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
CNRS, France
jpb@lodyc.jussieu.fr

1 July 2004 to 30 June 2007
http://www.claris-eu.org

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

The CLARIS consortium

Partic. Role*	Partic. No.	Participant name	Participant short name	Country
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	Argentine
CR	4	Universidad de Buenos Aires	UBA	Argentine
CR	5	Instituto Nacional de Pesquisas Espacias	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

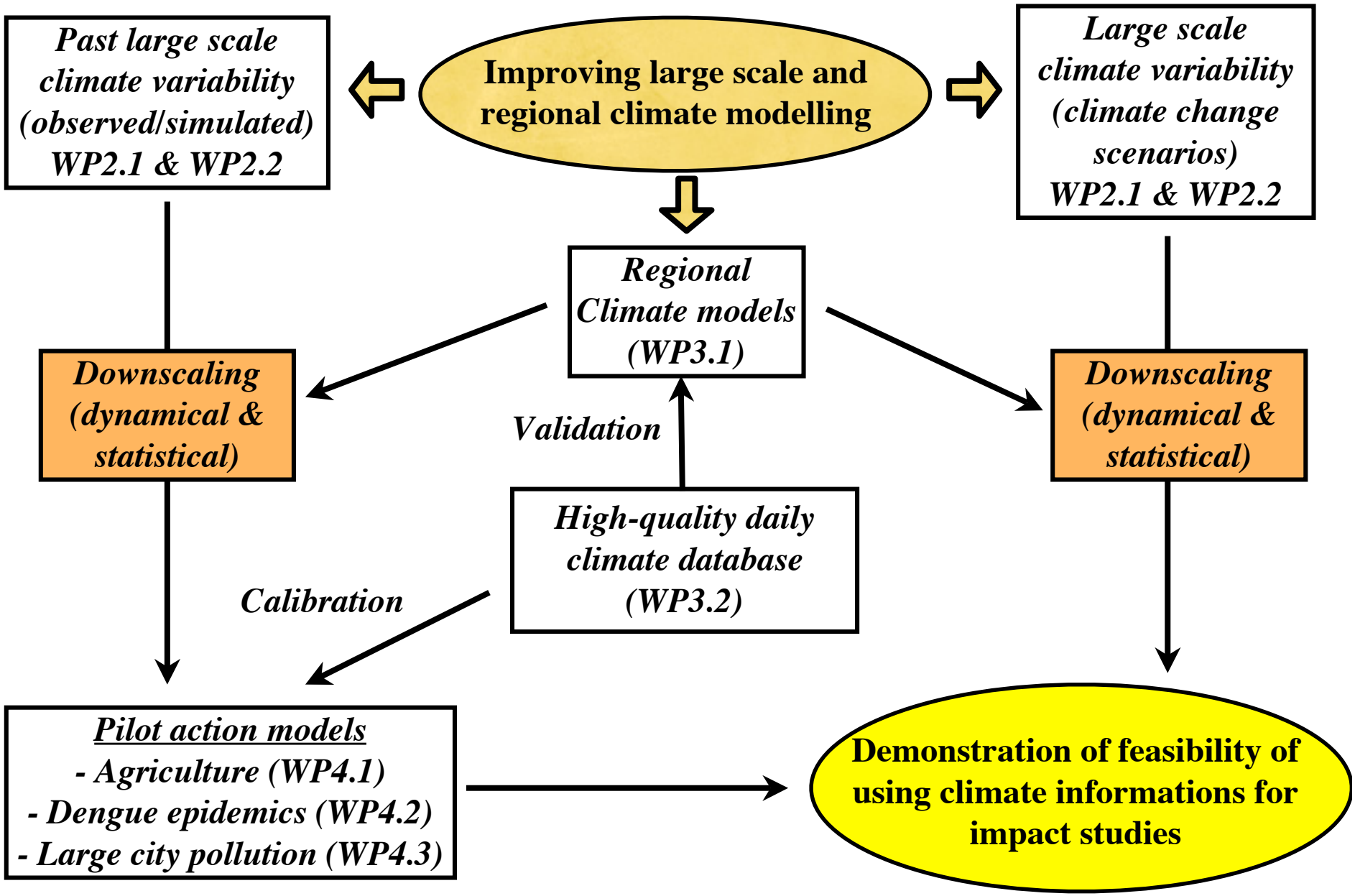
CLARIS strategic objectives

- **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.**

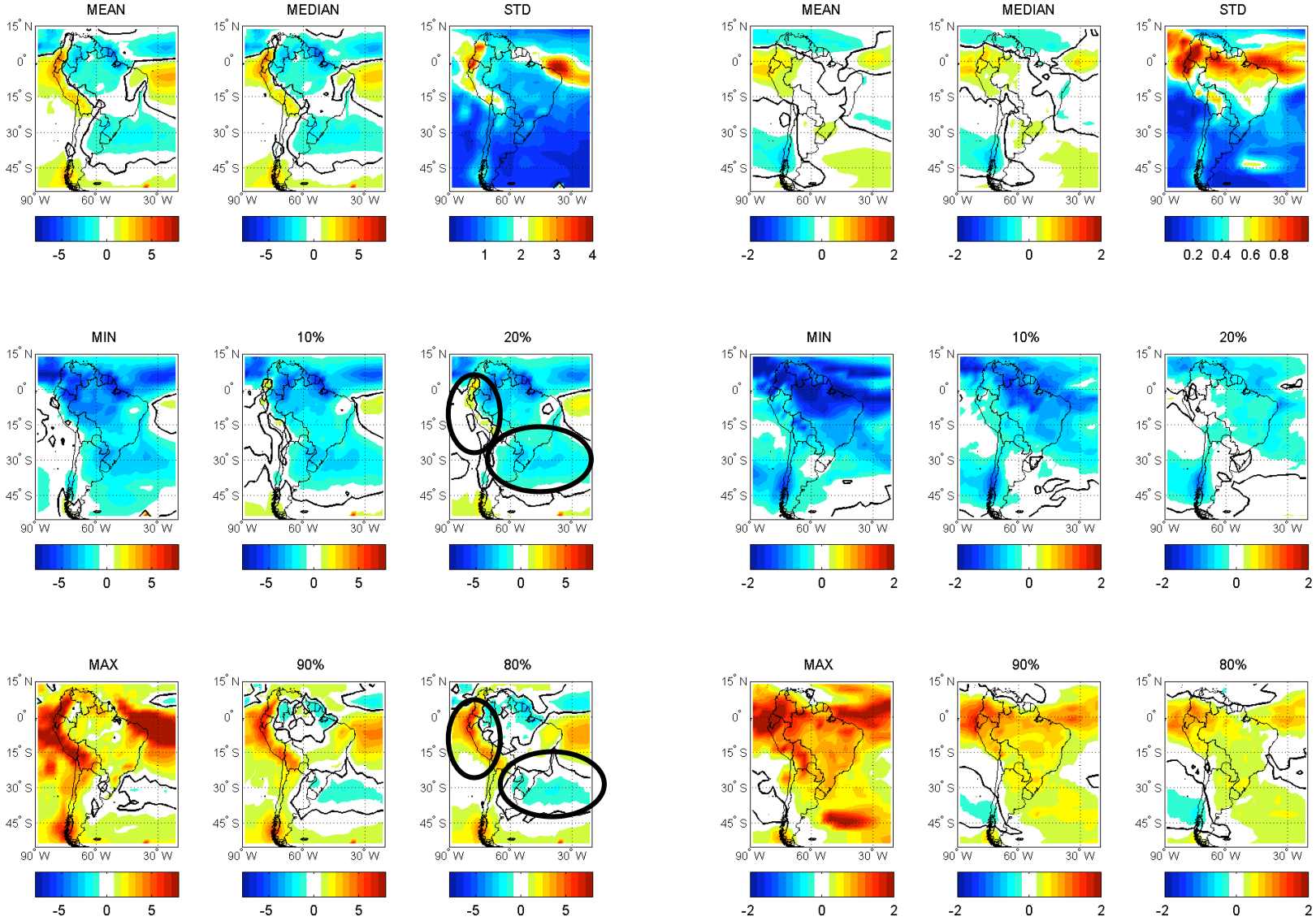
- **The third objective of CLARIS is to strengthen the communication between climate researchers and stakeholders, and to demonstrate the feasibility of using climate information in the decision-making process.**

