



# **CLARIS**

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

**A project within the EC 6th Framework Programme**

**Coordinator: Dr Jean-Philippe Boulanger**

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**1 July 2004 to 30 June 2007**

**<http://www.claris-eu.org>**

- ★ 13 partners**
- ★ 355 person.months**
- ★ 7 Workpackages**
- ★ 38 Deliverables**

# The CLARIS consortium

<b>Partic. Role*</b>	<b>Partic. No.</b>	<b>Participant name</b>	<b>Participant short name</b>	<b>Country</b>
CO	1	Centre National de la Recherche Scientifique	CNRS	France
CR	2	Centre de coopération Internationale en Recherche Agronomique pour le Développement	CIRAD	France
CR	3	Consejo Nacional de Investigaciones Cientificas y Técnicas	CONICET	Argentina
CR	4	Universidad de Buenos Aires	UBA	Argentina
CR	5	Instituto Nacional de Pesquisas Espaciais	INPE	Brazil
CR	6	Istituto Nazionale di Geofisica e Vulcanologia	INGV	Italy
CR	7	Consiglio per la Ricerca e Sperimentazione in Agricoltura	CRA	Italy
CR	8	Universidad de Castilla-La Mancha	UCLM	Spain
CR	9	Universidad de la Republica	UR	Uruguay
CR	10	Plant Research International	PRI	Holland
CR	11	Universidad de Chile	UCH	Chile
CR	12	Institut de Recherche pour le Développement	IRD	France
CR	13	Max-Planck Gesellschaft Institut	MPI	Germany

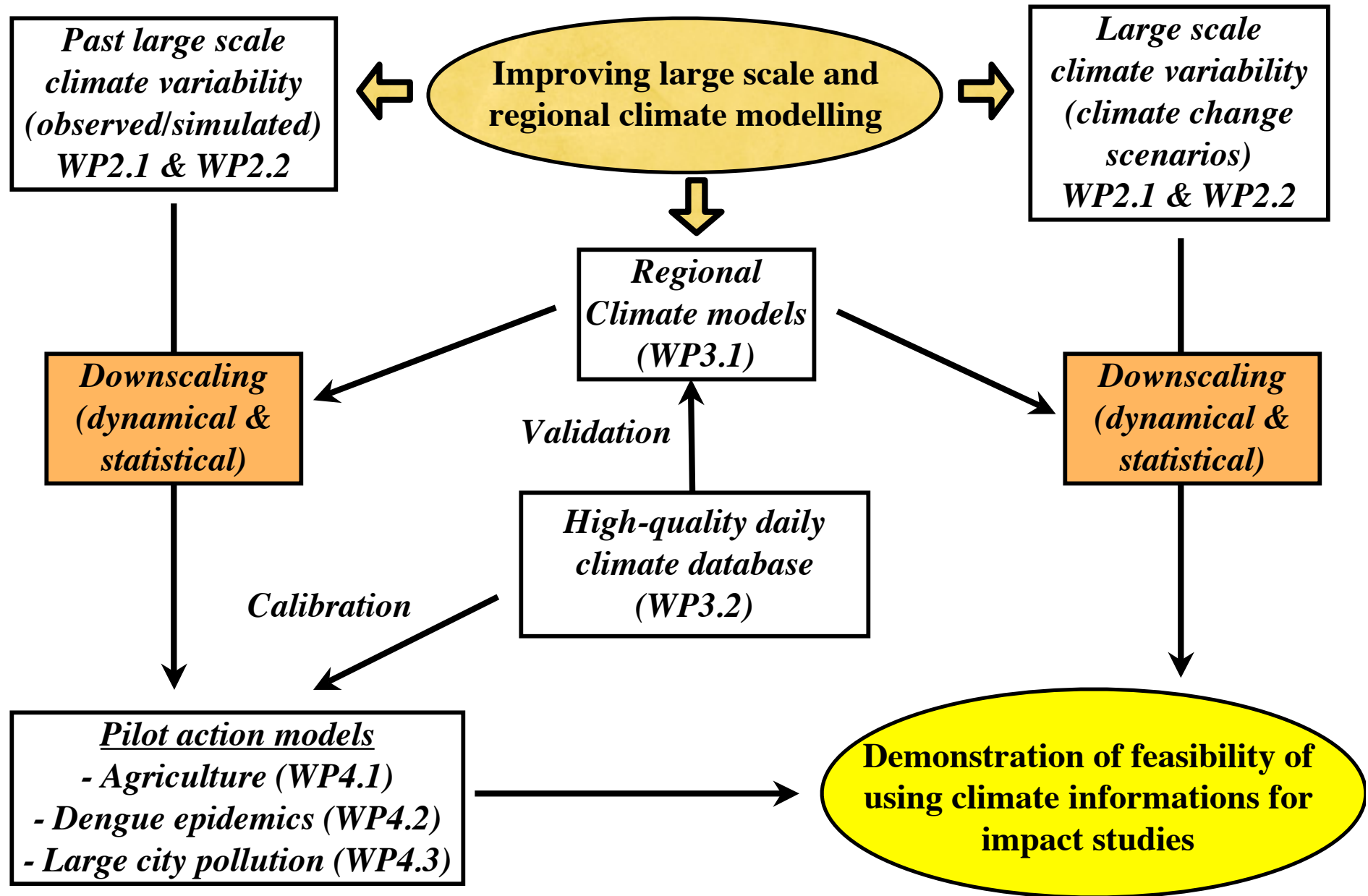


## CLARIS strategic objectives



- \* **The first objective of CLARIS is to set up and favor the technical transfer and expertise in Earth System and Regional Climate Modeling between Europe and South America together with the providing of a list of climate data (observed and simulated) required for model validations.**
- \* **The second objective of CLARIS is to facilitate the exchange of observed and simulated climate data between the climate research groups and to create a South American high-quality climate database for studies in extreme events and long-term climate trends.**
- \* **The third objective of CLARIS is to strengthen the communication between climate researchers and stakeholders, and to demonstrate the feasibility of using climate information in the decision-making process.**

