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MAREMEX-Mantaro

Extreme meteorological events and risk management in the Central Peruvian Andes

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REGION JUNÍN Integrando el cambio

Gobierno Provincial De Concepción

Grupo Yanapai

CC. de Acopalca
CC. de Quilcas
CC. de Rangra
CC. de San Juan de Jarpa

And the support of :

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OUTLINE

- Previous work in Mantaro basin
- Why meteorological extremes?
- Objectives
- Study zone
- Research organization
- Climatology and climate trends
- Other studies in variability and climate in Mantaro valley
- Studies related to physical vulnerability
- Studies related to socio economic vulnerability
- Collection of social data
- Mini meteorological network
- Validation and disemination
- New projects of IGP

1. PREVIOUS WORK BY IGP IN THE MANTARO BASIN

Integrated local assessment of climate change in the Mantaro basin (2003-2005)

Seasonal climate forecasts for agricultural applications in the Mantaro valley (2007-2010)

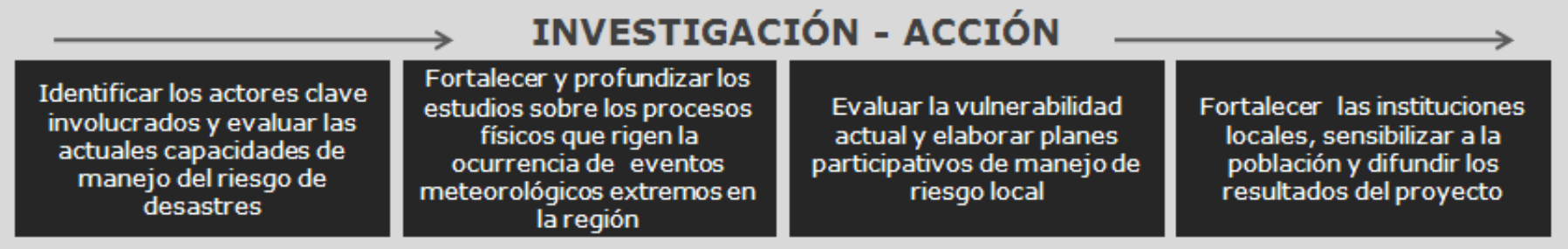
2. WHY METEOROLOGICAL EXTREMES?

Table 1 Meteorological extreme events and their main negative impacts identified in the Mantaro Valley

Scope	*Meteorological extreme events*		
	Intense rain	*Droughts*	*Frosts*
Urban	Damages in transport (bridges, roads, etc.), housing and drinking water infrastructure; loss of human beings.	Cuts in drinking water service; decrease in the generation of hydroelectric energy	Bronco-pulmonary diseases, especially in children and the elderly
Rural	Loss of agricultural land, seeds, etc.; loss of agricultural infrastructure (canals, rural roads, etc.); erosion	Water conflicts; decrease in the crop yields; increase in pests and plant diseases.	Bronco-pulmonary diseases, especially in children and the elderly; impacts in agriculture as decrease in crop yields; low yield of milk and meat in cattle and sheep (*)

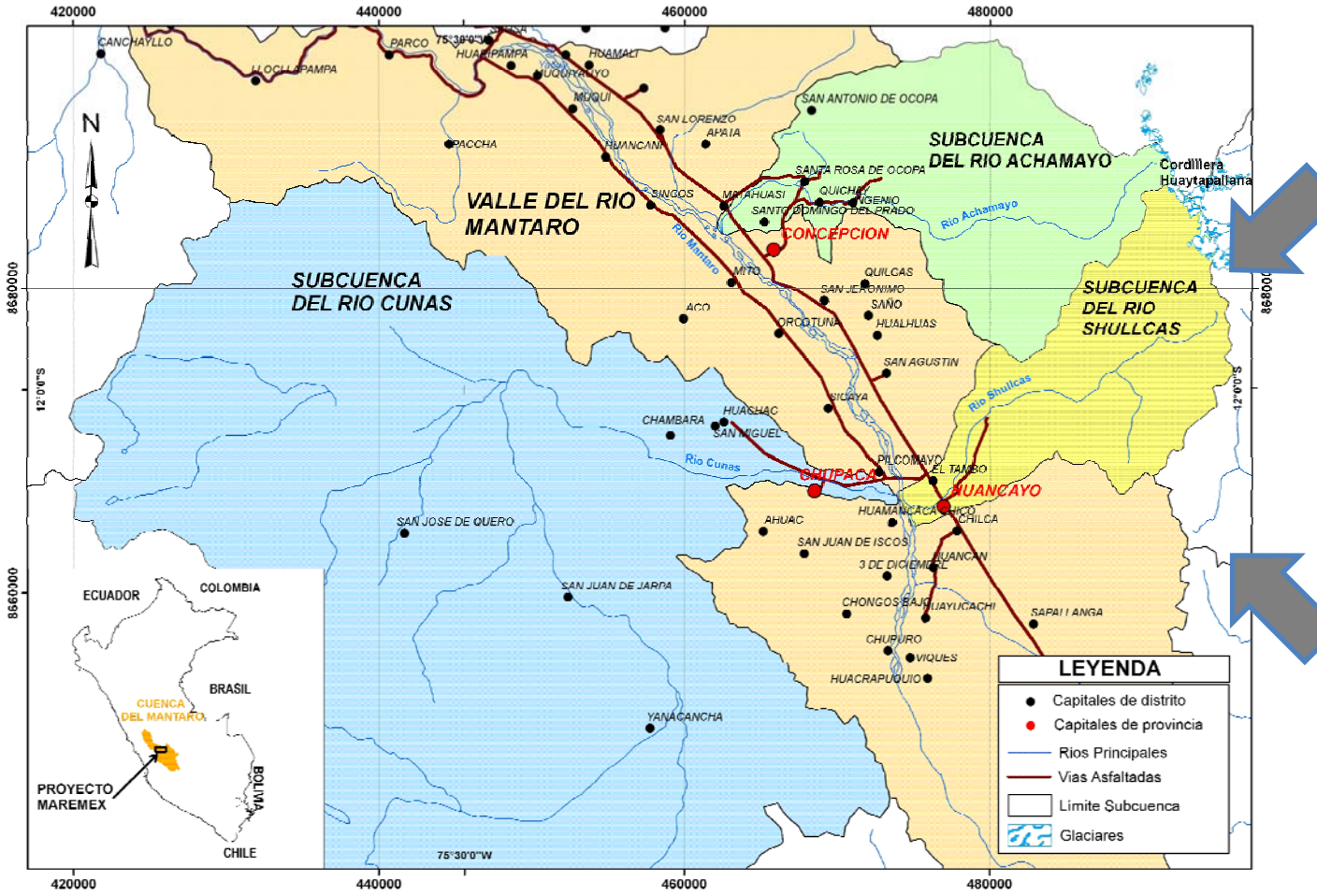
(*)Life testimonies of farmers in the Mantaro valley (Conveagro, 2007)

