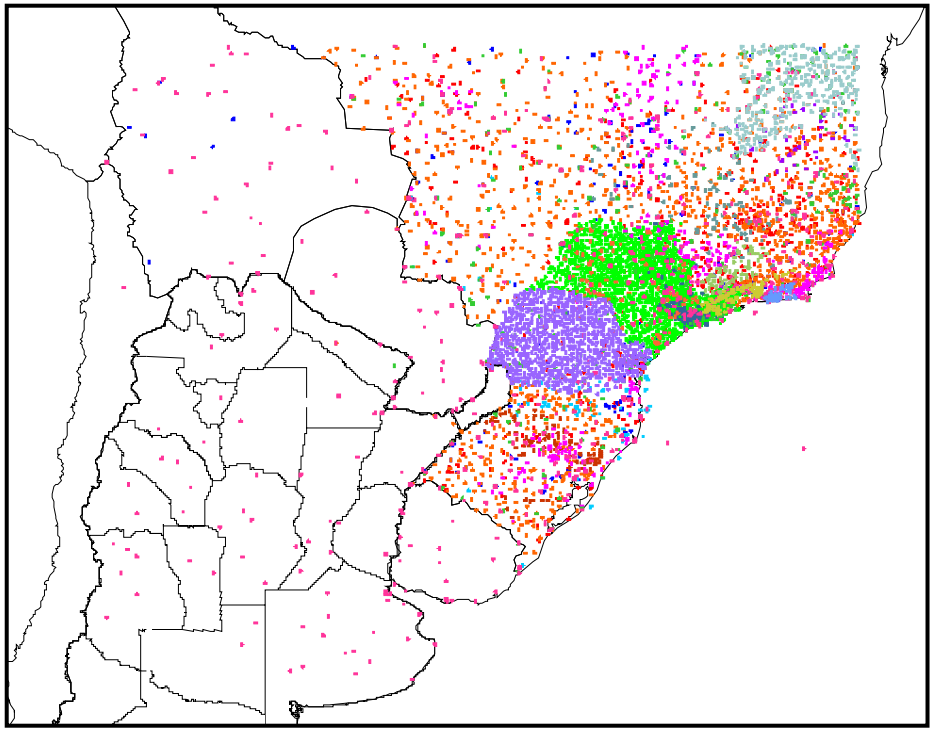


Export the information

http://www.claris-eu.org/


CLARIS | LPB
SEVERTH FRAMEWORK PROGRAMME
List stations
List measurements
View stations map
Logged in as olga.penalba. Log out.
Stations Map
Guyana
Guyane
Mapa
Satélite
Híbrido
Stations Map
Foz do Iguaçu
Posadas
Station 10362
Paraguay
Datos de mapa ©2010 INAV/Geosistemas SRL, MapLink - Términos de uso
Google

BRAZIL



Rainfall: 7665 stations; 532 empty stations

Temperature: ~ 320 stations

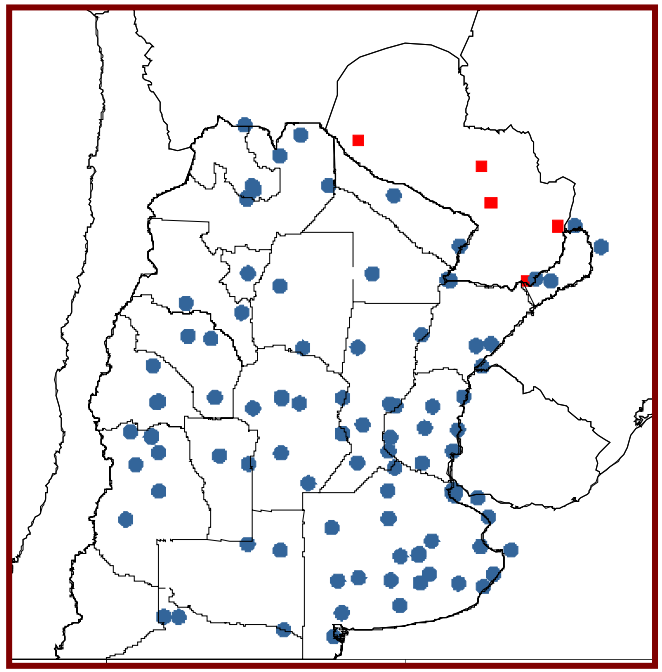
http://www.claris-eu.org/

SERLA
SUDENU
SEDERHSA
SDM
LIGHT
INMET
IGAM
IAC
FURNAS
GEORIO
INDEF
ELECTRPAULO
DNOS
DEPRC
DAEE-SP
COPEL
CHESF
CEEE
CEMIG
CPRM
CLIMERH
CMCD
ANEEL
OTHERS

