

JOINT WCRP/WWRP WEBINAR SERIES

American Monsoons

CLIVAR/GEWEX Monsoons Panel

Regional Working Group on American Monsoons



SPEAKERS

WG-AMM

Working Group on
American Monsoons

24 April 2024
17:30-19 UTC

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AMERICAN MONSOONS

PROGRAMME

17:30	Introduction
17:45	Challenges for the South American monsoon predictability – Pedro L. S. Dias
18:05	The North American monsoon: current scientific issues & perspective for the future – Salvatore Pascale
18:25	Questions & Answers



Pedro Leite da Silva Dias
University of São Paulo

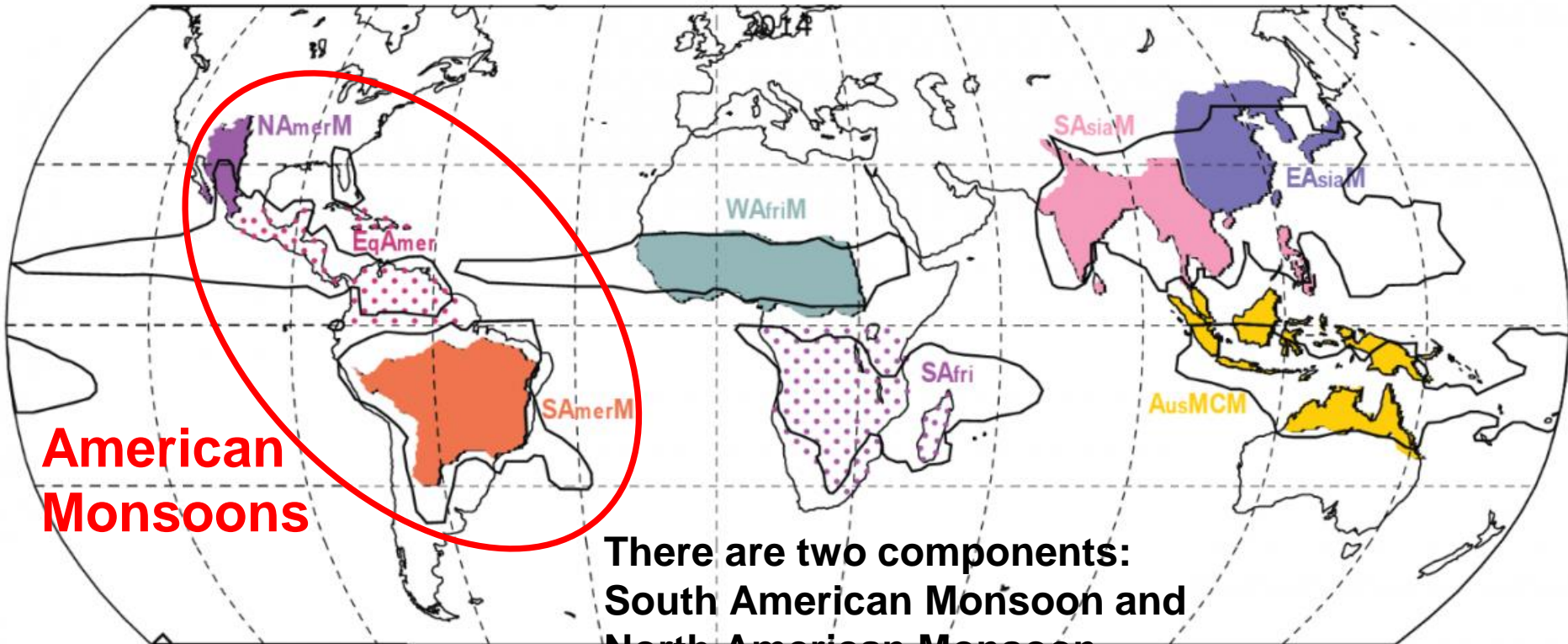


Salvatore Pascale
University of Bologna

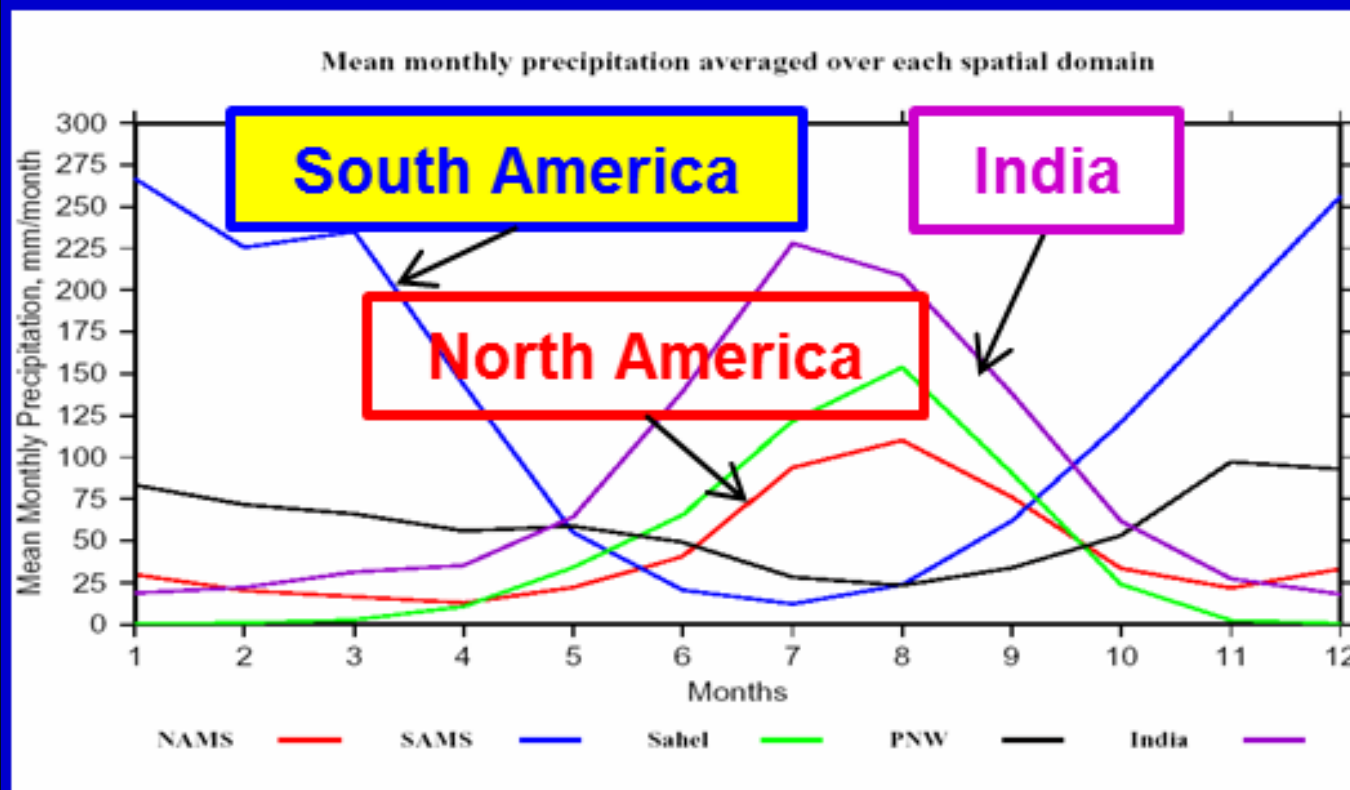
CLIVAR/GEWEX Monsoons Panel Regional Working Group on American Monsoons

Co-Chairs: Alice M. Grimm (Brazil) and Ruth Cerezo Mota (Mexico)

