Precipitation Validation on S-E Continental Shelf to be Used as Input to Estimate River Discharge

Second Workshop on Regional Climate Modeling and Extreme Events over South America

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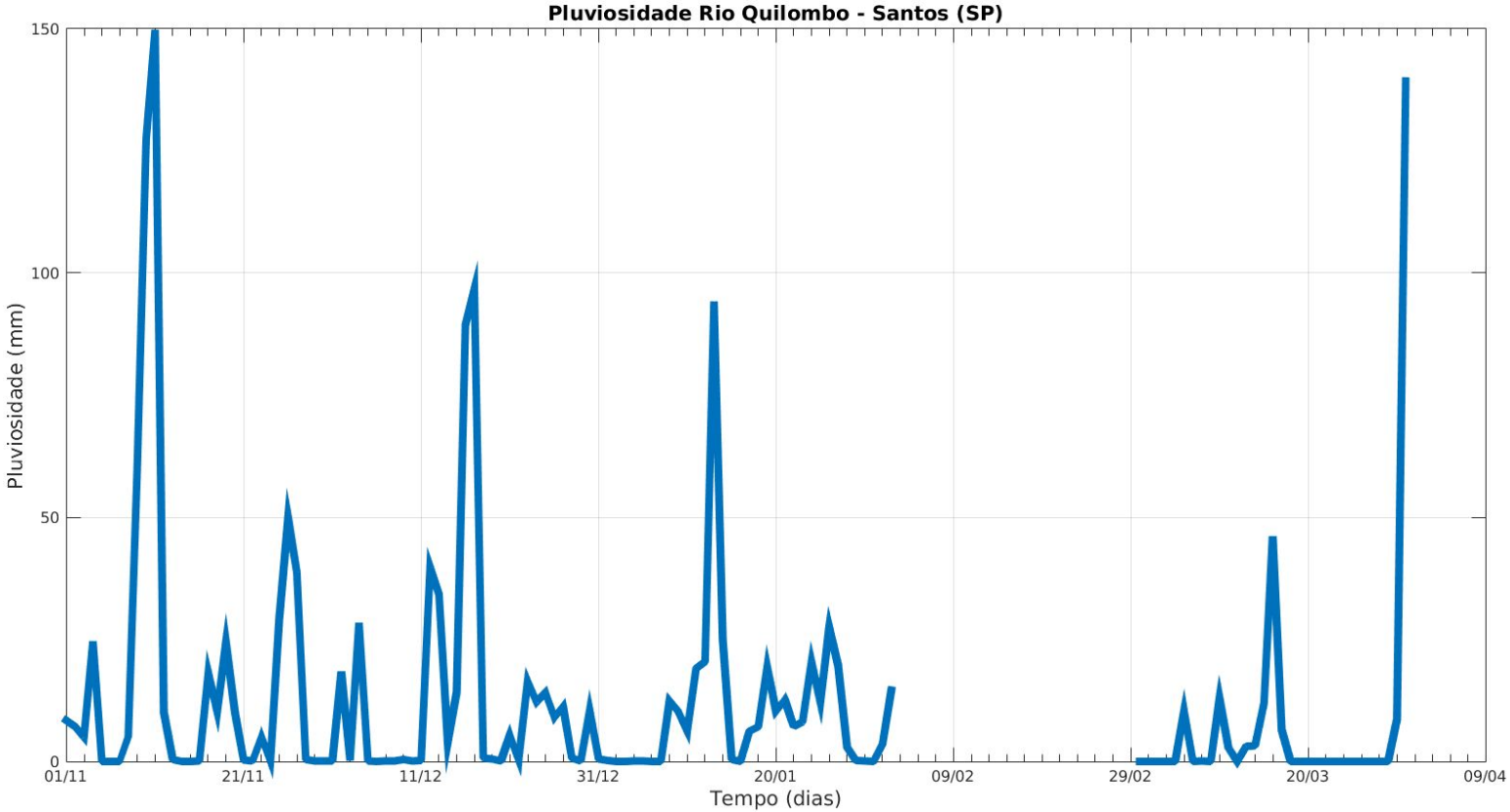
INCLINE

Brief Introduction

- Our research interests range from estuarine plumes up to continental shelf-deep ocean processes;
- Coastal Hydrodynamics Lab maintains an operational model forced by winds, tides and river runoff; link here!
- Lack of river discharge measurements in Brazil;
- Important for the inner shelf (baroclinic pressure gradient force)


Pluviosidade Rio Quilombo - Santos (SP)
Pluviosidade (mm)
150
100
50
0
01/11
21/11
11/12
31/12
20/01
09/02
29/02
20/03
09/04
Tempo (dias)

Objective

Validate precipitation using RegCM4 and observed data with the final goal of estimate river's discharge.

