THE GLOBE PROGRAM

HOW TO USE GLOBE TO UNDERSTAND EFFECTS OF EL NIÑO ON PEOPLE

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Big Questions

All researches start with observations about environment

This year is colder than the last year. What happen this year?

We use to have flowers in March, why not this year?

Perceptions about environment

- Environmental perception is defined as awareness of, or feelings about, the environment, involve the act of using senses to understand what happen in the environment

- Important because perception could guide us to :

  - Research: To gain more information

  - Act: Transform information in action

- It dependes of individuals and their context

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Using Perceived Information about El Niño to Define Environmental Indicators as Early Warnig Systems as Well as Adaptation and Mitigation Measurements

- What is the problem with El Niño?
  - El Niño, as we know, is a natural phenomena, the problem is that we are not always well prepared to face their effects.
  - Firts step is recognize how El Niño affect our lives?
    - As part of El Niño Field Campaign we ask you to write a story to answer this question.

Story Tellers

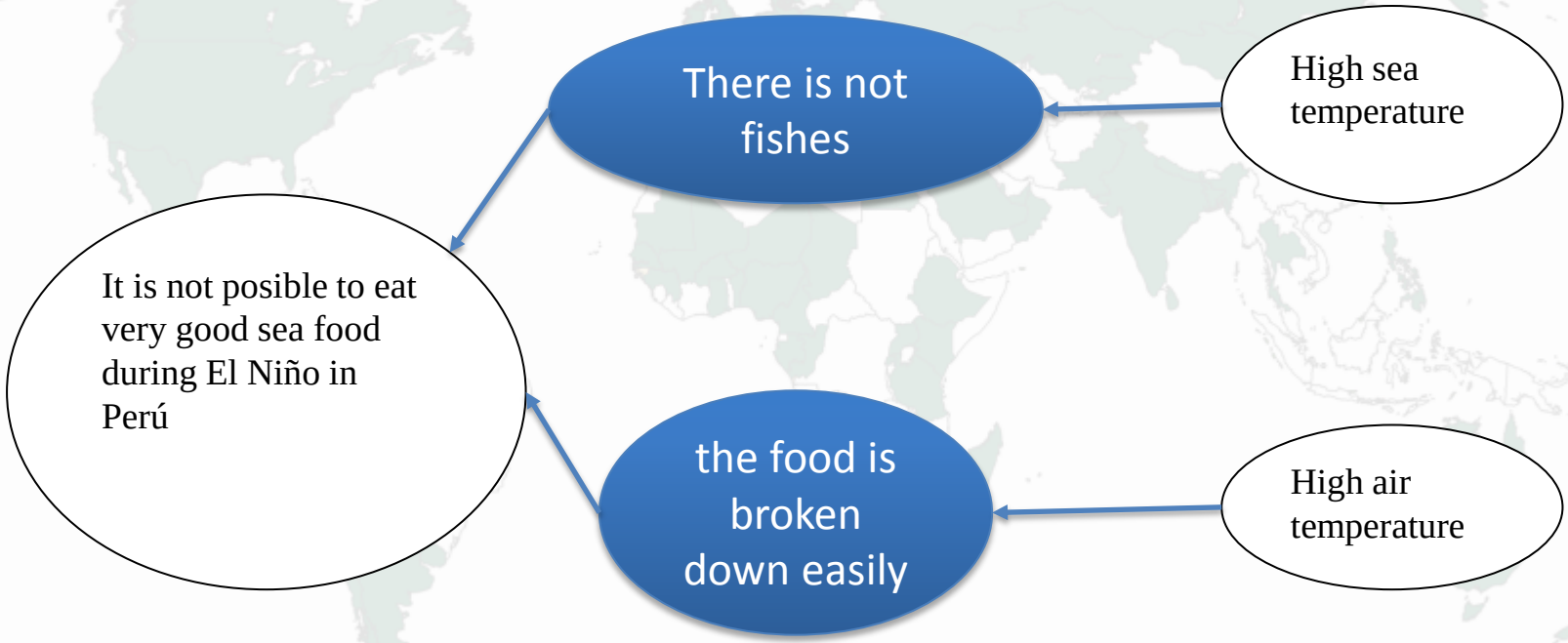
Enso is a Japanese character that means circle. “It symbolizes absolute enlightenment, strength and elegance” as well as **creativity.**

- The ENSO have an effect on living things affecting animal behavior, migrations patterns, growing of plants, and human economic activities. For example, fishes have to migrate looking for lower temperatures in the Peruvian sea, more plants appear in the desert, some typical foods as “cebiche” in Peru increases its cost, fishermans need sail more longer to find fishes, etc.

