

Identifying end-user needs and opportunities provided by convection-permitting simulations in the Amazon Basin

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1. Workshop aims and organisation

CP models provide huge opportunities through improvements in model representation, particularly of rainfall variability which is a key parameter for end users.

But how can this information be translated and disseminated to end users?

As part of the Convective-Scale Impacts of Deforestation on Amazonian Rainfall (CIDAR) project, an online workshop was organized with stakeholders from the Amazon to determine climate-data requirements for decision-making in the region.

Invited stakeholders

- Civil Defense,
- State Office for the Environment (Sema),
- Institute of Sustainable Development in Agriculture and Environment in the State of Amazonas (IDAM),
- Amazonas Institute for Environmental Protection (IPAAM),
- Amazon Institute of People and the Environment (Imazon),
- Manaus Municipal Department of Health (Sema),
- Representatives of several Brazilian universities,

Questions to stakeholders

1. What climate data do you currently use for planning purposes? How do you use it?
2. What climate data would you ideally have to make more effective decisions?
3. What is the most effective way in which researchers can deliver the information you need for decision-making?

2. Stakeholder responses

Climate data needs of stakeholders were very varied, including **basic meteorological and surface variables**, **hydrological variables**, and **other derived quantities**.

Ease of data access and information-delivery concerns were equally important as having access to specific model outputs.

Climate data needs

- Precipitation regimes
- Relative humidity,
- Wind,
- Evapotranspiration,
- Mean and extreme temperatures
- Water balance,
- River levels (floods and droughts)
- Climate water deficit
- Wildfire risk
- Power balance,

Information delivery

Data must be easily accessible and user friendly...

- Use of online data portals
- Data separated by region (for large volumes)
- File types must be compatible with existing workflows

... but need information as well as data.

- Online visualisations of data.
- Themed seminars of an appropriate level.
- Use of social media to also raise social awareness.

3. Opportunities and challenges from CP modelling

Opportunities

- Big demand for improved climate data from all stakeholders.
- Clear benefits from CP modelling for many variables they want (precipitation, hydrology, etc.)
- Improved spatial resolution of CP models also identified as a benefit.

Challenges

- Tension between huge data outputs of CP models and the need for data that is easy to download and use.
- Very different data and file type requirements for different stakeholders.
- Many quantities are derived, or dependant on additional modelling → not enough to just provide raw model output.

Key conclusion

Stakeholders were very receptive and interested in the workshop. **Ongoing engagement with stakeholders is critical**, and this needs to occur:

- **More widely**: to identify and address unique requirements for each location
- **More frequently**: facilitating data use for decision making must be seen as a continuous process.