Condiciones hidroclimáticas en la Cuenca del río Paraná – Brasil

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Perspectivas Climáticas del Centro Regional del Clima para el Sur de América del Sur

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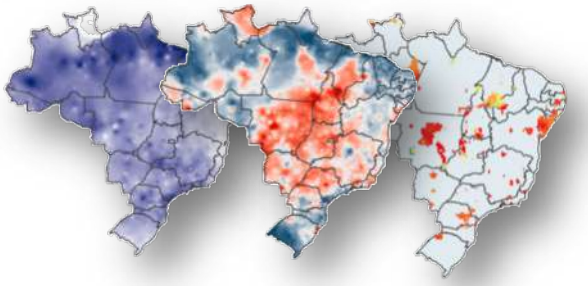
MONITOREO DE SEQUÍA METEOROLÓGICA/AGRÍCOLA

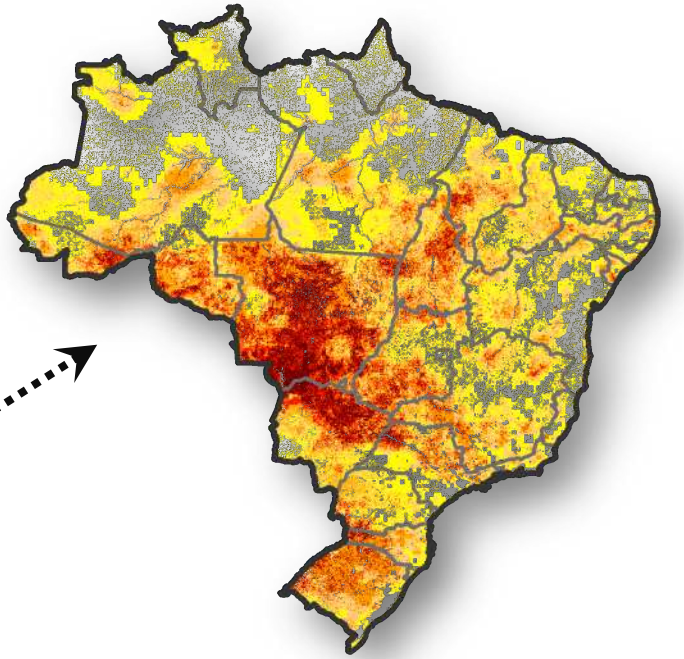
Déficit de lluvia (in situ + satélite)

CHIRPS

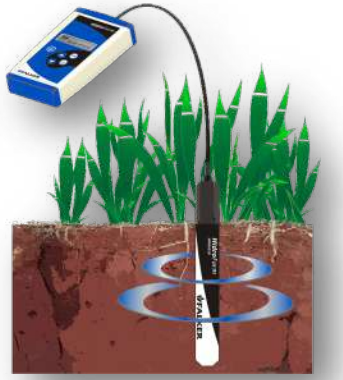
Lluvia, SPI, duración da sequia



Índice Integrado de Sequia (IIS)

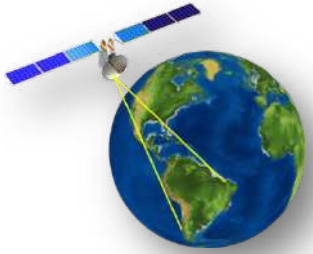


Humedad del suelo (in situ, satélite)



GRACE – US

Estrés hídrico na vegetación - Satélite

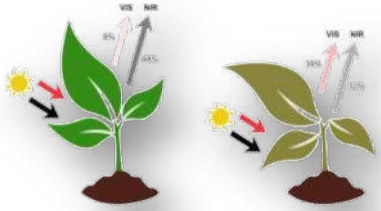


NDVI
Salud de la vegetación

NOAA
TERRA
AQUA

VHI
VSWI

Temperatura da superficie



MONITOREO DE SEQUÍA HIDROLÓGICA

Déficit de Lluvia (in situ + satélite)