3. OBJECTIVES



The main objective is to strengthen the capacity of risk management to extreme meteorological events by the population and the institutions that are in charge of the natural resources management, in order to reduce the vulnerability of the urban and rural population in the Mantaro valley to climate change. It´s expected that the knowledge generated will serve as input into the preparation of local plans for adaptation.

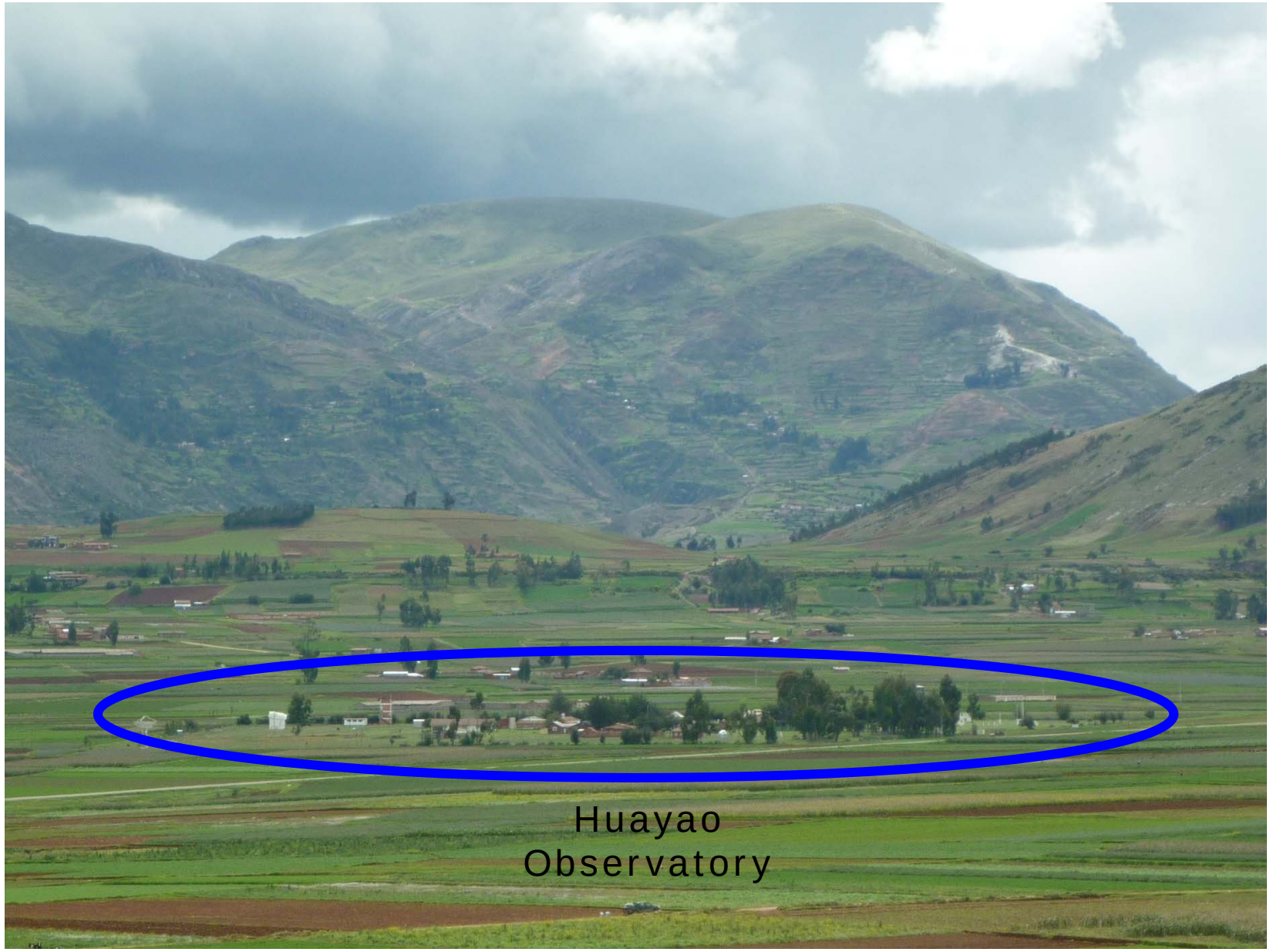
4. STUDY ZONE (1/2)