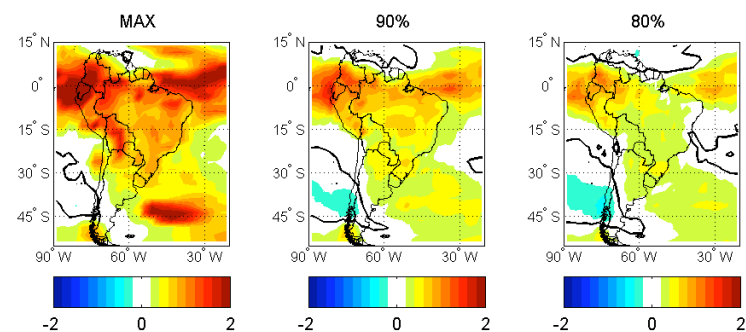
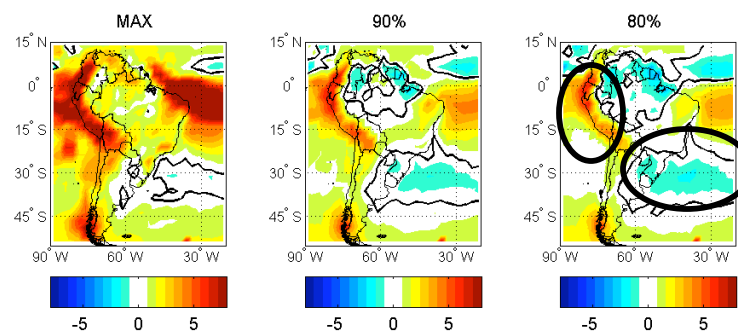
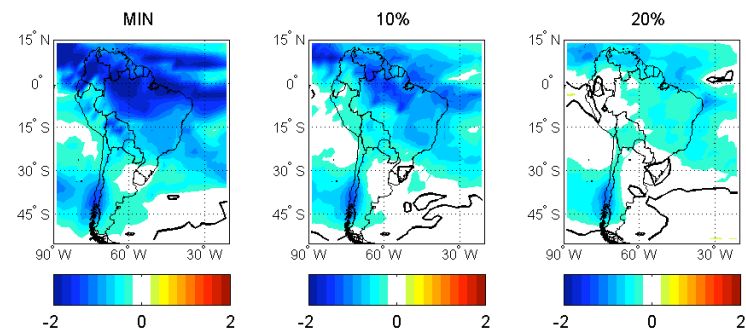
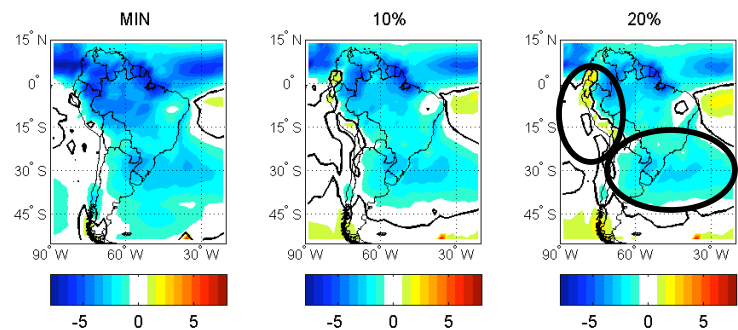
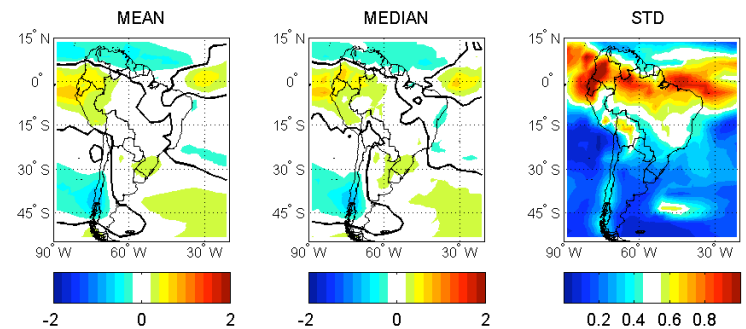
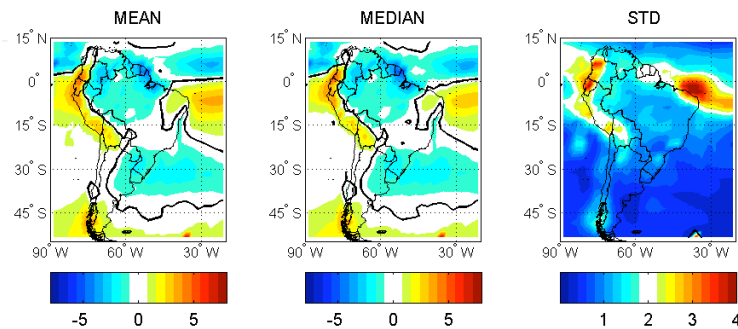
# Graphical representation of the CLARIS project components





20c3m  
1976-2000

SRES A2  
2076-2100



*Precipitation*



# Downscaling Experiment Strategy



- Modelling Groups:
  - CIMA (MM5, RCA), CPTEC (PRECIS, Eta, RegCM3), Univ. Chile (MM5)
  - MPI (REMO), UCLM (PROMES), IPSL (LMDZ)
  - SENAEMI (MM5)
- Extreme event cases:
  - 11/1970 – 01/1971: anomalously rainy and cold conditions
  - 10/1986 – 12/1986: anomalously rainy and tempering conditions
  - 05/1996 – 08/1996: anomalously dry and warm conditions
- Interannual simulations (ERA40)
- Climate Change Simulations (CPTEC, CIMA, MPI)
- Model parametrization improvement