- We want to invite you to investigate more about what happen in your city, country or region when the ENSO is present and use all the creativity that “Enso” means to **write a short tale** imagining what happen, for example, when a group of fishes need to travel to find lower temperatures in South America, what about birds? And people?

http://www.globe.gov/web/el-nino/el-nino-campaign/el-nino-story-maps

Defining problems in context



From Problems to Indicators

What do you want to do with the problem? – what is your goal?	What do you need know to reach the goal	How can you measure the state of the goal	What do you need measure
To find alternative sea food	What are the most common species during El Niño What is the ideal sea temperatura for “cebiche” species What is the value of air temperature that contribute more in the broken down of food	Monitoring frequent species that arrive to markeds Measure sea water temperatura Air temperatura and Surface temperature	Number of common species during El Niño Sea wáter temperatura in C Air temperatura in C Surface temperatura in C

Indicators

- Number of most common fishes : Identification of the dominant specie
- Temperature of sea water
- Air temperatura
- Surface temperature

Building Scenaries

- **What would people like to happen during El Niño respect food, security (risk places)**

- Scenaries are interesting because guide governments to plan mitigation and adaptation measures having as input people wishes.

Weather phenomenon ENSO impact of on coverage land between 10° and 40° latitude in South America

GLOBE collaborative project in the region of Latin America and the Caribbean. Argentina, Peru and Uruguay

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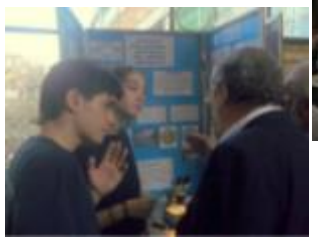
Investigation Plan
International Collaborative Work

Peru

Claudia Caro - Universidad Nacional Agraria La Molina – Lima



Uruguay

Patricia Piriz - Club de Ciencias Bénticos – Montevideo

Argentina

Ana Prieto - María Eugenia Bertossi - CEI “San Ignacio” - Junín de los Andes

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Investigation Plan
Scientists Support

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Dr. Ricardo Chrobak from Argentina (Specialist on Science Teaching)

Dr. Vasco Mantas from Portugal (Remote Sensing Specialist)

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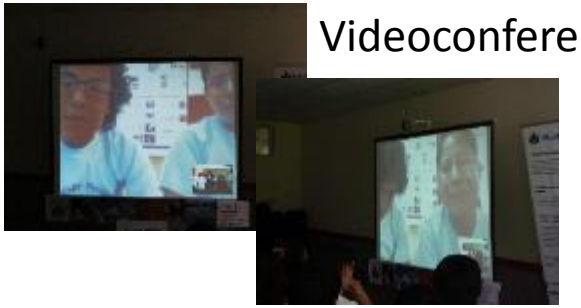
Investigation Plan
International Collaborative Work