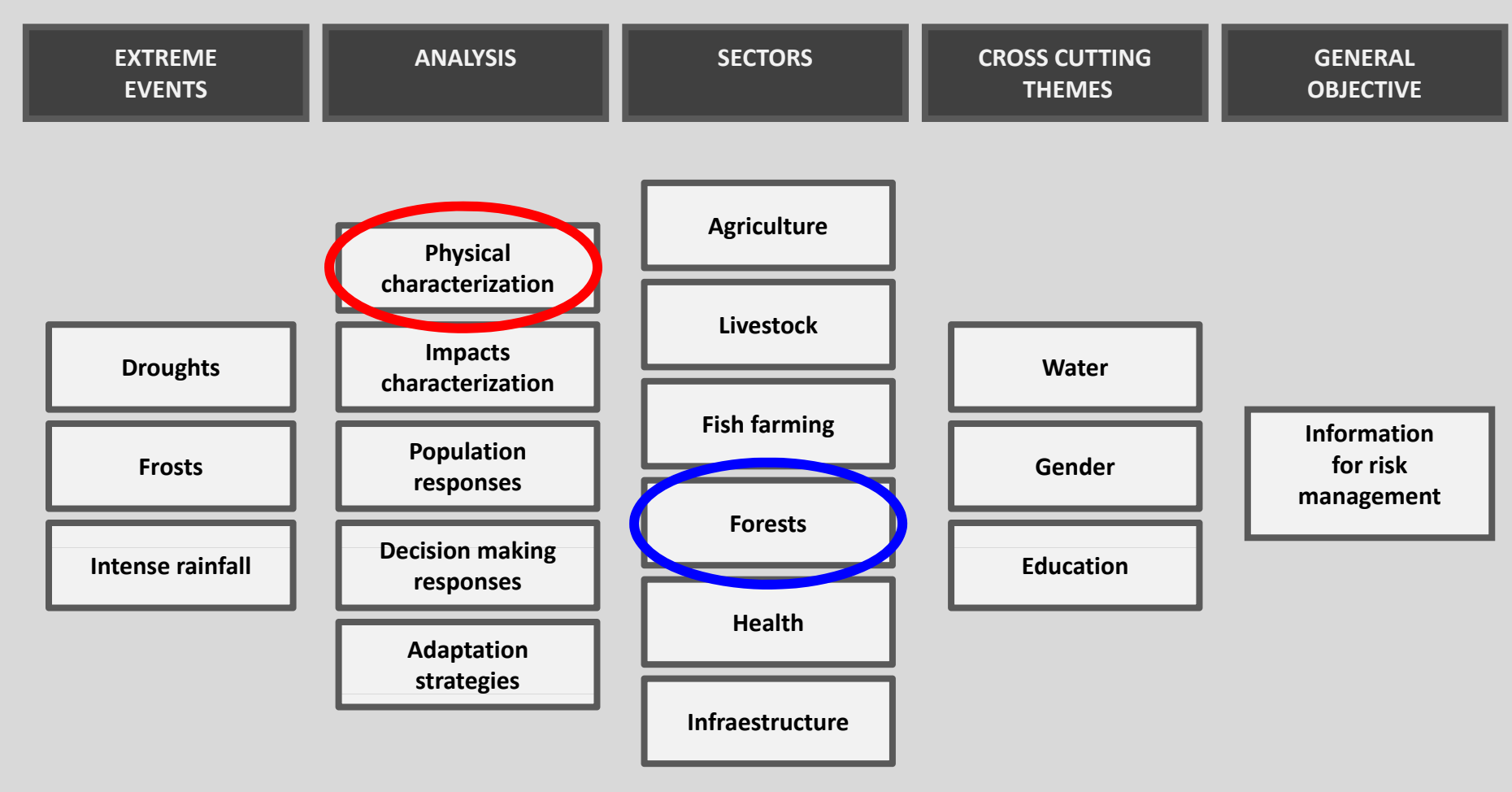
Urban scope

Rural scope

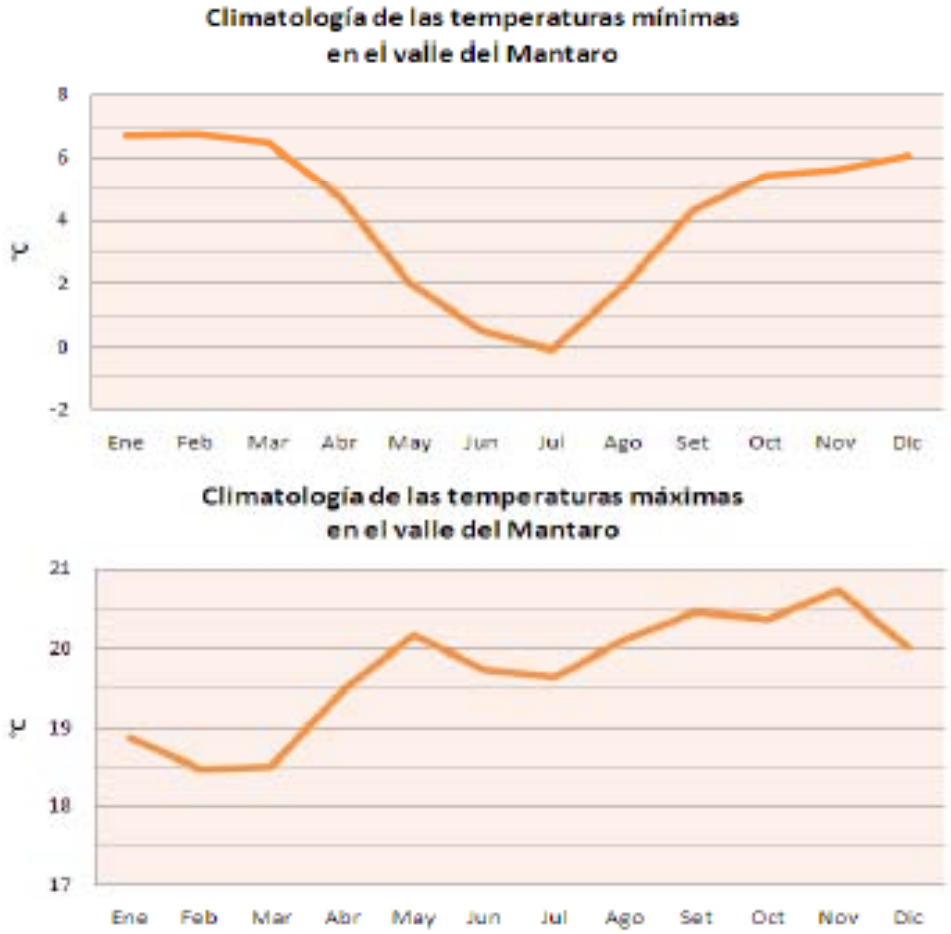
4. STUDY ZONE (2/2)



