



# Sistema de pronóstico hidrológico de la Represa de Salto Grande

Hydrological forecasting system in the Salto Grande Dam

**International Conference on Climate Services 4**



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Área Hidrología

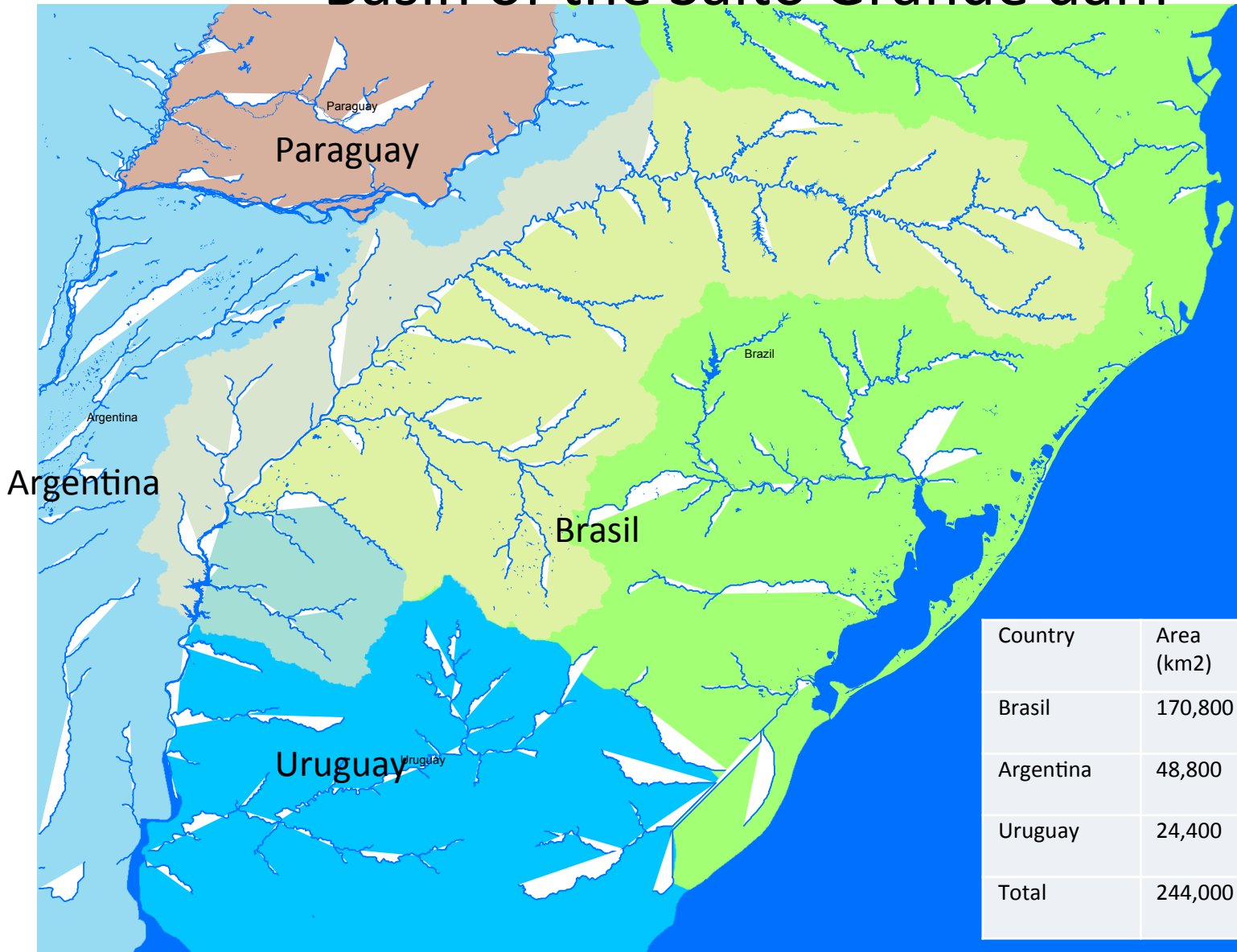
Gerencia de Ingeniería y Planeamiento  
Comisión Técnica Mixta de Salto Grande