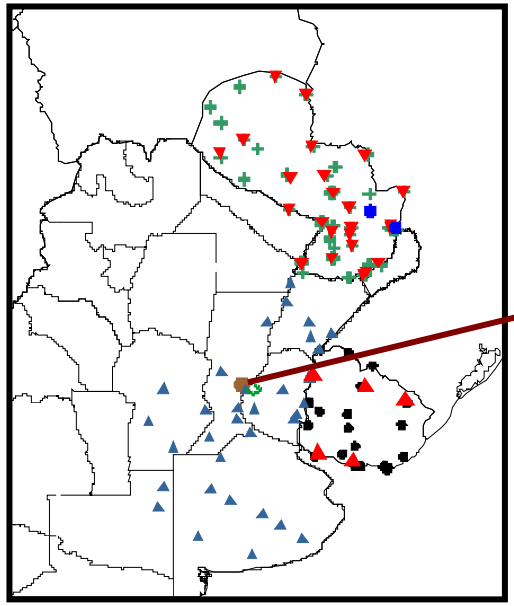
DATABASE

Temperature and rainfall

Argentina: ~ 100 stations



http://www.claris-eu.org/



Paraguay

DINAC

NOAA

ANDE

Argentina

U.N. Litoral

INTA

Dirección de Hidráulica

CLARIS LPB

Digitalized

daily information of radiation

April 1995 to Sept 2008

Uruguay

NOAA

INIA

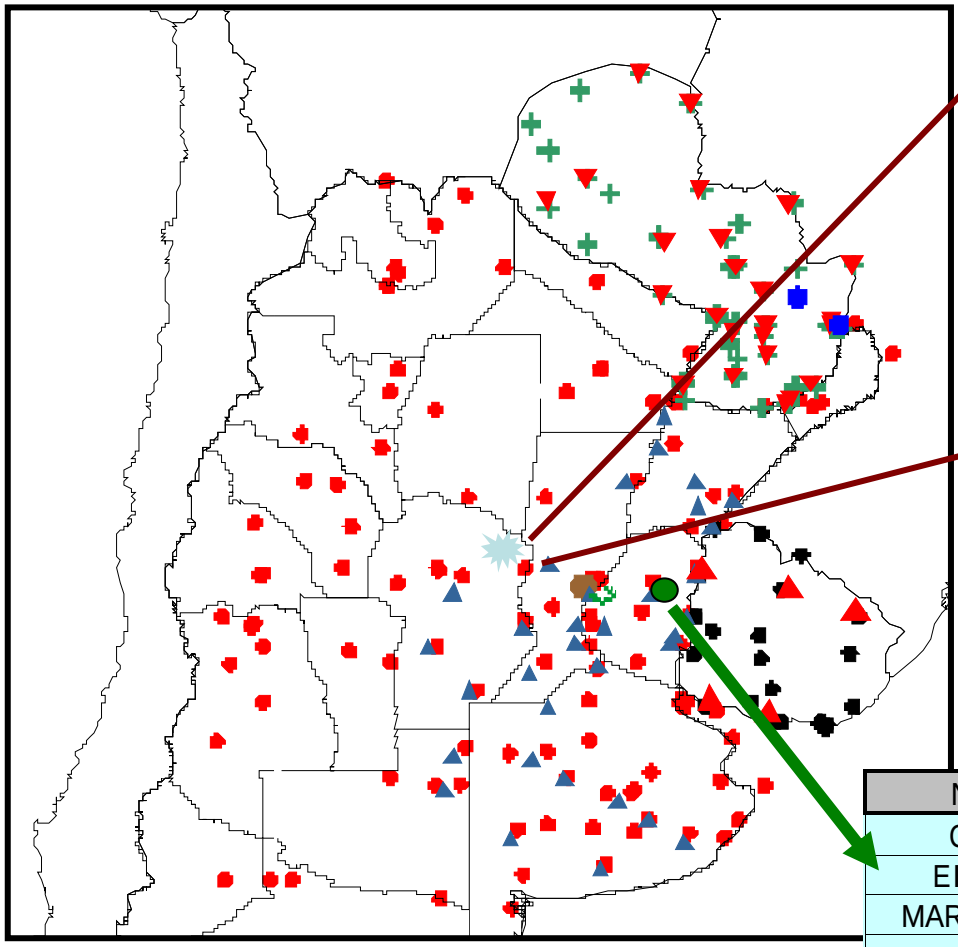
temperature, rainfall and radiation

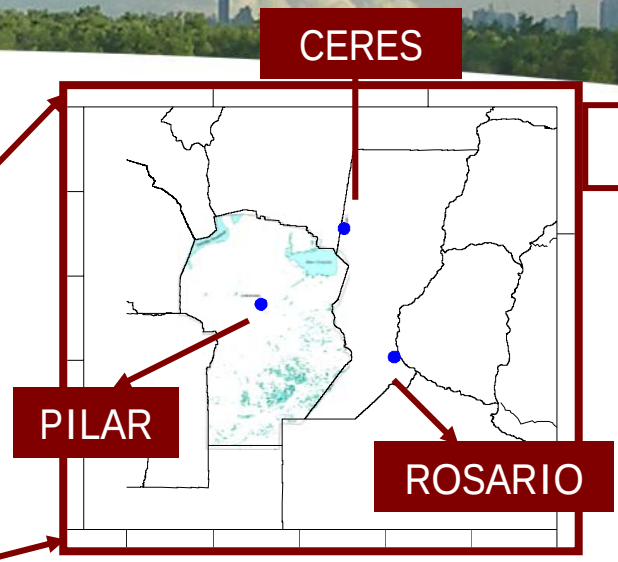
ARGENTINA: ***INTA + U.N. Litoral***

PARAGUAY: ***NOAA*** ***(26 stations-errors)*** **+** ***ANDE*** ***(1 station)***

http://www.claris-eu.org/

Longest series close to Mar Chiquita Lake



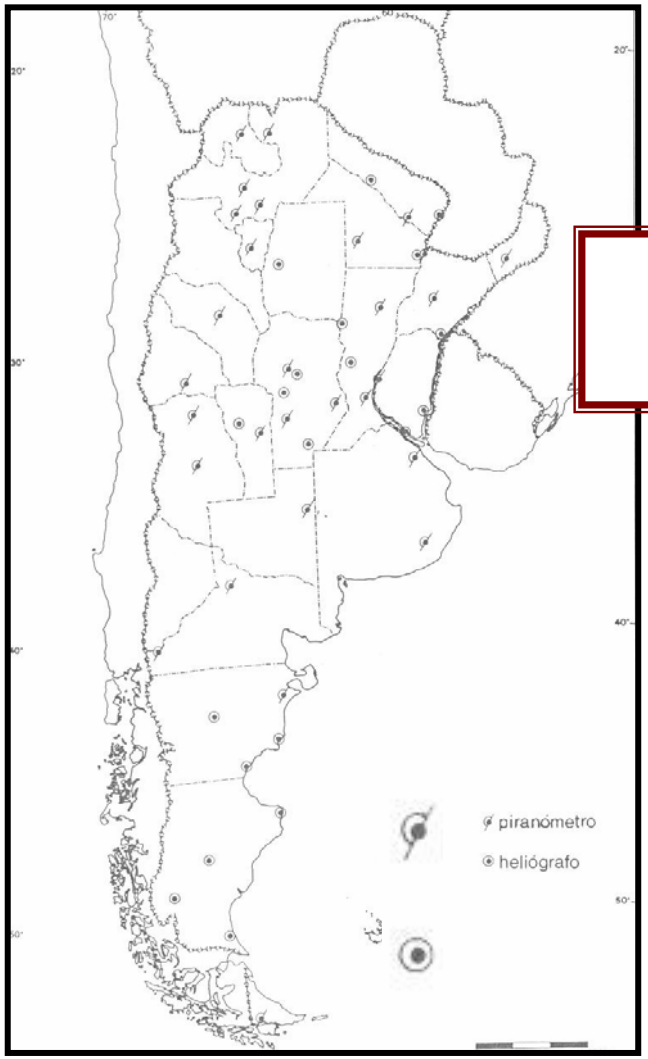


Dirección de Hidráulica de Entre Ríos
Pluviómetros de la Cuenca del Arroyo de Las Conchas

NOMBRE	SERIE	LATITUD	LONGITUD
CERRITO	1976-2009	31 34 45	60 04 32
EIGENFELD	1945-2009	31 53 11	60 13 53
MARIA GRANDE	1945-2009	31 39 31	59 53 53
SEGUI	1945-2009	31 57 30	60 07 35
TABOSSI	1945-2009	31 48 09	59 56 05
VIALE	1945-2009	31 52 17	60 00 44
ESPINILLO	2000-2009	31 49 10	60 26 12
EL RAMBLON	2002-2009	31 50 49	60 06 03

http://www.clar

Radiation



26 stations from Pyranometer and

24 stations from Heliograph / Sunshine recorder

http://www.claris-eu.org/

Daily extreme rainfall events over South America as represented by four regional models and a new observational database

Armelle Reca Remedio[1], Federico Robledo[2], Anna Sörensson[3,4], Daniela Jacob[1], Laurent Li[5], Claudio Menéndez[2,3], Olga Penalba[2], Enrique Sanchez[4], Patrick Samuelsson[6], Herve le Treut[5], Manuel Castro[4], and Ulrika Willen[6]

[1]Max Planck Institute for Meteorology, Hamburg, Germany, [2]Departamento de Ciencias de la Atmósfera y los Océanos – FCEyN – UBA, Buenos Aires Argentina, [3]Centro de Investigaciones del Mar y la Atmósfera, CONICET/UBA, Buenos Aires, Argentina, [4]Facultad de Ciencias del Medio Ambiente, Universidad de Castilla-La Mancha,Toledo, Spain, [5]Laboratoire de Météorologie Dynamique, Paris, France, [6]Rossby Centre, SMHI, Norrköping, Sweden

