

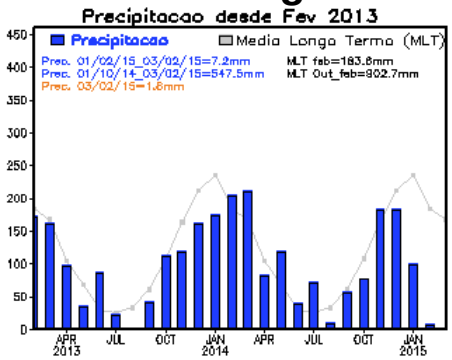
Operational Conditions of the National Interconnected System

João José Cascaes Dias

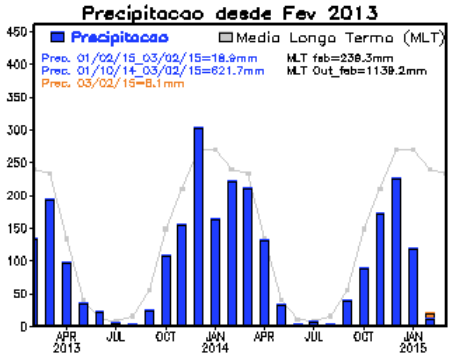
Rio de Janeiro, February 6, 2015

Average Rainfall Anomaly in the River Basin of SIN

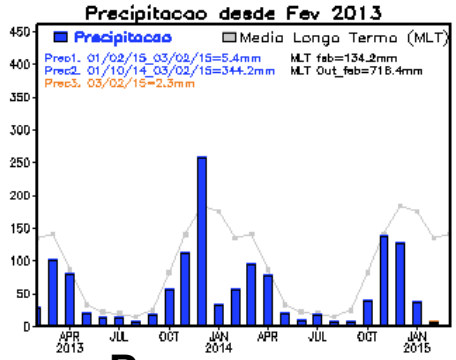
Alto Paraguai



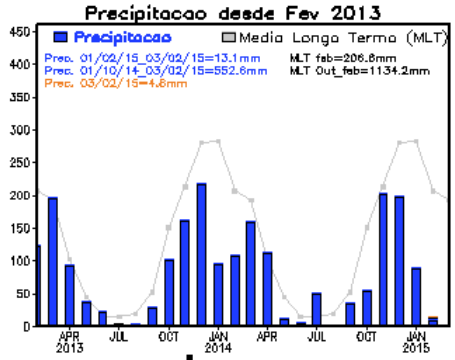
Tocantins



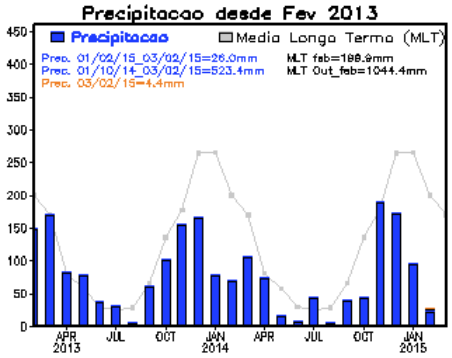
São Francisco



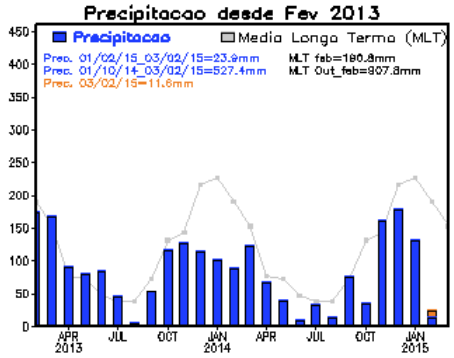
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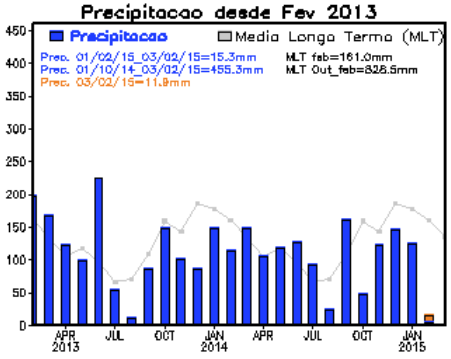
Grande



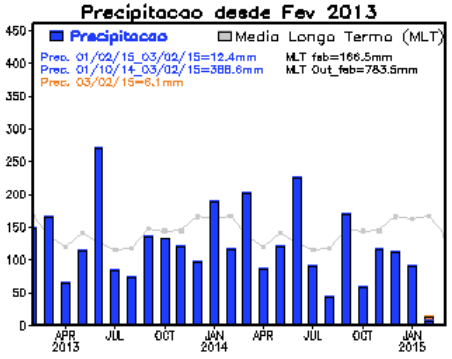
Tietê



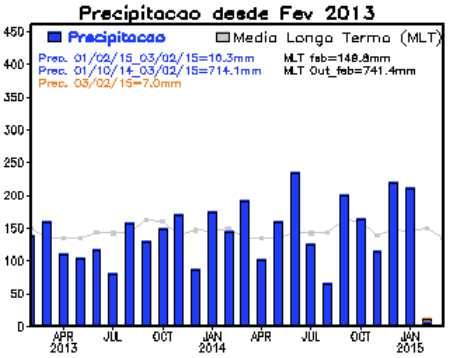
Paranapanema



Iguaçu



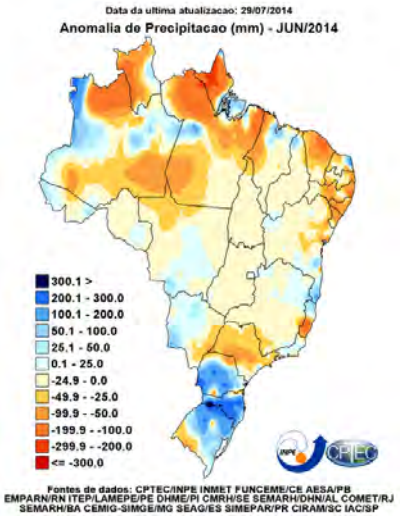
Uruguai

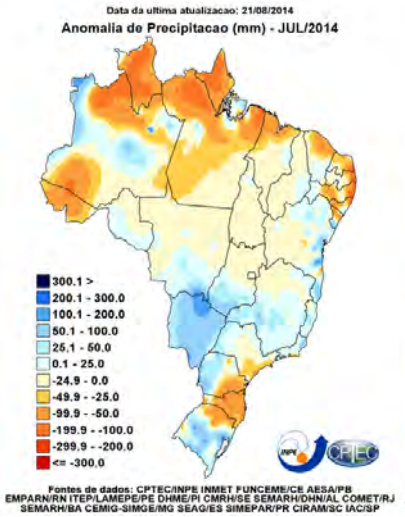


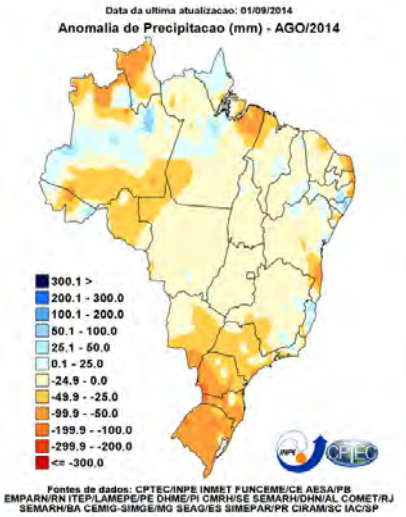
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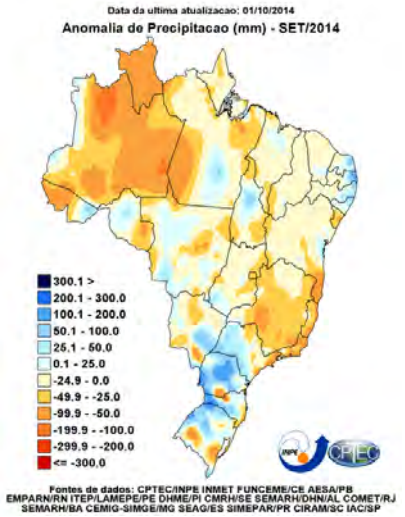
Tractebel Energia
GDF SUEZ