Global and regional monsoon domains



Annual cycles in some monsoon systems

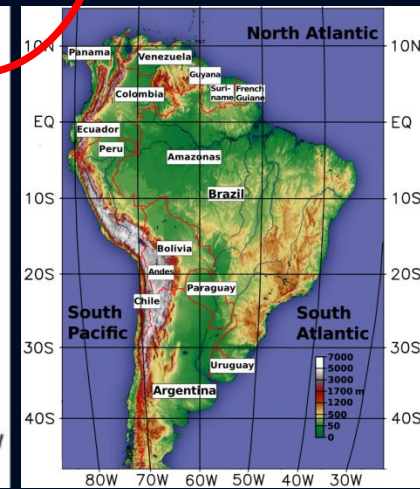
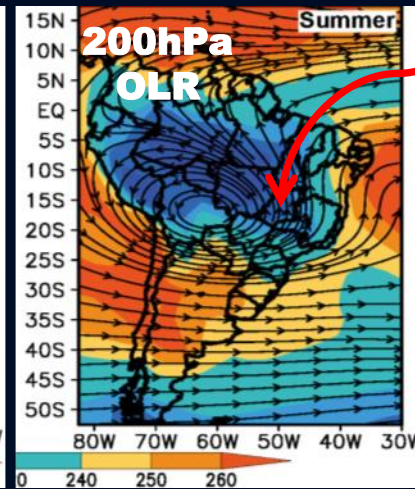
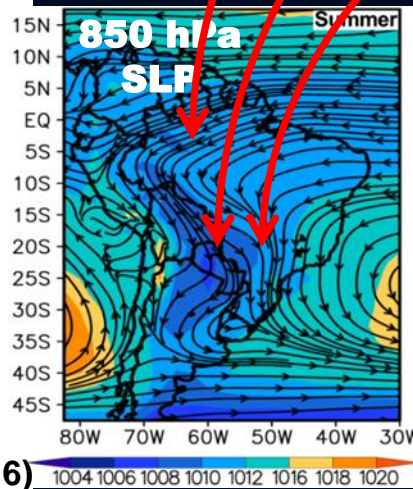
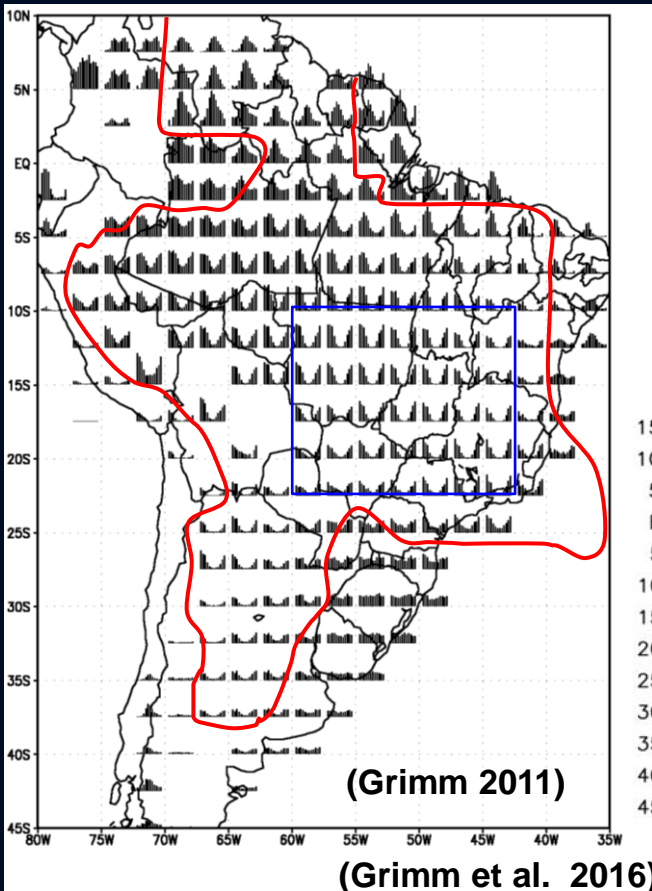


Mean annual cycle of precipitation over several major monsoon areas [NAMS (20°-37°N, 248°-257°E); SAMS 40°-60°W); India (6°-37°N, 68°-98°E); Sahel (10°-20°N, 15°-15°W)]. For comparison, one nonmonsoon region with a large annual cycle is also shown [Pacific Northwest (PNW: 42°-50°N, 112°-124°W)]. (Vera, Higgins, Amador et al. 2006)

South American Monsoon

The South American monsoon (SAM) affects most of South America and provides almost all the precipitation over extensive and populous regions. In the core monsoon region more than 90% of the annual rainfall occurs in the monsoon season (Oct-Apr).

- ❑ In austral summer, a thermal low-pressure system intensifies over the Chaco region.
- ❑ The tropical northeasterly trade winds are enhanced.
- ❑ Cross-equatorial flow penetrates SA, becomes northwesterly at the Andes foothills, is channeled southward, and turns clockwise around the Chaco low.
- ❑ Low-level wind and moisture convergence associated with the interaction between the continental low, the South Atlantic high and the northwesterly winds result in enhanced precipitation in the Amazon, and Central and Southeast Brazil.