11/12/2014

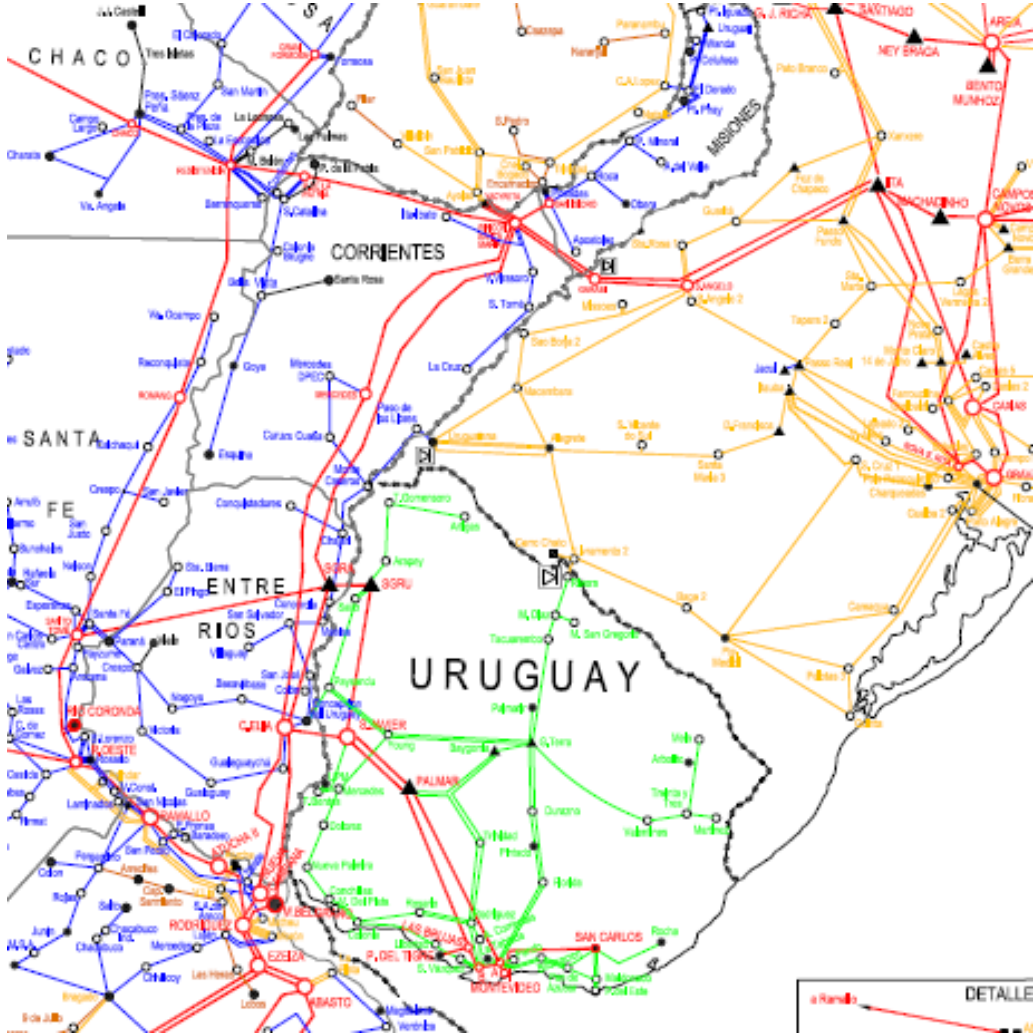
# Content

- Basin and data
- System
- Forecasting
- Needs and improvements

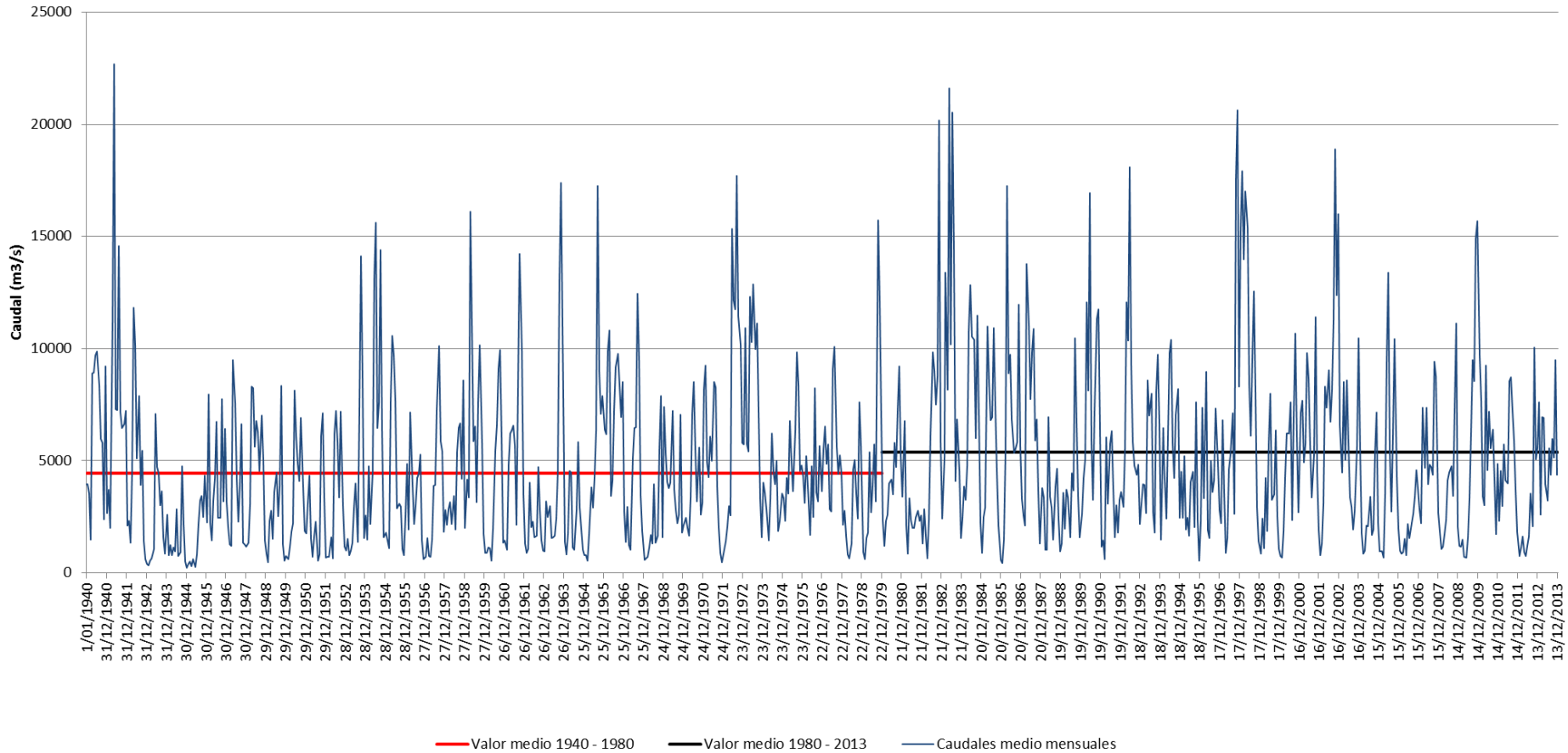