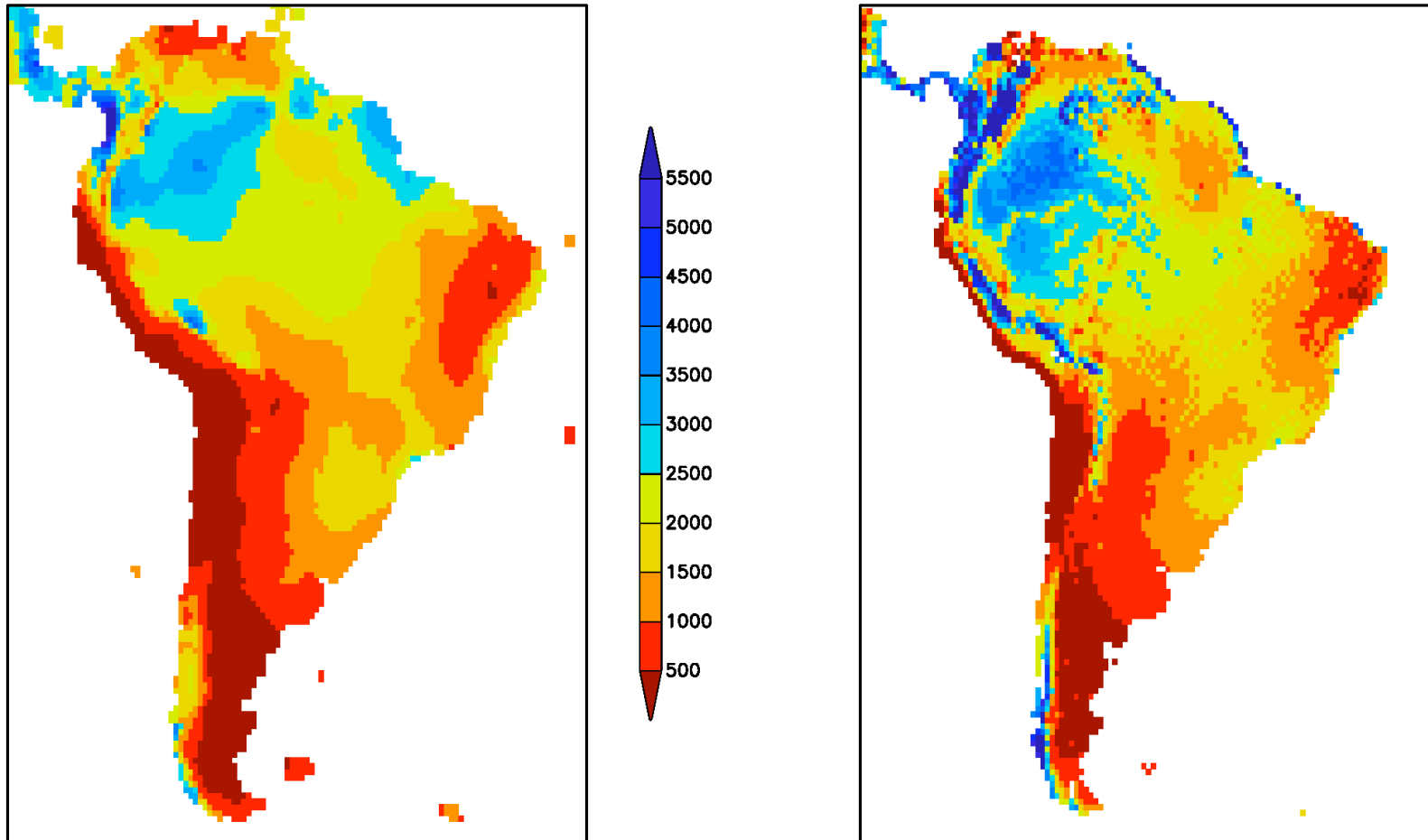


# Downscaling of ERA 40



CRU

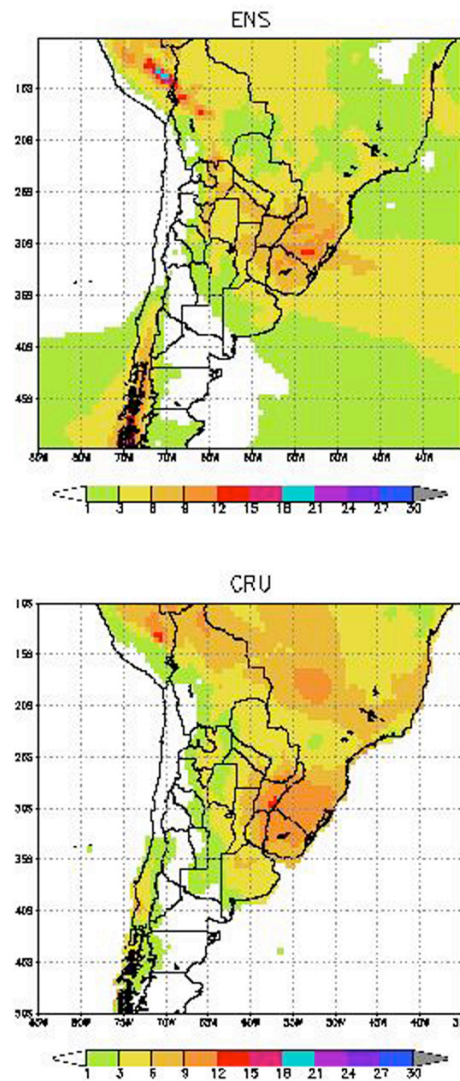
REMO 5.7



Precipitation 1961-1990 [mm/year]