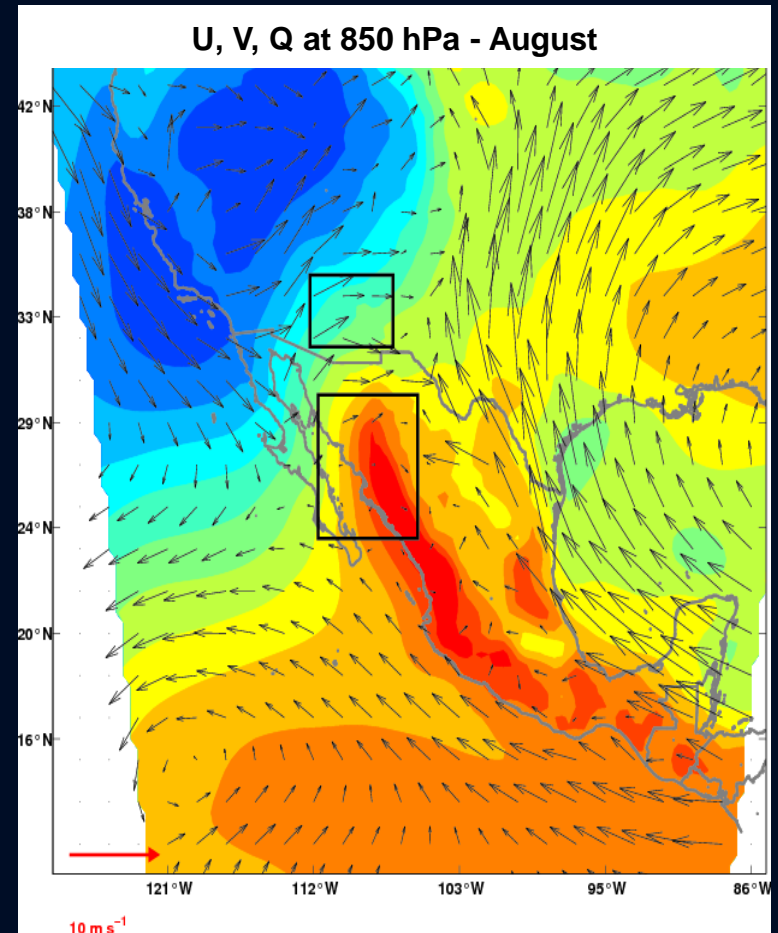
North American Monsoon

The North American Monsoon (NAM) has its CORE region over the Northwest Mexico, extending towards the southwest of USA.

It is responsible for about 70% of the total annual precipitation in the Mexican portion and almost 40% over the USA portion.

It starts around late June, when the thermal contrast between the Gulf of California and the continent is strong enough to almost revert the wind direction, advecting warm and moist air over the continent.

By July – August it is fully developed
By September it starts to weaken and decay
(e.g., Stensrud et al 1995; Douglas 1995; Higgins et al 1997; Turrent & Cavazos, 2009)



(Cerezo-Mota et al. 2011)

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- **Alice M. Grimm Co-Chair**
Federal University of Parana, Brazil
- **Iracema F. A. Cavalcanti**
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- **Christopher Castro**
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- **Tereza Cavazos**
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- **Salvatore Pascale**
University of Bologna, Italy
- **Cuauhtémoc Turrent Thompson**
CICESE, Mexico
- **Robin Chadwick**
UK Met Office and Exeter University

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The Working Group on American Monsoons (WG-AMM) aims to:

- ❑ reduce the community's vulnerability to natural variations in the strengths of these two monsoons and to monsoon climate change;**
- ❑ facilitate interaction among researchers, operational predictors and stakeholders;**
- ❑ coordinate scientific community efforts to understand the American monsoon systems and their predictability and contribute to improve the reliability of forecasts;**
- ❑ To provide authoritative information on process understanding, models' fidelity in representing the regional monsoons components and forecast skill assessment.**

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To reach these objectives, the WG-AMM members:

- ❑ participate and present in Climate Outlook Forums, and in Workshops on special events, such as El and La Niña, which bring together climate researchers, operational forecasters, civil defense and stakeholders;**
- ❑ present or convene sessions on the AMM at international conferences and workshops through the year, encouraging research in this field particularly among early career scientists;**
- ❑ provide reviews and original papers on all aspects of the AMM (characteristic features, climatology, variability, predictability, climate change);**
- ❑ promote workshops/advanced schools that bring together senior and early career researchers, students, stakeholders. The 1st Advanced School and Workshop on American Monsoons took place in Brazil, August 2019, and the 2nd one will be held in Mexico.**



**1st Workshop and Advanced School on American Monsoons
São Paulo, Brazil, 19-24 August 2019.**



**1st Workshop and Advanced School on American Monsoons
São Paulo, 19-24 de agosto de 2019.**



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