# Basin of the Salto Grande dam



# Energy context



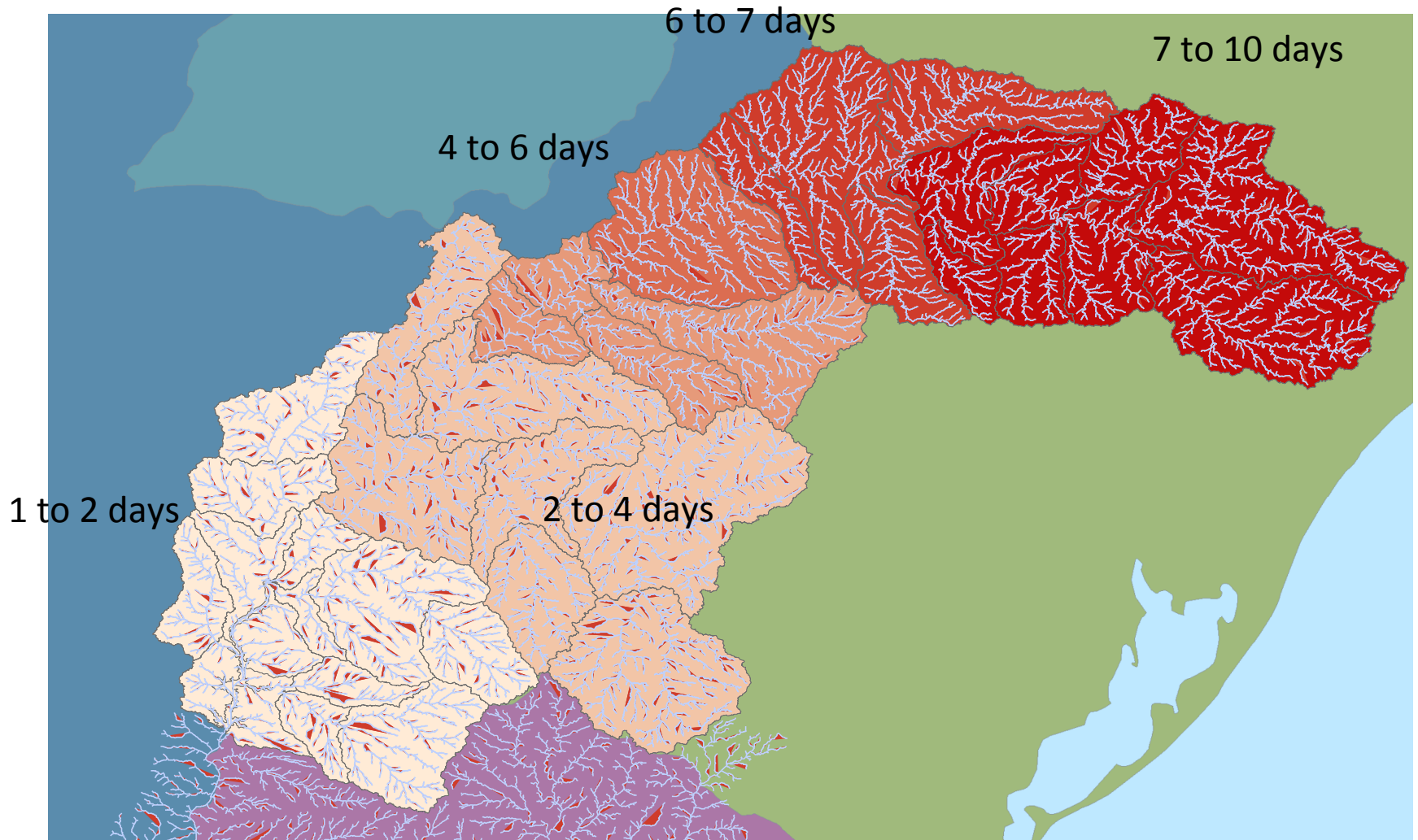
# Basin and flow regime



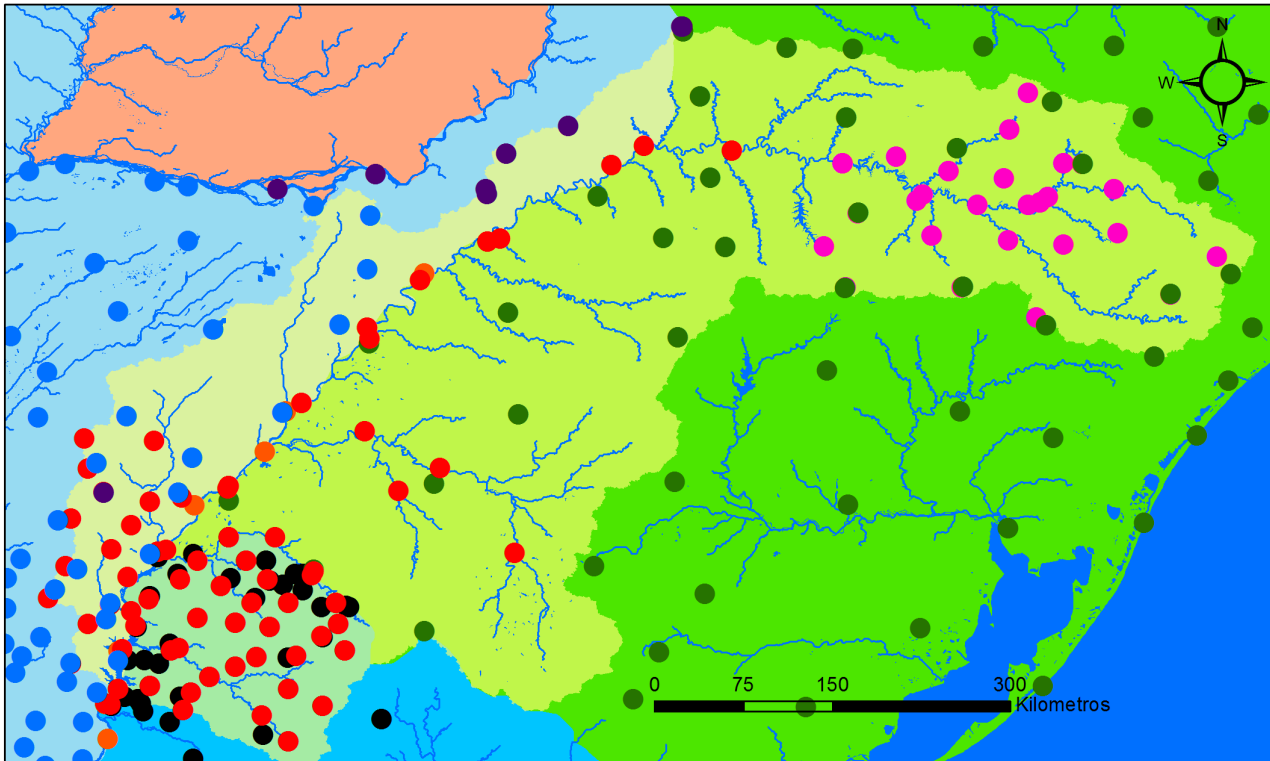
# Capacity of the dam

Dam	Util volume (Hm <sup>3</sup> )	Mean flow (m <sup>3</sup> /s)	Time to store the volume (days)
Bonete (UTE Río Negro)	6500	650	116
Salto Grande	2856	5368	6