Graphical representation of the CLARIS project components



20c3m
1976-2000

SRES A2
2076-2100



Precipitation

La Plata

Downscaling Experiment Strategy

- Modelling Groups:
  - CIMA (MM5, RCA), CPTEC (PRECIS, Eta, RegCM3), Univ. Chile (MM5)
  - MPI (REMO), UCLM (PROMES), IPSL (LMDZ)
  - SENAHMI (MM5)

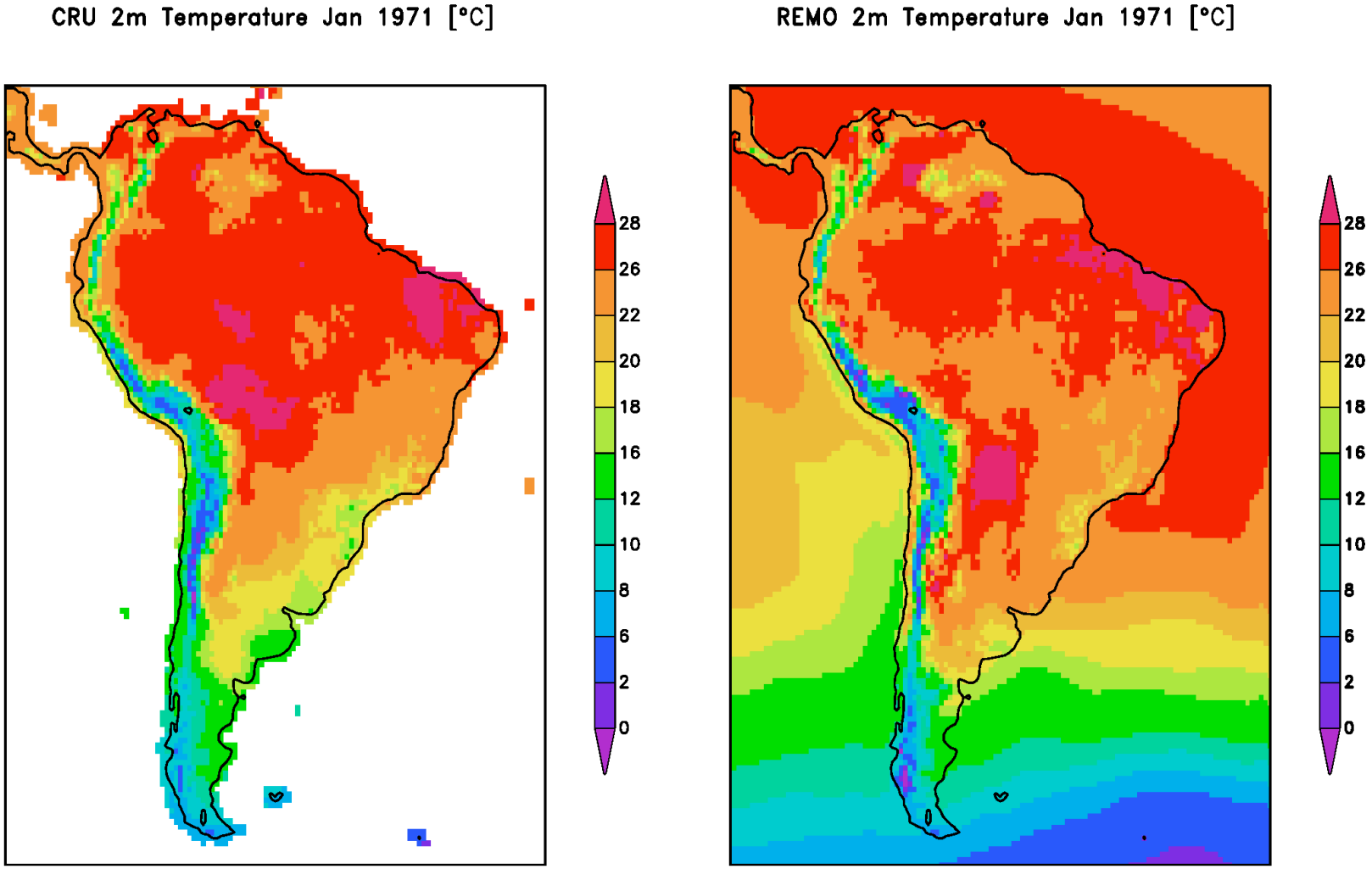
- Extreme event cases:
  - 11/1970 – 01/1971: anomalously rainy and cold conditions
  - 10/1986 – 12/1986: anomalously rainy and tempering conditions
  - 05/1996 – 08/1996: anomalously dry and warm conditions

- Interannual simulations (ERA40)

- Climate Change Simulations (CPTEC, CIMA, MPI)

- Model parametrization improvement

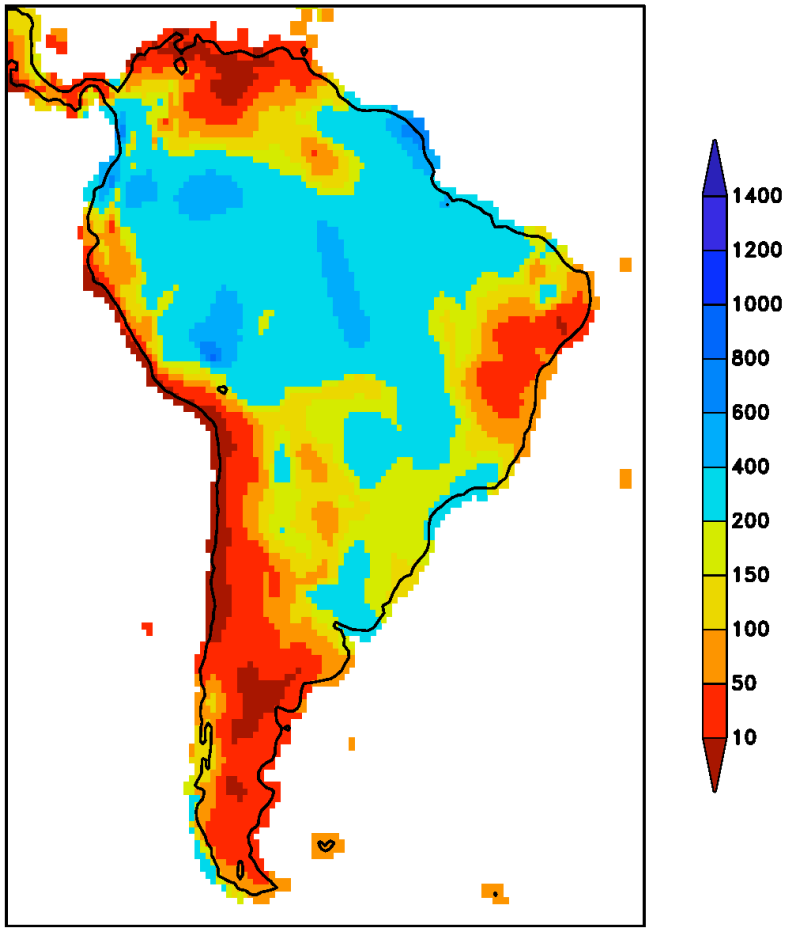
Case study: anomalously rainy and cold conditions