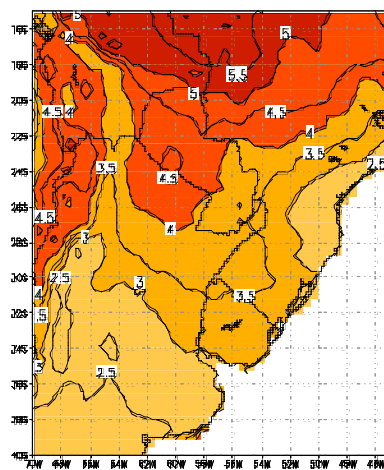
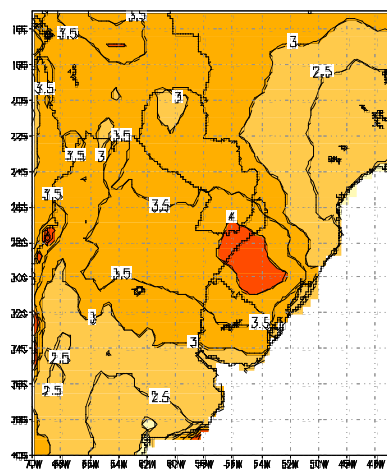
# Extreme event ensemble analysis



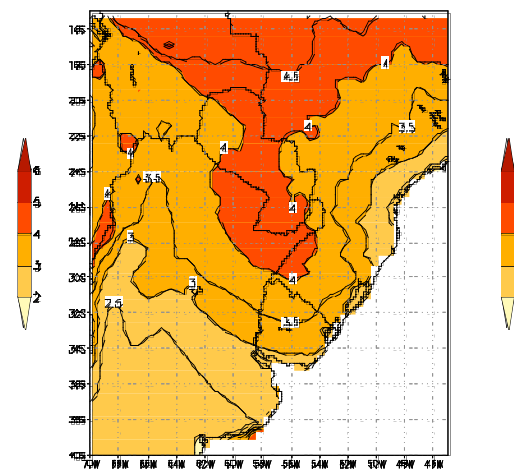


2080

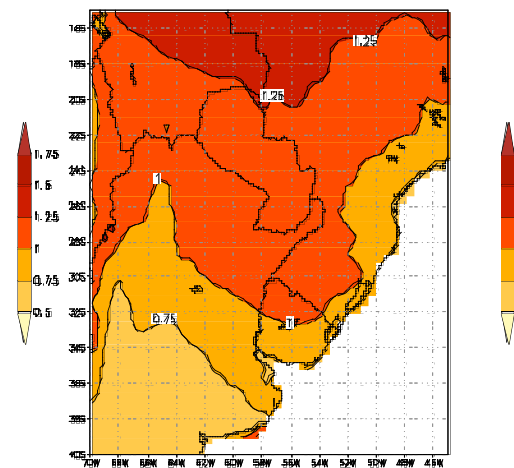
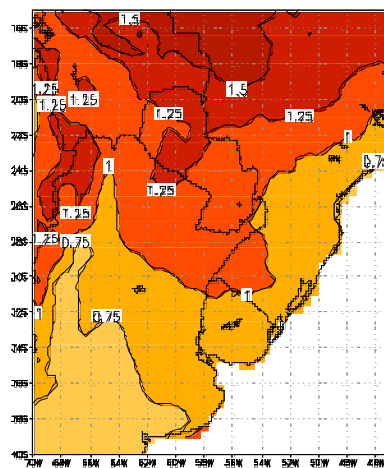
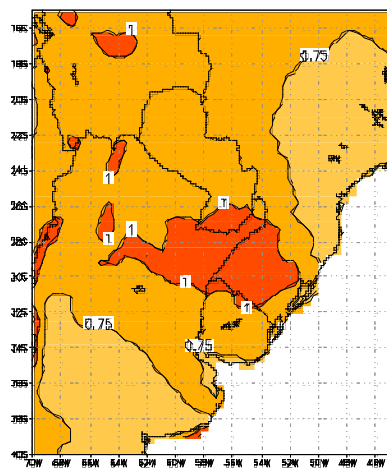
MEAN TEMPERATURE (C)  
DJF JJA