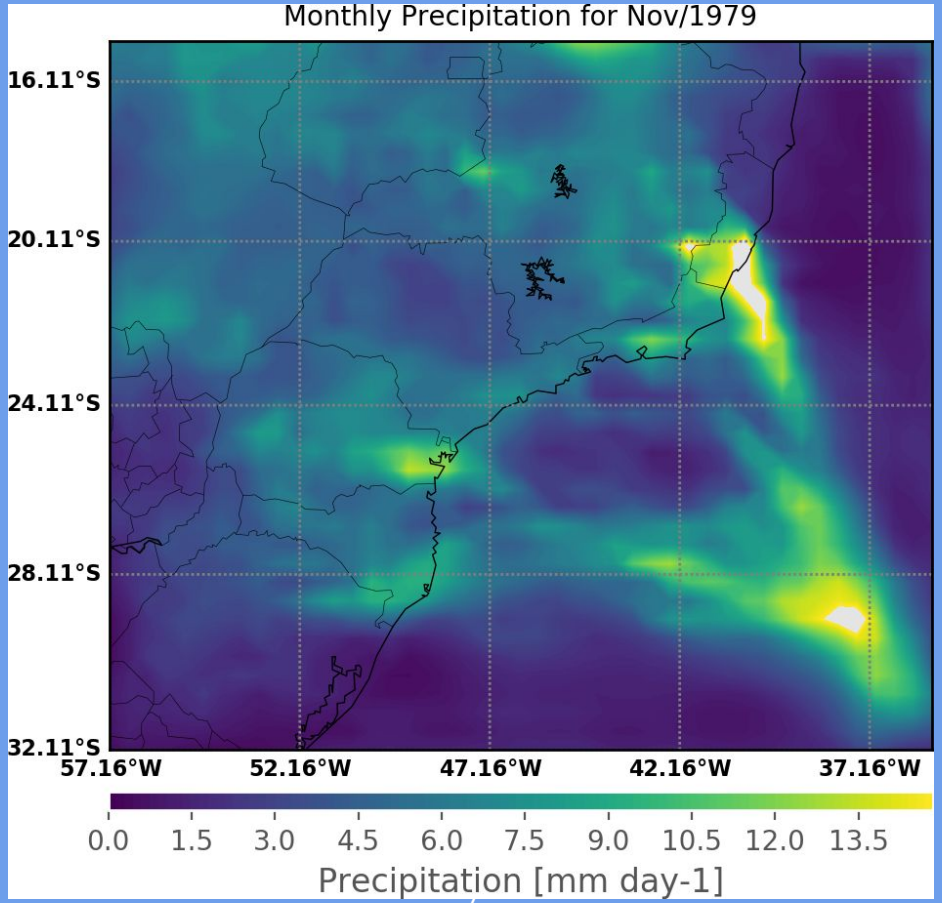
Set-up Parameters

Horizontal Resolution (ds)	60 km
Period	NDJFM (1979 - 1980)
Central Coordinates	Lat: -23.8654 / Lon: -46.3420
Projection	Mercator
iy : jx : kz	39 : 45 : 18
Spin-up	1 Month (November)