Online
Collaborative Tools



Videoconferences

Workshop in Buenos Aires

Workshop in Junín de los Andes

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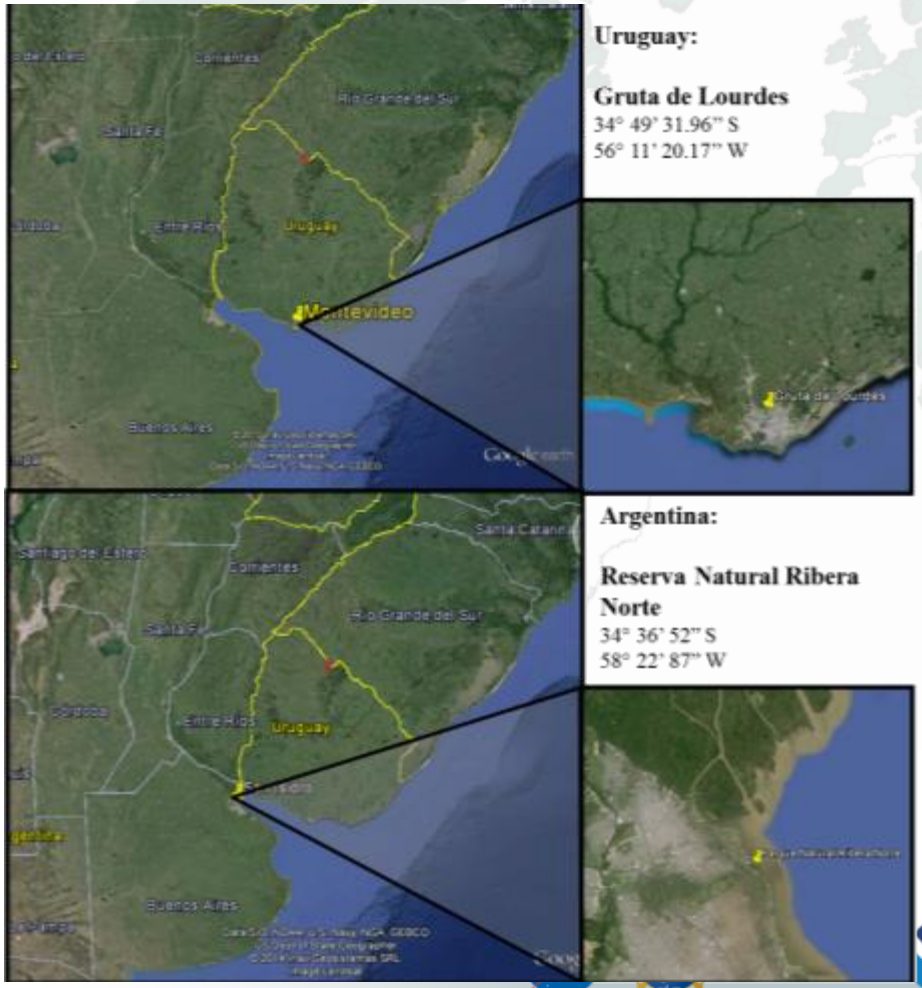
Investigation methods

Plain sites



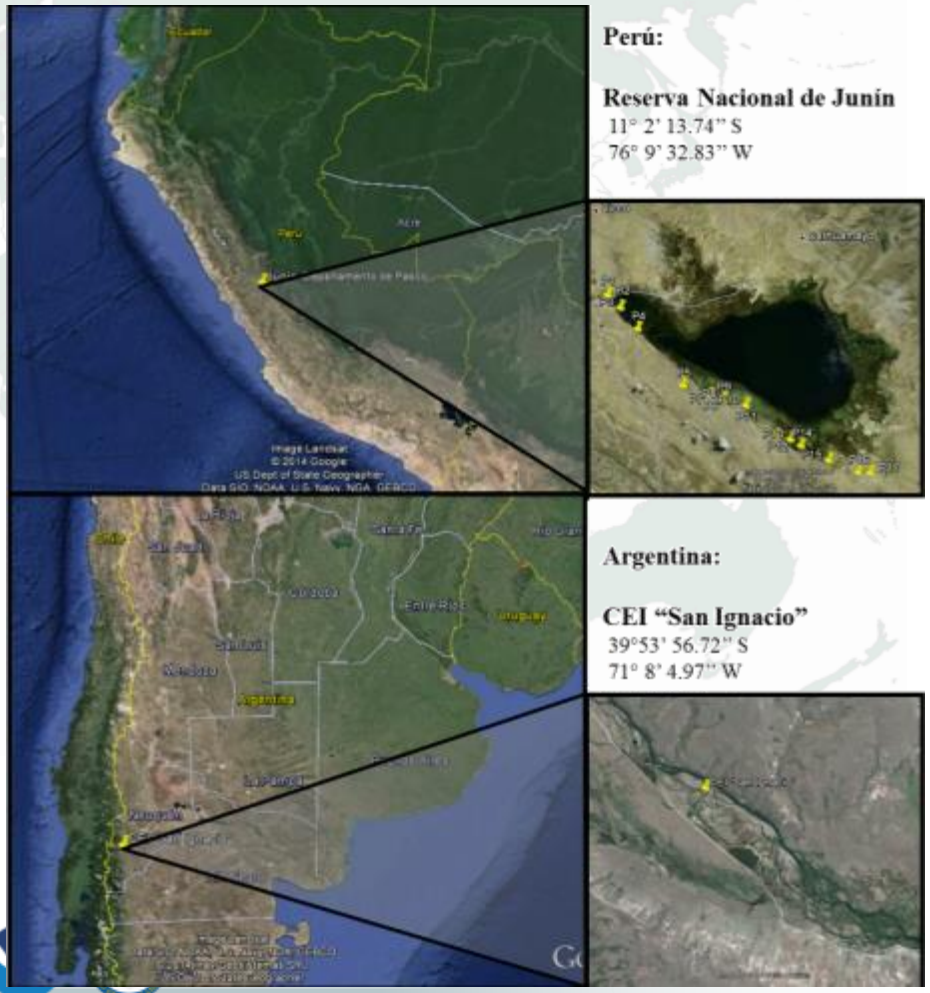
Uruguay:

Gruta de Lourdes
34° 49' 31.96" S
56° 11' 20.17" W

Argentina:

Reserva Natural Ribera Norte
34° 36' 52" S
58° 22' 87" W

Mountain sites



Perú:

Reserva Nacional de Junín
11° 2' 13.74" S
76° 9' 32.83" W

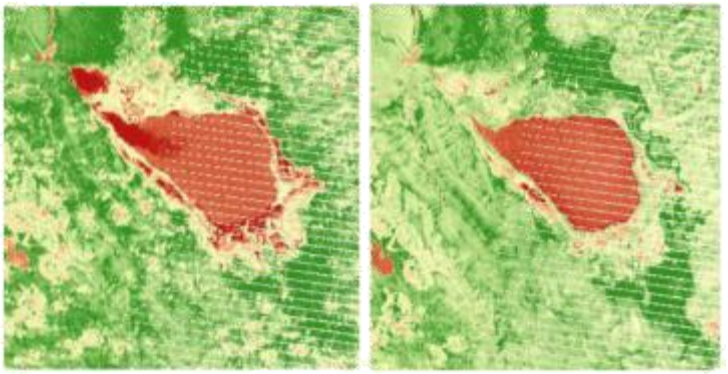
Argentina:

CEI "San Ignacio"
39°53' 56.72" S
71° 8' 4.97" W

Peru

Data Analysis - NDVI

Annual precipitation 940 mm

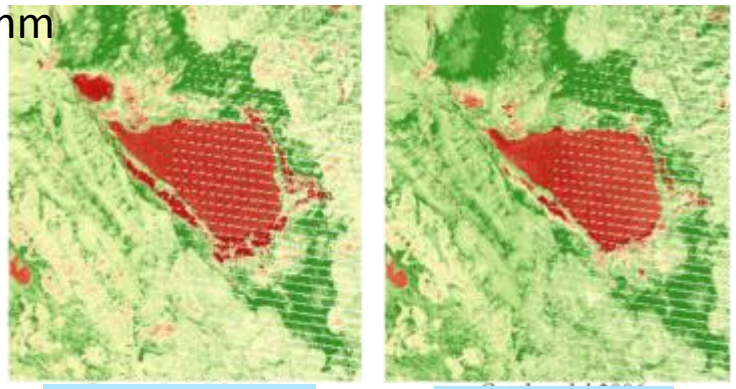


February 2006 *October 2003*

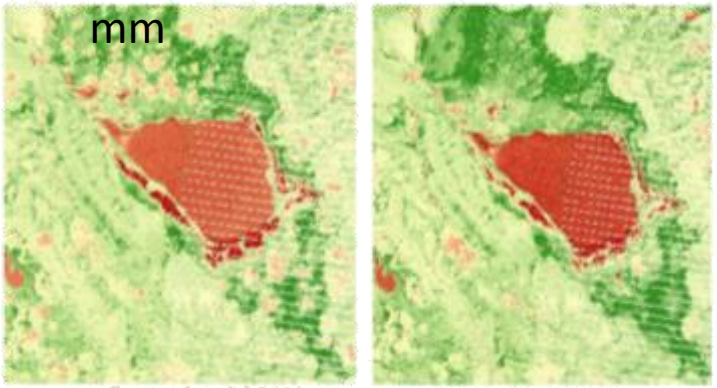
Annual precipitation 655 mm

Neutral Period

Annual precipitation 1476 mm



September 2006 *October 2006*



September 2010 *October 2010*

Niño period

Niña period

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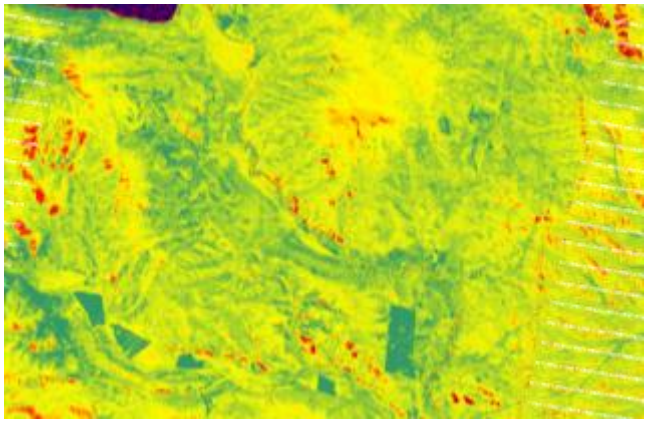
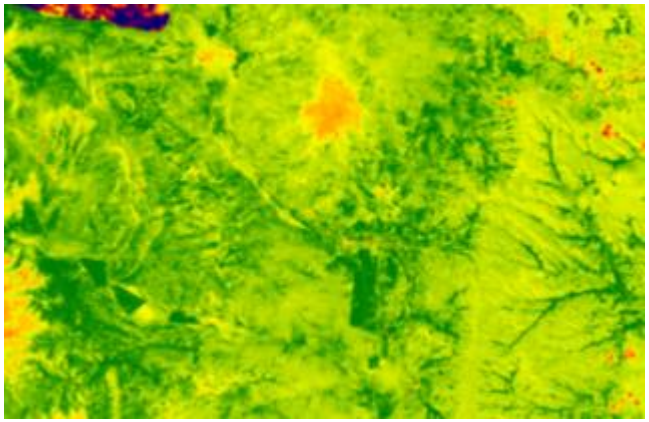
Argentina

