Update on WGSIP-related activities at CIMA-DCAO

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WGSIP meeting 2024
Toulouse, France

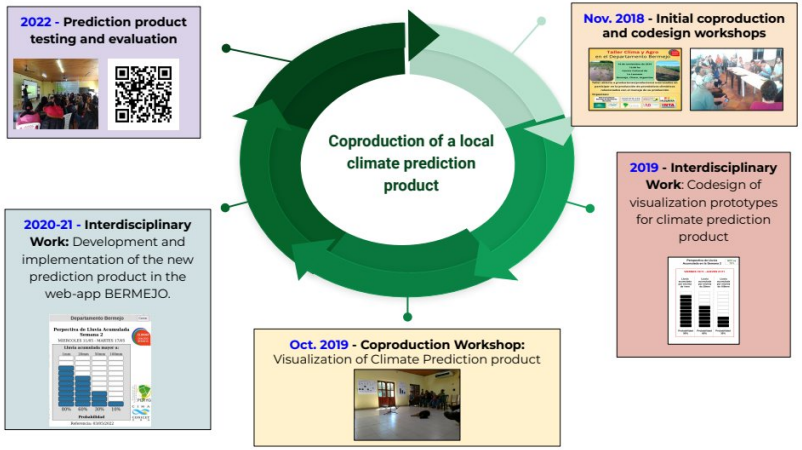
Updates from CIMA-DCAO

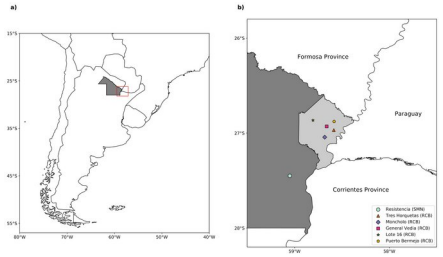
- Continued working with stakeholders towards the co-development of climate monitoring and prediction tools that are relevant to their socio-economic activities.
- Collaborated with the Argentinian National Weather Service and the Regional Climate Center for Southern South America to improve their prediction capabilities. This included **improving conceptual models of climate variability**, studying the **predictability** of climate and **developing forecasting tools**.
- Main focus was on subseasonal and seasonal timescales (most requested by stakeholders through local agencies).
- Most of these activities relied on databases sponsored by WCRP and other agencies (S2S, NMME, SubX).

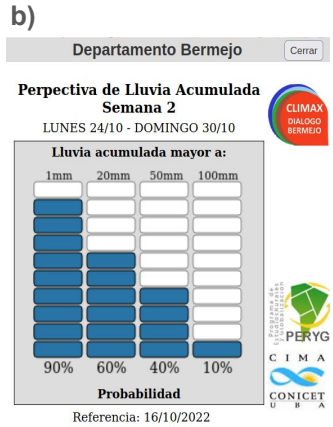
CLIMAX project

Co-production of a week-2 rainfall probabilistic prediction product to assist small-scale farmers in northeastern Argentina.

Forecasts issued for different weekly precipitation thresholds defined by local farmers based on their activities.





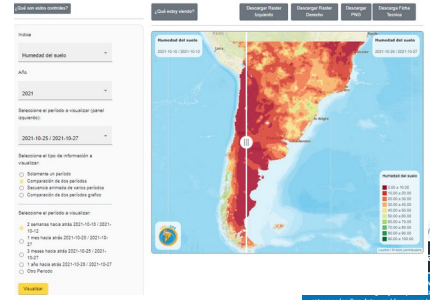


Diaz et al. submitted

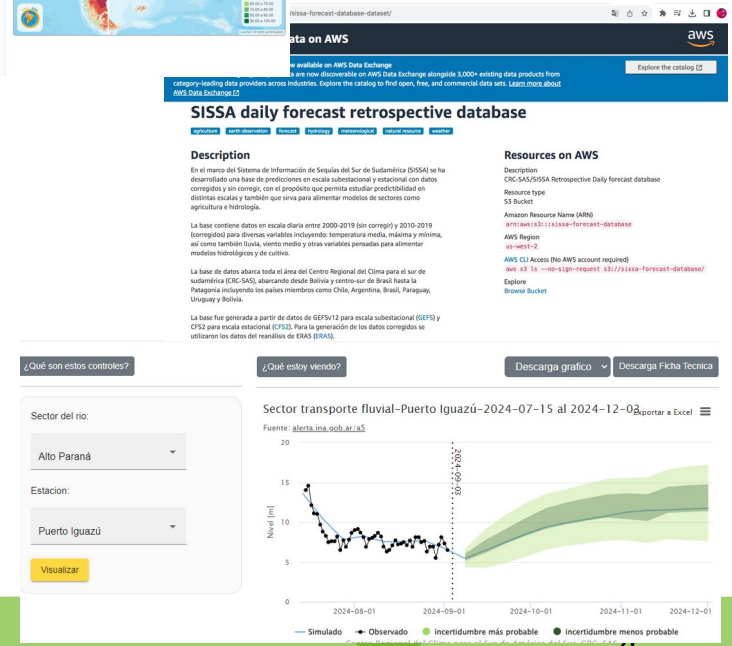
SISSA (Drought Information System for Southern South America)

Development of drought-related monitoring and prediction tools oriented to the agriculture, energy and maritime transportation sectors.