# Times of travel in the basil



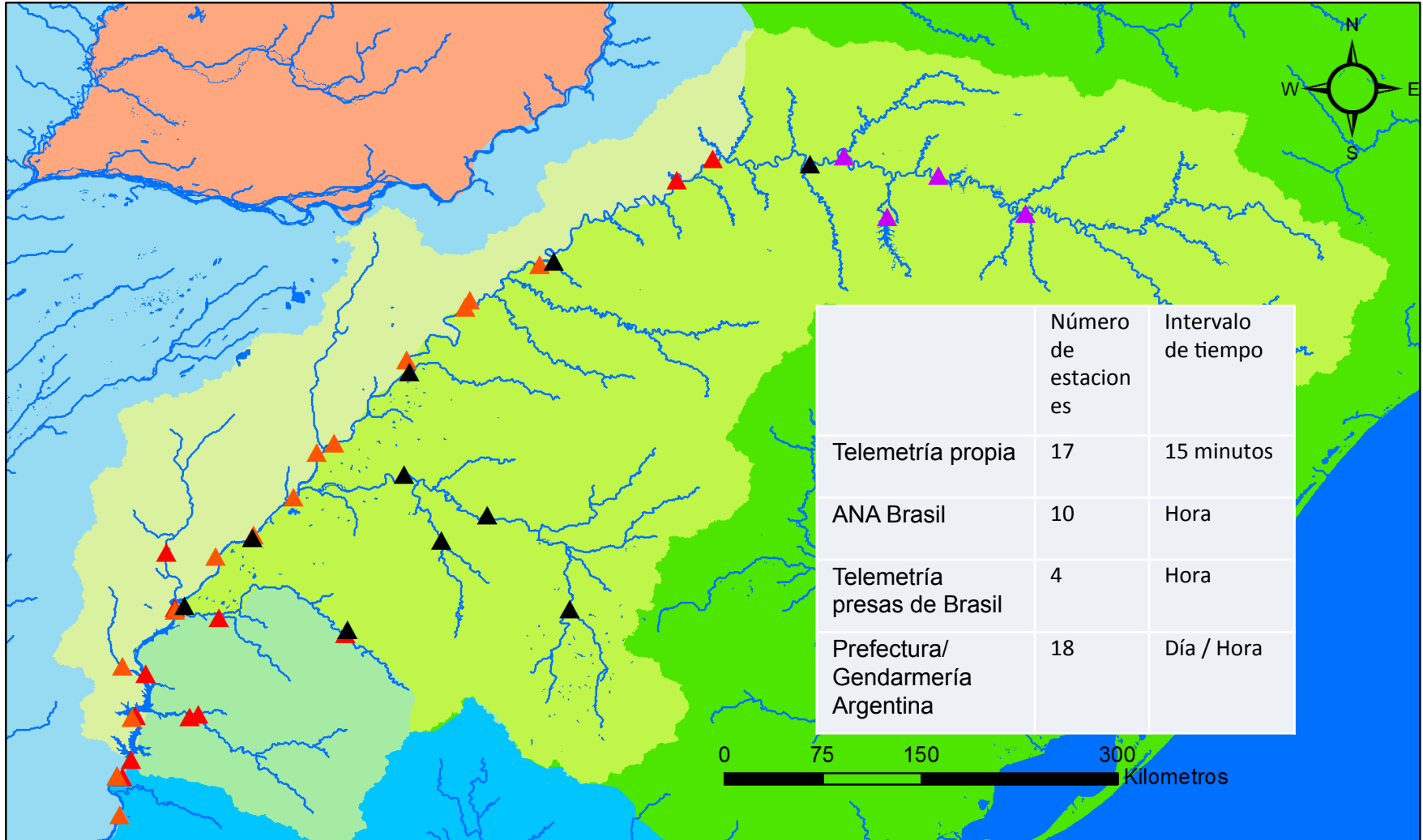
# Meteorological stations



	Número de estaciones	Intervalo de tiempo
Telemetría propia	60	15 minutos
INMET Brasil	77	Hora
Telemetría presas de Brasil	26	Hora
DNM / Policía Salto Artigas	50	Día
Prefectura/ Gendarmería Argentina	18	Día
SMN Argentina	4	Diaria
ANA Brasil	10	Hora
Yacyretá	4	Hora
Bolsa de Cereales de Entre Ríos	116	Hora



# Hydrological stations



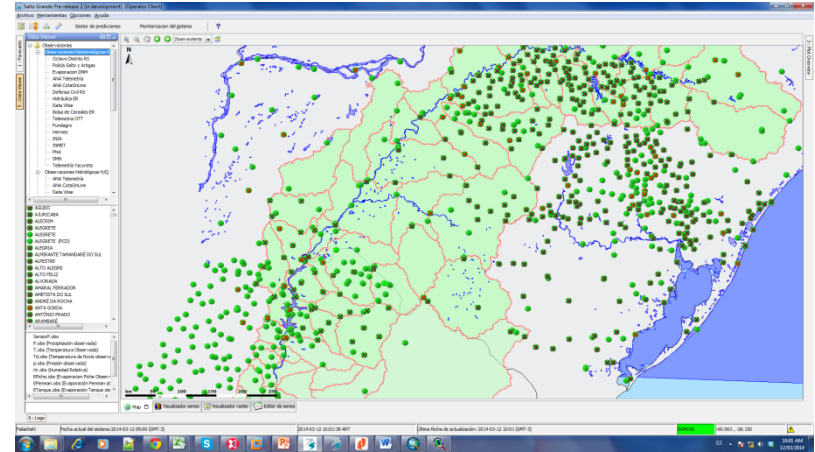
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# Hydrological system : FEWS (Deltares)