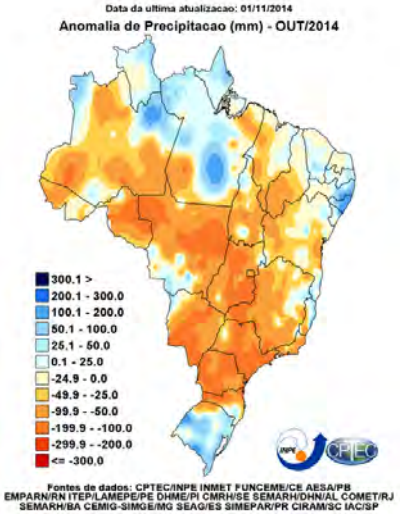
Anomalies Monthly Rainfall

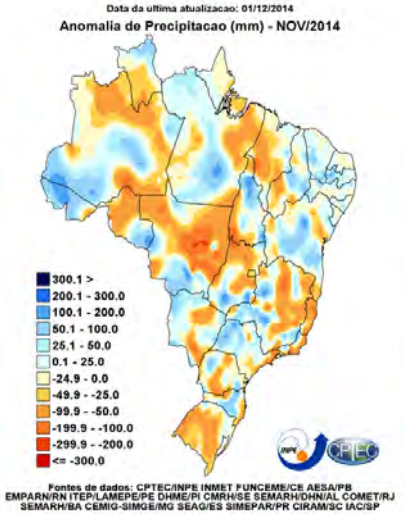


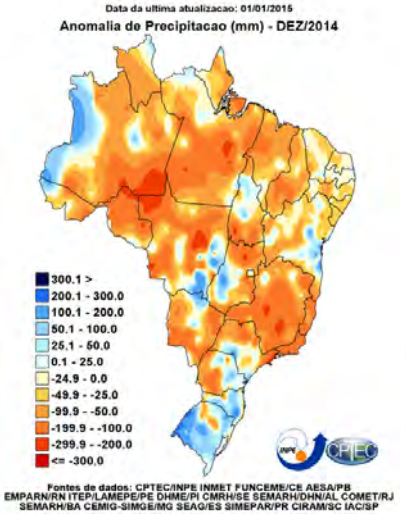


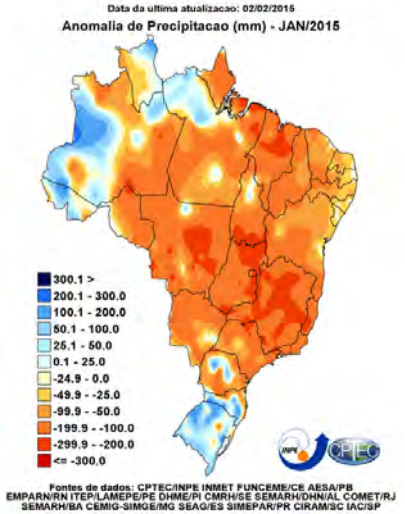






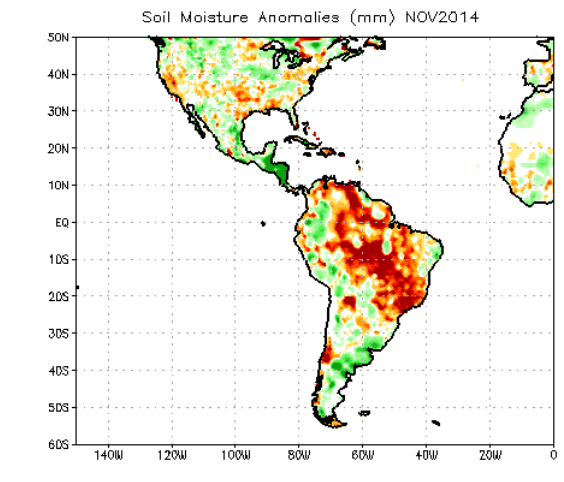




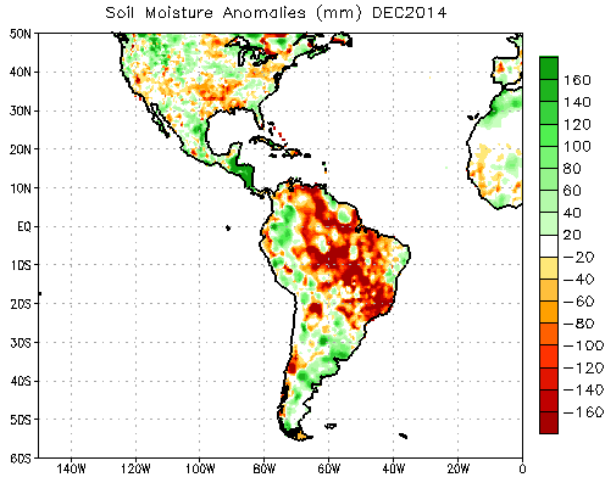


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Anomaly in Soil Moisture - Monthly



Data Source: CPC Leaky Bucket Soil Moisture Model
(Model depth: 1.6 m & Maximum water capacity: 7
Climatology (1979–1995)



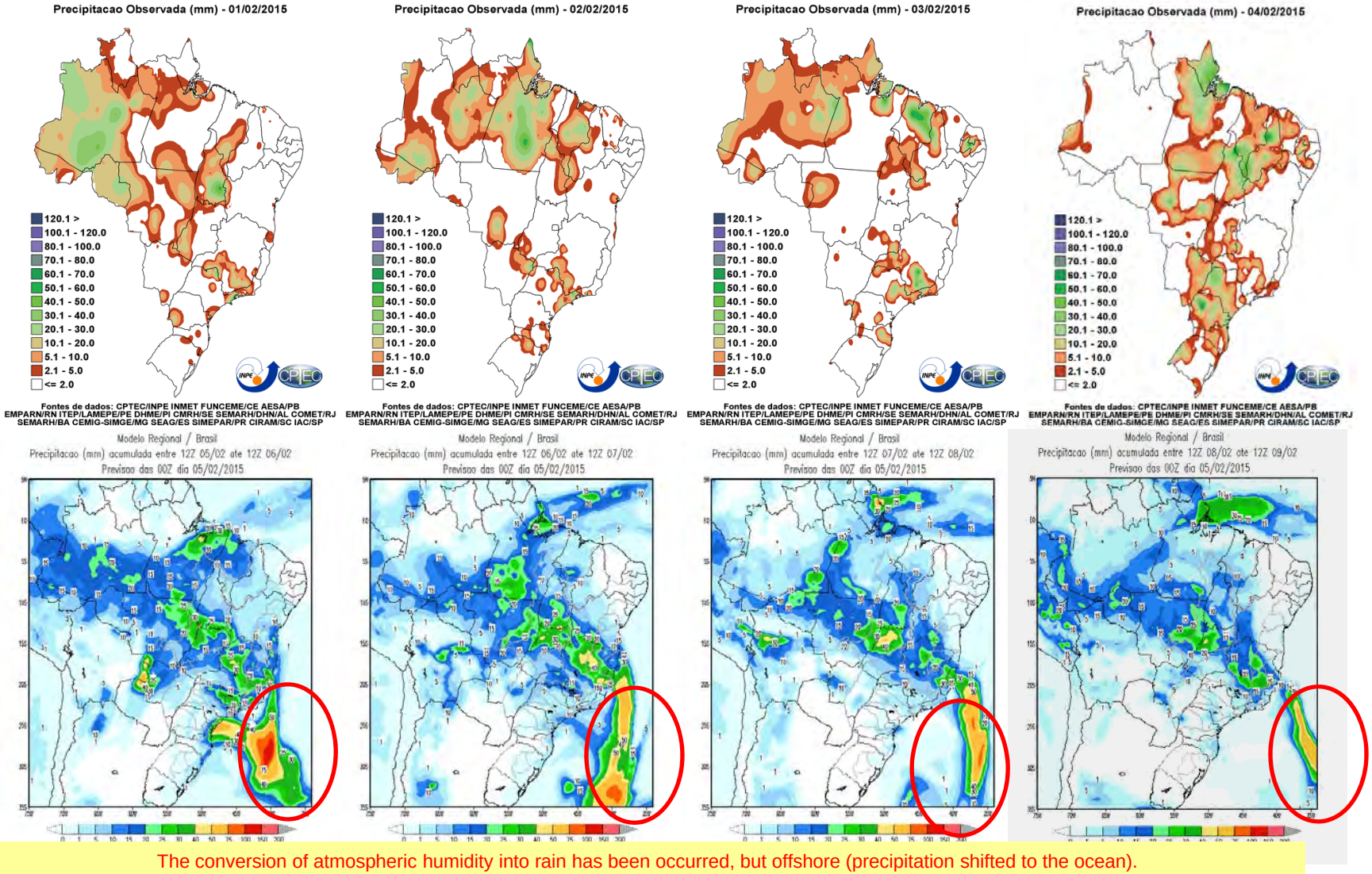
Data Source: CPC Leaky Bucket Soil Moisture Model
(Model depth: 1.6 m & Maximum water capacity: 760 mm)
Climatology (1979–1995)

Moisture in the soil anomaly, Dec-14 with a deficit compared to average about 140 mm in the main river basins of Southeast. This means that, in theory, to recover the average flow condition of the river basins, it would be necessary at least 140mm of rain above average.

Note: Evaporation rate in dry conditions tends to be higher than the average.