EGU Conference, Vienna
May 5, 2010

Motivation

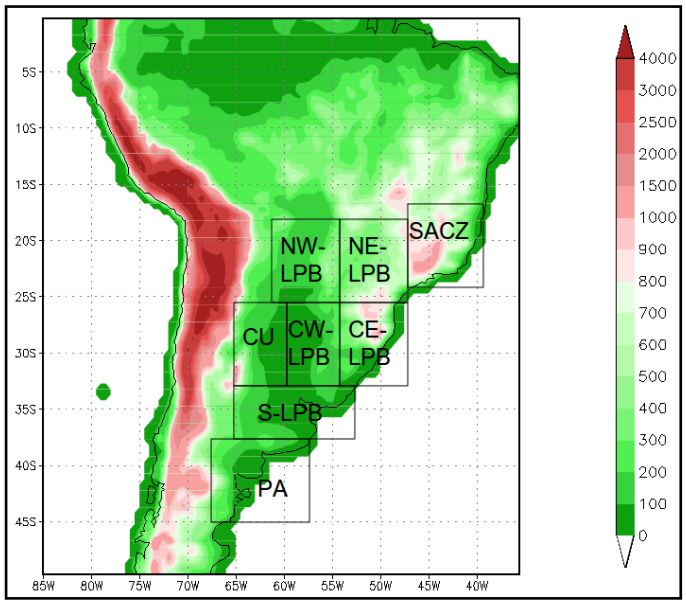
- ✓ Daily rainfall ➔ extremes
  - ✓ Impact in the agricultural and hydrological sector
- ✓ Compare the extreme daily rainfall between observation data set and model simulation

Hydrological consequence of accumulated rainfall falling on a number of consecutive days may be more severe than just an intense rainfall falling on a single day.

Regional scale rainfall still deserves interest in order to obtain new views to describe its particular characteristics.

Methodology

- ✓ Rainy day → greater than 0.1 mm
- ✓ Extreme precipitation event → when the daily rainfall is greater than a given threshold
- ✓ Threshold values → 75th-, 90th-, 95th-percentiles

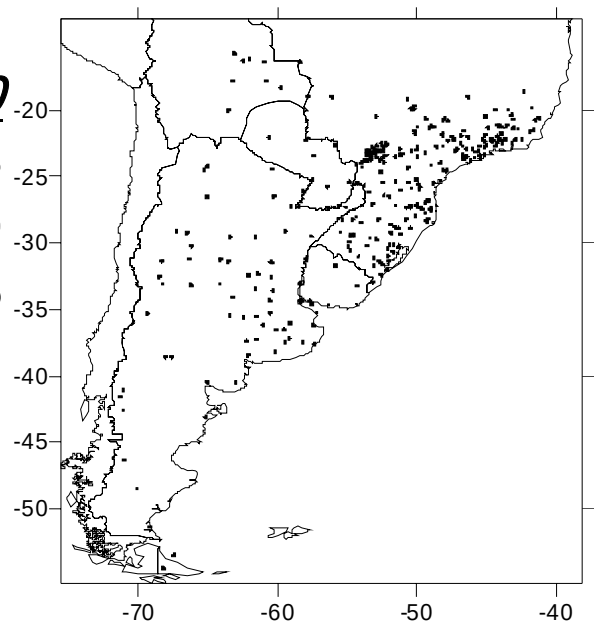


Each subregions:

- The daily rainfall percentiles are calculated for each point (station/grid) during the whole period and for every seasons

292 Stations: 1992-2000

- Argentina: 66
- Bolivia: 10
- Uruguay: 5
- Paraguay: 10
- Brazil: 201



➔ Quality control: Missing data < 10%

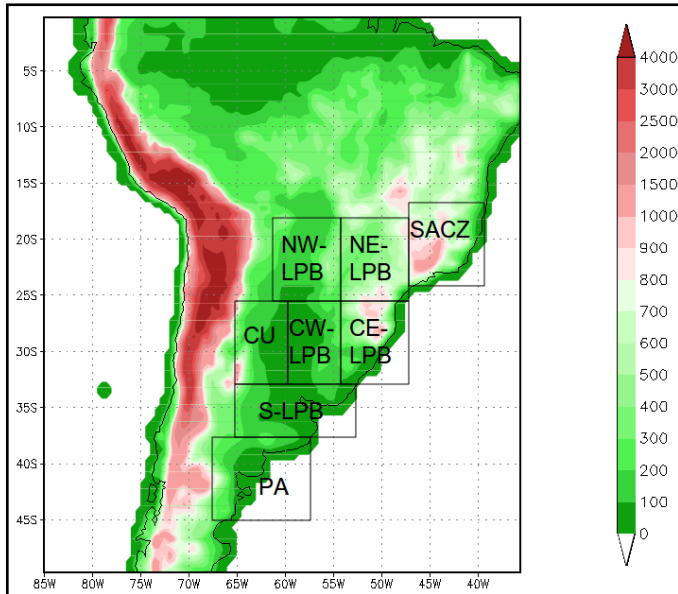
Regional climate models

	LMDZ	PROMES	RCA3	REMO
Reference	Hourdin et al (2006)	Castro et al. (1993)	Kjellström et al. (2005)	Jacob (2001)
Grid Resolution	0.5° to 0.7°	50 km	0.5°	50 km
Grid (Lat x Lon)	100 x 97	139 x 145	155 x 134	121 x 145
Vertical levels	19	28	24	31
Convection	Emanuel (1993)	Kain and Fritsch (1993)	Kain and Fritsch (1993), Jones and Sanchez (2002)	Tiedtke (1989), modifications after Nordeng (1994)
Microphysics	Bony and Emanuel (2001)	Hsie et al. (1984)	Rasch and Kristjánsson (1998)	Sundquist (1978)
Radiation	Morcrette (1991)	Stephens (1978), Garand (1983)	Savijärvi (1990), Sass et al. (1994). Räisänen et al. (2000)	Morcrette et al. (1986), Giorgetta and Wild (1995)
Land surface	Krinner et al. (2005)	Ducoudre et al. (1993)	Samuelsson et al. (2006), Champeaux et al. (2005)	Dümenil and Todini (1992)
Soil thermal layers	11	7	5	5
Soil moisture layers	2	2	2	1