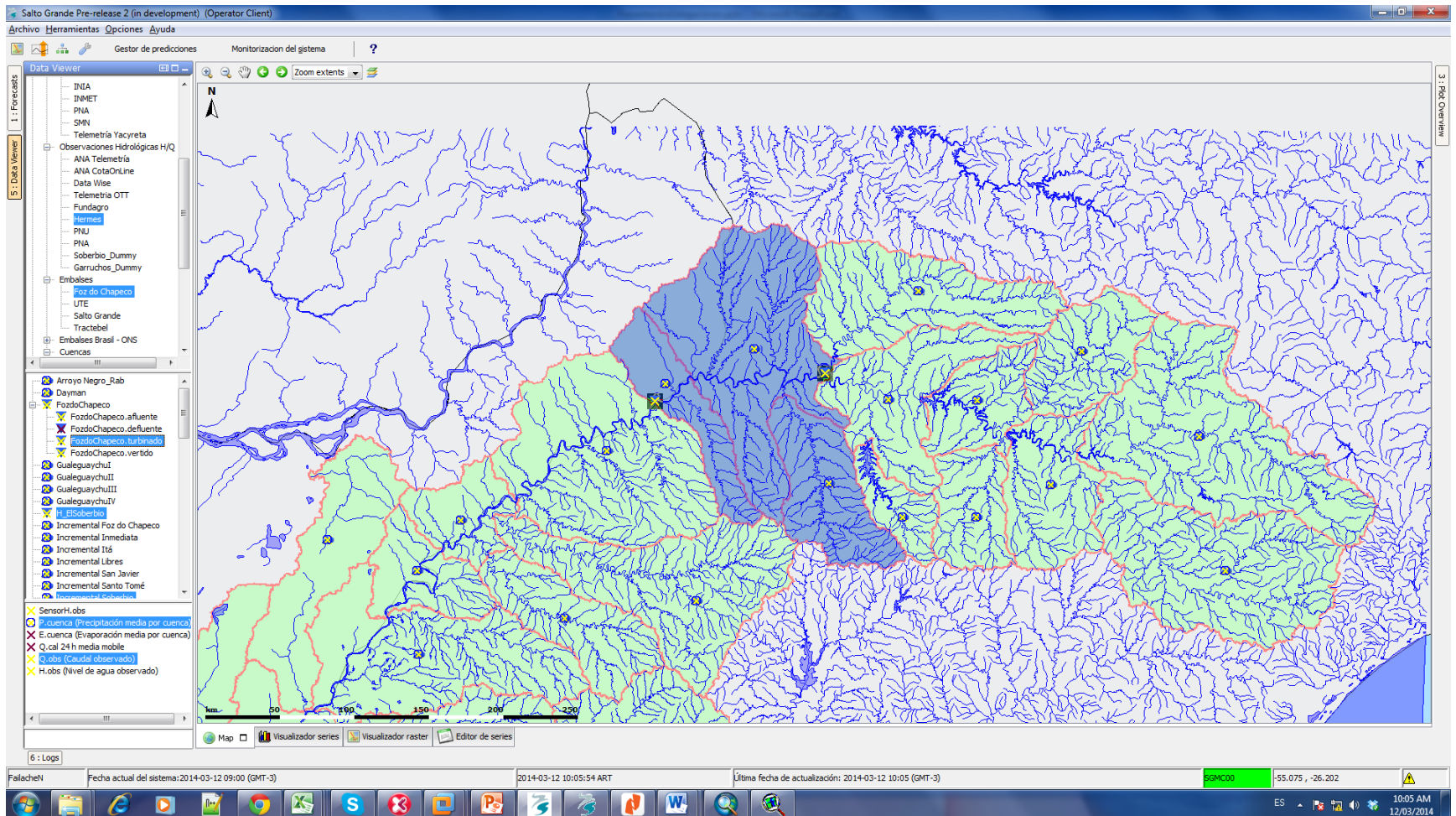
## System:

- Architecture, multiple servers, data base
- Sources of information, Python scripts
- Data assimilation (Hydro – Meteo and weather models)
- Managment of all the data, model time steps, level to flow transformations, mean precipitations in basins, read binary data, etc...
- Run models and flow forecast