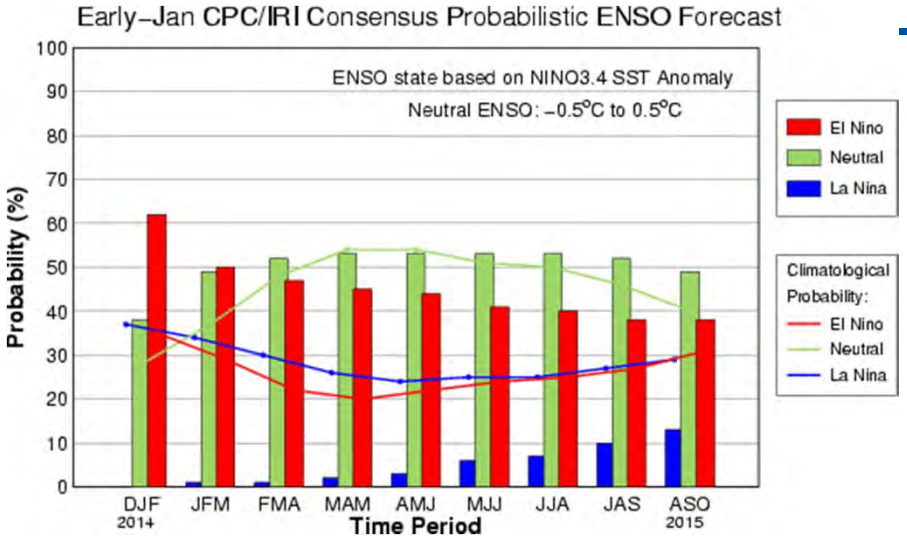
SOURCE: CPC/NOA

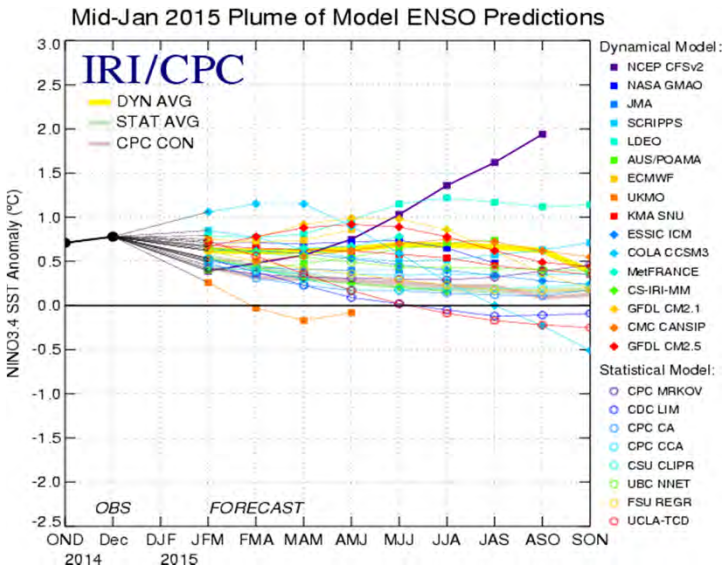
Daily Forecast – Feb 4, 2015

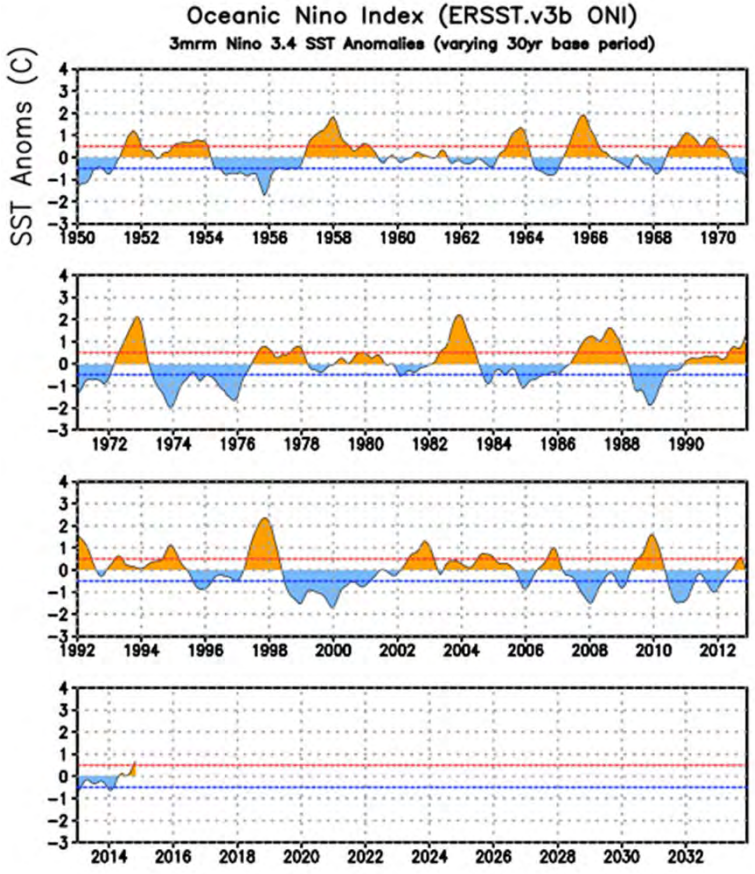


The conversion of atmospheric humidity into rain has been occurred, but offshore (precipitation shifted to the ocean).

Pacific Conditions





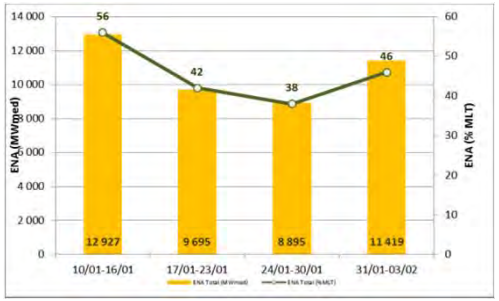


SOURCE: CPC/NOA

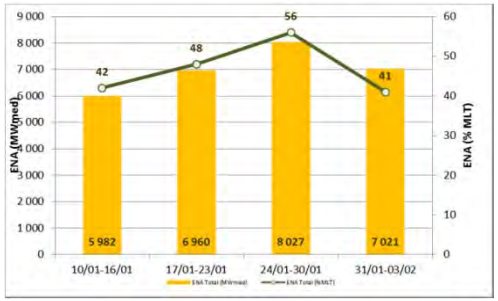
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Hydro Energy Conditions of the River Basins

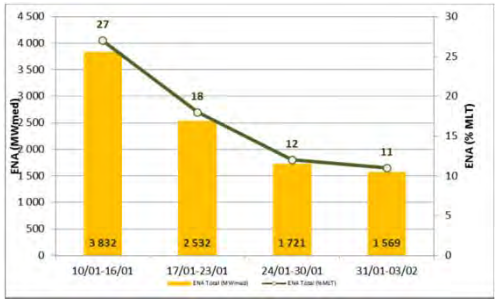
Baixo Paraná



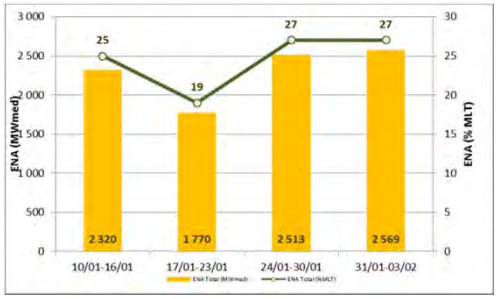
Tocantins



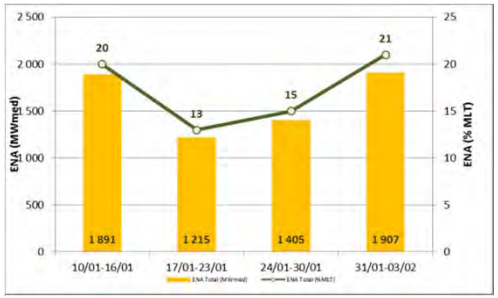
São Francisco



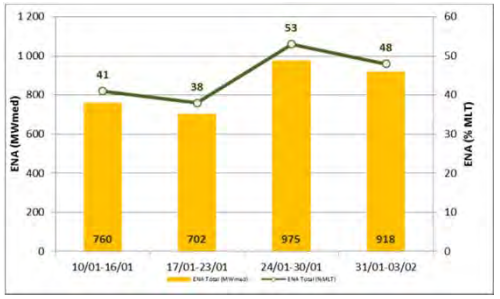
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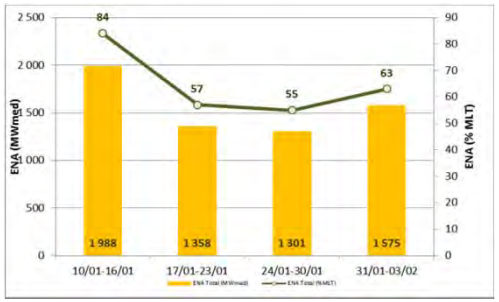
Grande