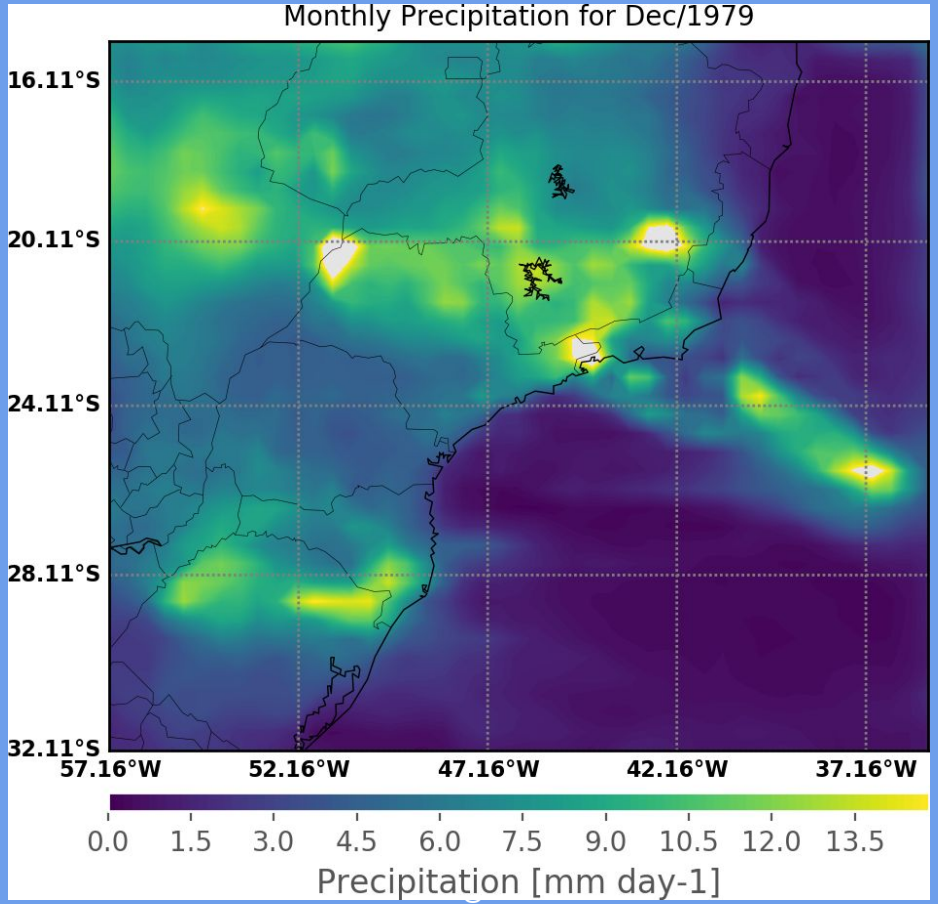
Domain Area


Nicarágua
Venezuela
Guiana
Suriname
Colômbia
RR
AP
Equador
AM
PA
MA
CE
RN
PI
PB
PE
AL
Brasil
AC
RO
TO
BA
SE
Peru
6.000,00 km
Bolívia
MG
ES
MS
SP
RJ
Paraguai
PR
SC
Chile
RS
4.000,00 km
8.714,85 km
0
2.000,00 km

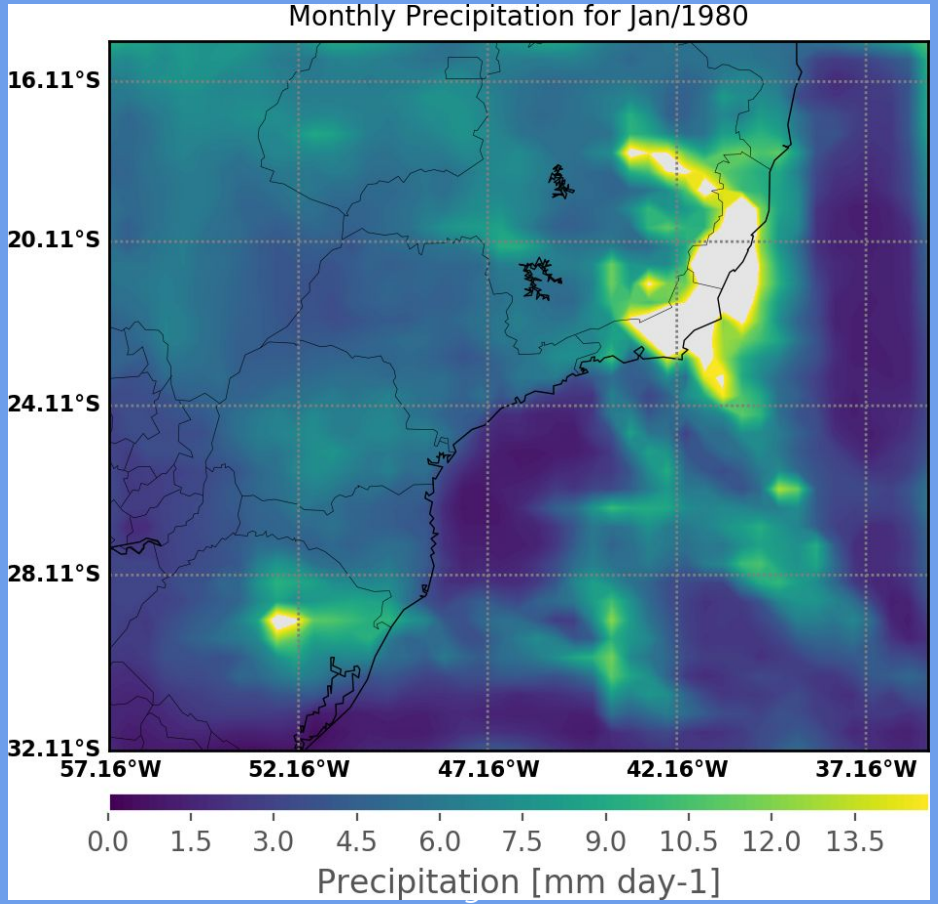
Results - Monthly Precipitation (Nov)



