Atmospheric patterns in 1985 and 2015`s extreme wet and dry january

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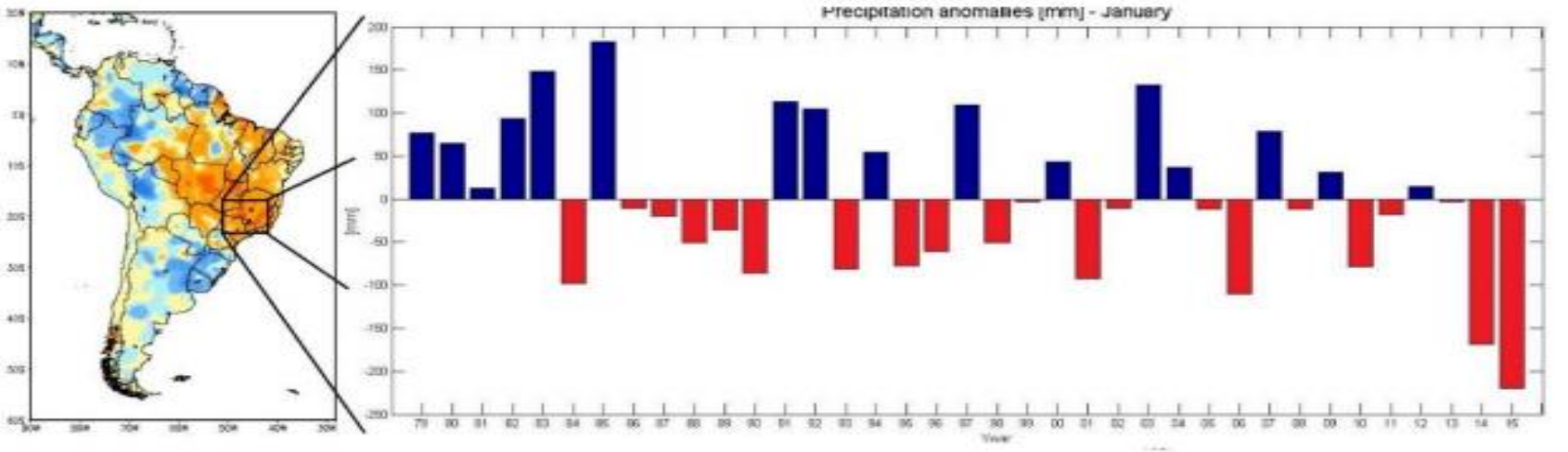
Motivation

- **So, what`s the motivation ?**

- Extreme anomalies of precipitation in january of 1985 and 2015.

- Coelho et al. (2015) finded atmospheric ondulation patterns in summer (DJF) of 2014.

- Reboita et al. (2015) observed precipitation anomalies in january for the period 1979-2015.



Objective

- Verify the ability of the regional model RegCM4 to represent the precipitation and circulation anomalies in Brazilian Southeast for 1985 and 2015`s january.

Methodology

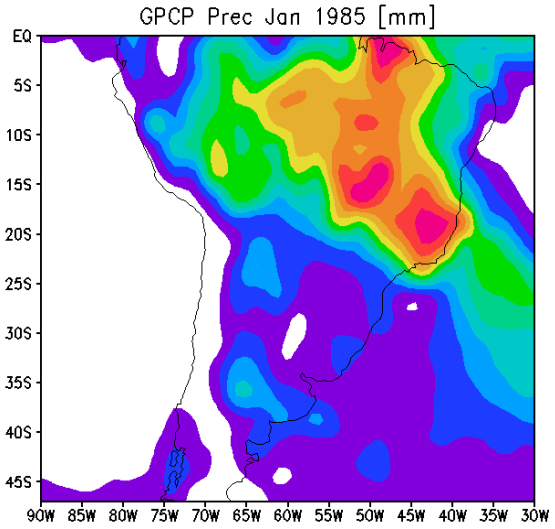
- RegCM4 configuration:
  - ICBC = ERA-Interim 15
  - Domain = South America (125 x 120 pts)
  - ds = 60 km
  - dt = 150 s
  - Wet period = Jan 1985
  - Dry period = Jan 2015
- Other configurations - Default