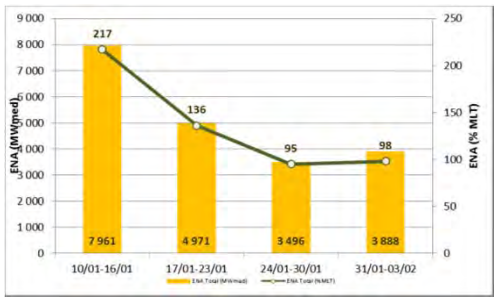
Tietê



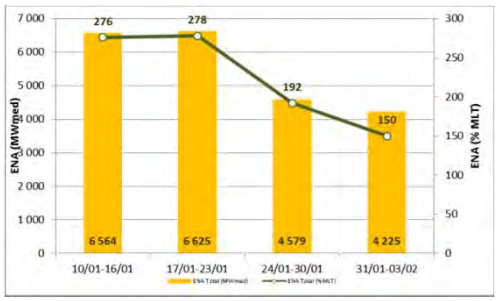
Paranapanema



Iguaçu



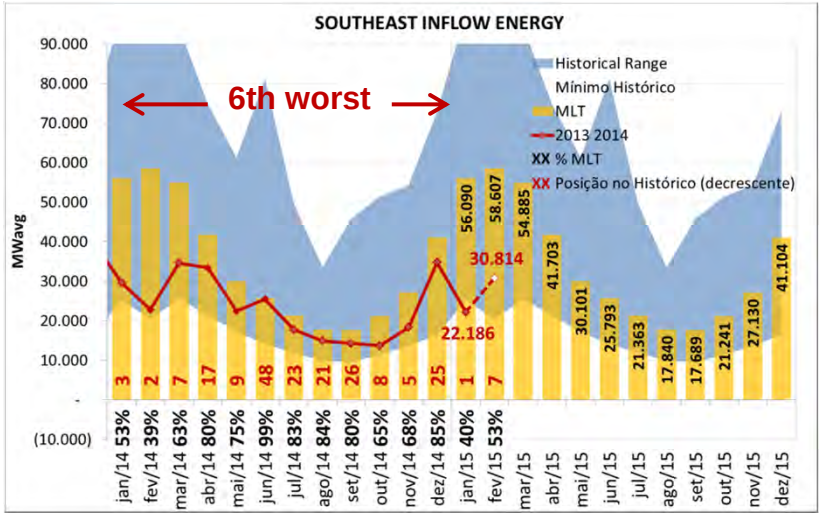
Uruguai

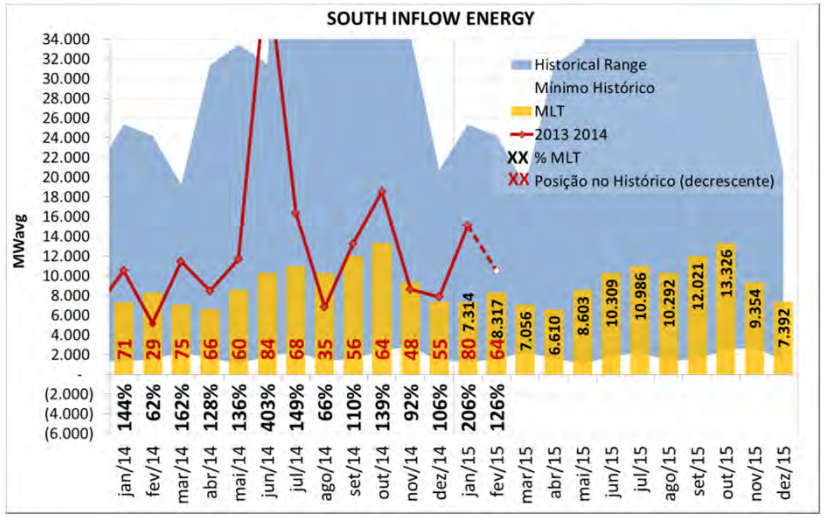


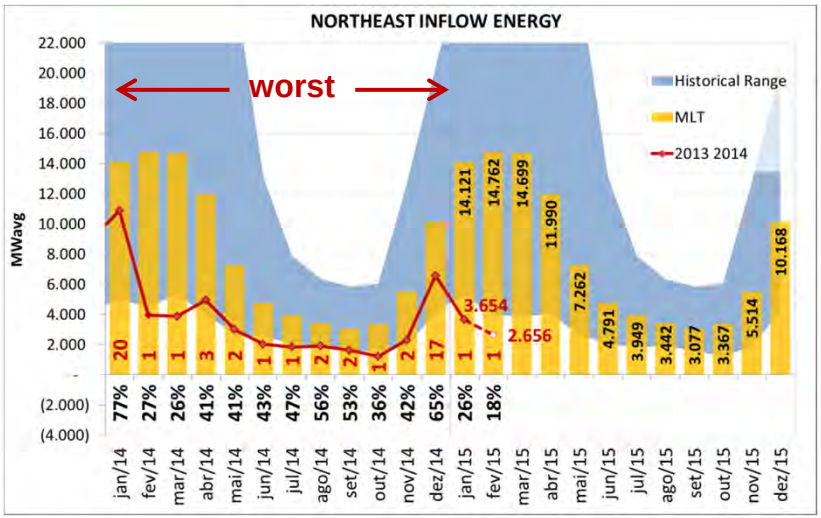
SOURCE: ONS

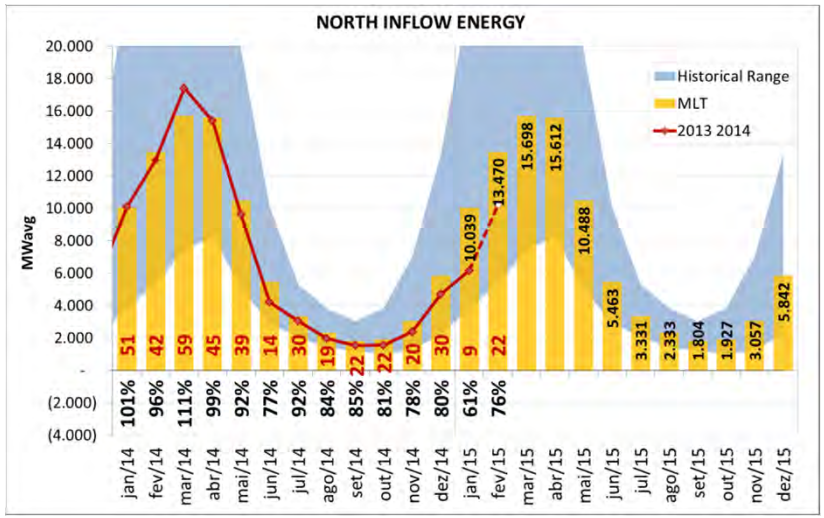
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Inflow Energy





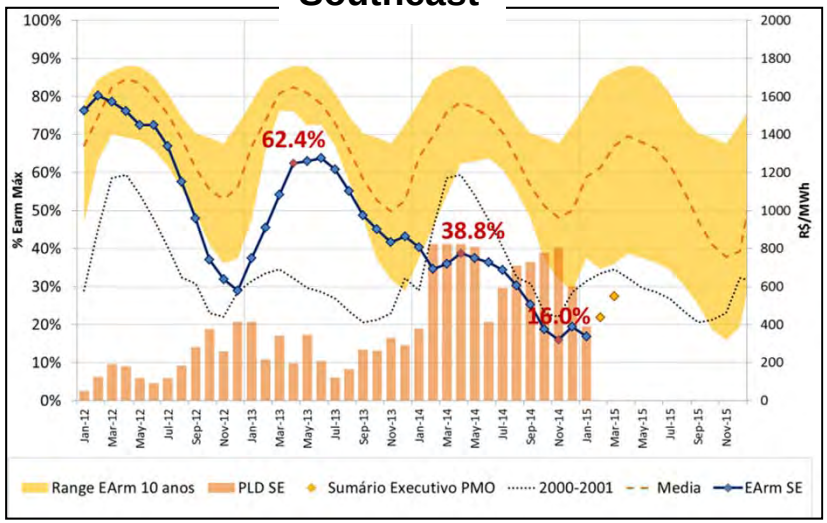




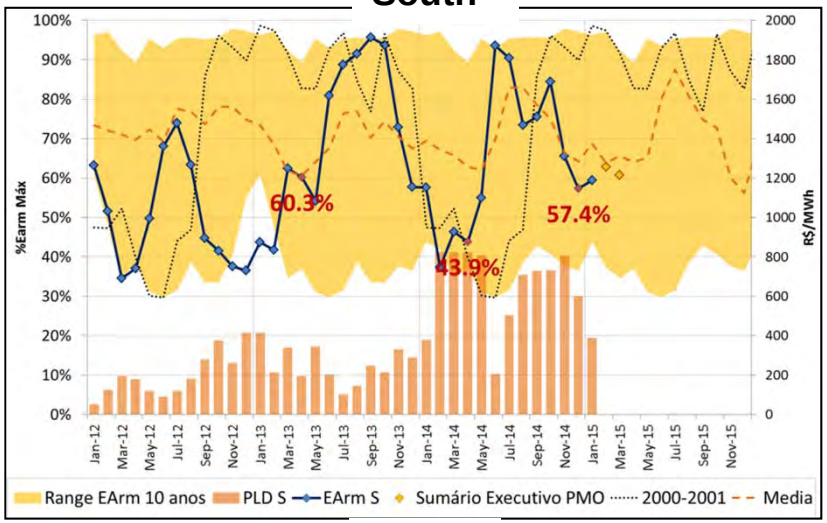
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Storage and Spot Price (PLD)