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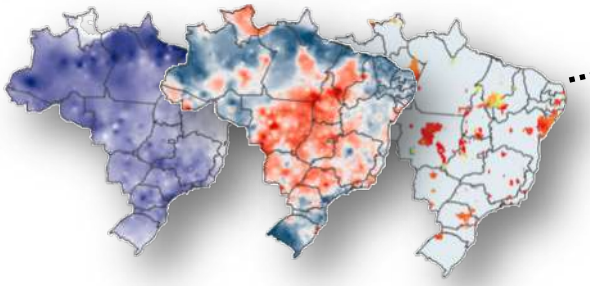
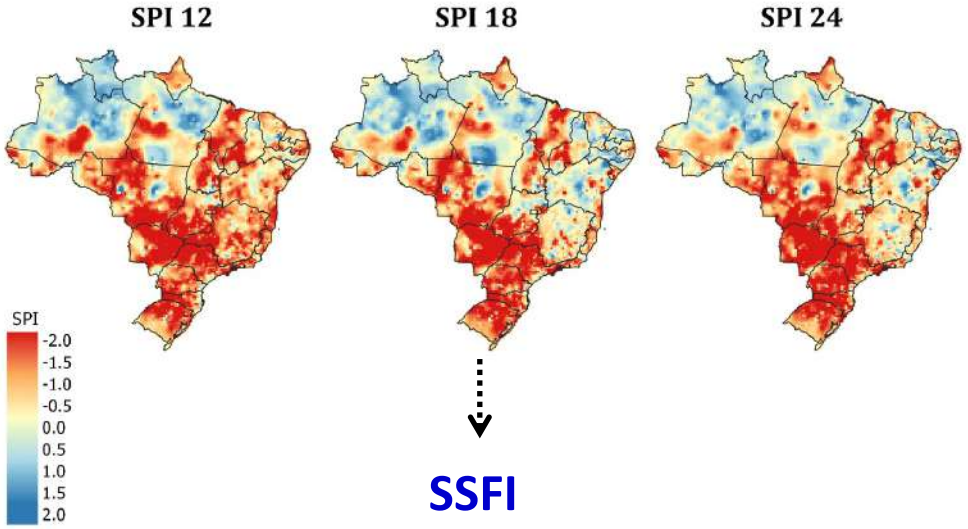
Lluvia, SPI, duración de sequia



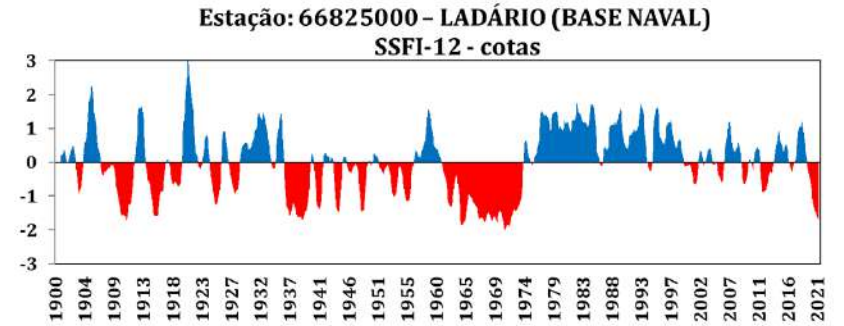
Nivel/Caudal de los ríos (in situ)