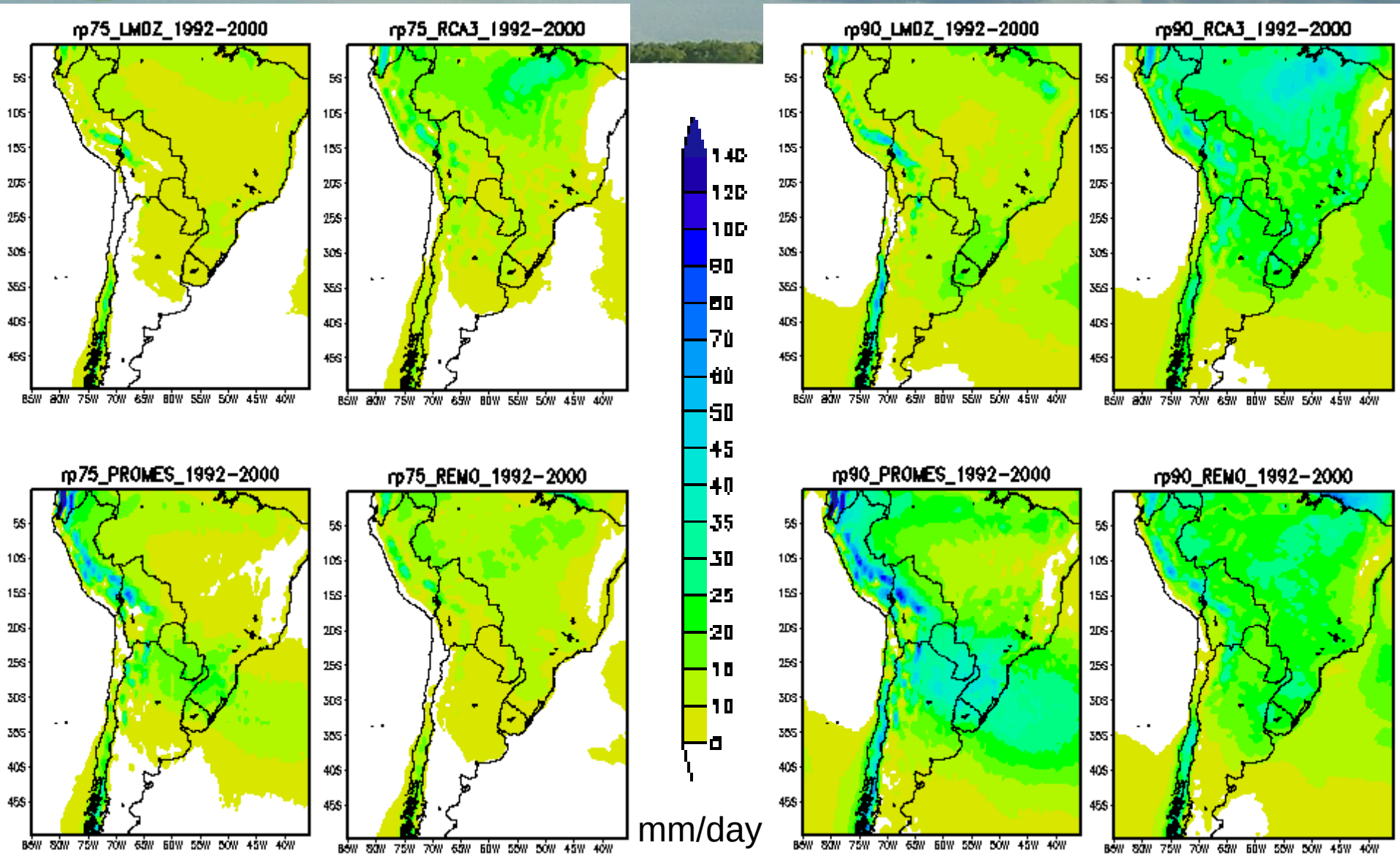
Menéndez et al, 2010

Results

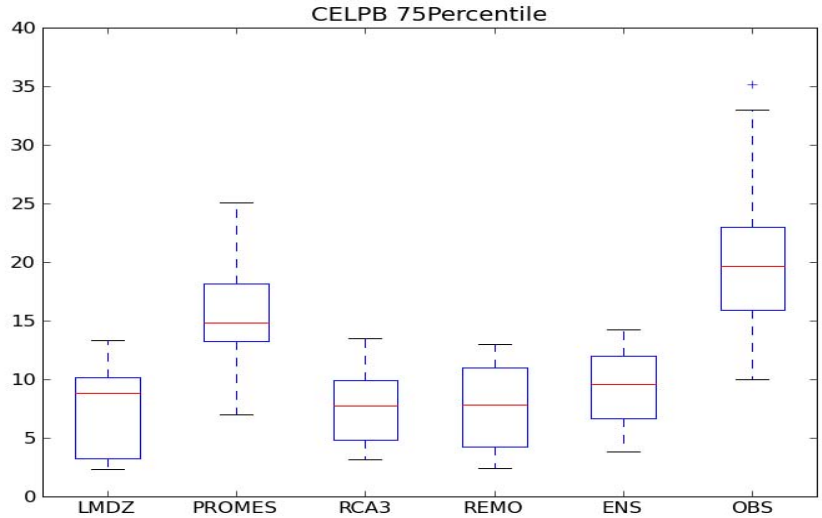
- ✓ For each subregions:
  - ✓ Annual thresholds
  - ✓ Seasonal thresholds
- ✓ Comparison between model and observed
  - ✓ Maximum threshold values for each subregions

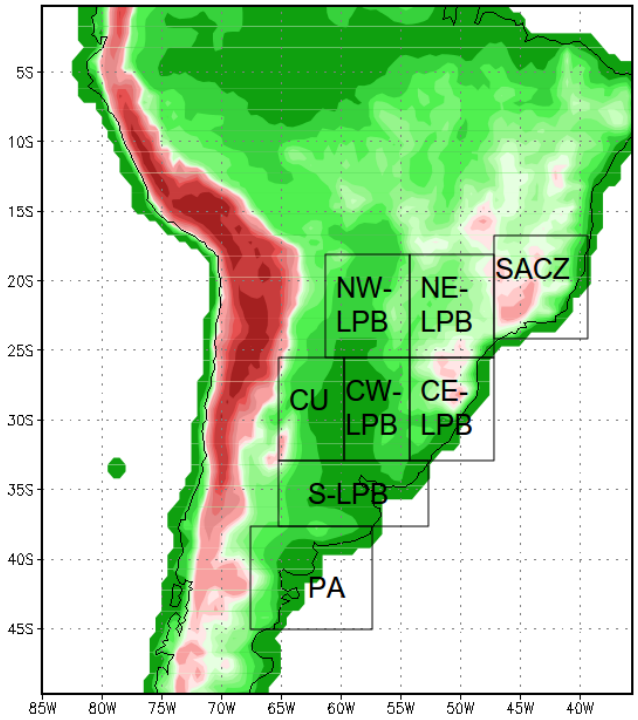


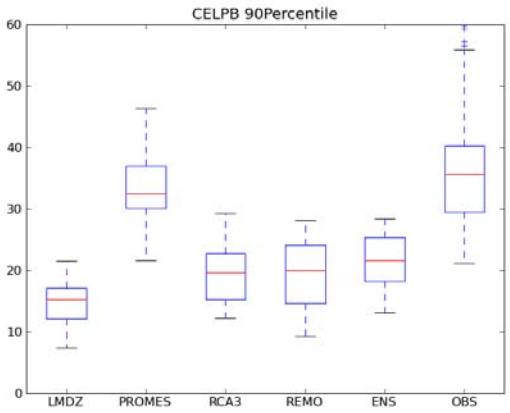
Annual threshold values from models

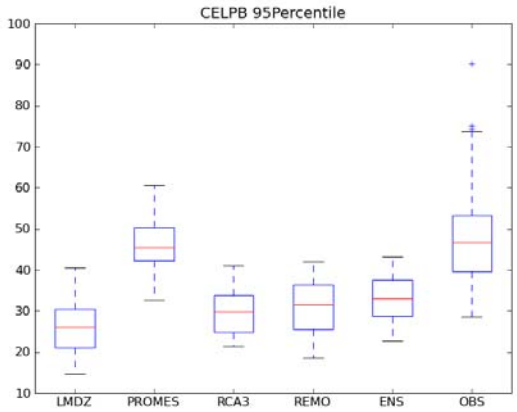


Comparison of the annual threshold distribution









http://www.claris-eu.org/

Preliminary Conclusions

- ✓ Based on the model results, extreme precipitation events often occur near the Andes.
- ✓ Models and the ensemble mean underestimated the extreme precipitation thresholds
- ✓ Role of the different convection schemes?