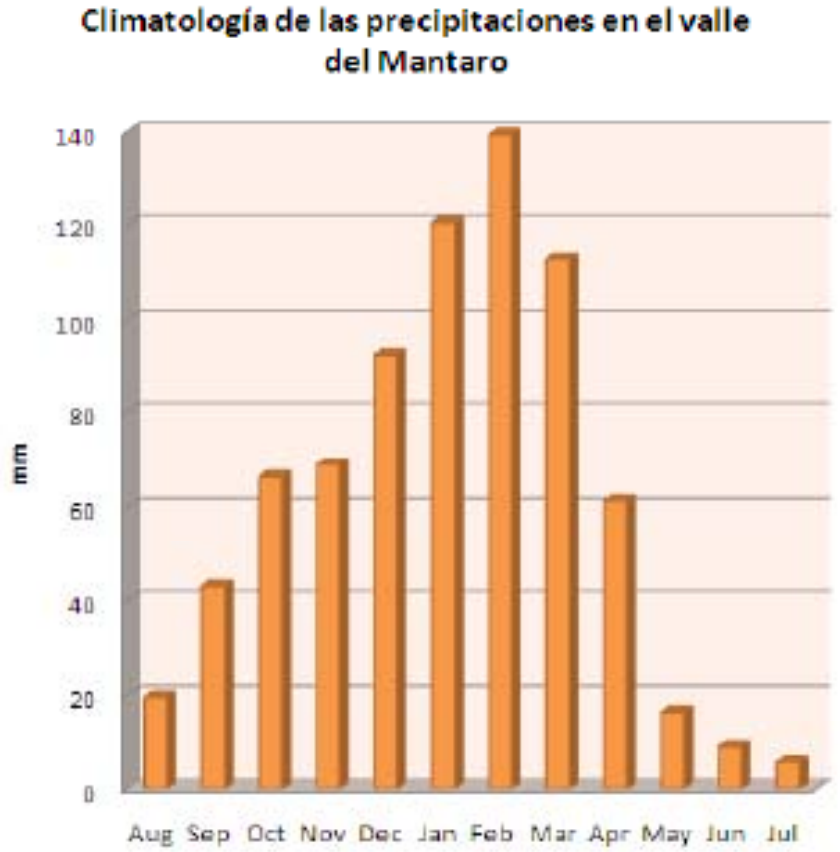
5. RESEARCH ORGANIZATION



6. CLIMATOLOGY AND CLIMATE TRENDS (1/3)

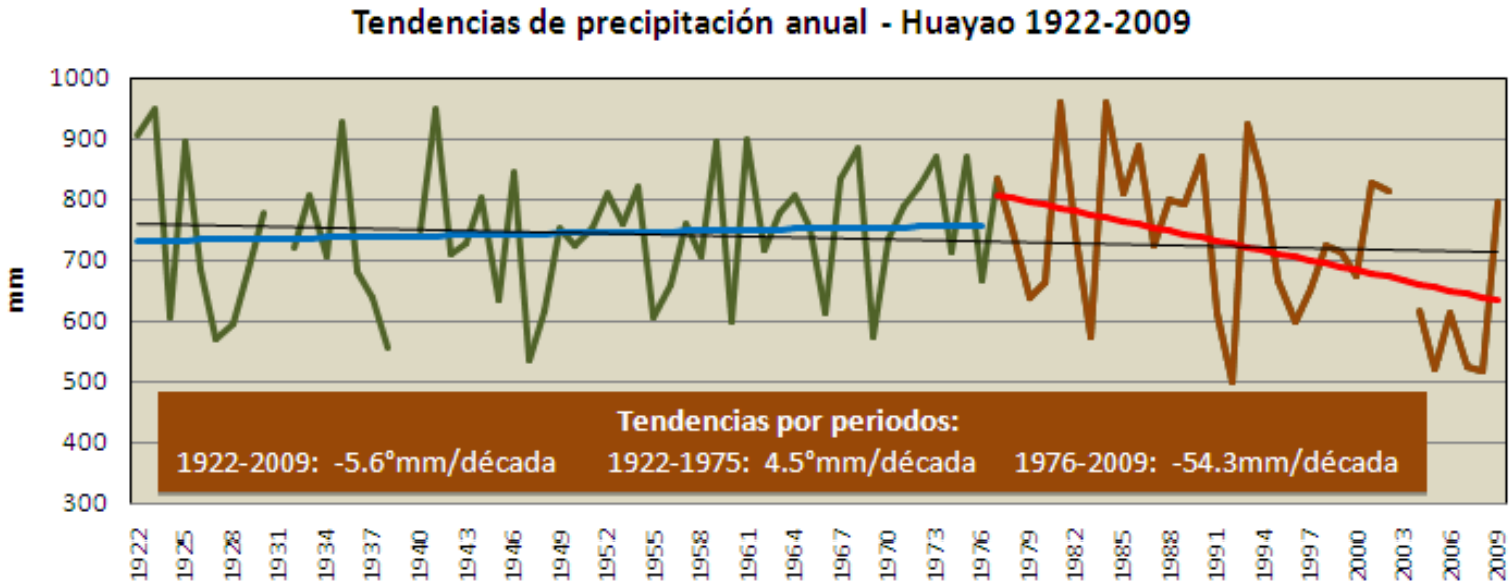


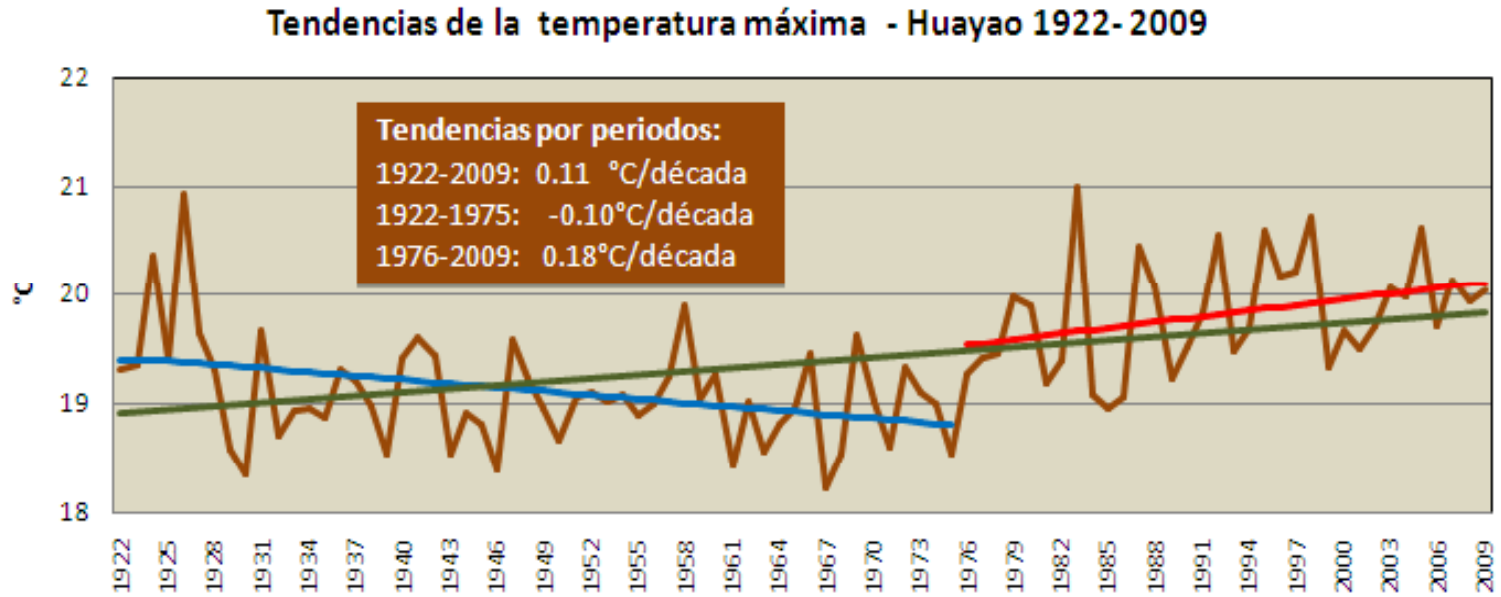
Climatologías de temperaturas máximas y mínimas (1970-2001), utilizando datos de las estaciones de Huayao, Jauja, Santa Ana, Ingenio y Viques. Fuente: IGP y SENAMHI. Elaboración G. Trasmonte.



Climatología de precipitaciones (1970-2001). Las precipitaciones en el valle del Mantaro tienen gran variabilidad estacional, observándose la estación seca de mayo a agosto y la estación lluviosa de setiembre a abril. Datos: Estaciones de Huayao, Jauja, Santa Ana, Ingenio y Viques. Fuente: IGP y SENAMHI. Elaboración Y. Silva.