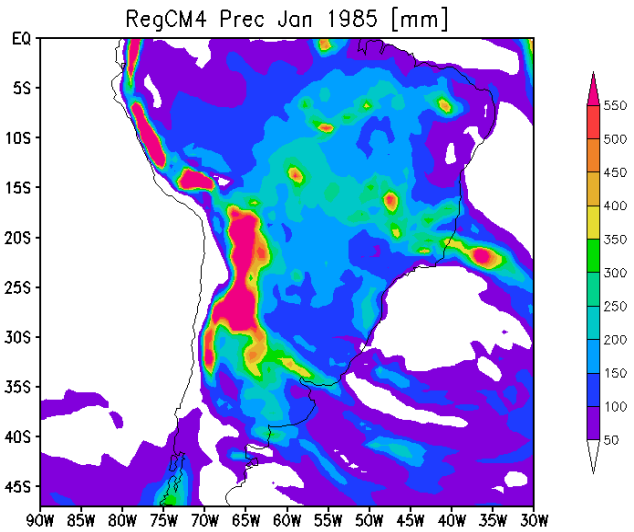
Methodology

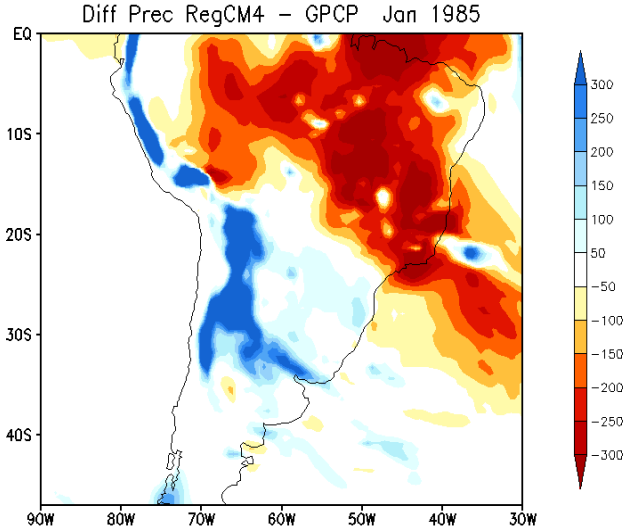
- Precipitation data: GPCP x RegCM4
- Circulation fields: NCEP2 x RegCM4

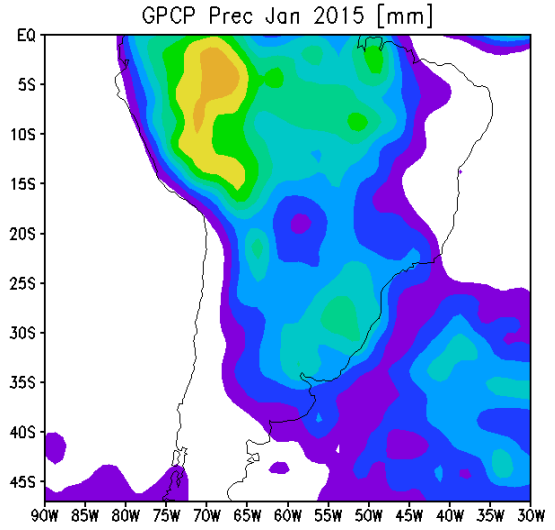
- Climatology from:
  - Precipitation – GPCP
  - Circulation - NCEP2