A Southeastern South American daily gridded data set of observed surface minimum and maximum temperature for 1991-2000

Bárbara Tencer [1,2] , **Matilde Rusticucci** [1,2] , **Phil Jones** [3]

btencer@at.fcen.uba.ar

[1] *Laboratorio de Extremos Climáticos en Sudamérica, Departamento de Ciencias de la Atmósfera y los Océanos, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires*

[2] *CONICET, Argentina*

[3] *Climatic Research Unit, School of Environmental Sciences, University of East Anglia, Norwich, UK*

Objective

To develop a gridded daily data set of observed minimum and maximum surface temperature for Southeastern South America.

Methodology

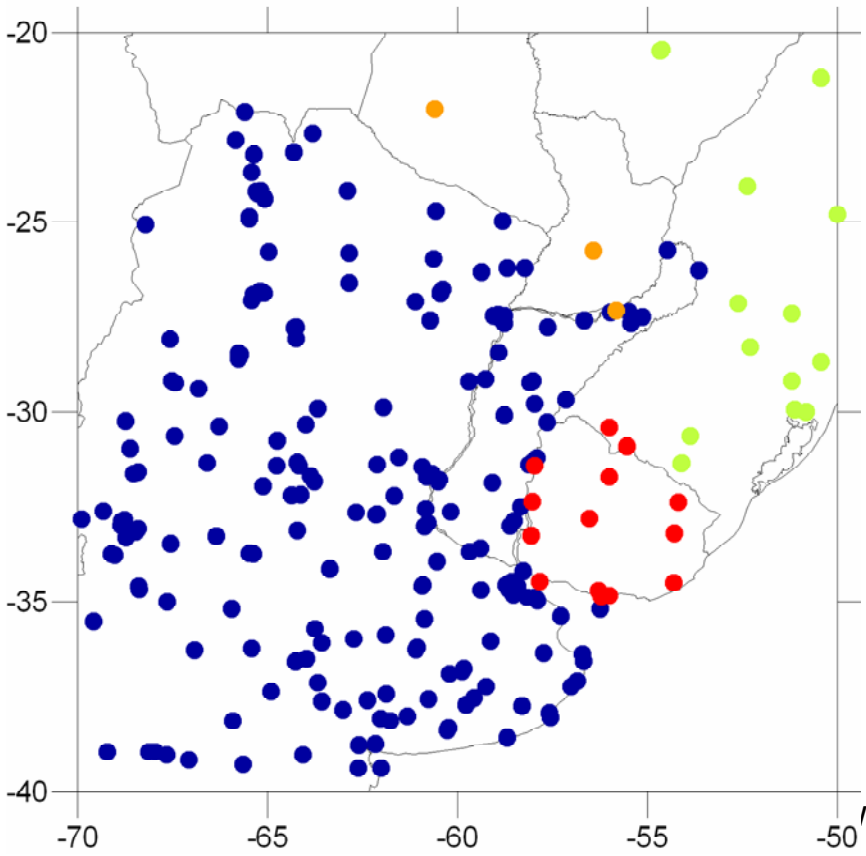
Interpolation method developed for Europe during the ENSEMBLES project (Haylock et al., 2008).

Data

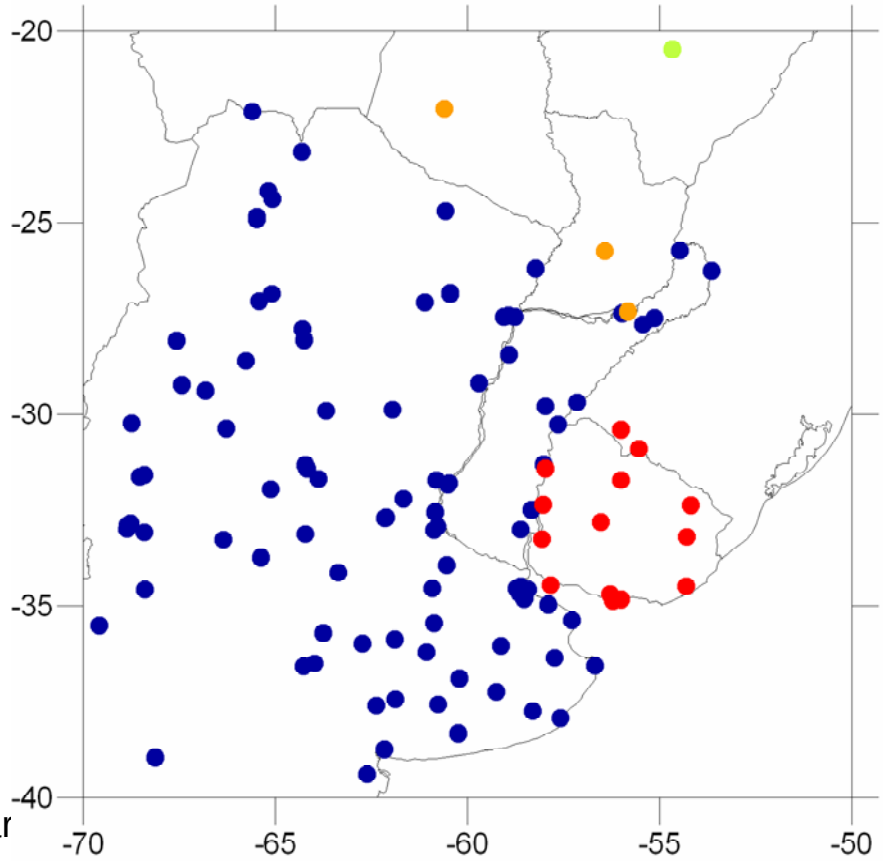
Daily observed data set developed during the European Commission FP6 CLARIS Project.