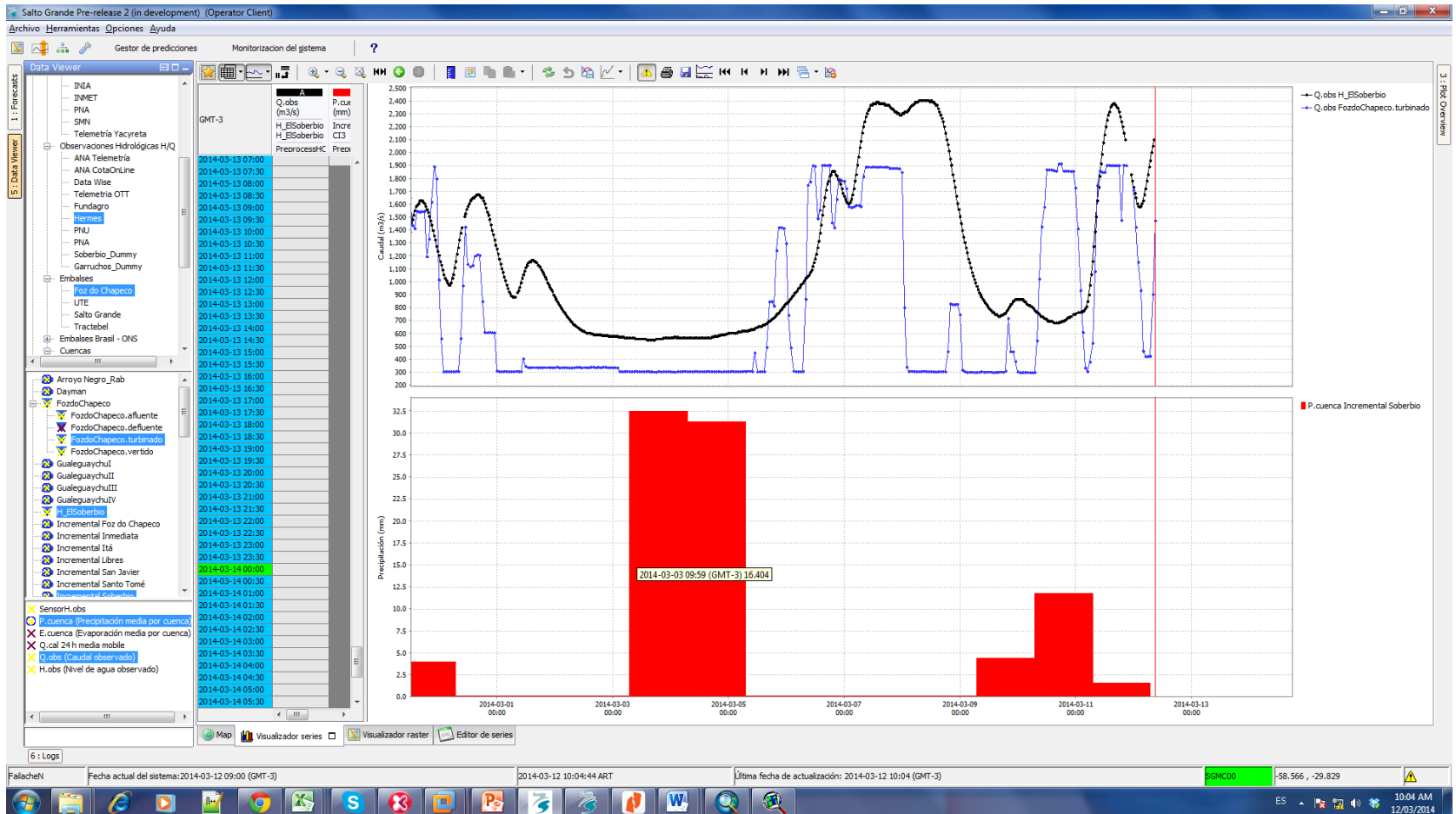
# Hydrological system : FEWS (Deltares)

Example Foz do Chapecó – Soberbio



# Hydrological system : FEWS (Deltares)

## Example Foz do Chapecó – Soberbio



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# Flow forecast

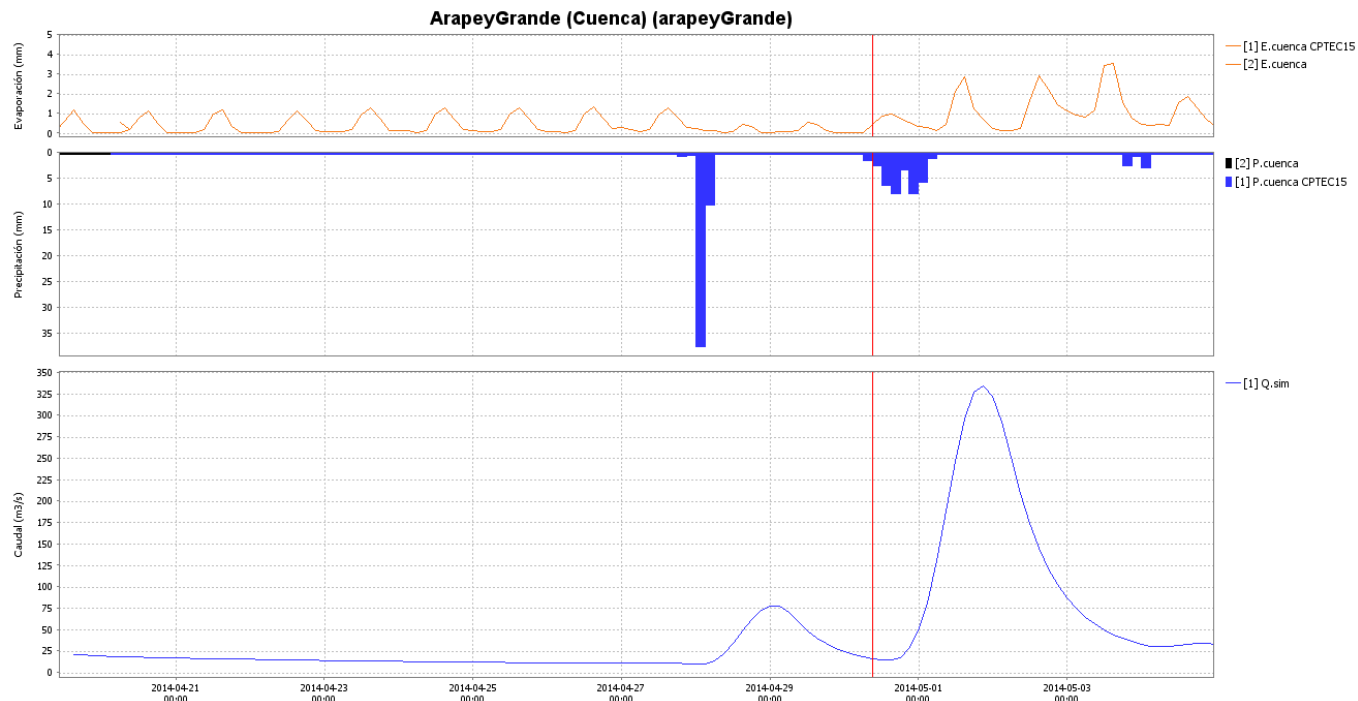
Objective:

- Dam management for the energy production
- Security of the dam in high flows
- Flow control for the population in risk

# Flow forecast

Hydrological model: Sacramento

Meteorological models: GFS, CPTec ETA15, CPTec ETA40 (Ensemble but only one member) and SMN-ETA

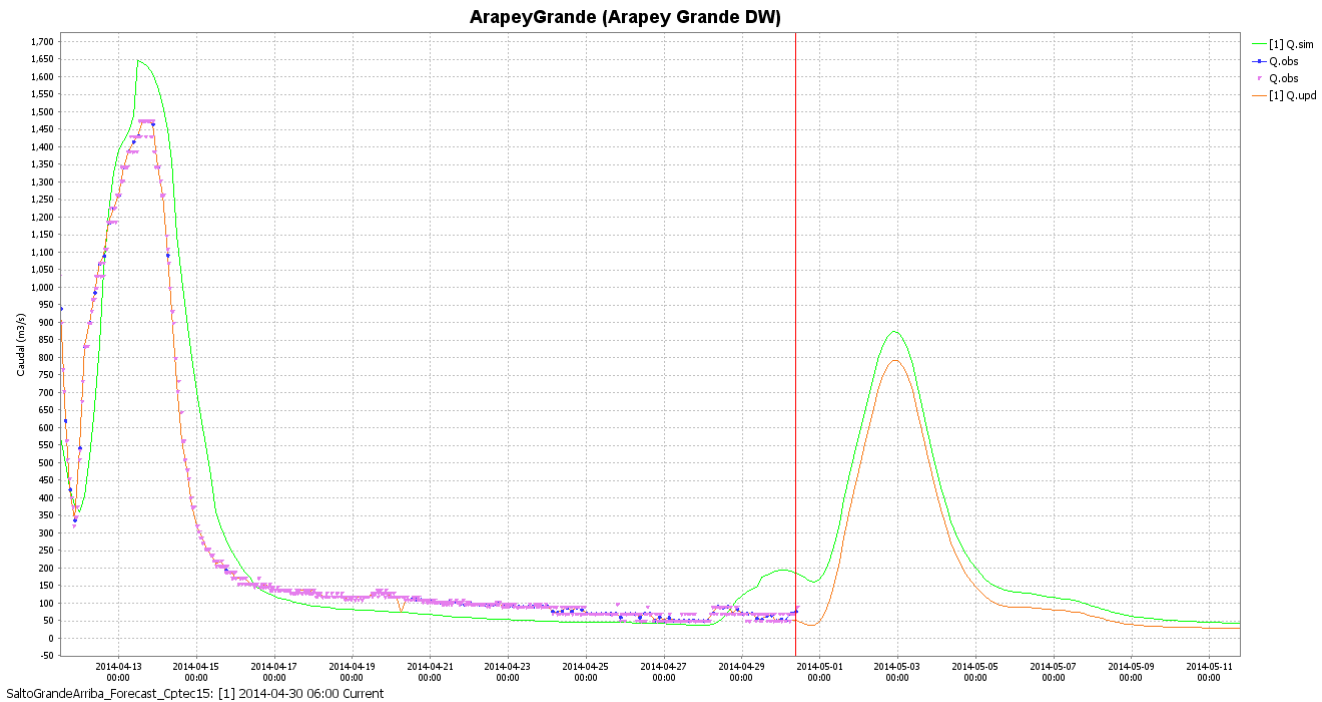


SaltoGrandeAriba\_Forecast\_Cptec15: [1] 2014-04-30 06:00 Current SaltoGrande\_Update: [2] 2014-04-29 12:00 Current



# Flow forecast

Hydraulic models: HEC-RAS and 2 layer Muskingum  
Correction model: ARMA (AR(1))



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# Needs and improvements

Density of the  
Meteorological monitoring  
Ibicuí Basin

Chajarí RADAR...

Management of the  
uncertainty,