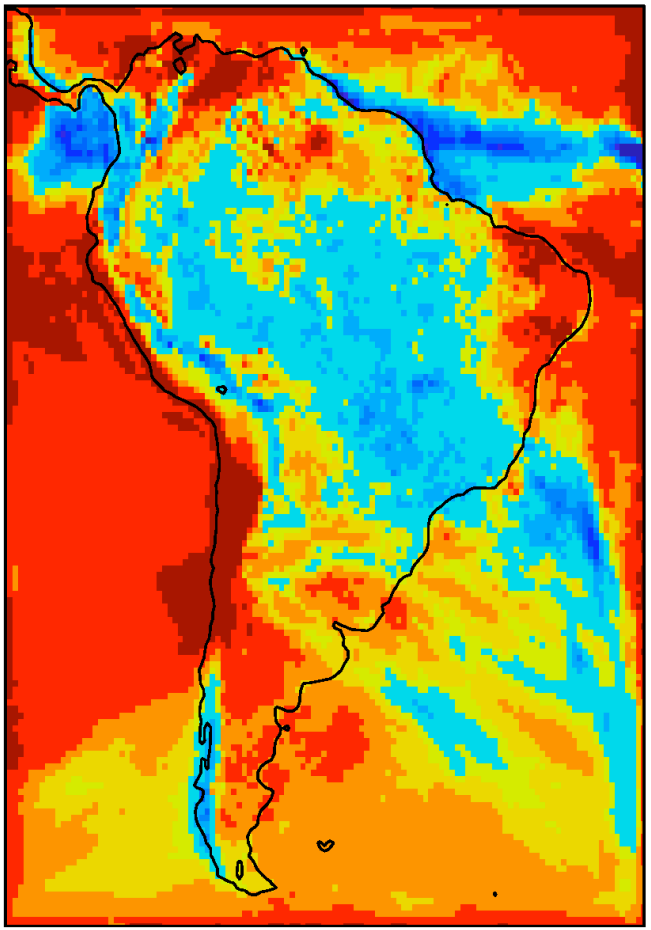
2m Temperature [°C]

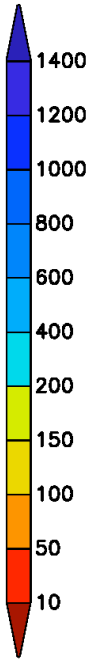
Case study: anomalously rainy and cold conditions

CRU Precipitation 01/1971 [mm/month]



REMO Precipitation Jan 1971 [mm/month]



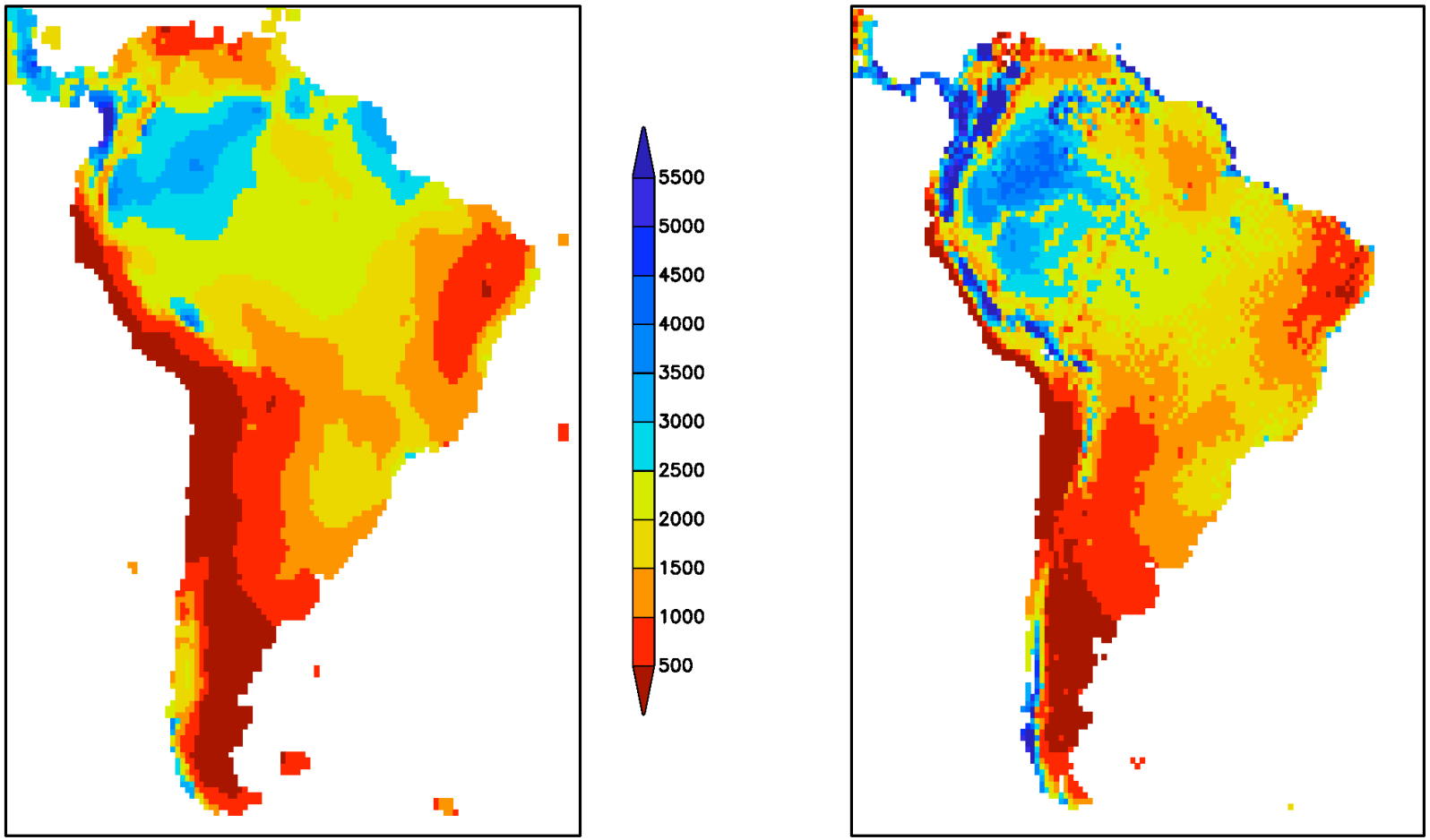


Precipitation [mm/month]