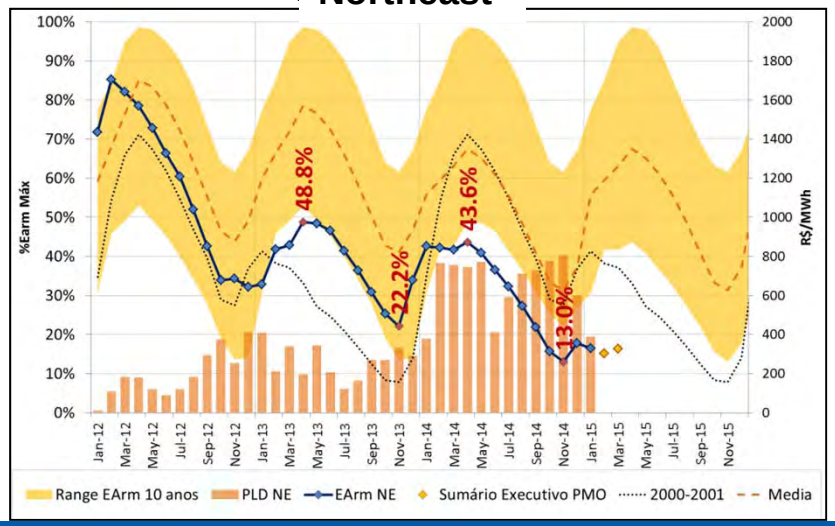
Southeast



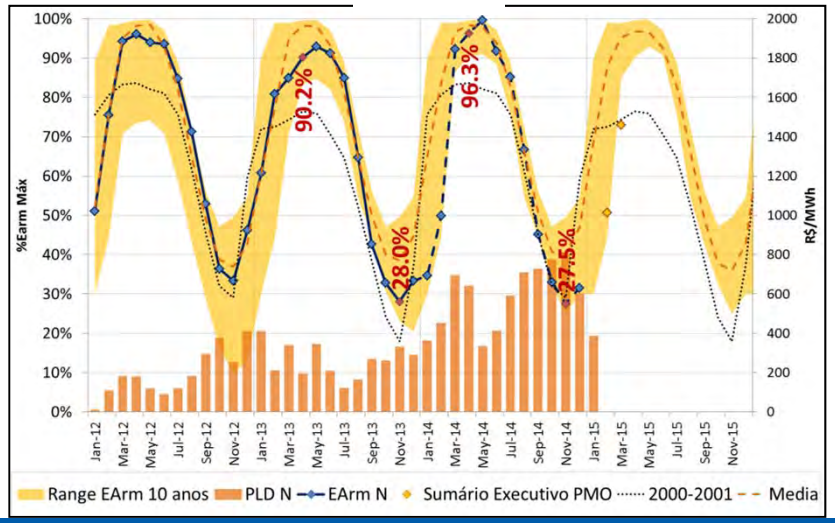
South



Northeast

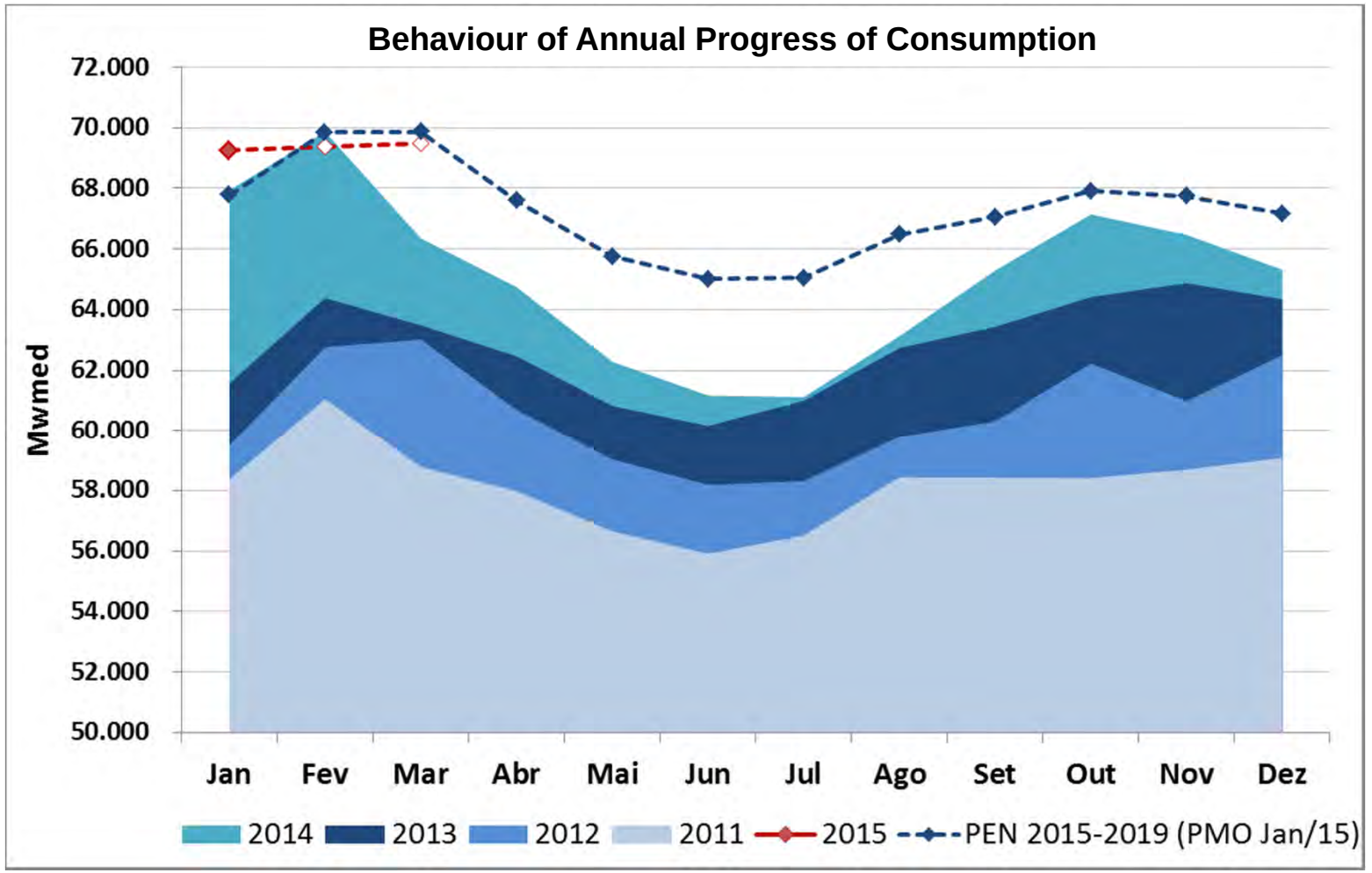


North



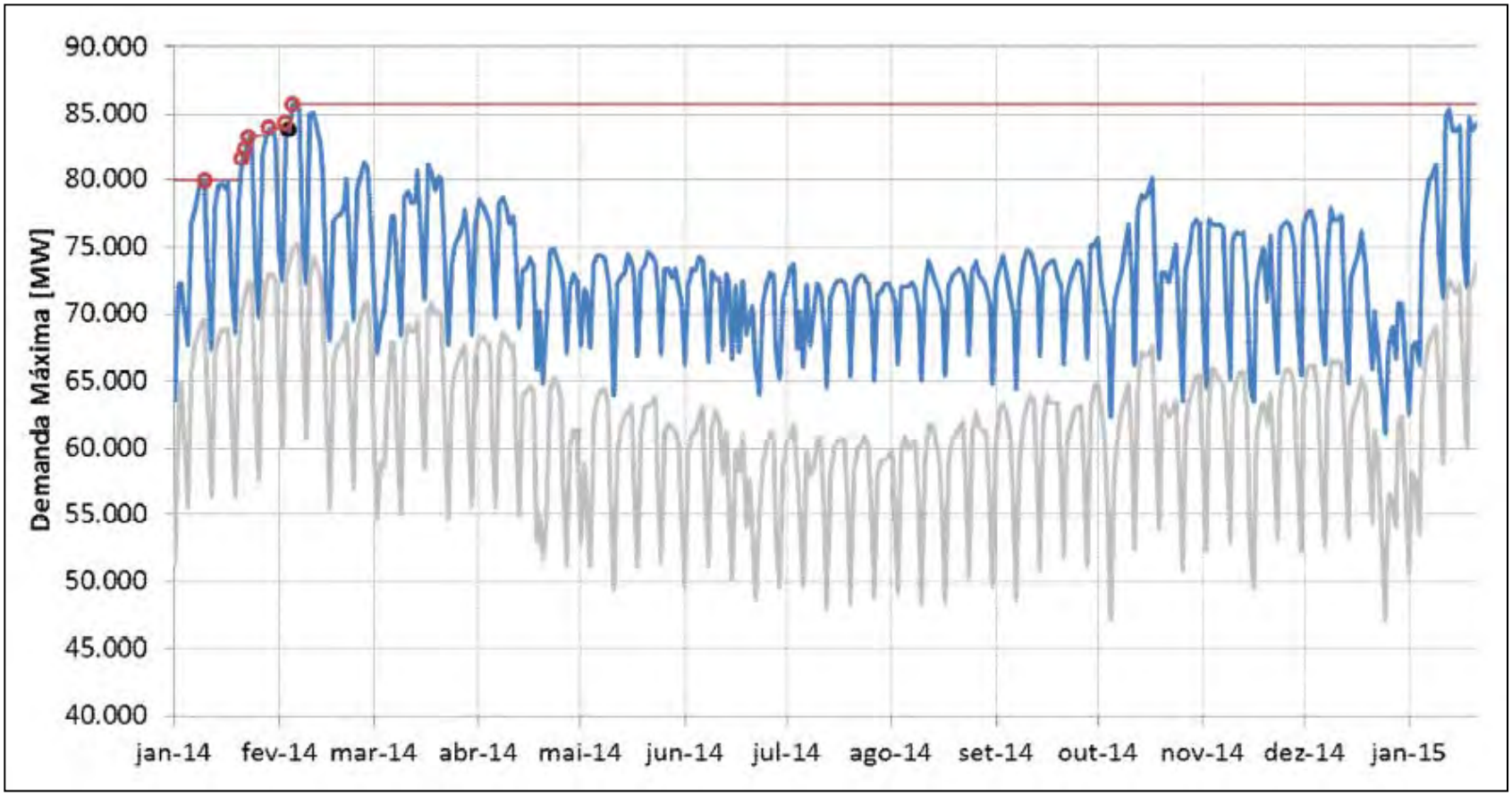
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Consumption Progress