Data

All stations



Stations with less than 20% of missing data in January



w.clar

Topography

Minimum Temperature

No topography

With topography

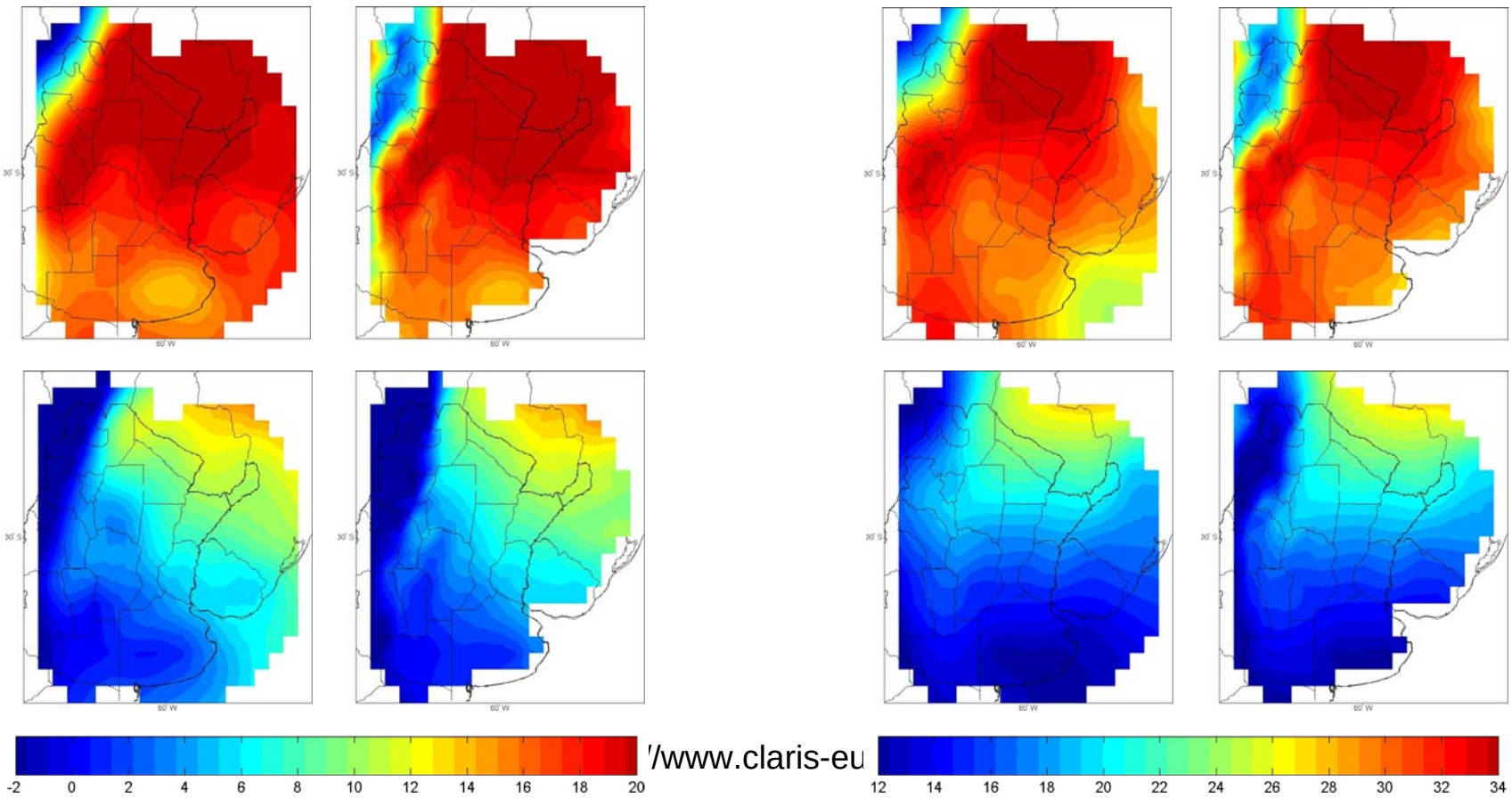
Maximum Temperature

No topography

With topography

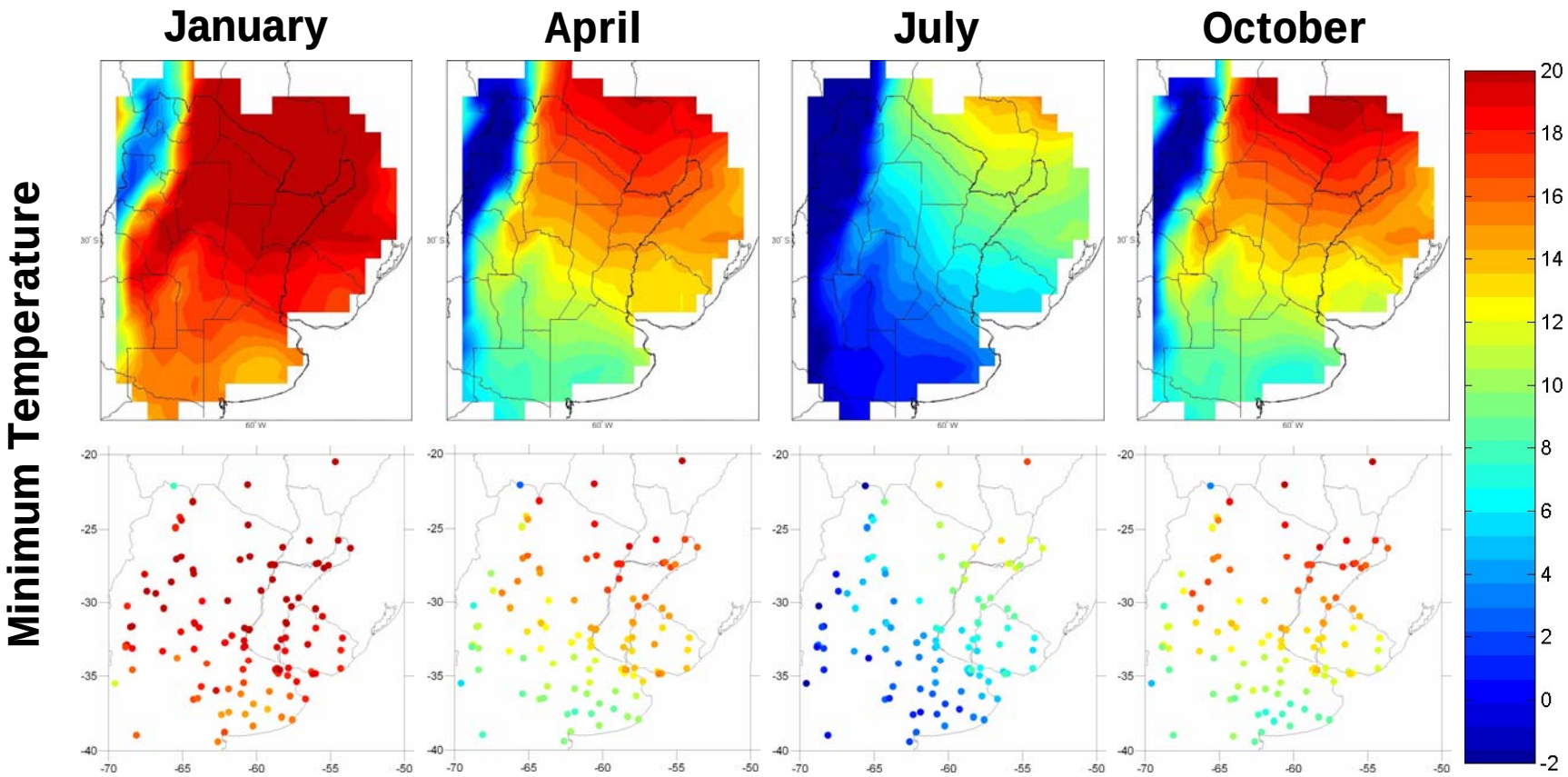
January

July



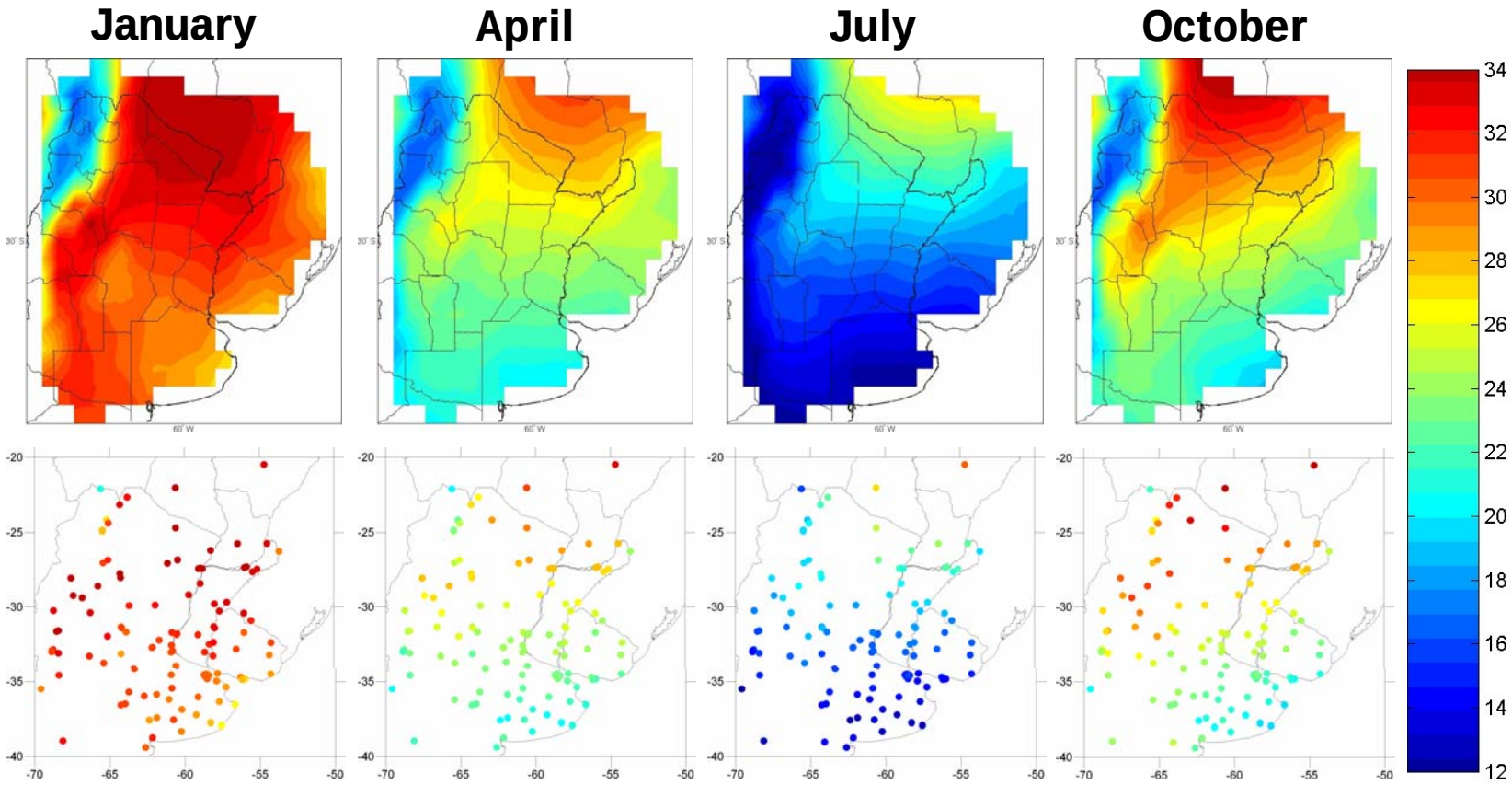
'/www.claris-eu

Monthly mean values



http://www.claris-eu.org/

Monthly mean values



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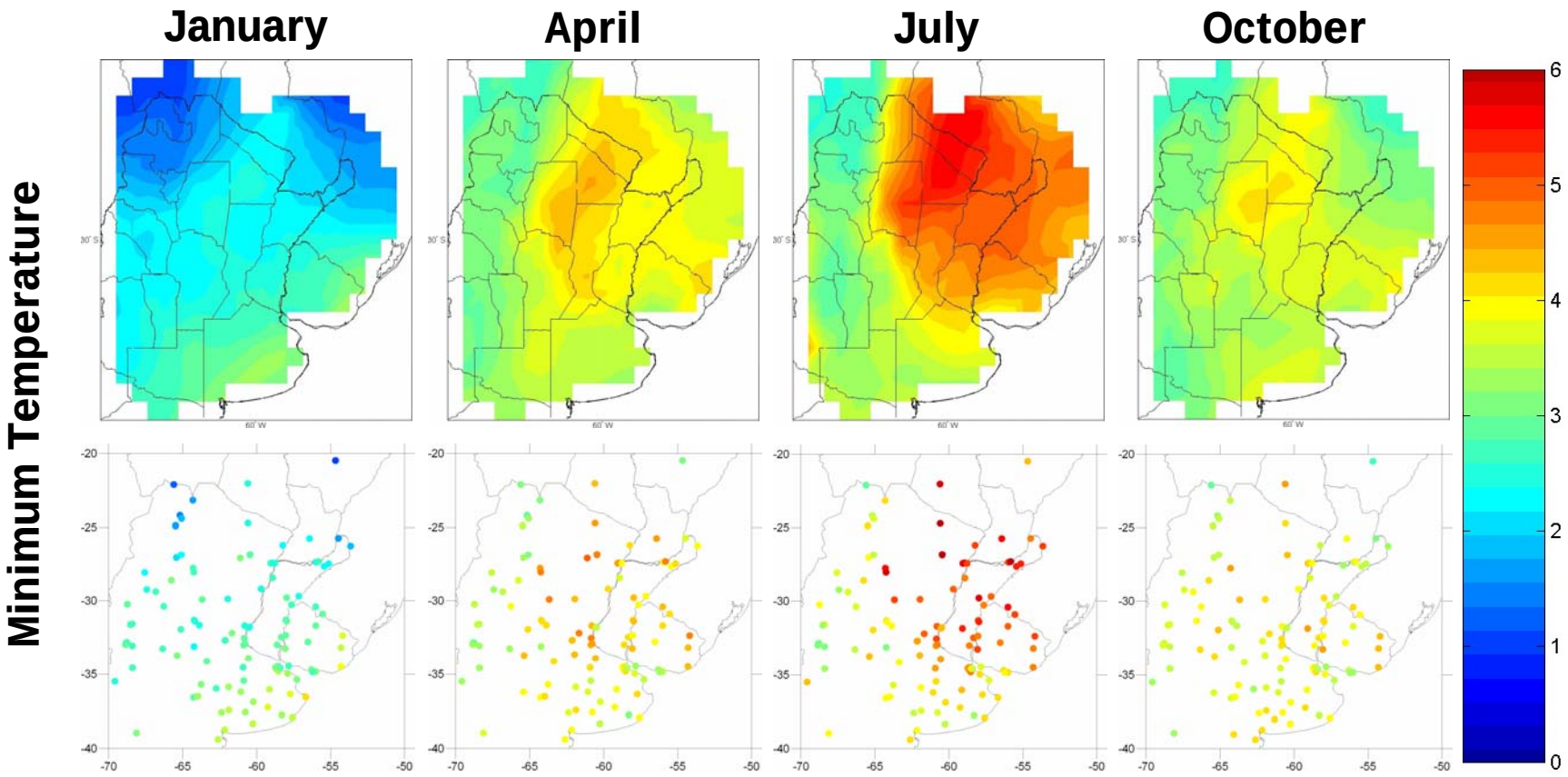
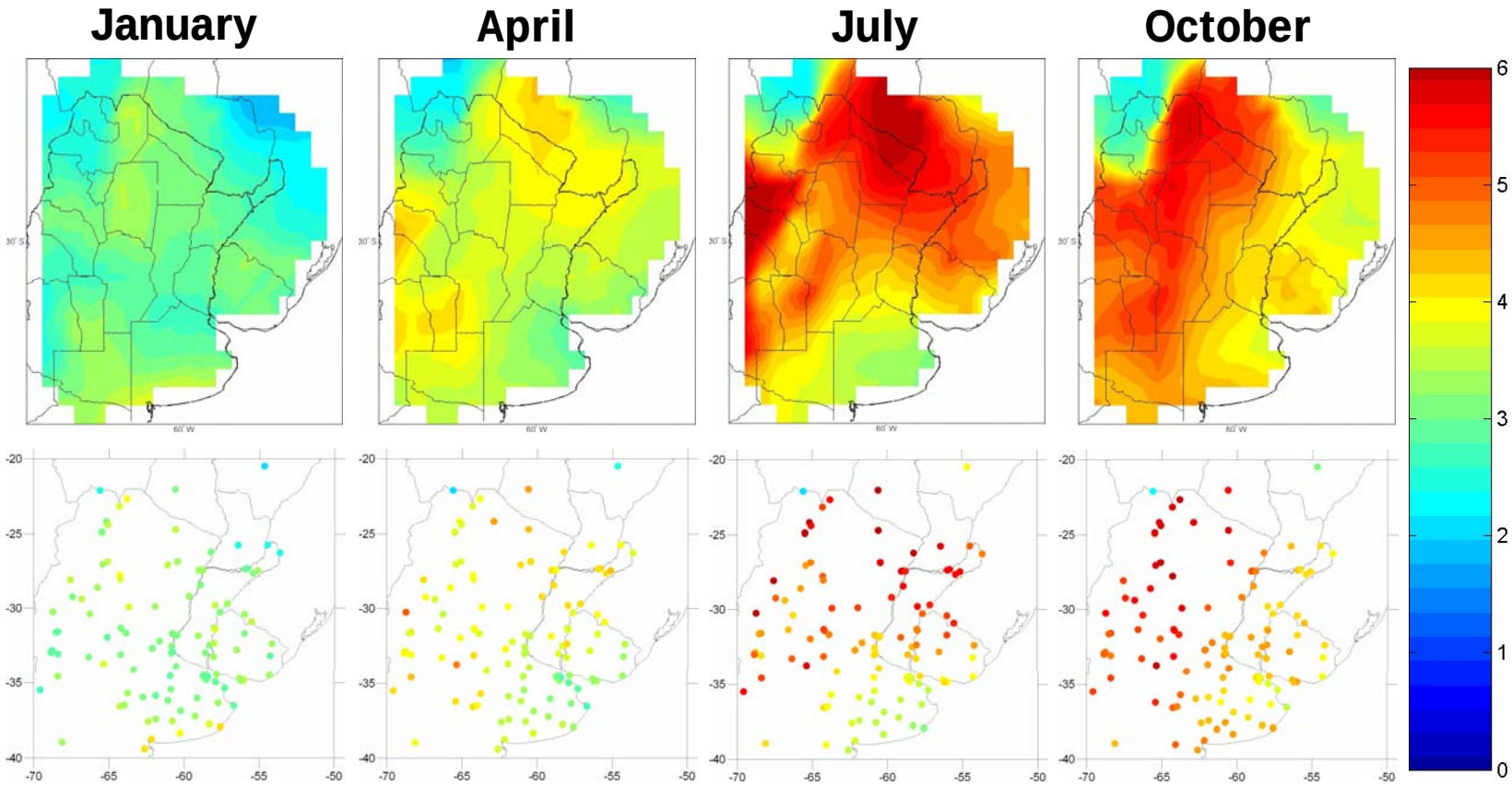
Monthly standard deviation



http://www.claris-eu.org/

Monthly standard deviation



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Skill Scores

Table 2. Definition of Skill Scores Used in This Paper

Skill Score	Equation[a]
Compound relative error (CRE)	$CRE = \frac{\sum_{k=1}^{n}(y_k - o_k)^2}{\sum_{k=1}^{n}(o_k - \bar{o})^2}$
Mean absolute error (MAE)	$MAE = \frac{1}{n}\sum_{k=1}^{n}\lvert y_k - o_k \rvert$