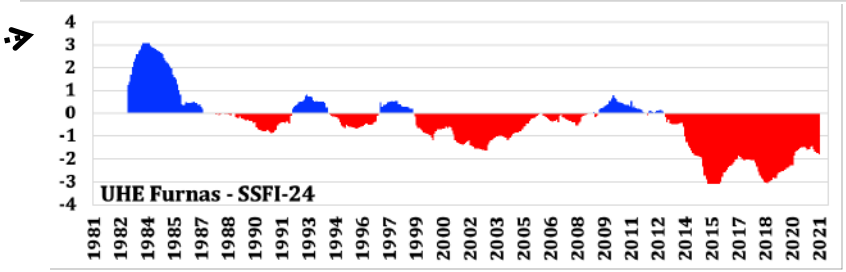
SPI escalas relevantes para hidrología



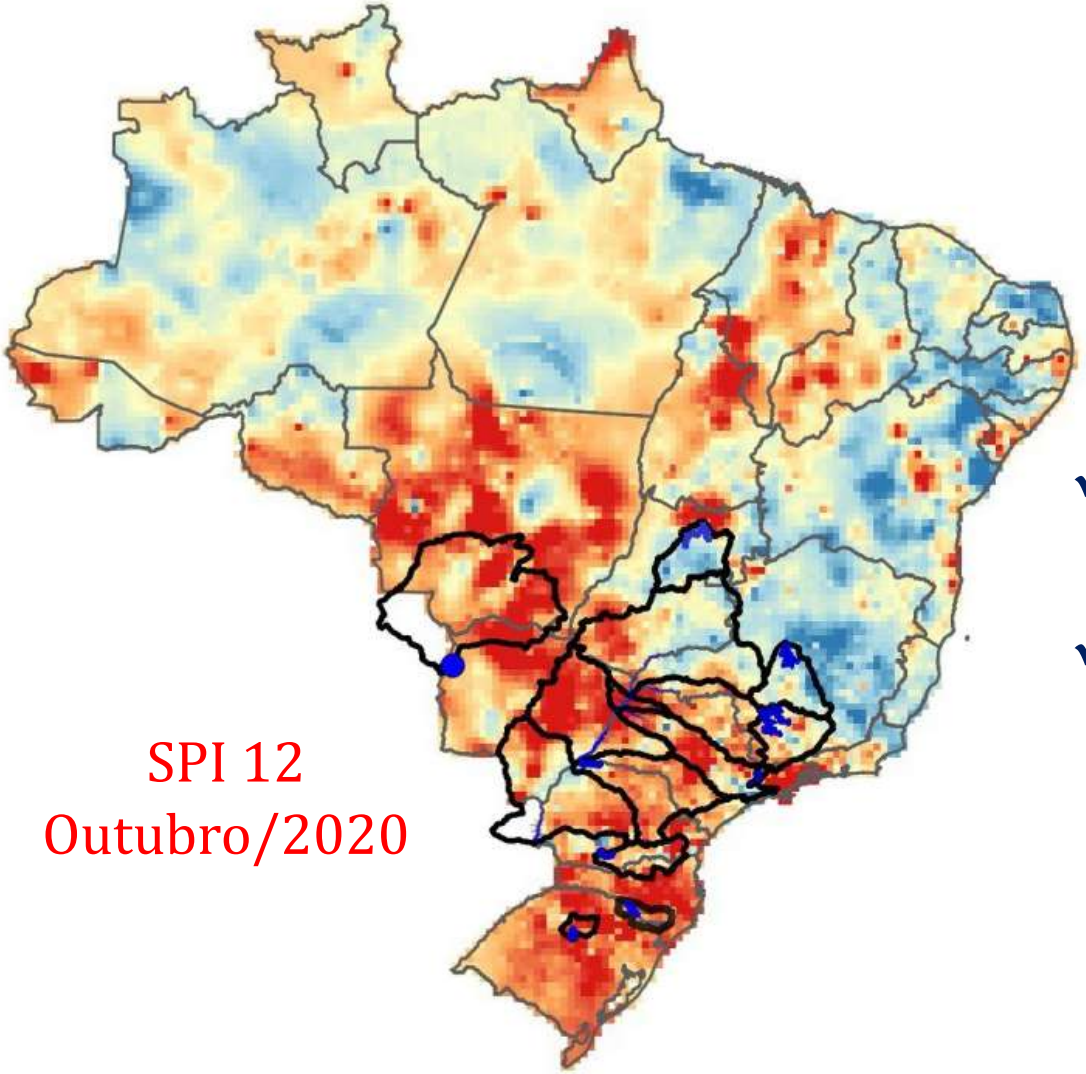
SSFI

(Standardized Streamflow Index)