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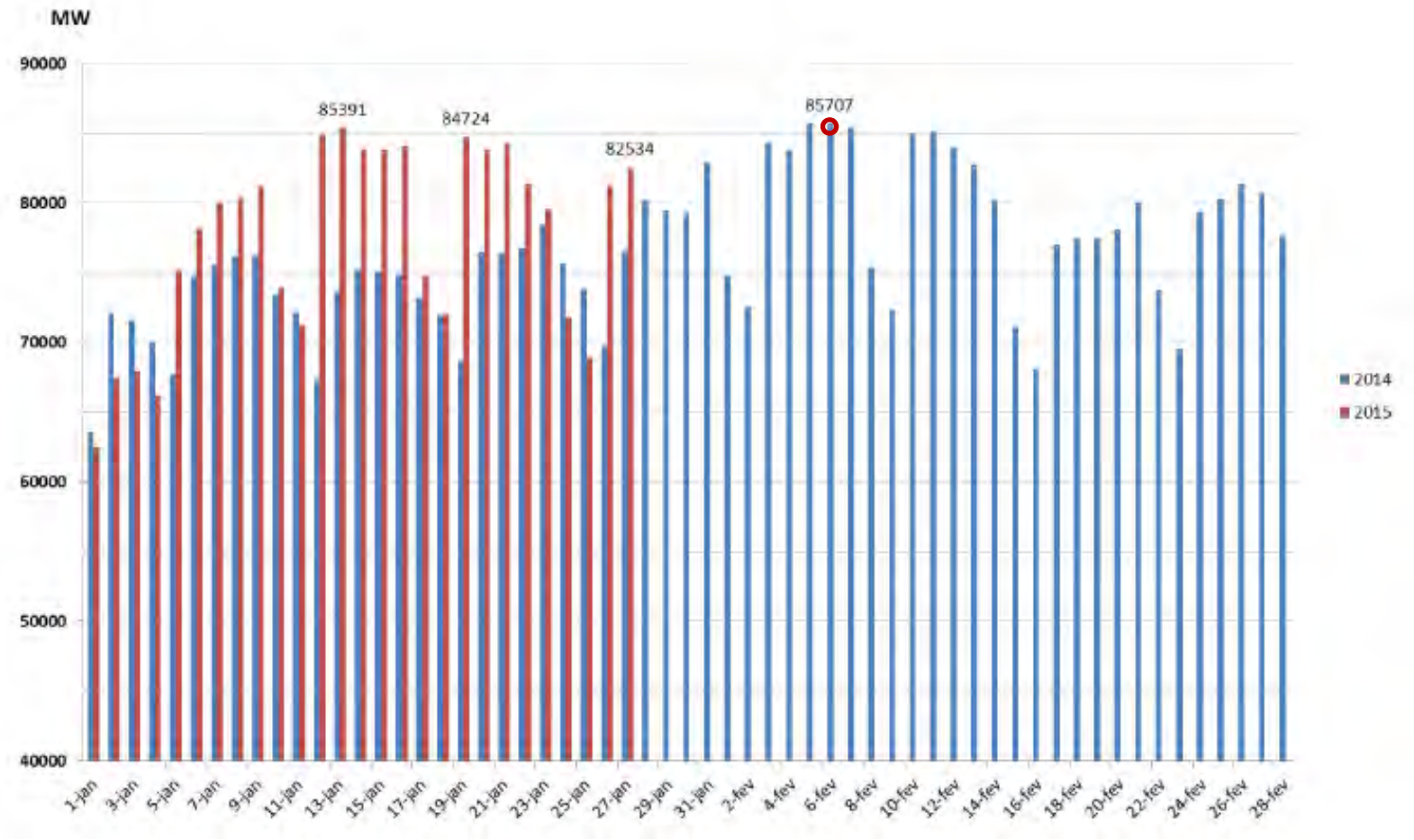
Progress of Demand (2014-2015)



SOURCES: ONS/ABRAGE

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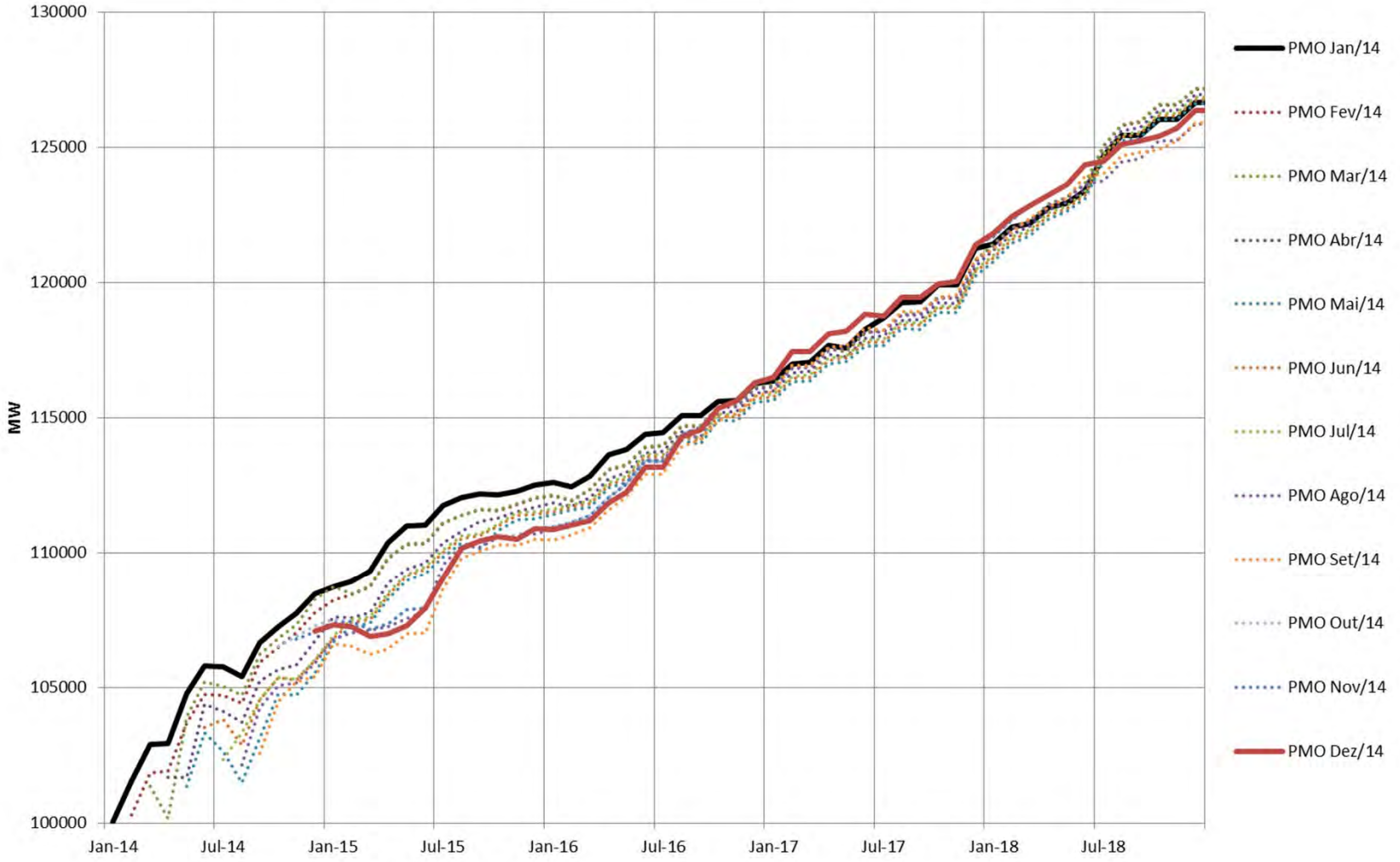
Progress of Demand (January 2014-2015)