CIMA-DCAO involved in the development of seasonal forecasts of extreme conditions, a S2S database for local agencies and workshops on S2S prediction.



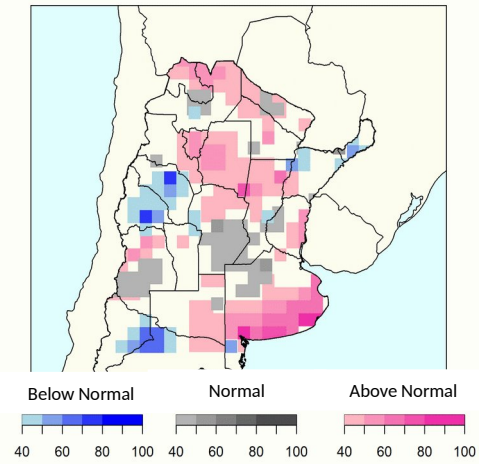
Credit: Carolina Vera (SISSA coordination office)



Seasonal forecasts of temperature extremes in central and northern Argentina

The seasonal forecast of temperature extremes is shared at the monthly climate outlook meetings organized by the National Weather Service.

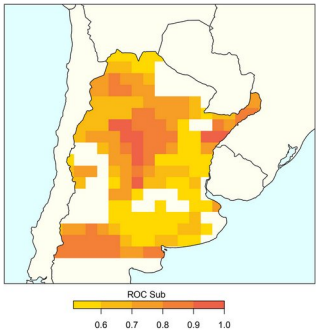
Forecast for NDJ 2024 TX90



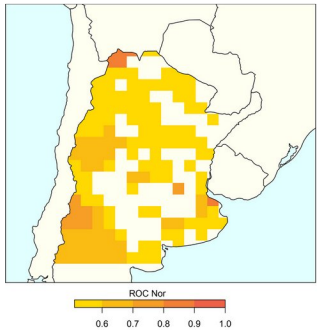
The Below Normal category implies a lower occurrence of warm extremes of maximum temperature (blue tones).

The Above Normal category implies a higher occurrence of warm extremes of maximum temperature (pink tones).

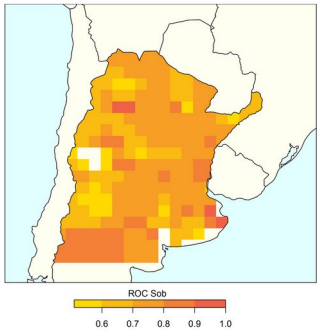
ROC - Below Normal



ROC - Normal



ROC – Above Normal

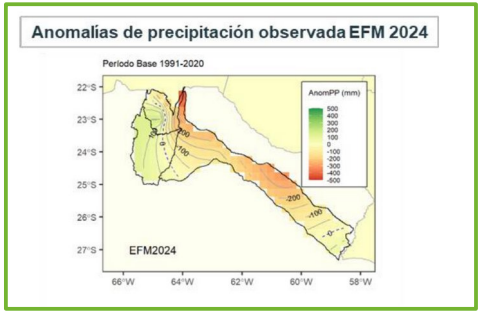


Forecast Available at http://pronosticosextremos.at.fcen.uba.ar/

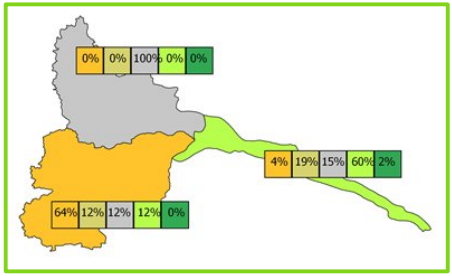
Credit: Soledad Collazo, Mariana Barrucand, Matilde Rusticucci

Seasonal forecasts for river basins

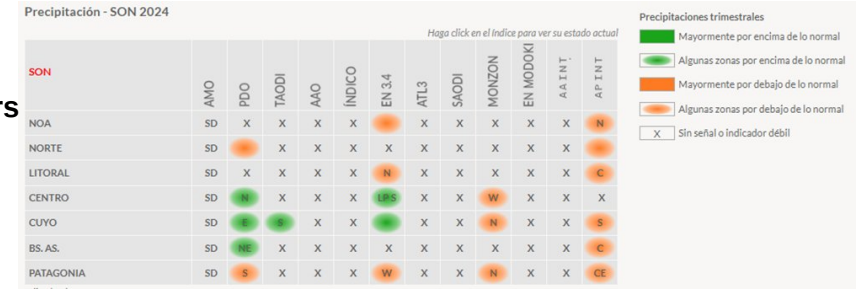
Qualitative forecast of the seasonal precipitation for the Bermejo River Basin, in the north of Argentina



Seasonal probabilistic forecast for Comahue Region and Negro River Basin, in the Northeast of Argentinian Patagonia



Climate Monitoring of large-scale drivers of Precipitation and Temperature variability



Under development

- Monthly forecast of mean temperature in Argentina using **Neural Networks**.
- Probabilistic forecast of monthly precipitation in the Río Bermejo Basin, employing **machine learning techniques**.