MEAN TEMPERATURE(C)  
ANNUAL



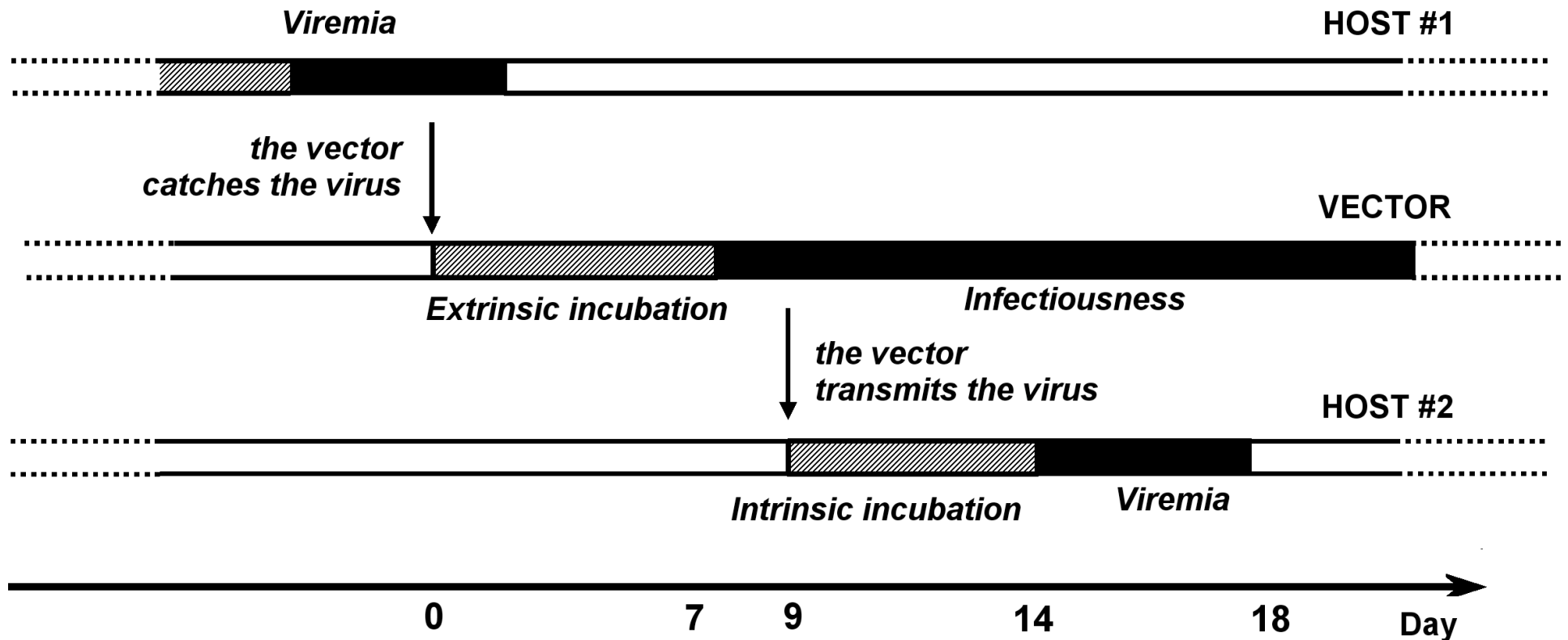
2020



Mean Temperature changes (2081-2090; 2021-2030)