Downscaling of ERA 40

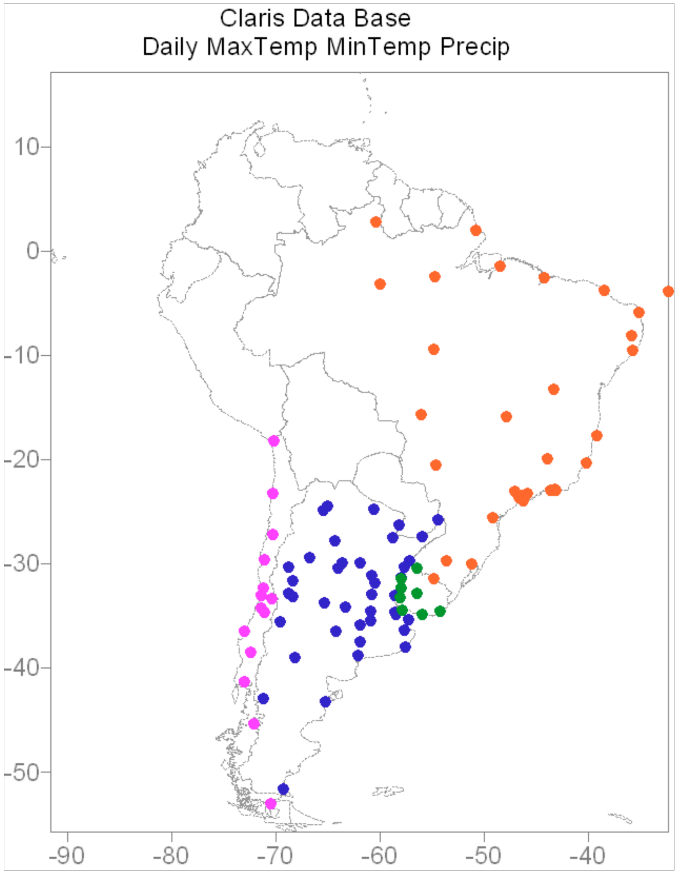
CRU

REMO 5.7

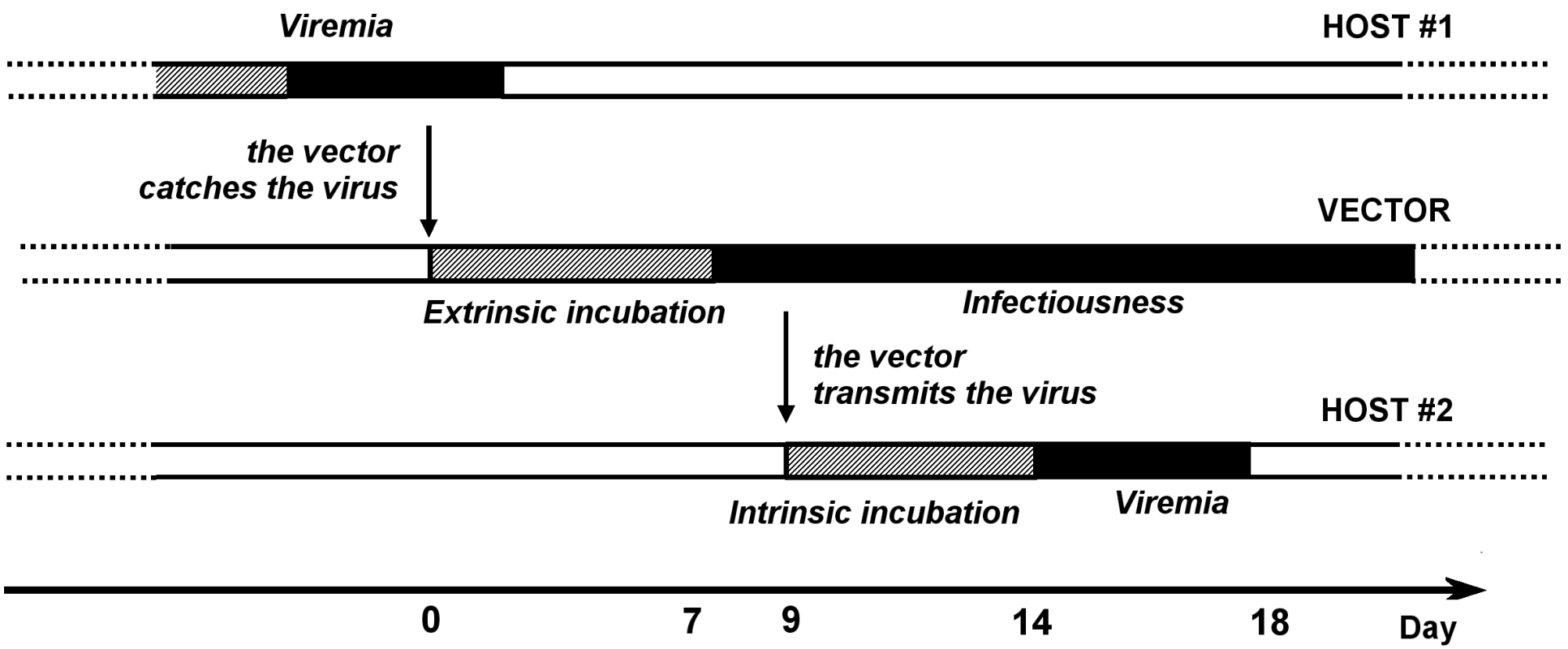


Precipitation 1961-1990 [mm/year]

The Claris Data Base

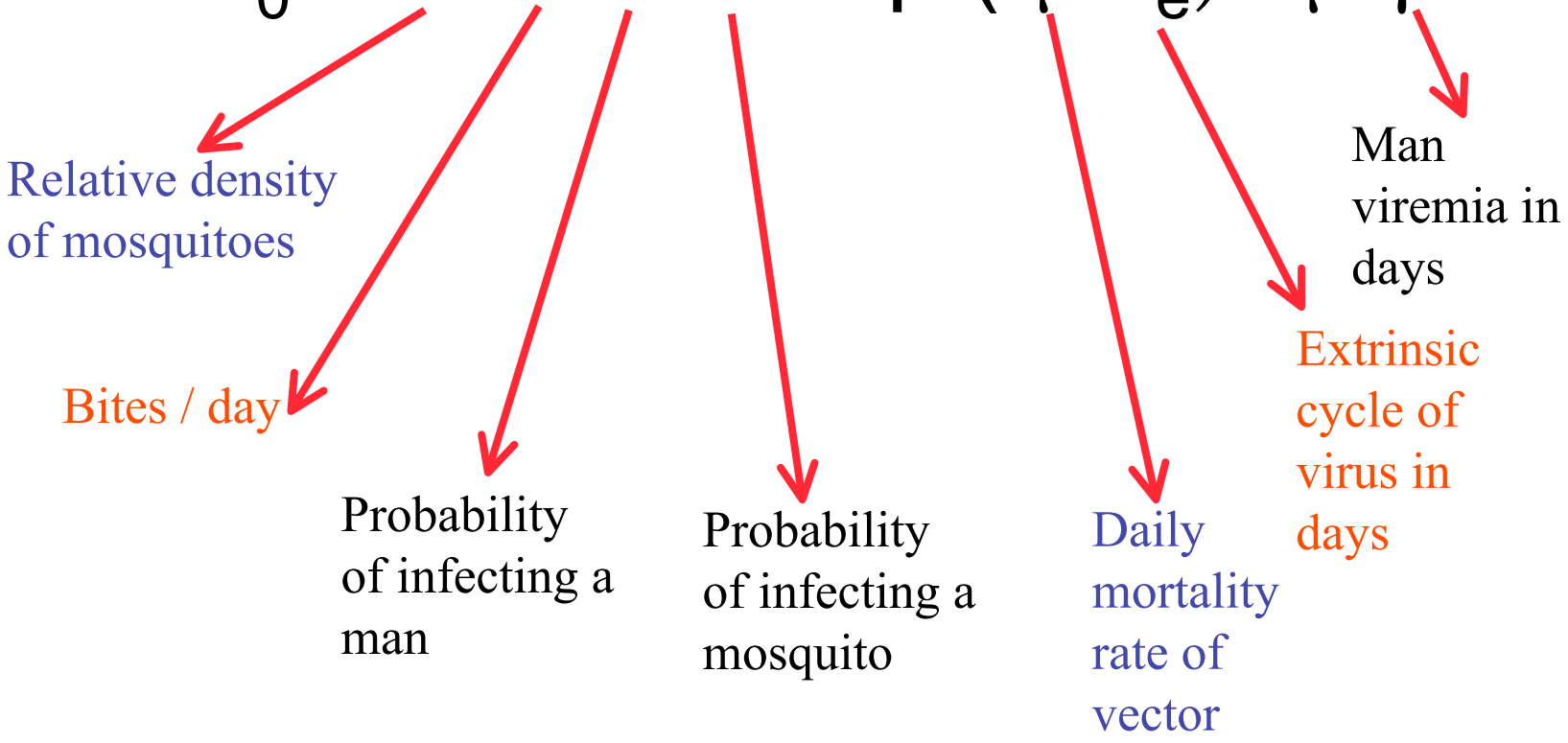


The cycle of the virus: infection, incubation, transmission



The risk of epidemics may be expressed by the basic reproduction number of the disease:

$$R_0 = m\, a^2\, b\, c \exp(-\mu\, \tau_e) / \mu\, \gamma$$



In blue, influenced by RH and/or rain

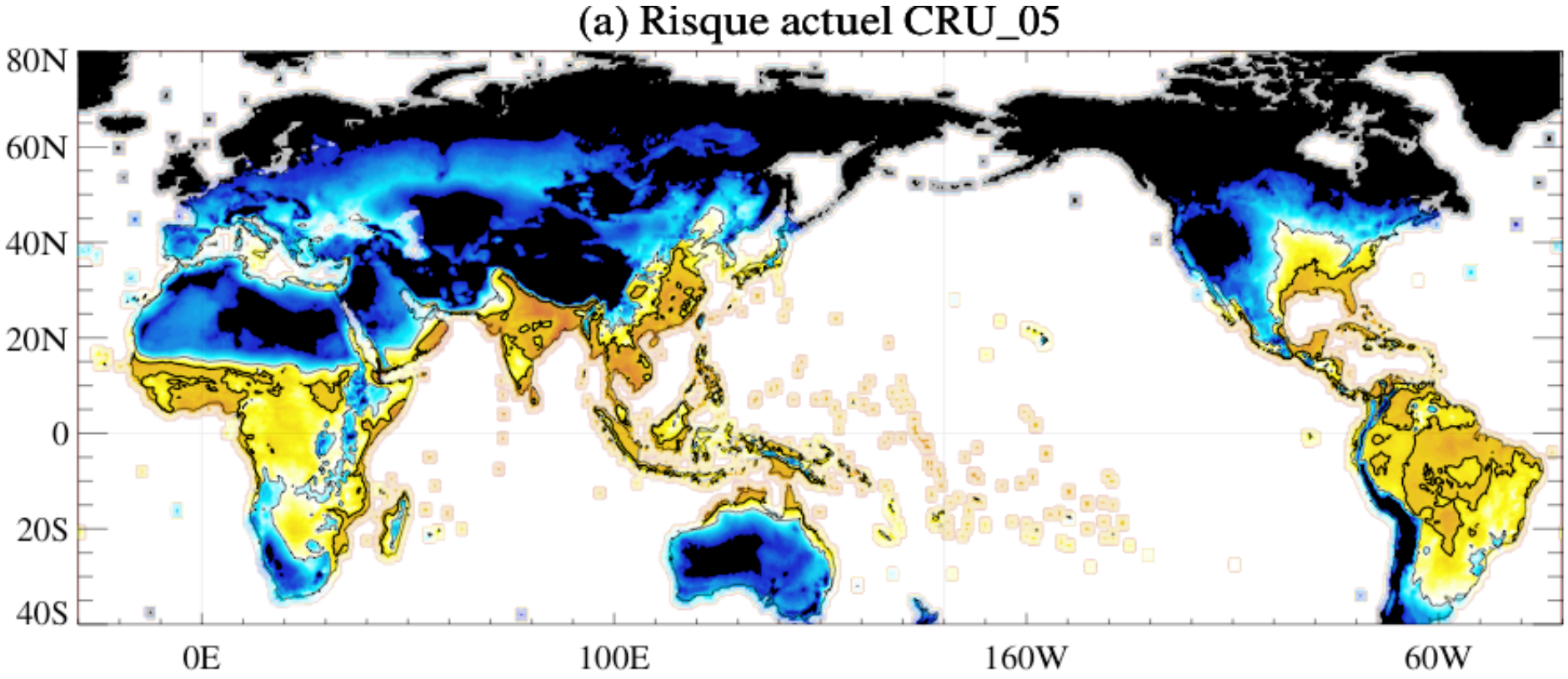
In red, influenced by temperature

$$R_0 = V \bullet N \bullet \frac{S_N \exp(-\mu t_J)}{2 t_N} \bullet \left[\frac{k}{1 - \exp(-\mu t_G)} \right]^2 \bullet \exp(-\mu t_E)$$