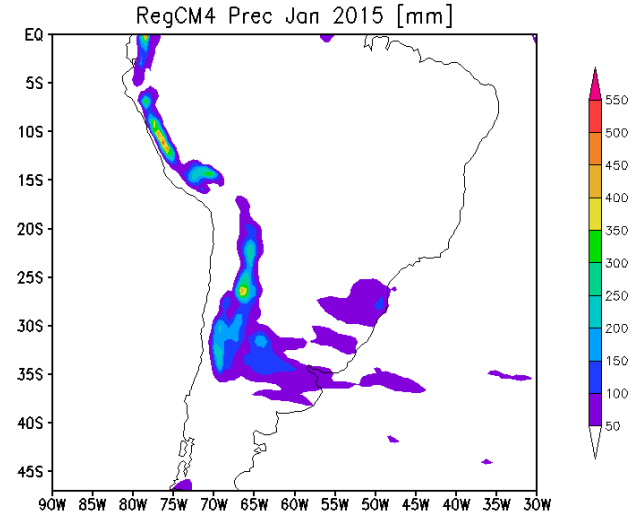
Results


GPCP Prec Jan 1985 [mm]
EQ
5S
10S
15S
20S
25S
30S
35S
40S
45S
90W 85W 80W 75W 70W 65W 60W 55W 50W 45W 40W 35W 30W
550
500
450
400
350
300
250
200
150
100
50


RegCM4 Prec Jan 1985 [mm]
EQ
5S
10S
15S
20S
25S
30S
35S
40S
45S
90W 85W 80W 75W 70W 65W 60W 55W 50W 45W 40W 35W 30W
550
500
450
400
350
300
250
200
150
100
50


Diff Prec RegCM4 – GPCP Jan 1985
EQ
10S
20S
30S
40S
90W 80W 70W 60W 50W 40W 30W
300
250
200
150
100
50
-50
-100
-150
-200
-250
-300


GPCP Prec Jan 2015 [mm]
EQ
5S
10S
15S
20S
25S
30S
35S
40S
45S
90W 85W 80W 75W 70W 65W 60W 55W 50W 45W 40W 35W 30W
550
500
450
400
350
300
250
200
150
100
50