SOURCES: ONS/ABRAGE

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GDF SUEZ

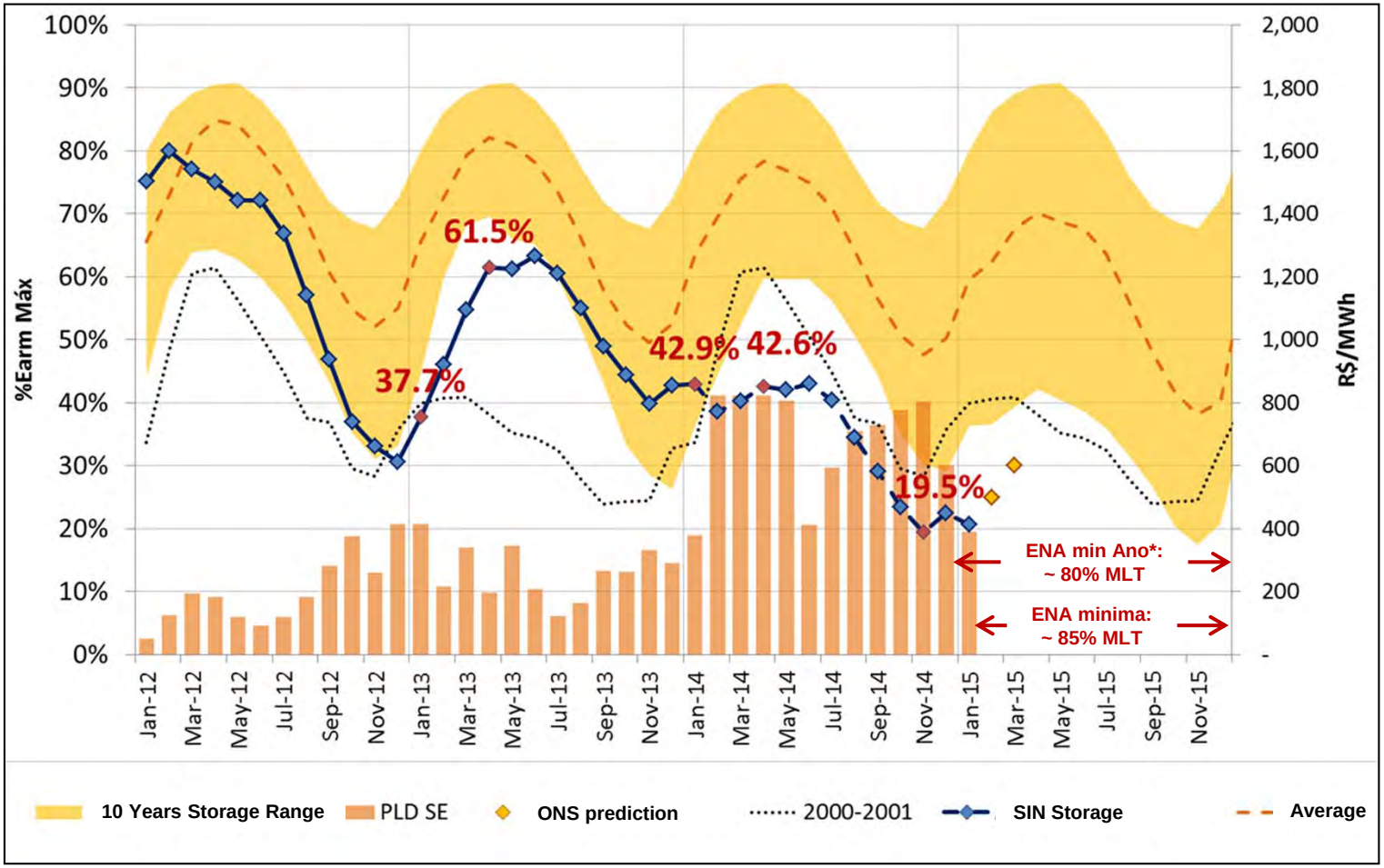
Hydrothermal Progress * – ONS/PMO (2014)



* HPP (Power) + TPP (Availability - discounting Maintenance and Forced Outage Rate)

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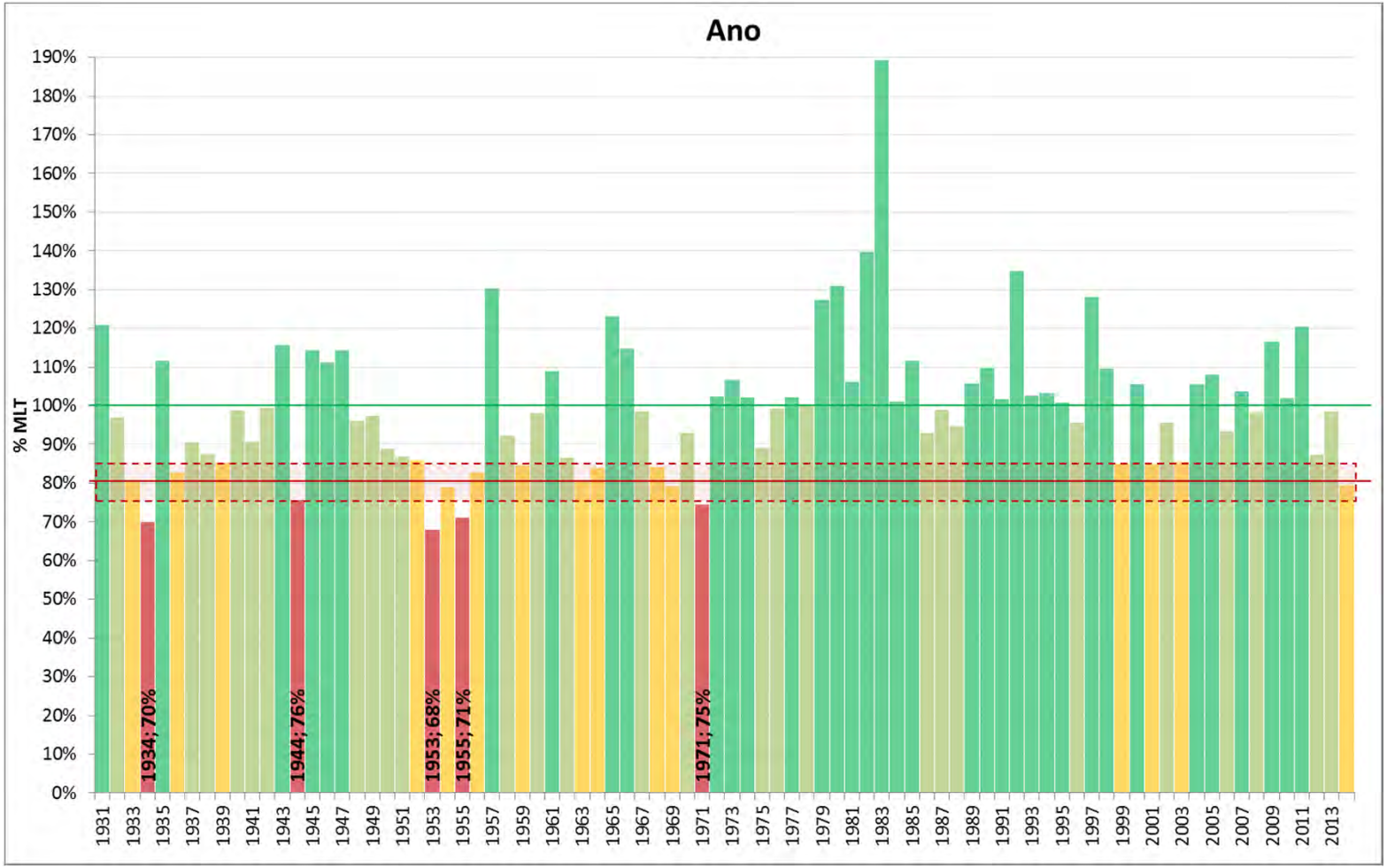
Storage (SIN)



* Minimum Energy Inflow in 2015 to reach 10% of storage in Nov-15. Variations in the spatial and temporal distribution of rainflow may alter the estimated values for the evolution of storage due to transmission limitations, and possible loss of producibility and spillage, particularly in Northern and Southern subsystem. The same note applies to the demand and availability of SIN power plants (PMO Feb-15).