Data Analysis - NDVI

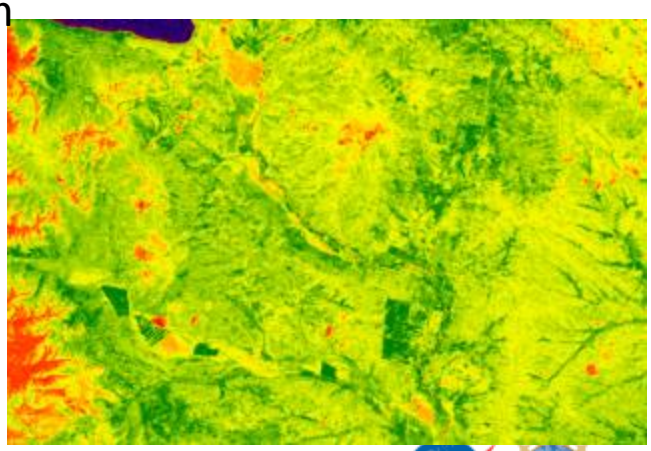


Neutral Period - 2003

Annual precipitation 840 mm

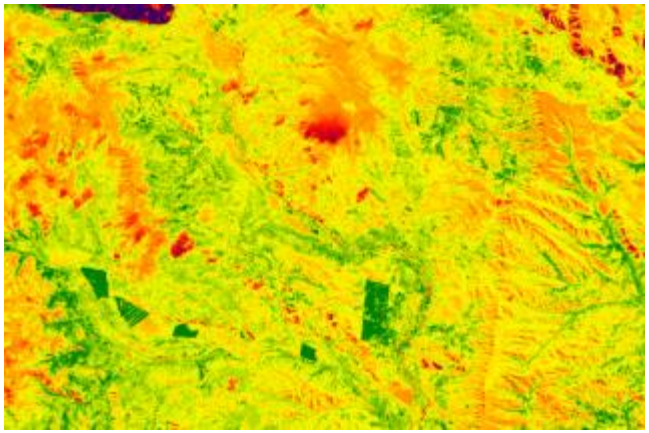


Current - September 2013



Niño Period - 2002

Annual precipitation 1059



Niña Period - 1999

Annual precipitation 745

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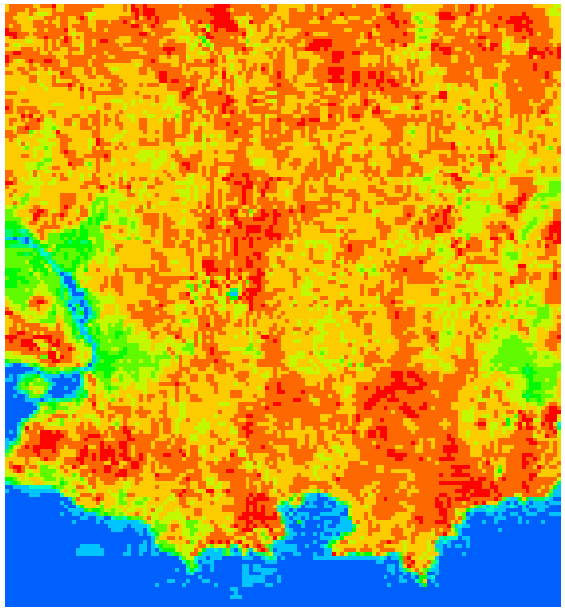
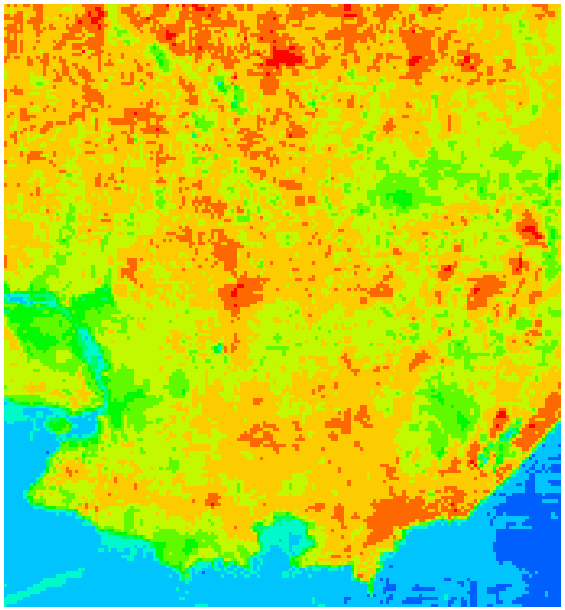
Uruguay

Data Analysis - NDVI



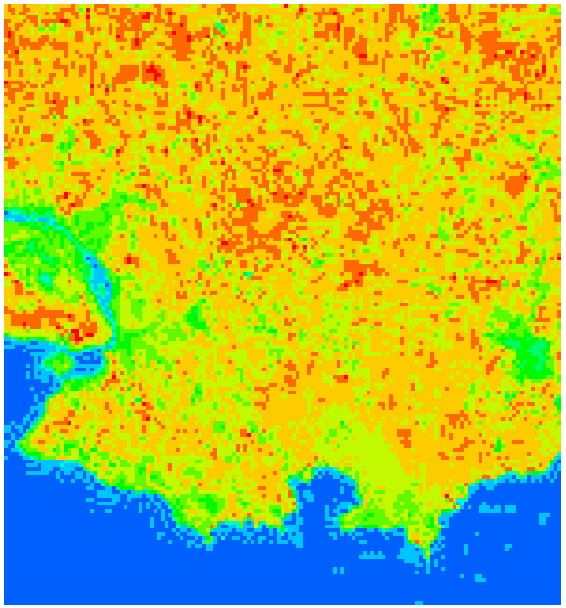
Neutral Period - 2003

Annual precipitation
1240 mm



Niño Period - 2009

Annual precipitation
1350 mm



Niña Period - 1999

Annual precipitation
1240 mm

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Conclusions

- In the studied cases the data shows:
  - Vegetal cover diminution on the period of La Niña for Argentina and Uruguay and an increase of it for Peru.
  - In the period of el Niño the precipitations are much higher in Argentina and Uruguay, while in Peru it rains less
  - The ENSO doesn't affect de same way to Argentina, Uruguay and Peru; being Peru the country that seems less to the another two.

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Thank you for your attention

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