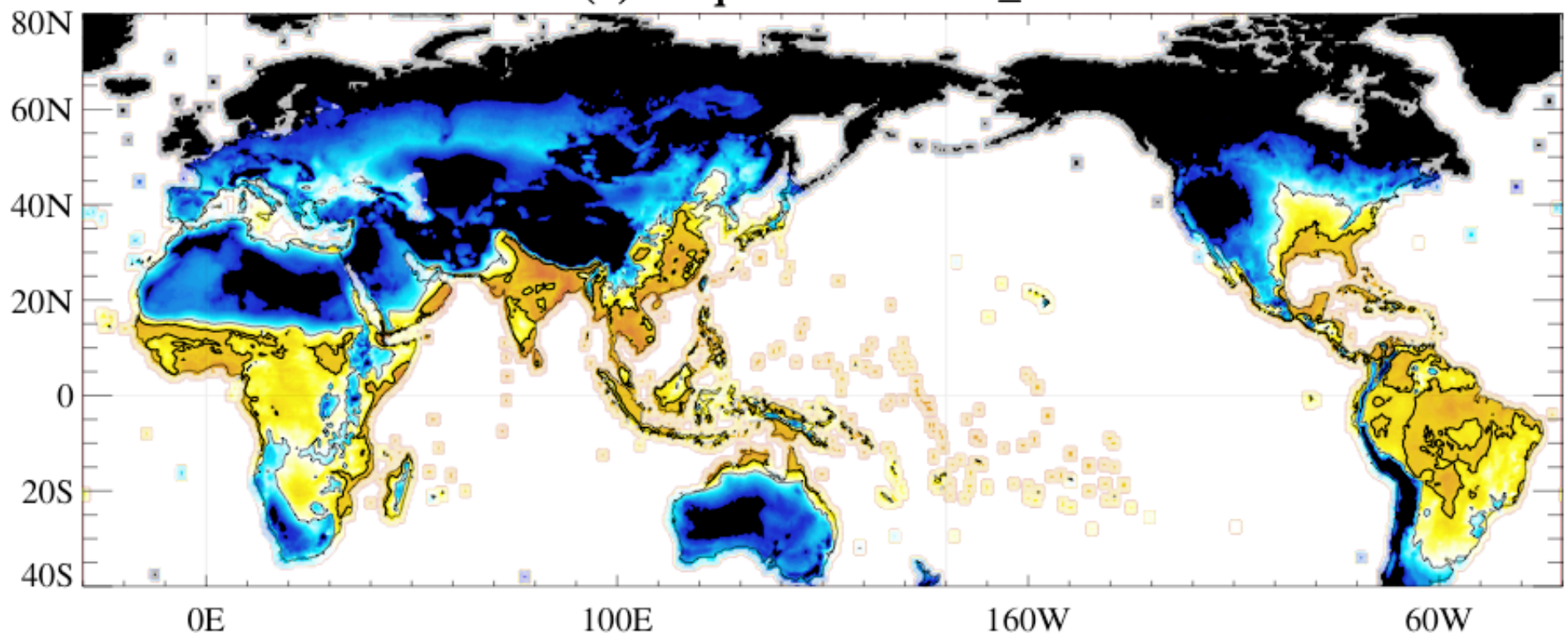


# The cycle of the virus: infection, incubation, transmission



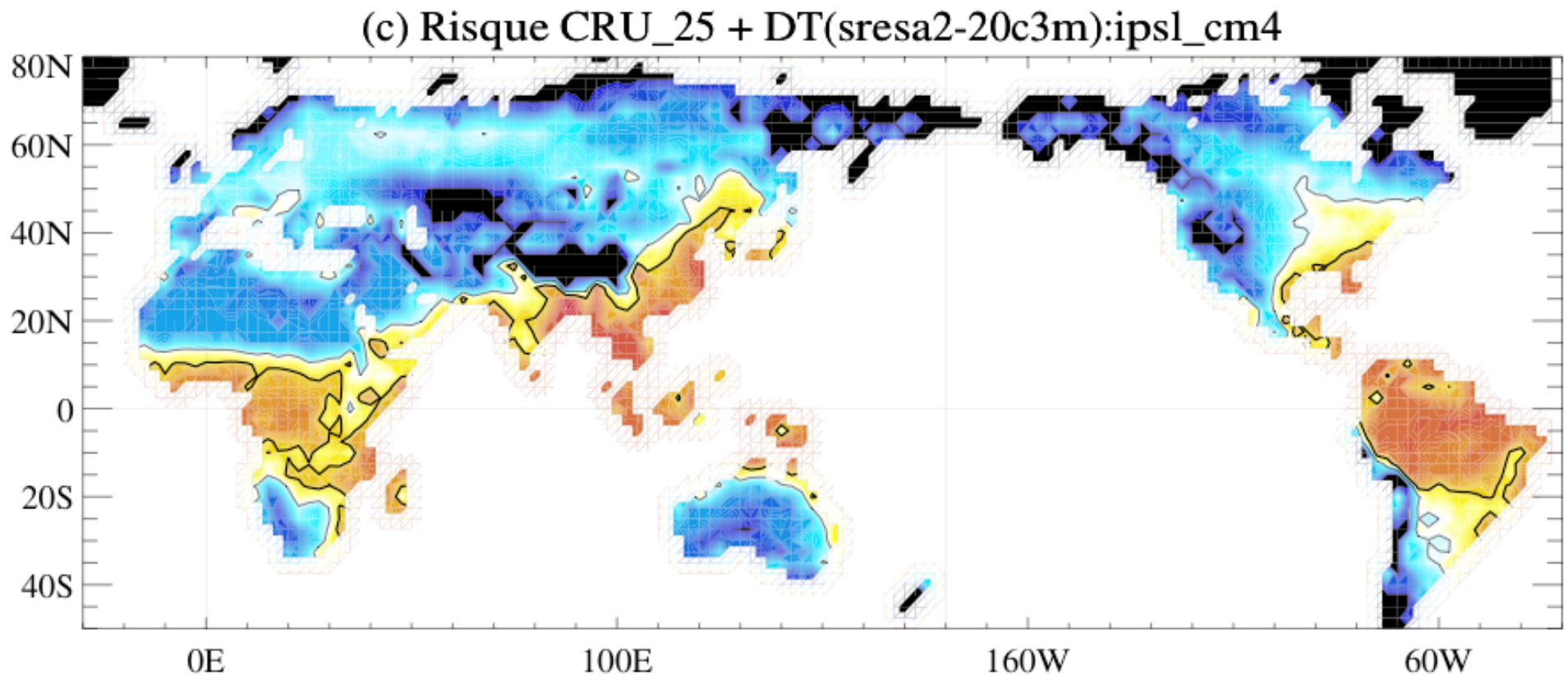
# Actual risk map

(a) Risque actuel CRU\_05

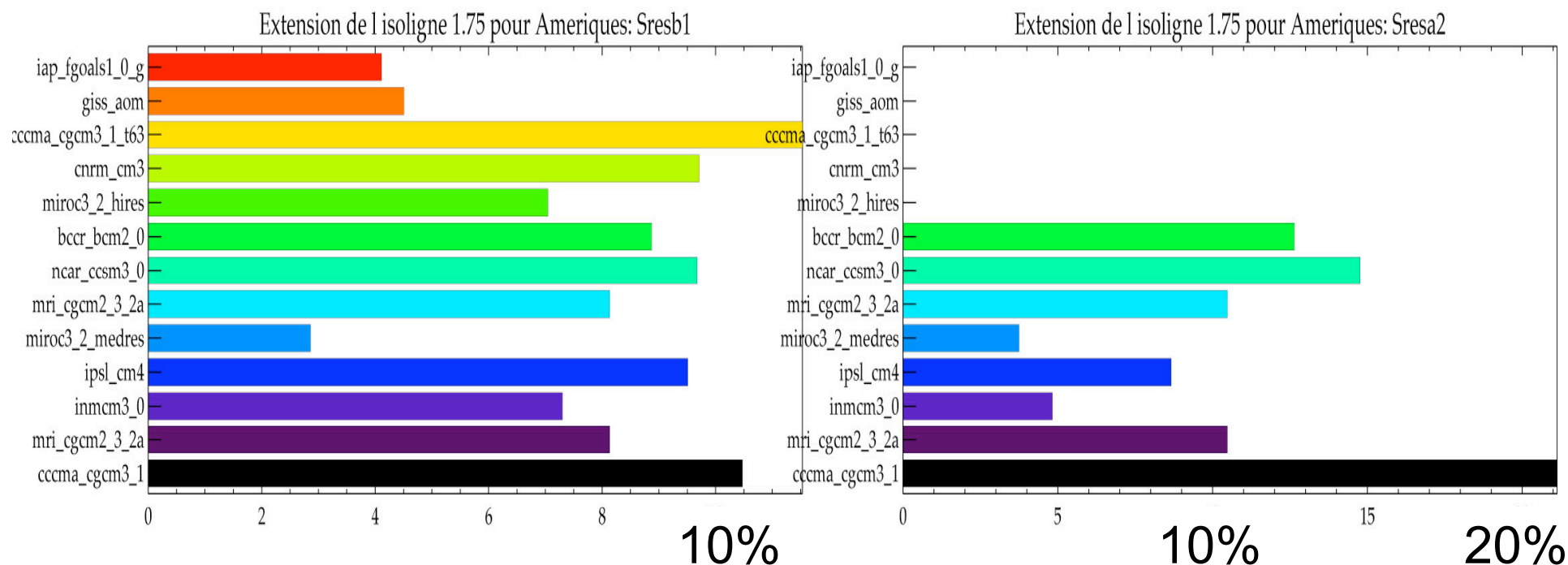


# Applications: future risk maps

**SRES B1, IPSL**



# Future risk increase (%relative to present) according to different models and countries



South America (scenarios B1 vs. A2)