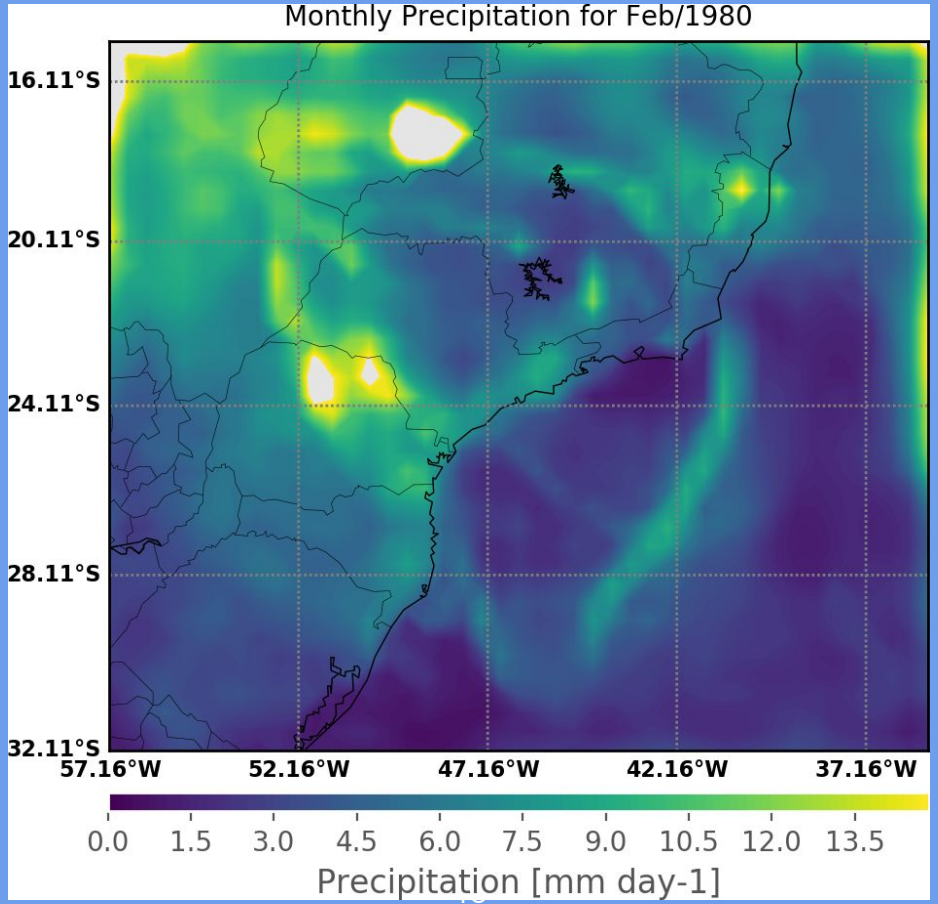
Results - Monthly Precipitation (Dec)



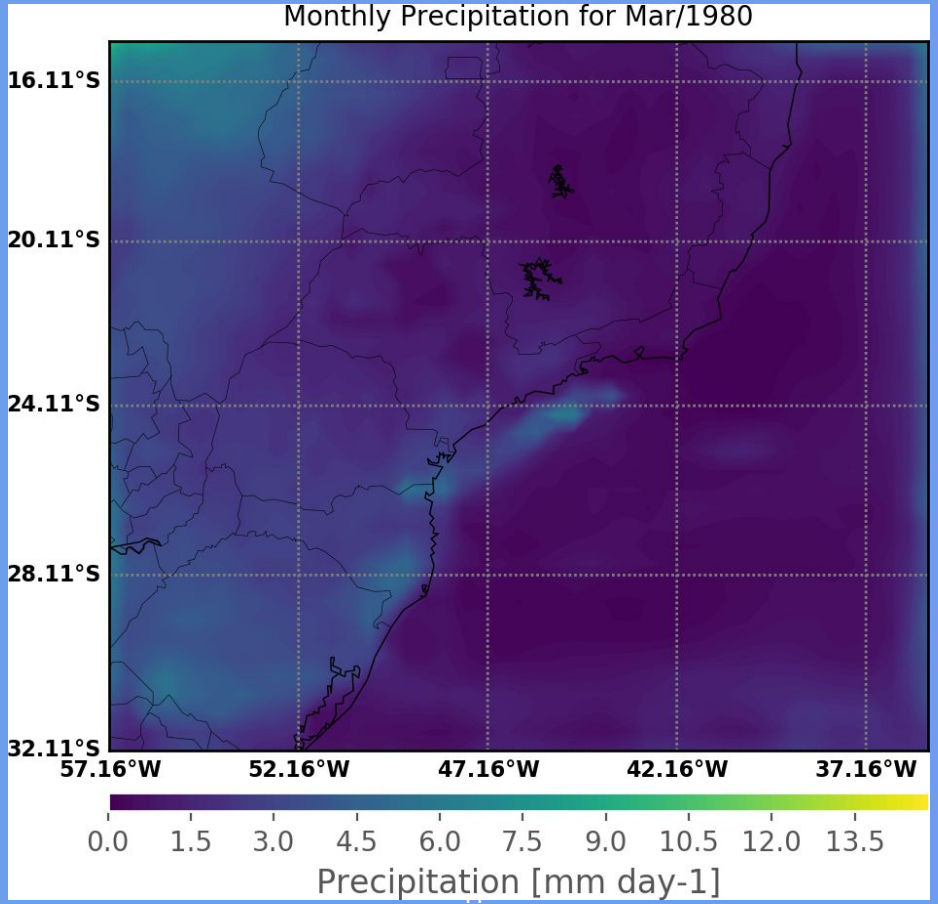
Results - Monthly Precipitation (Jan)