6. CLIMATOLOGY AND CLIMATE TRENDS (2/3)





6. CLIMATOLOGY AND CLIMATE TRENDS (3/3)

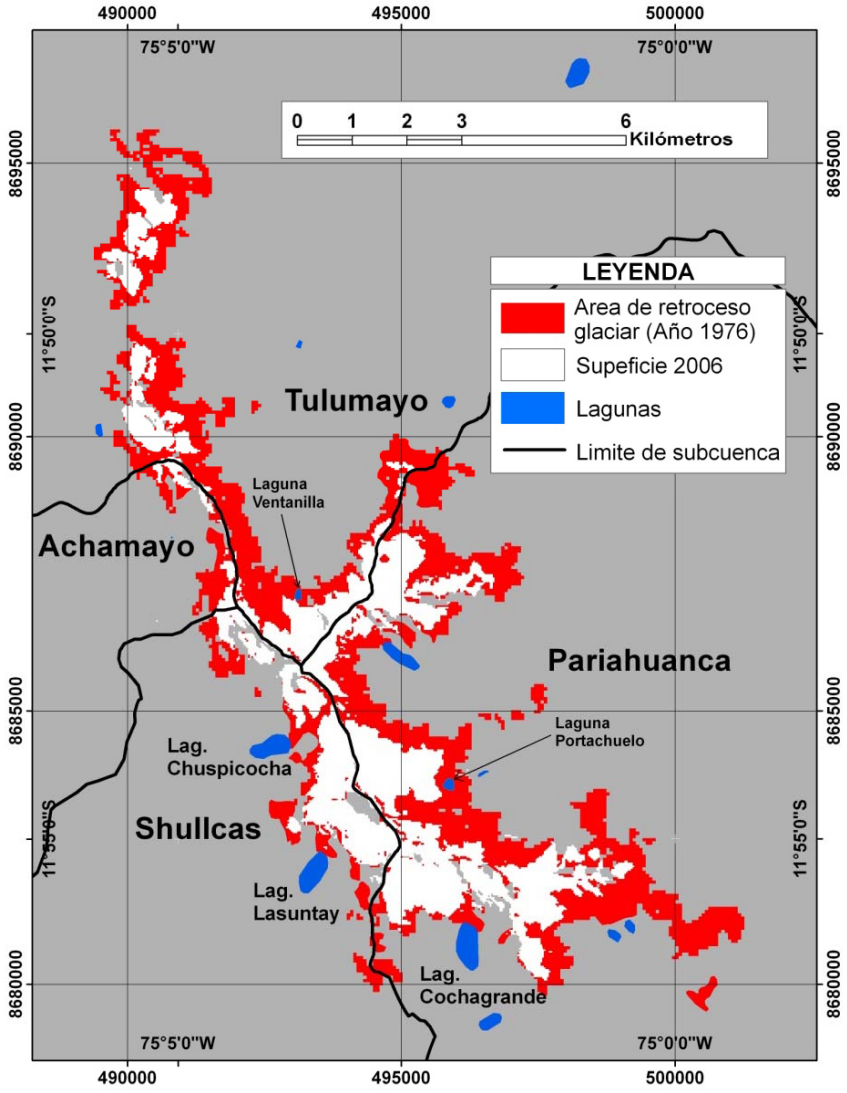
HUAYTAPALLANA GLACIER ABLATION

The Huaytapallana Glacier — that provides of potable water to Huancayo city and main economic sectors in the zone-, have and accelerated process of ablation. Between the years 1976 - 2006 its surface has been reduced from 35,6 to 14.5 km2. (near 60%)

Statistical escenarios for the central zone of Mantaro basin (IGP, 2005)

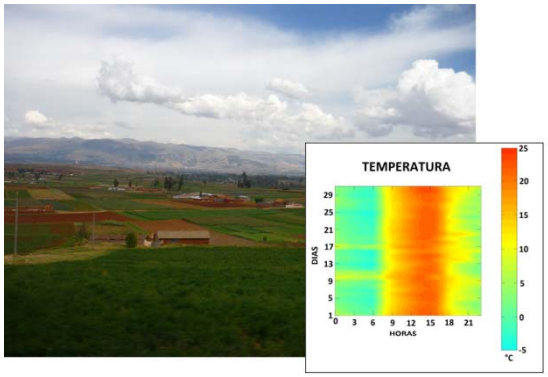
*Increase of temperature in 1,3°C
*Decrease of 19% of precipitation during the months of December to February
*Decrease of 6% on relative humidity

In the frame of climate change the extreme meteorological events are those that are affecting more the population

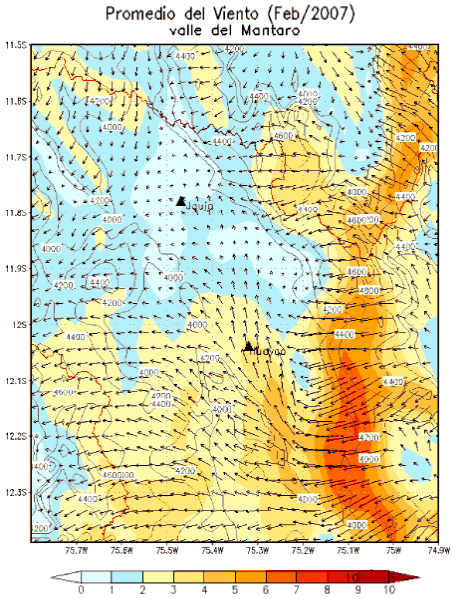


R. Zubieta

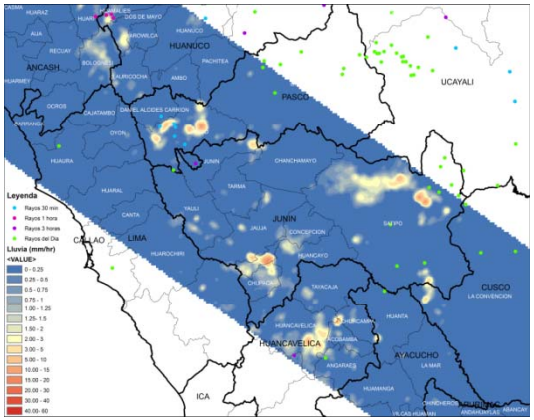
7. OTHER STUDIES RELATED TO VARIABILITY AND CLIMATE IN MANTARO VALLEY



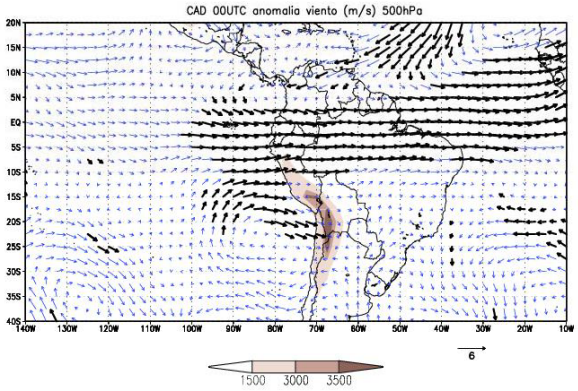
Physical analysis of radiate frosts
- Miguel Saavedra