Threshold of epidemic transmission = 1

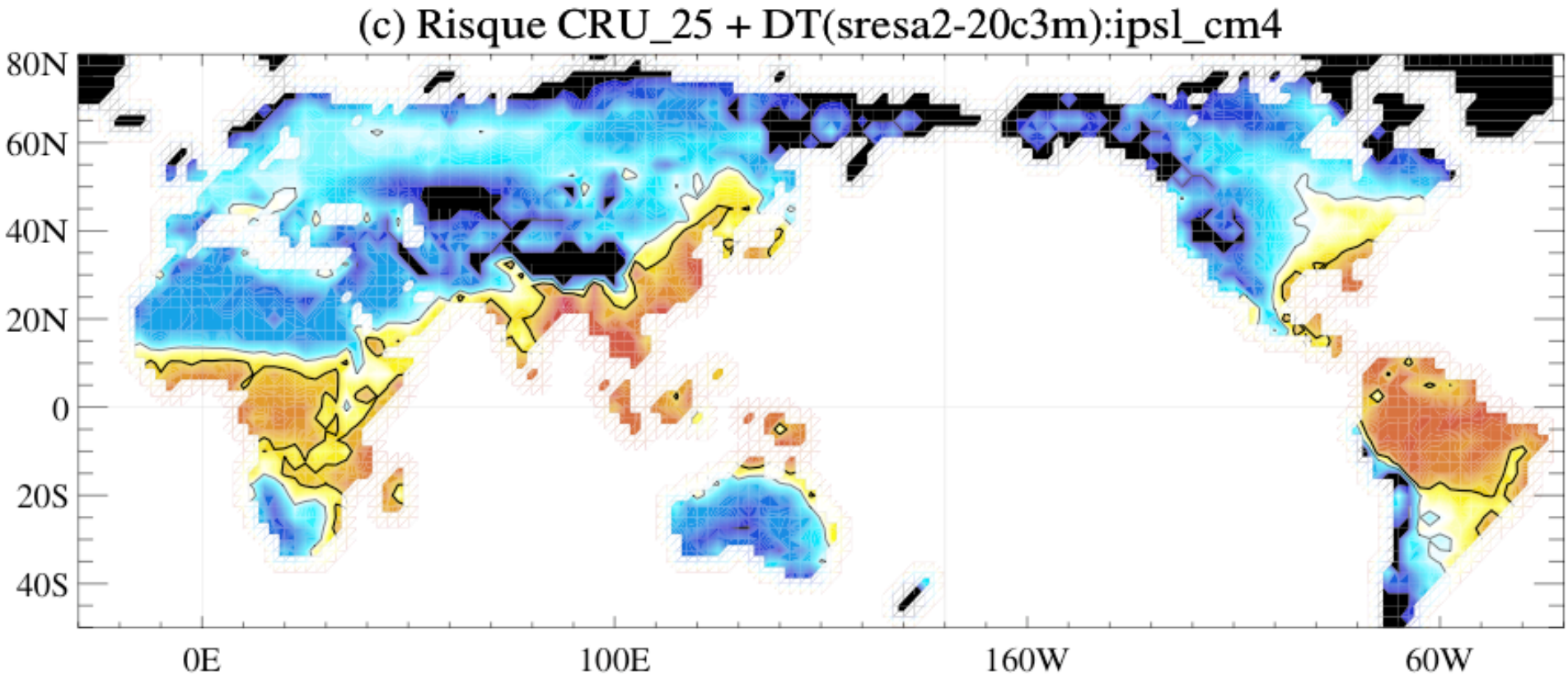
Number of pupae by habitant

Actual risk map

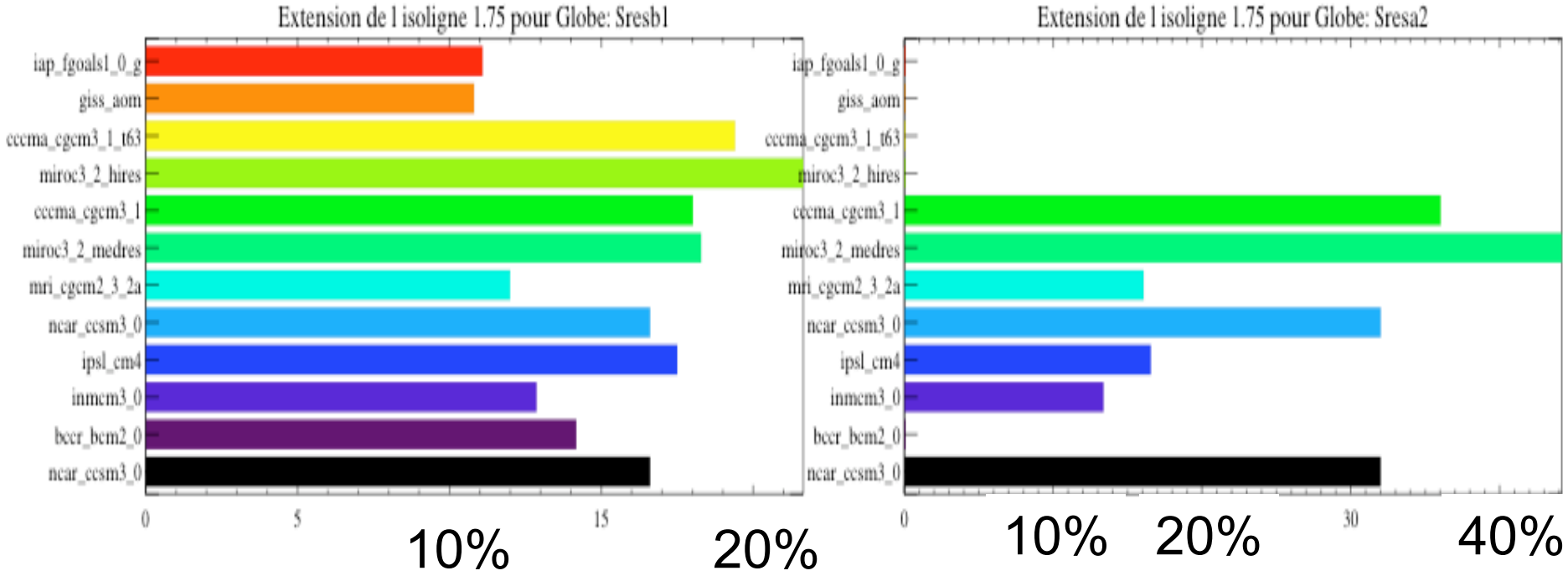


Applications: future risk maps

SRES A2, IPSL

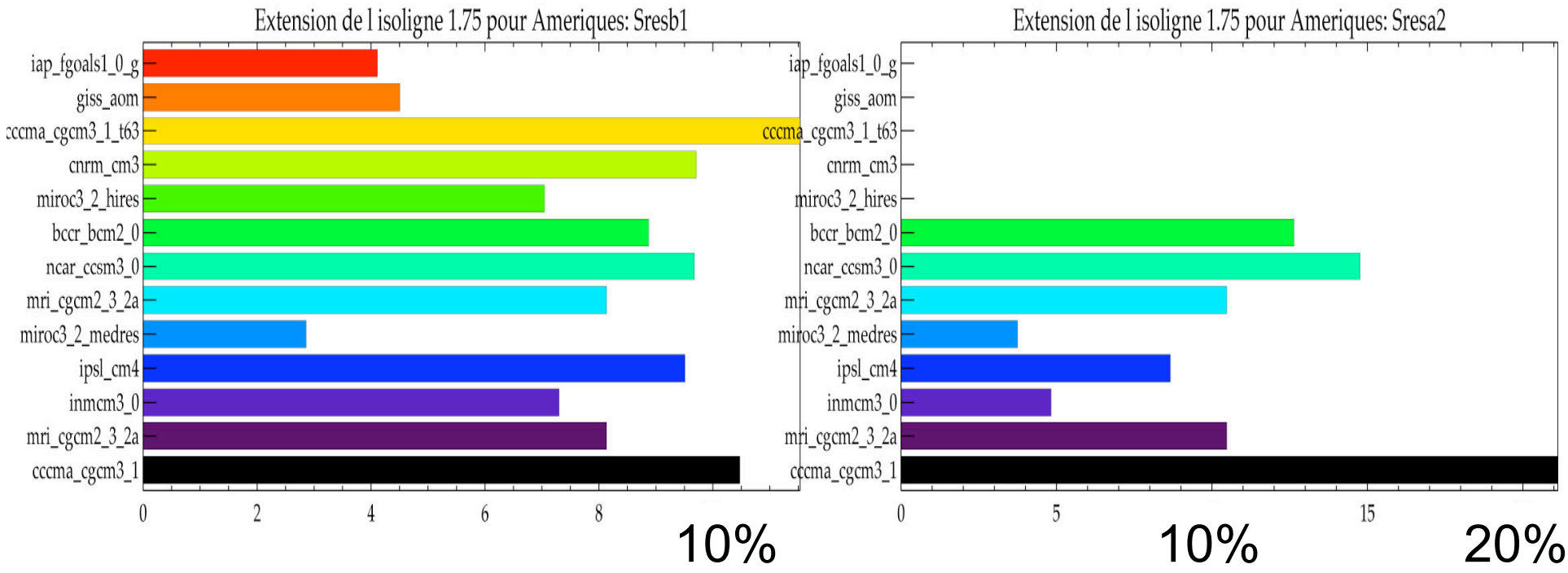


Future risk increase (%relative to present) according to different models and countries



Worldwide (scenarios B1 *vs.* A2)