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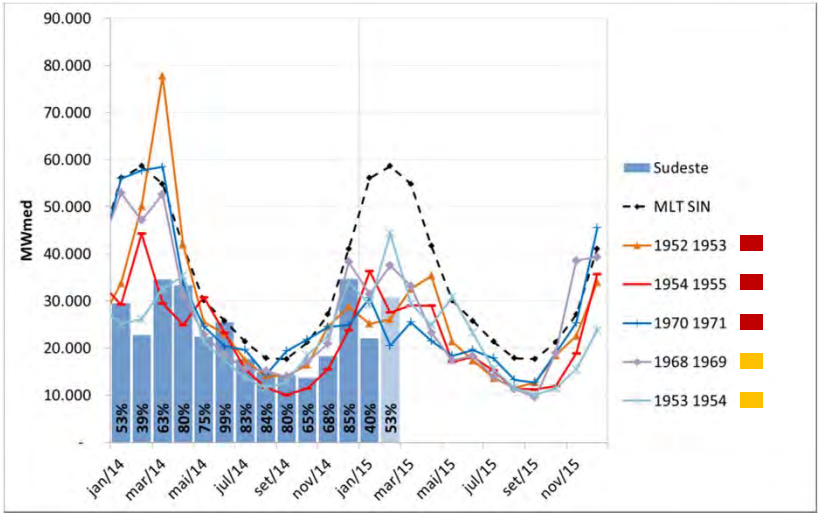
Minimum Energy Inflow* (SIN)

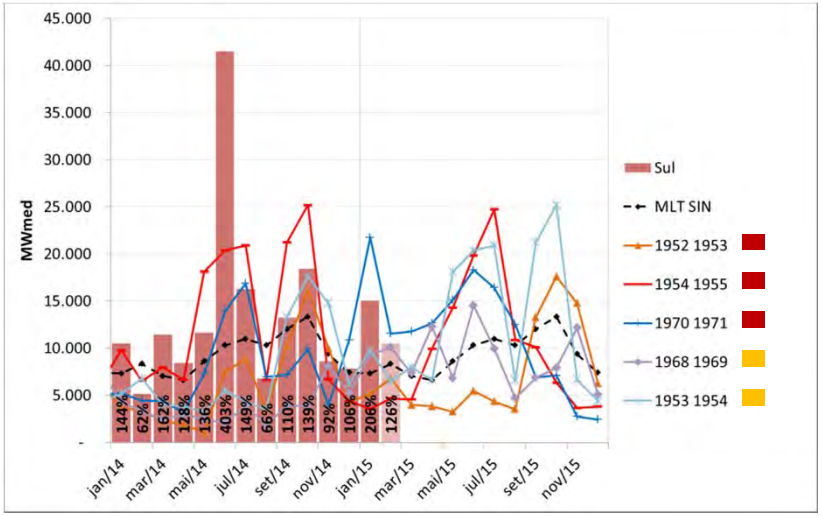


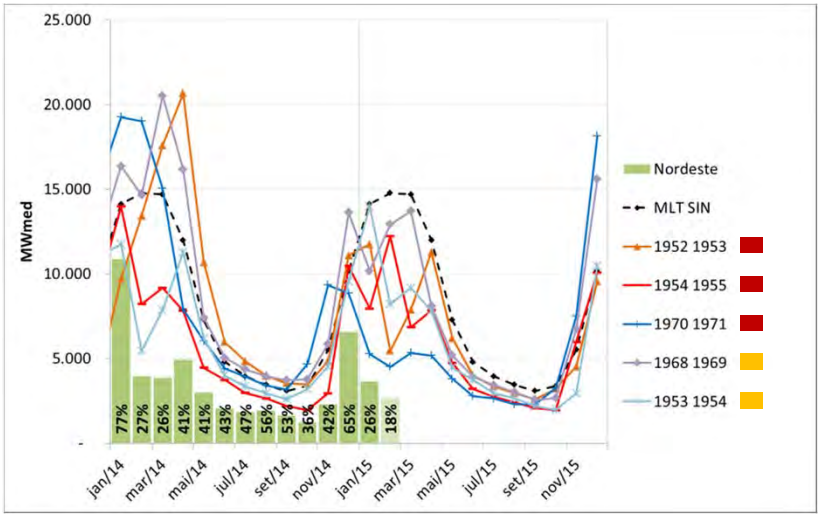
* Minimum Energy Inflow in 2015 to reach 10% of storage in Nov-15. Variations in the spatial and temporal distribution of rainflow may alter the estimated values for the evolution of storage due to transmission limitations, and possible loss of producibility and spillage, particularly in Northern and Southern subsystem. The same note applies to the demand and availability of SIN power plants (PMO Feb-15).

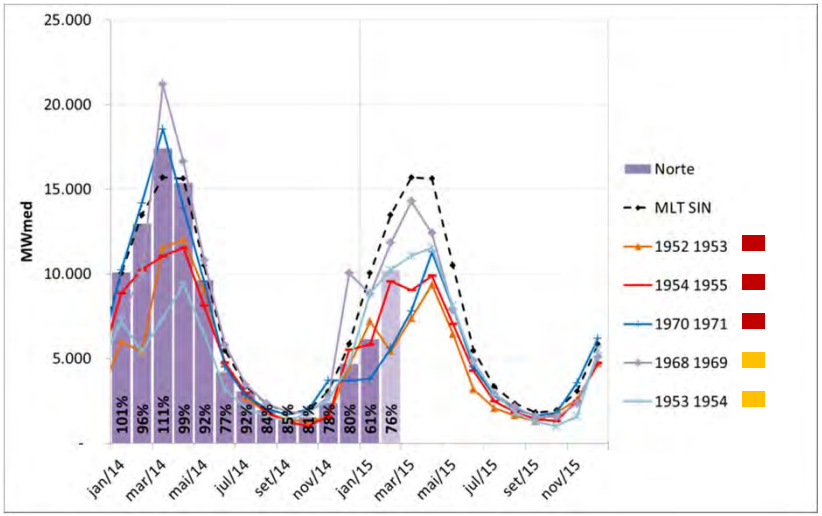
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Critical Energy Inflows with Similarity in History



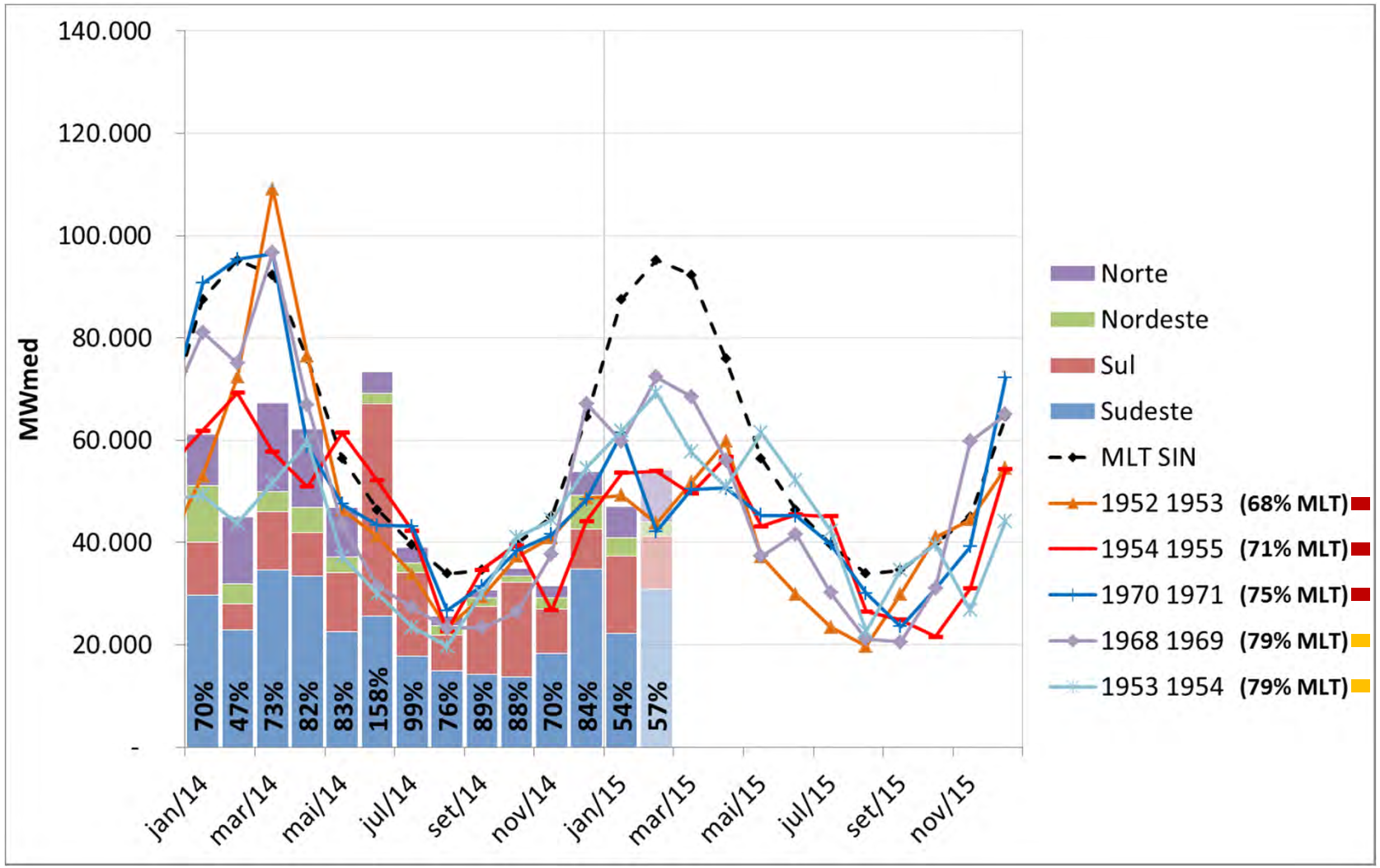






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Critical Energy Inflows with Similarity in History



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