Root mean squared error (RMSE)	$RMSE = \sqrt{\frac{1}{n}\sum_{k=1}^{n}(y_k - o_k)^2}$
Linear error in probability space (LEPS)	$LEPS = \lvert P_v - 0.5 \rvert - \lvert P_f - P_v \rvert$ for each day. Final LEPS is percentage score over all days.
Pearson correlation (R)	$R = \frac{\sum_{k=1}^{n} y_k o_k - \frac{1}{n}\left(\sum_{k=1}^{n} y_k\right)\left(\sum_{k=1}^{n} o_k\right)}{\left[\sum_{k=1}^{n} y_k^2 - \frac{1}{n}\left(\sum_{k=1}^{n} y_k\right)^2\right]^{1/2}\left[\sum_{k=1}^{n} o_k^2 - \frac{1}{n}\left(\sum_{k=1}^{n} o_k\right)^2\right]^{1/2}}$
Percent correct (PC)	$PC = \frac{a+d}{a+b+c+d}$
Critical success index (CSI)	$CSI = \frac{a}{a+b+c}$

[a]Explanation of the variables: y is the series to evaluate (the reconstruction); o is the observed, or reference series; k is the number of the day; n is the total number of days; $P_v = \mathrm{CDF}_o(o_k)$, where CDF_o is the cumulative probability distribution of the observation, determined from an appropriate climatology; $P_f = \mathrm{CDF}_o(y_k)$; a is the fraction of hits (e.g. wet (>0.5 mm) days in the reconstructed and in the observed series); b is the fraction of false alarms (e.g. wet days in the reconstructed series and dry (<0.5 mm) days in the observed series); c is the fraction of misses (e.g. dry days in the reconstructed series and wet days in the observed series); and d is the fraction of correct rejection (e.g. dry days in the reconstructed and in the observed series).

http://www.claris-eu.org/

Hofstra et al. (2008)

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http://www.claris-eu.org/

Hofstra et al. (2008)

Conclusions

A gridded data set of observed daily data has been developed for Southeastern South America.

- ✓ Variables → Minimum Temperature
  Maximum Temperature
- ✓ Period → 1961-2000
- ✓ Region → 20º - 40º S / 50º - 70º W
- ✓ Resolution → 1º x 1º

An effort will be done in order to improve the resolution once the observed data set that is being developed in CLARIS LPB is completed.

http://www.claris-eu.org/