



# DSS: Traditional weather prediction in decision making for agriculture

*Case: The Bolivian Altiplano.*

The bolivian altiplano presents many climatic constrains:

- ✓ Frost,
- ✓ Hail,
- ✓ Drought,
- ✓ Flooding .



However local farmers use traditional ancient knowledge in order to predict weather with the purpose of better decision making, in types of crops seeds and water usage

# STUDY AREA

Bolivian altiplano



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# METODOLOGY

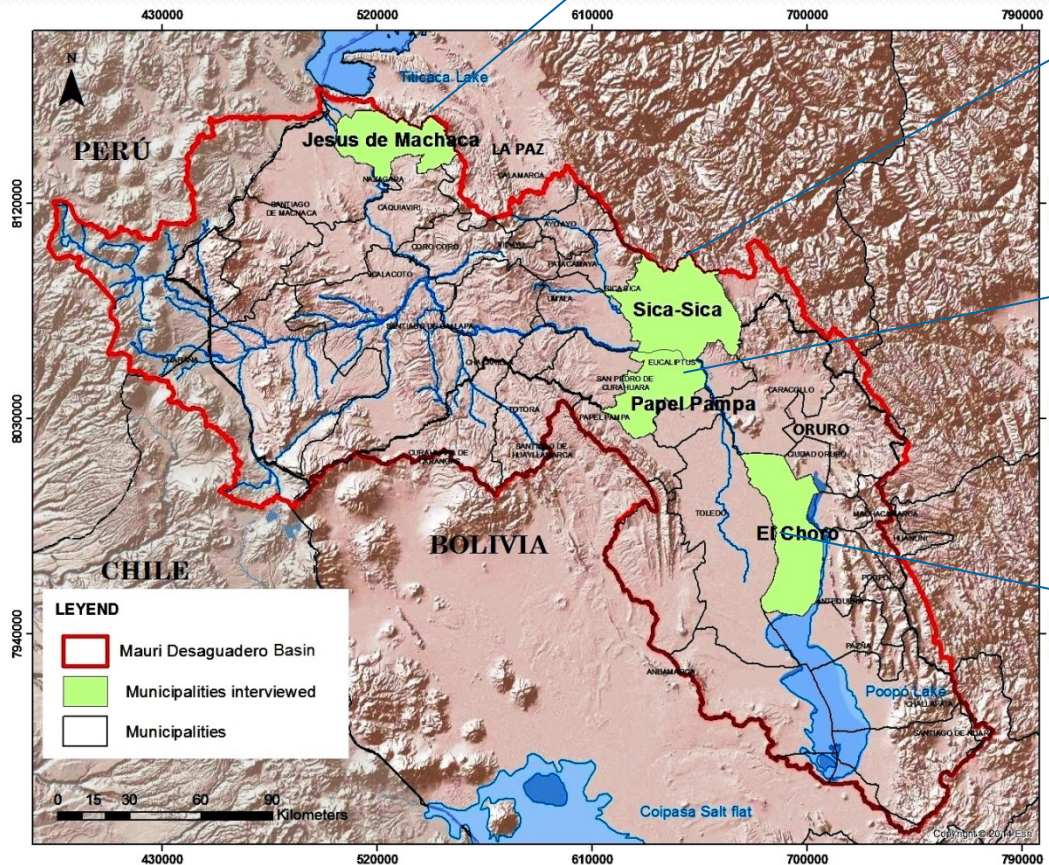
Key informant interviews,  
and participatory  
workshops



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PAPELPAMPA



EL CHORO

## Natural indicators for weather prediction in the Bolivian Altiplano:

Indicator	Season	Observed	Weather forecast
<p><b>Thola</b> (<i>Parastichia lepidophylla</i>)</p> 	<p>August - september</p>	<p>The flowers and seeds (quality and quantity of flowers)</p>	<p>If, flowering and seed production of thola has good amount of seeds, then there will be a good production in the community.</p>
<p><b>Andean Fox</b> (<i>Pseudalopex culpaeus</i>)</p> 	<p>September October</p>	<p>Howl</p>	<p>If, the fox has a hoarse howl, it is interpreted as a good year with good presence of rains.</p>
<p><b>Pleyades Constellation</b></p> 	<p>June</p>	<p>Intensity, size and grouping of stars</p>	<p>When stars appear bright and large means good year; if they appear opaque or small, it means bad year.</p>