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



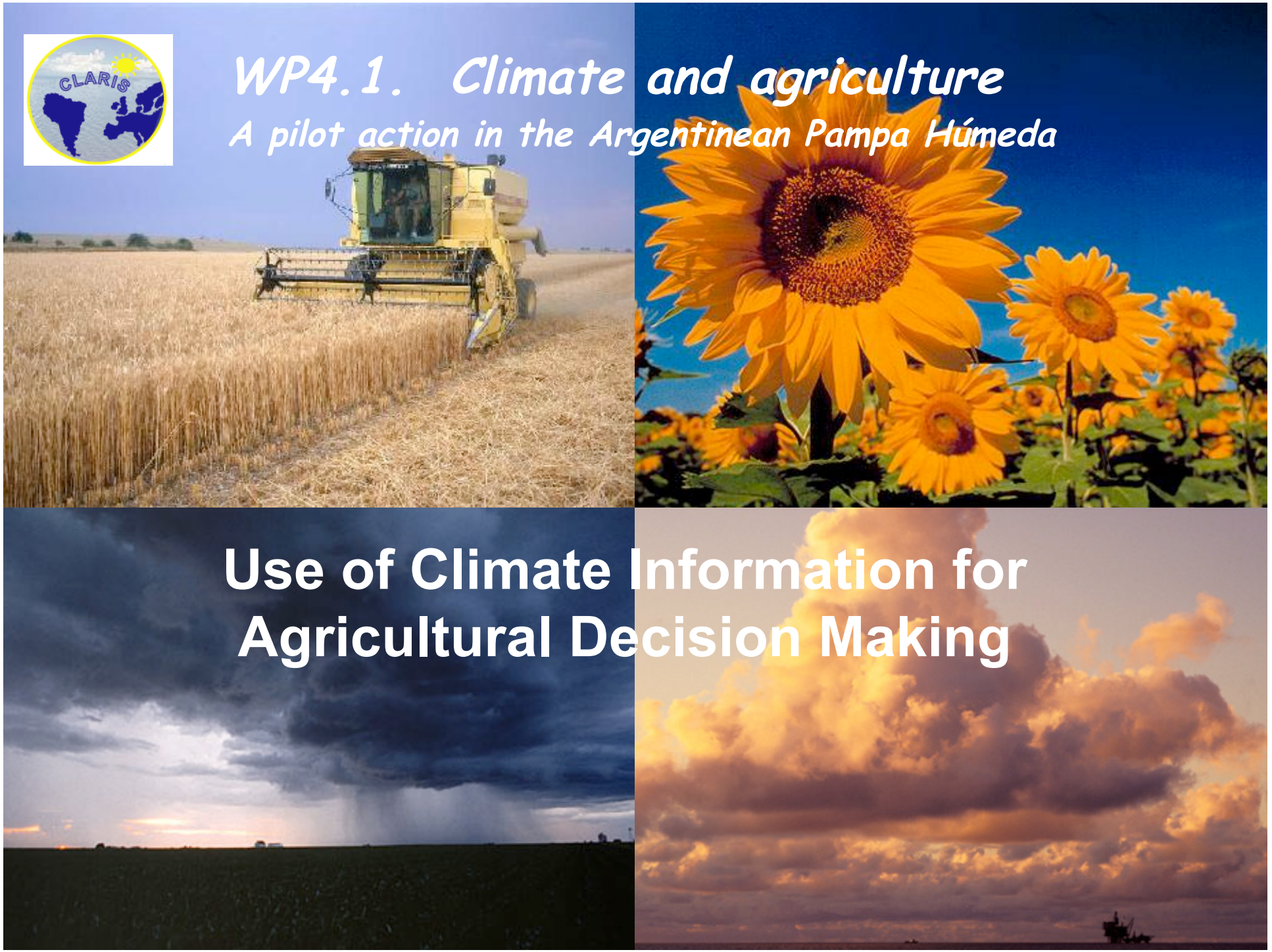
South America (scenarios B1 *vs.* A2)

Conclusions

(i) The dengue-transmission risk model is calibrated with parameters, which can easily be evaluated experimentally or in the field;

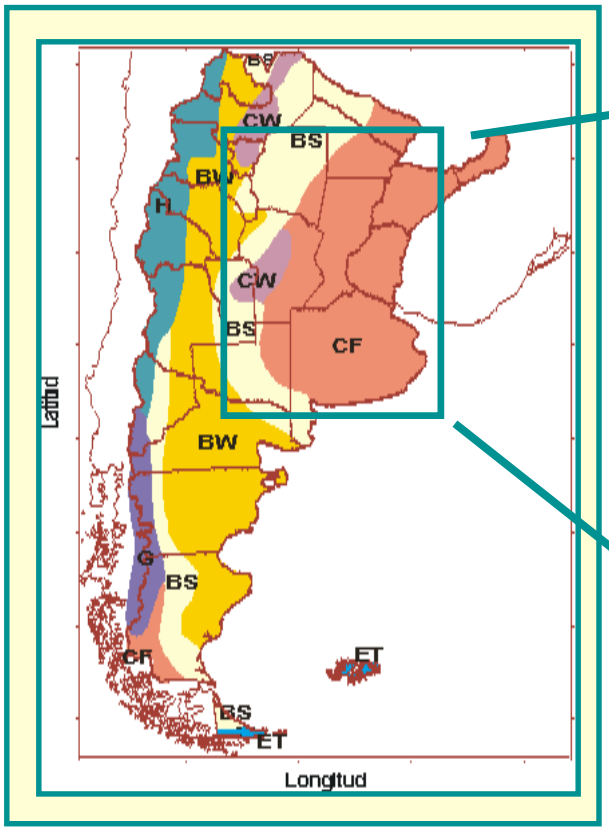
(ii) Only humidity deficit and monthly mean temperature are necessary to drive the risk model;

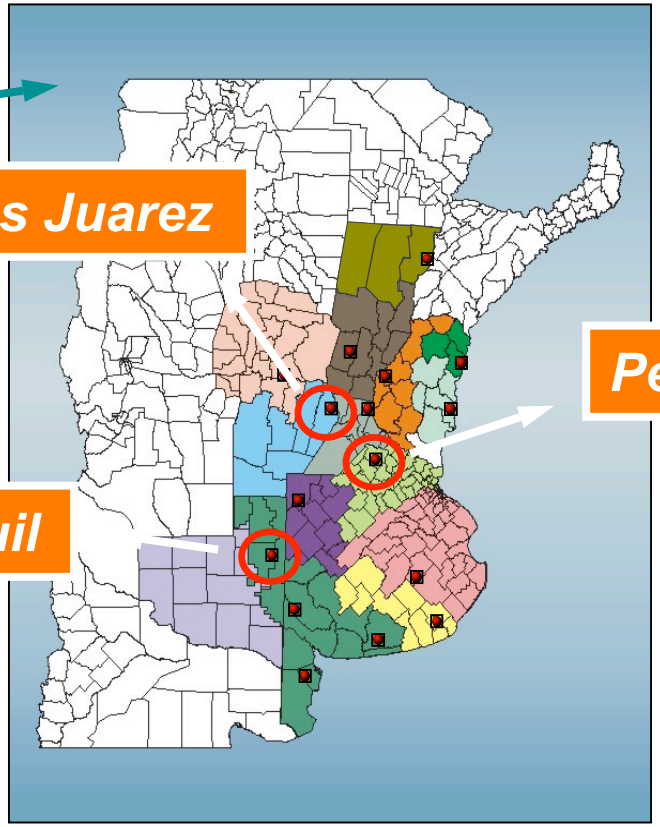
(iii) The climatic changes which resulted from very diverse models gave global risk evaluations of the same order (10-20% expansion of risk areas for moderate climate change, and 15-45% for extreme climate change). In the future, environmental and regional spatial parameters will be incorporated in the risk model.