Surface wind description - Dalma Mamani



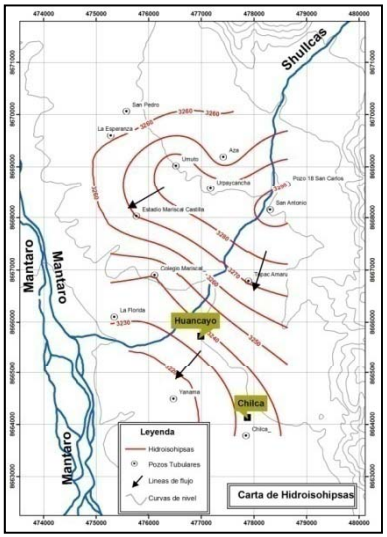
Intense storms characterization through remote sensing - Steven Chávez



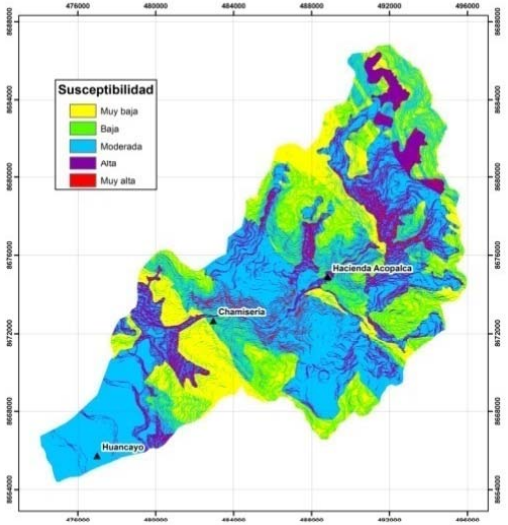
“Veranillos” characterization - Juan Sulca

Rain and cloudiness - Jackelin Chacaltana

8. STUDIES RELATED TO PHYSICAL VULNERABILITY IN MANTARO VALLEY

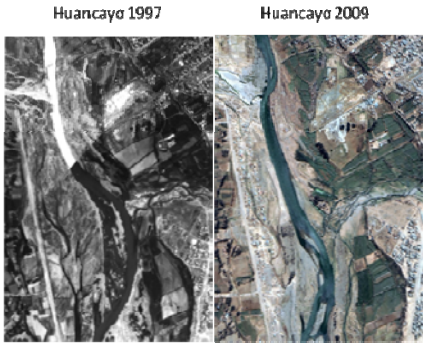


Hydrogeological conditions – Franklin Blanco



Evaluación de la potencialidad a generar deslizamientos - Franklin Blanco

Physical vulnerability of rural and urban settlements
- Luis Céspedes



Flood zones assessment – Ricardo Zubieta

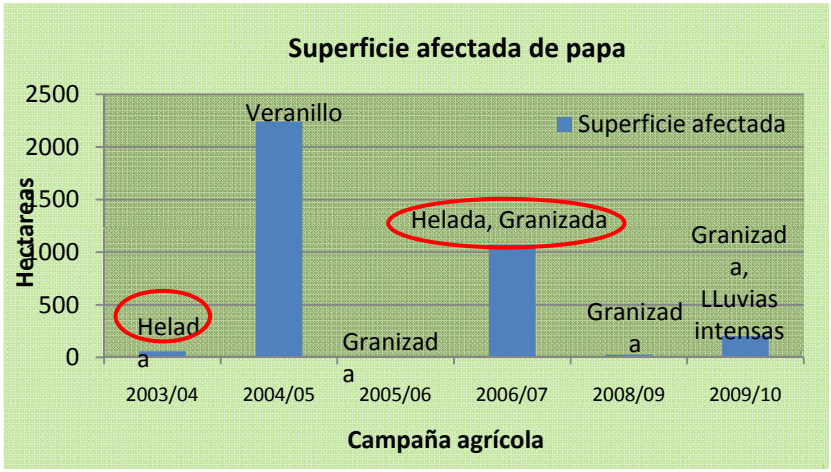
Rain thresholds for the determination of landslides - Marco Moreno

9. STUDIES RELATED TO SOCIO ECONOMIC VULNERABILITY IN MANTARO VALLEY

HEALTH
Lidia Enciso

FORESTS
TUD

LIVESTOCK
Enma Nuñez



AGRICULTURE
Lucy Giraldeza

FISH FARMING
Jahir Anicama

10. RESEARCH ON VULNERABILITY AND ADAPTATION: COLLECTION OF INFORMATION ON PERCEPTIONS AND TRADITIONAL KNOWLEDGE (1/2)

a) Rural setting: Participative workshops in Quilcas (Achamayo sub-basin), Acopalca (Shullcas sub-basin) and San Juan de Jarpa (Cunas sub-basin)



b) Urban setting: Participative workshops in Concepción (Achamayo sub-basin), Huancayo (Shullcas sub-basin) and Chupaca (Cunas sub-basin)