- **ANCIENT WEATHER PREDICTION AND TYPE OF CROPS**

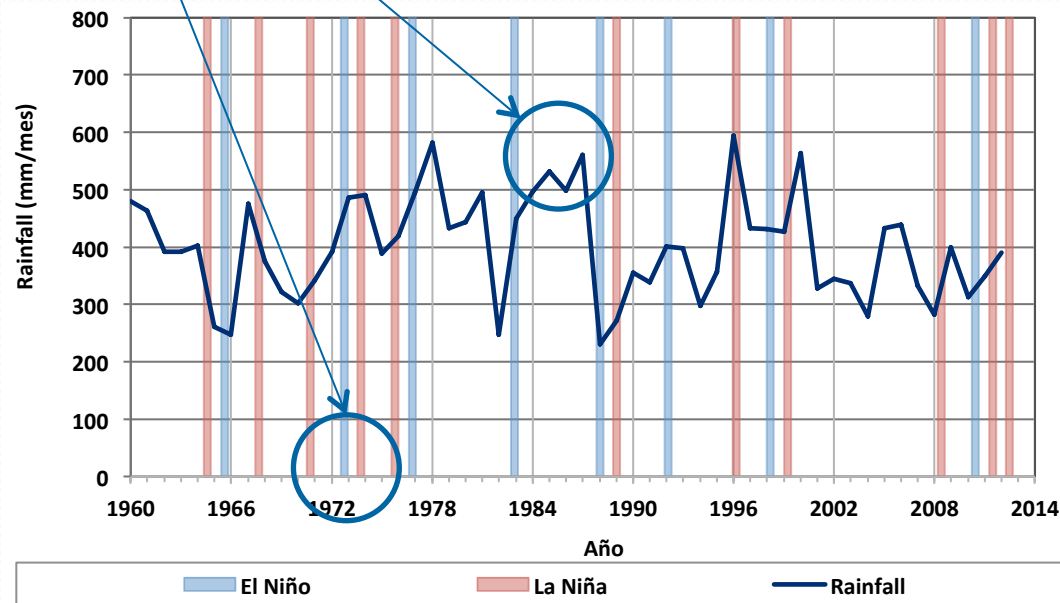
Pleiades constellation

If the constellation of Pleiades appears weak, the farmers decide to sow quinoa, because of its strength less water



## ANCIENT WEATHER PREDICTION, POTATO YIELD AND METEOROLOGICAL DATA

Place	Year	Observation	Pronostic	Production	
Sicuaní	1973	Weak	Bad yield	Bad yield	< 3 MT/HA
Cuyo-Cuyo	1987	bright	Good yield	Good yield	> 8 MT/HA
Chayantaka	1991	Late oncet	Bad yield	Bad yield	
Chayantaka	1992	Good yield	Good yield	Good yield	



## CONCLUSIONS AND RECOMMENDATIONS

- The decision supporting system based on ancient weather forecast, it is a knowledge that allows the highlands poor farmers to live in the Bolivian altiplano.
- The ancient weather forecasting system in the altiplano communities provides information not available in the scientific forecasts (When? and What? type of crop sowing). But scientific forecasts have benefits (amount of rainfall, temperatures). However, both systems should be integrated, and this could be as follow:



Traditional knowledge on climatic risk

Farmer better prepared for Decision making



Pastors and farmer In the field



Bio indicator validation



National system of early warning system




UGR

Climatic risk forecast

When and What type of crop sow



Miércoles		Jueves		Viernes		Sábado		Domingo		Lunes	
Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
19°	12°	20°	12°	19°	11°	19°	12°	16°	9°	17°	10°
14 km/h		16 km/h		14 km/h		11 km/h		22 km/h		18 km/h	
1.2 mm		0 mm		0.1 mm		0.1 mm		1.2 mm		6.1 mm	
08:00	14°	08:00	12°	08:00	14:00	14:00	14:00	14:00	14:00	14:00	14:00
14:00	19°	14:00	19°	14:00	19°	07:04	07:03	07:01	07:01	07:01	07:01
20:00	16°	20:00	18°	20:00	17°	20:04	20:03	20:03	20:03	20:03	20:03

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- There is an urgent need to recover these practices and revitalize this knowledge. Young people are losing this traditional weather prediction, as well as ancient knowledge because of the migration, loss of native languages (Quechua and Aymara), lack of communication between the young and the elder people.

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- Thank you for your attention