# The CLARIS LPB Project



## **ENV.2007.1.1.5.3. Past and future climate change impacts in the Parana-Plata river basin of South America**

Observations and modelling studies at both regional and continental scale to quantify past and predict future climate changes and impacts in the Parana-Plata basin. Emphasis in climate change impacts should be given to floods, hydrological systems, land-use and agriculture, deforestation and needs to assess the social and economic implications. Adaptation measures to future climate risks and impacts should be also considered. (Specific International cooperation action)

Funding scheme: collaborative projects (small or medium-scale focused research projects)

*Expected impact: Strengthening of the cooperation between European and South American multidisciplinary research communities by studying climate change impacts in a basin which largely involves the greater part of the population, economy, agriculture, hydropower production of the five major South American countries concerned. Improved prediction capacity of the climate change impacts, which will result in economic, environmental and social benefits for the region.*



# Major objectives

- 1- To quantify the potential hydroclimate changes all along the 21<sup>st</sup> century, their uncertainty and the sources of uncertainty taking as a reference the recent observed hydroclimate variability (from present back to 1850 years)
- 2- To develop interface methods to provide climate scenarios for socio-economic issues
- 3- To quantify the social and economic impacts of a changing climate on crucial sectors for the region (land-use, cropping systems, hydropower production, water resources and health) in order to provide guidelines for policy-makers.



# CLARIS LPB Structure



WP0: Coordination, management, synthesis and outreach

Theme 1 : Past and future hydroclimate variability in LPB

WP1.1:  
Recent past  
observations (stations  
and proxys)

WP1.2:  
Climate Change  
scenarios and  
uncertainty

WP1.3:  
Regional scenarios and  
uncertainty

WP1.4:  
Evolution of extreme  
hydroclimate events

Theme 2 : Application of climate simulations for impact studies

WP2:  
A climate-impact model interface

Theme 3 : Socio-economic impact of climate in LPB

WP3.1:  
Land-use, agriculture  
and socio-economic  
impacts

WP3.2:  
Water Resources

WP3.3:  
Climate-induced  
epidemics risk: The  
Dengue case

# CLARIS LPB Consortium

## Present list of partners

Insitute	Country
IRD/CNRS	France
UEA	GB
ZALF	Germany
MPI	Germany
INGV/CMCC	Italy
U. Bologna	Italy
UCLM	Spain
SMHI	Sweden
CPTEC	Brazil
USP	Brazil
UFSC	Brazil
CONICET	Argentina
UBA	Argentina
INTA	Argentina
UR	Uruguay

## Potential new partners

Insitute	Country
<i>EMBRAPA</i>	<i>Brazil</i>
<i>IICA</i>	<i>Int.</i>
<i>Agriterris</i>	<i>Franco-Arg</i>

## Potential subcontractors

Insitute	Country
<i>IMT</i>	<i>Belgium</i>
<i>CESIRICERCA</i>	<i>Italy</i>

## List of stakeholders

Insitute	Country
<i>ACA</i>	<i>Argentina</i>
<i>Insurance</i>	<i>Intl.</i>
<i>Prov. De Buenos Aires</i>	<i>Argentina</i>
<i>Minist. Salud</i>	<i>Brazil</i>
...	...