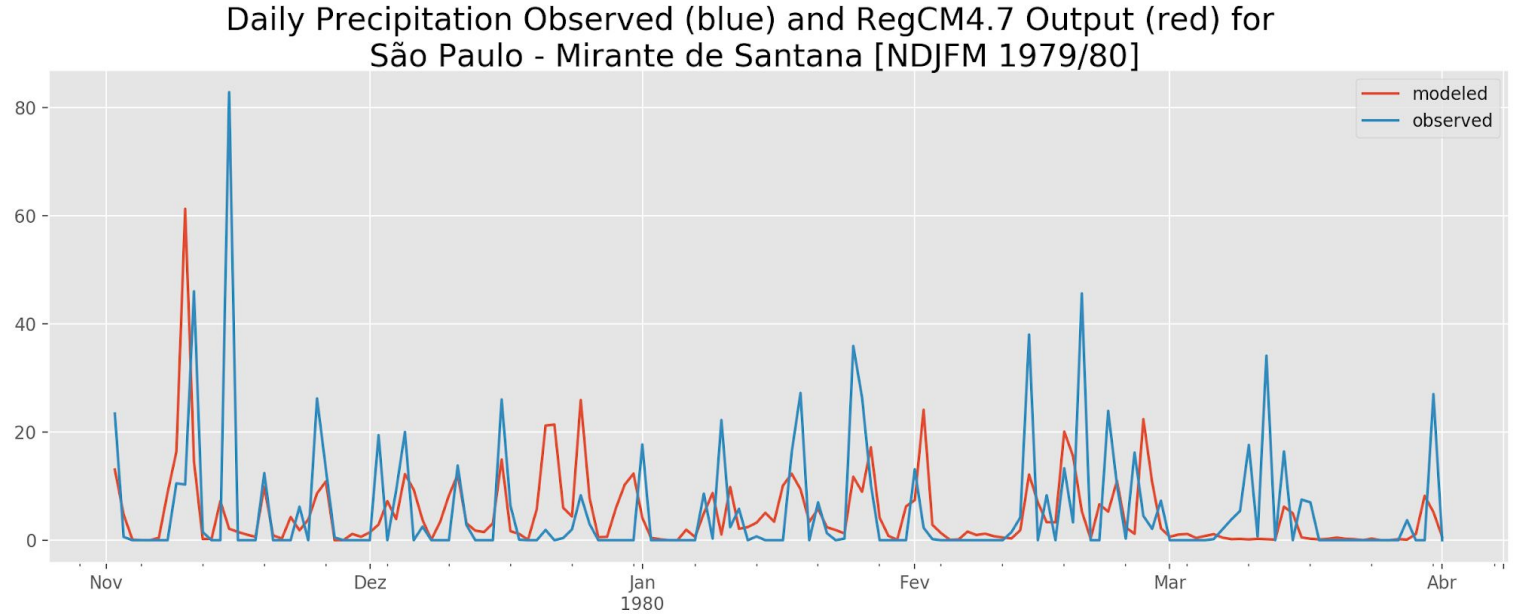
Results - Monthly Precipitation (Feb)



Results - Monthly Precipitation (Mar)



Results - Daily Precipitation Time Series



Skill Score = 0.44

Next Steps

- **Improve the model** (downscaling?);
- **Validate precipitation output with observed data;**
- **Estimate river's discharge (R = A x P) - simplest estimation**

THANK YOU!