10. RESEARCH ON VULNERABILITY AND ADAPTATION: COLLECTION OF INFORMATION ON PERCEPTIONS AND TRADITIONAL KNOWLEDGE (2/2)

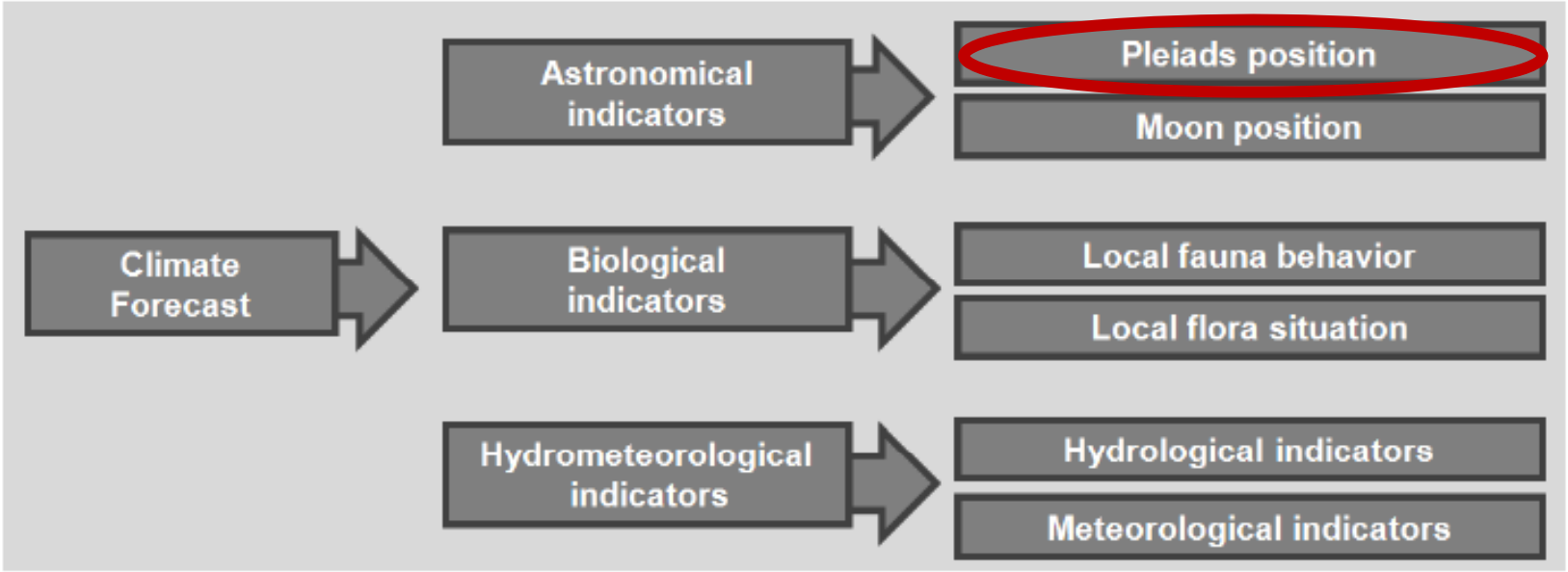


Figure 4 Local knowledge on climate forecast of "good year" in the Mantaro Valley

A. Martínez & E. Nùñez

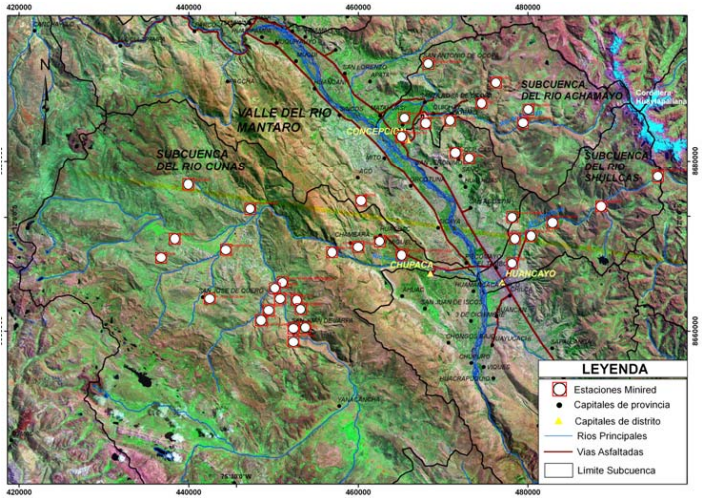
11. LINK BETWEEN PHYSICAL AND SOCIAL ASPECTS: SENSIBILIZATION AND MINI METEOROLOGICAL NETWORK

OBJECTIVES

a) To have a basic meteorological network of high density (but very low cost) and easy installation and use .

b) Involve population in use and maintanance of this network, as a way to sensibilization in varibility and climate change.

Emphasis in training and “apropiaciòn” of the theme by the involved communities



Equipment installation

Training

Daily data

K. Takahashi & R. Orozco

12. RESULTS VALIDATION & DISEMINATION (1/2)

DISEMINATION

Level of authorities, decision-makers, other institutions, and the general public: Presentations in workshops, seminars and national meetings, and publications are in production: semi-annual newsletters; two volumes with the results of the project, and a couple of publications in specific issues.

VALIDATION

Scientific papers in international journals

RESULTS VALIDATION & DISEMINATION (2/2)

DISEMINATION

In a way to "give back" the information collected some specific products will be distributed in the way of posters with relevant information for the communities. It has been coordinated with the beneficiaries themselves, to prepare this information in large formats (posters), framed and placed in the community house, schools, municipalities, etc. of the communities that are participating in the project.

13. NEW PROJECTS OF IGP

Impacts of variability and climate change in the Tumbes mangrove ecosystem
Oct 2011 – Sep 2014

ANDES-Plus
Sep 2011-Jun 2012

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Manejo de Riesgos ante Eventos Meteorológicos Extremos como Medida de Adaptación ante el Cambio Climático en el Valle del Mantaro

MAREMEX ANTARO

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maremex@igp.gob.pe

MUCHAS GRACIAS