Credit: Marcela González, María Paula Llano, Sabrina Ayala and team

Collaborations with other WCRP activities

- APARC:

  - “Quantifying stratospheric biases **and identifying their potential sources** in subseasonal forecast systems” by Lawrence et al. (2022) https://doi.org/10.5194/wcd-3-977-2022

  - “A process-based evaluation of **biases in extratropical stratosphere-troposphere coupling** in subseasonal forecast systems” by Garfinkel et al. (see presentation later this week).

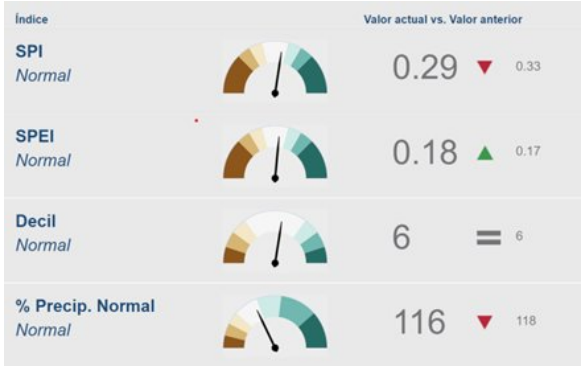
  - “Exploring the role of **stratospheric nudging in S2S models** for the upward wave propagation prior to SSWs” by Ayarzagüena et al. (In preparation).

- EPESC

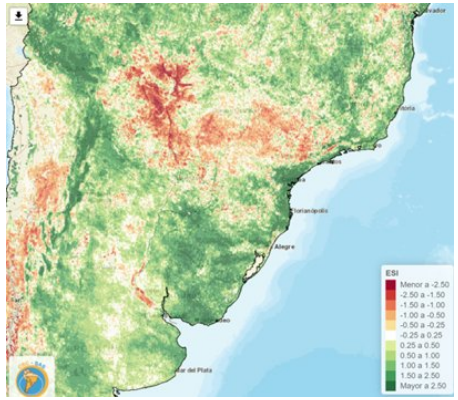
  - Identifying the **forced response** of the Southern Hemispheric atmospheric circulation to greenhouse gases, aerosols, and ozone, and associated surface impacts on extremes → In conjuction with APARC LESFMIP.

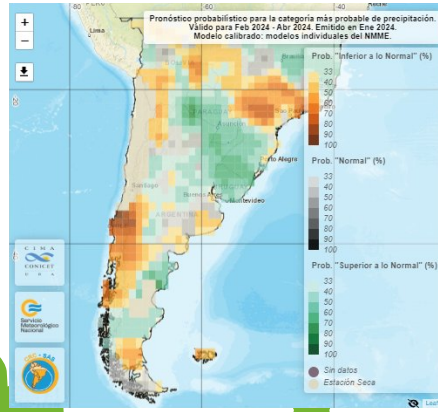
SIGRIFSA (Design and Implementation of an Information System for Wildfire Risk Management in Southern South America)

Following the success of SISSA, a new project will start with focus on managing the risk associated with wildfires.



Credit: Carolina Vera





SAClimServ: A Catalyst for South American Climate Services

French PEPR TRACCS call (€1Million in 5 years)

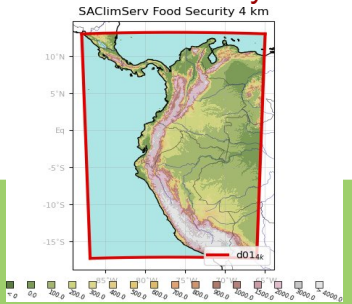
- **PI**: Lluís Fita Borrell, (IRL 3351 IFAECI), Argentina
- **Consortium**: IGE, CESSMA, [IRD], IPSL, [CNRS], France
- **co-PI**: 10 (to increase) South American partners

Provide knowledge/resource-based infrastructure to underpin climate services in South America

Credit: Lluís Fita

- **Co-construction** of knowledge among hydroclimate scientists, NHMs and decision makers
- First time ensemble of **seasonal** kilometer-scale experiments produced over two domains for South America [NMHS priority]
- Open data storage with 'in-situ' diagnostic capabilities.
- New **observational** process-oriented campaigns in poorly observed areas → **Improve/nurture** existing regional resources and centers
- **Foster the appropriation** of regional climate information at subseasonal to decadal timescales by stakeholders [NMHS priority]

Food security



Water resources