CLARIS
WP4.1. Climate and agriculture
A pilot action in the Argentinean Pampa Húmeda
Use of Climate Information for
Agricultural Decision Making

WP4.1. Climate and agriculture

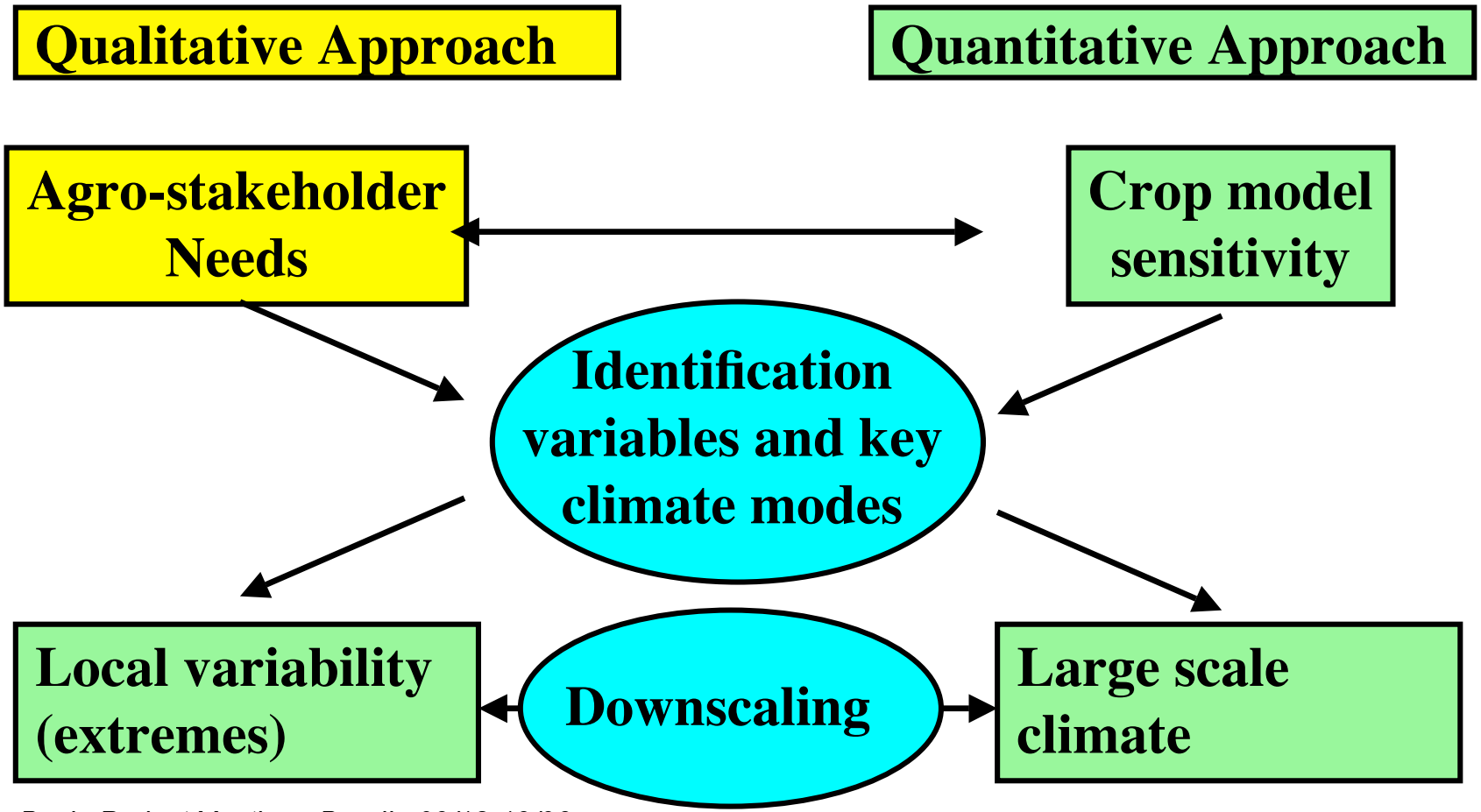
A pilot action in the Argentinean Pampa Húmeda



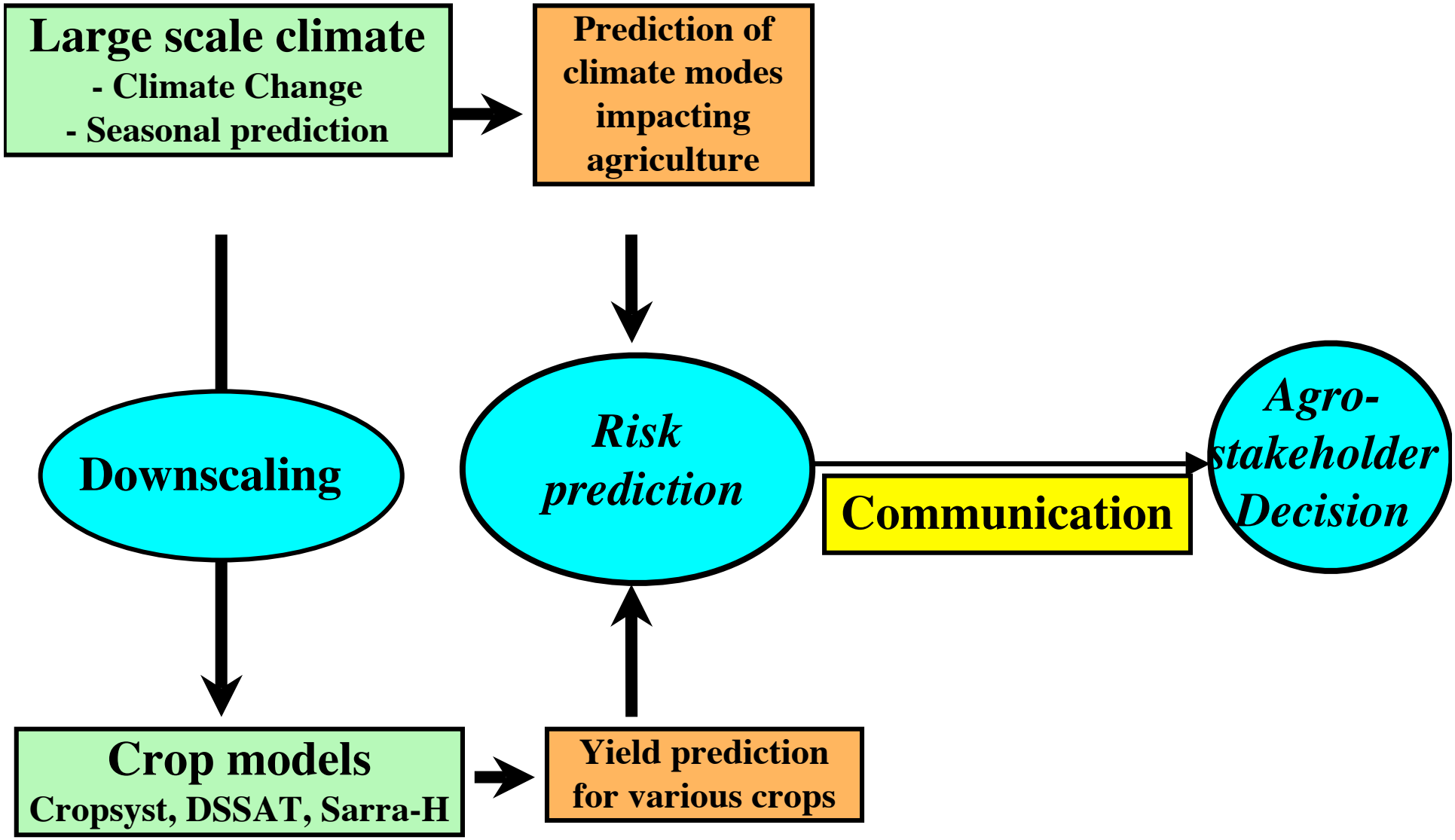


Inter-disciplinary research team

- Climate: CNRS, IRD, UBA, CONICET
- Agriculture: INTA, ISCI-CRA
- Economy: CIRAD, PRI
- Sociology: IRD, UNGS



Climate and agriculture



To build on the CLARIS Project?

- How does CLARIS help strengthening existing Europe-South America collaborations?

- Does CLARIS favor new (sustainable) collaborations (i.e. which scientific projects will derive from the network)?

- How CLARIS does contribute to international objectives (VAMOS, MESA, LPB) and favor a stronger European involvement in such objectives?

- Which prospectives for further EU-SA collaborations?
  - Climate Change issues
  - Seasonal Prediction issues
  - Impact issues (favoring interdisciplinary groups)