RegCM4 Prec Jan 2015 [mm]
EQ
5S
10S
15S
20S
25S
30S
35S
40S
45S
90W 85W 80W 75W 70W 65W 60W 55W 50W 45W 40W 35W 30W
550
500
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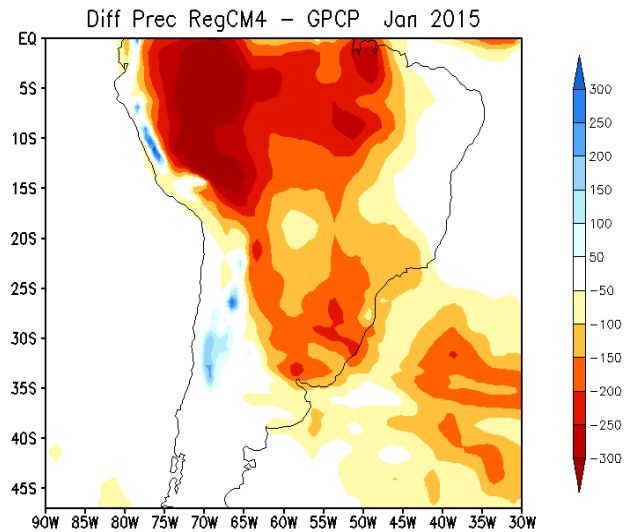
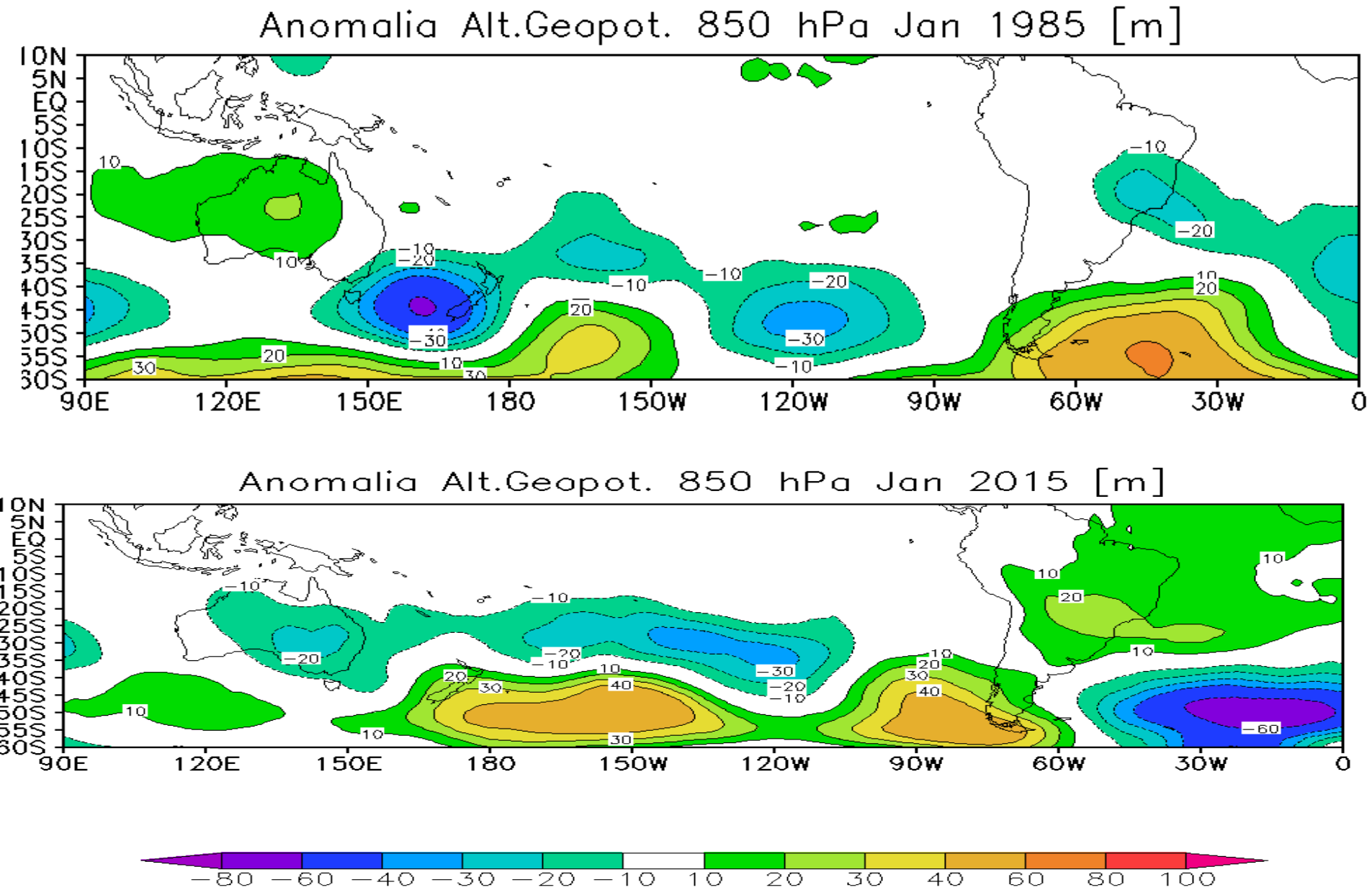

Diff Prec RegCM4 – GPCP Jan 2015
EQ
5S
10S
15S
20S
25S
30S
35S
40S
45S
90W 85W 80W 75W 70W 65W 60W 55W 50W 45W 40W 35W 30W
300
250
200
150
100
50
-50
-100
-150
-200
-250
-300

NCEP2


Anomalia Alt.Geopot. 850 hPa Jan 1985 [m]
10N
5N
EQ
5S
10S
15S
20S
25S
30S
35S
40S
45S
50S
55S
60S
90E
120E
150E
180
150W
120W
90W
60W
30W
0
Anomalia Alt.Geopot. 850 hPa Jan 2015 [m]
−80 −60 −40 −30 −20 −10 10 20 30 40 60 80 100

The End

Thanks!