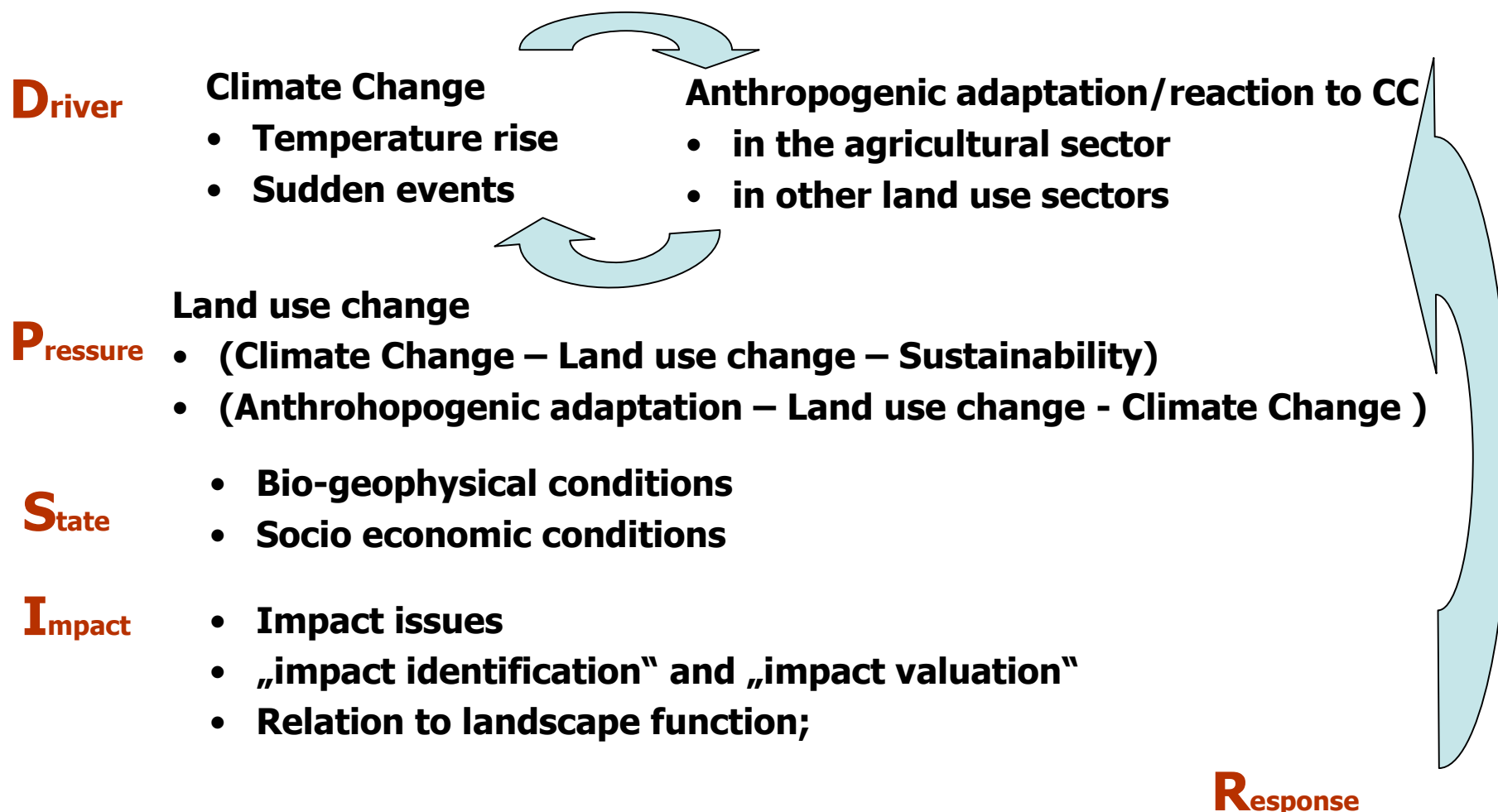
## List of collaborators

Insitute	Country
UFP/UFRGS	Brazil
UCH	Chile
ECMWF	Europa
Universidad Nacional de Cordoba	Argentina
UPMC	France
Section of Earth Sciences	Switzerland

## **Our expectations about the LPB-IAI-IDRC- SECyT Meeting**

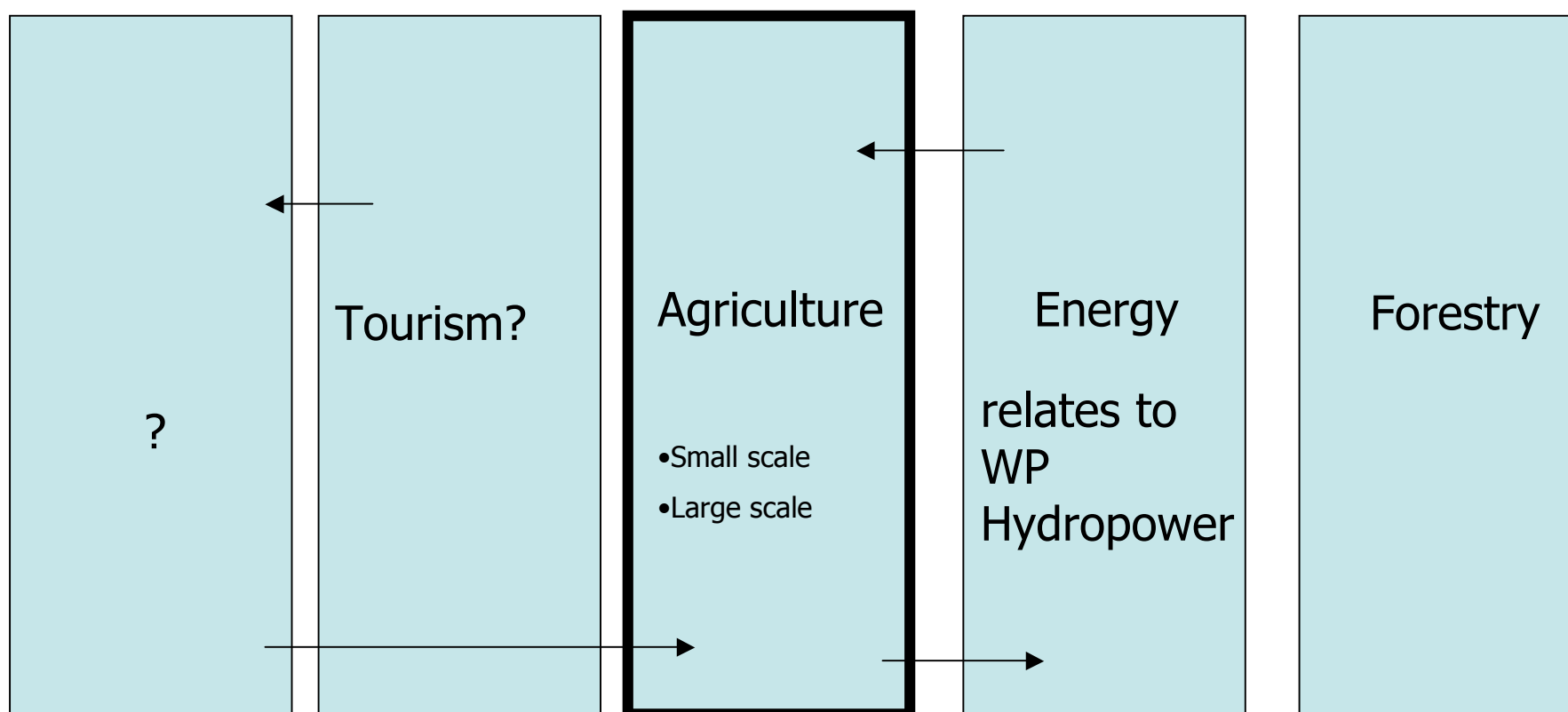
- **To improve the coordination/complementarity between the CLARIS LPB proposal and other related projects (e.g. SENSOR)**
- **To promote the multi-disciplinarity approach of the CLARIS LPB consortium by welcoming in our project experts on non-climate issues (e.g. land-use, land-cover, bioenergy, rural development)**

## WP Land use, agriculture and socio-economic implications



## WP Land use, agriculture and socio-economic implications

### Land use sectors, interrelations and impacts



# Thanks!

M. Nuñez, S. Solman and Collaborators

- Projections of future climate for 2020's and 2080's for Southern South America.
- Maps present here are focused to LPB region.