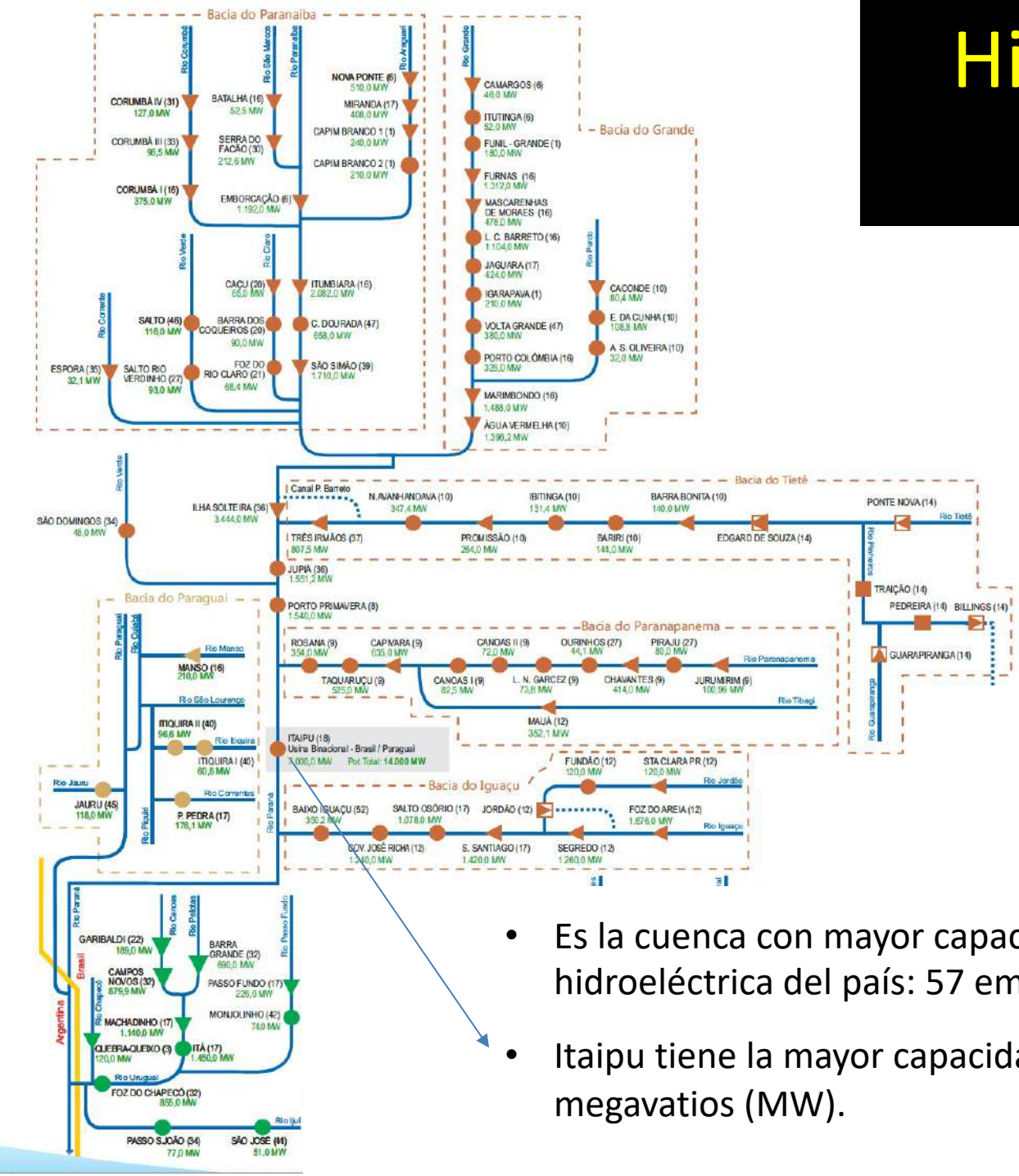
MONITOREO DE SEQUÍA HIDROLÓGICA



Cuencas monitoreadas

- ✓ Abastecimiento de agua
- ✓ Generación de Energia Eléctrica

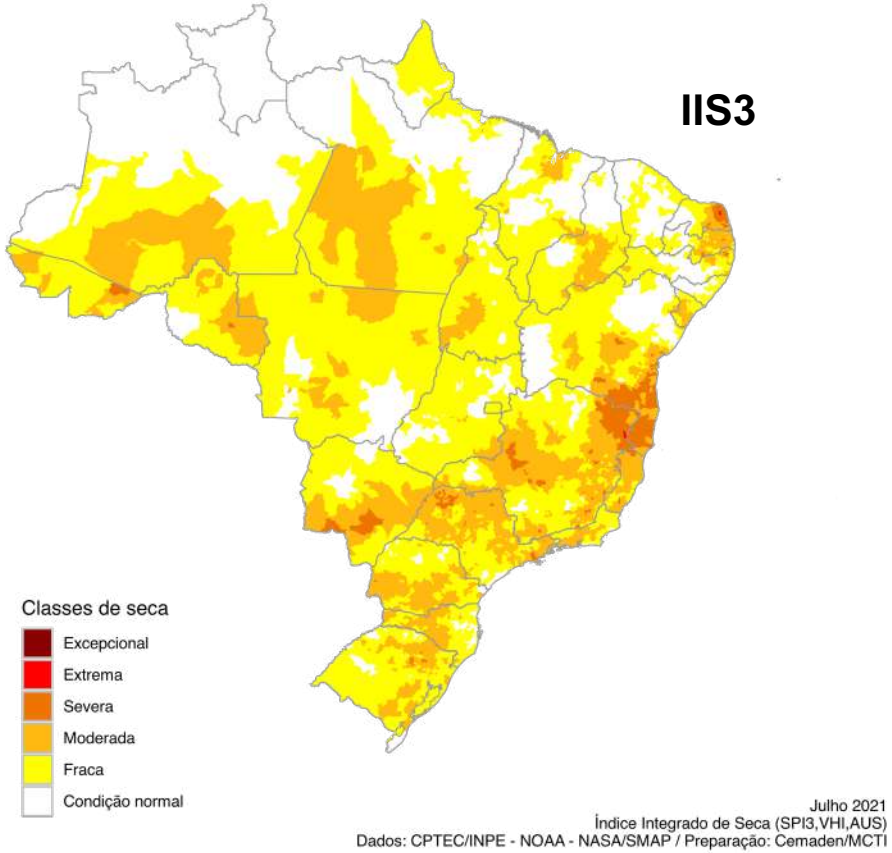
Hidroeléctricas Río Paraná

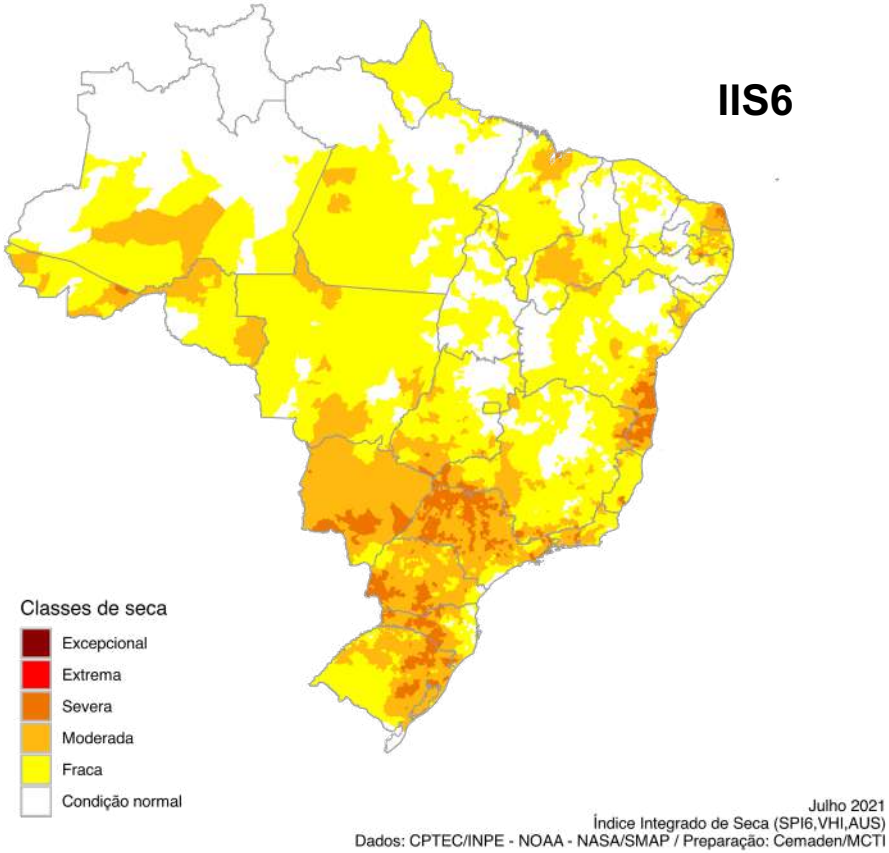


- Es la cuenca con mayor capacidad instalada de generación hidroeléctrica del país: 57 embalses
- Itaipu tiene la mayor capacidad instalada, con 14.000 megavatios (MW).

Datos: ONS

Índice Integrado de Sequía - IIS: (SPI3 e 6 + VHI+US): Julio/2021



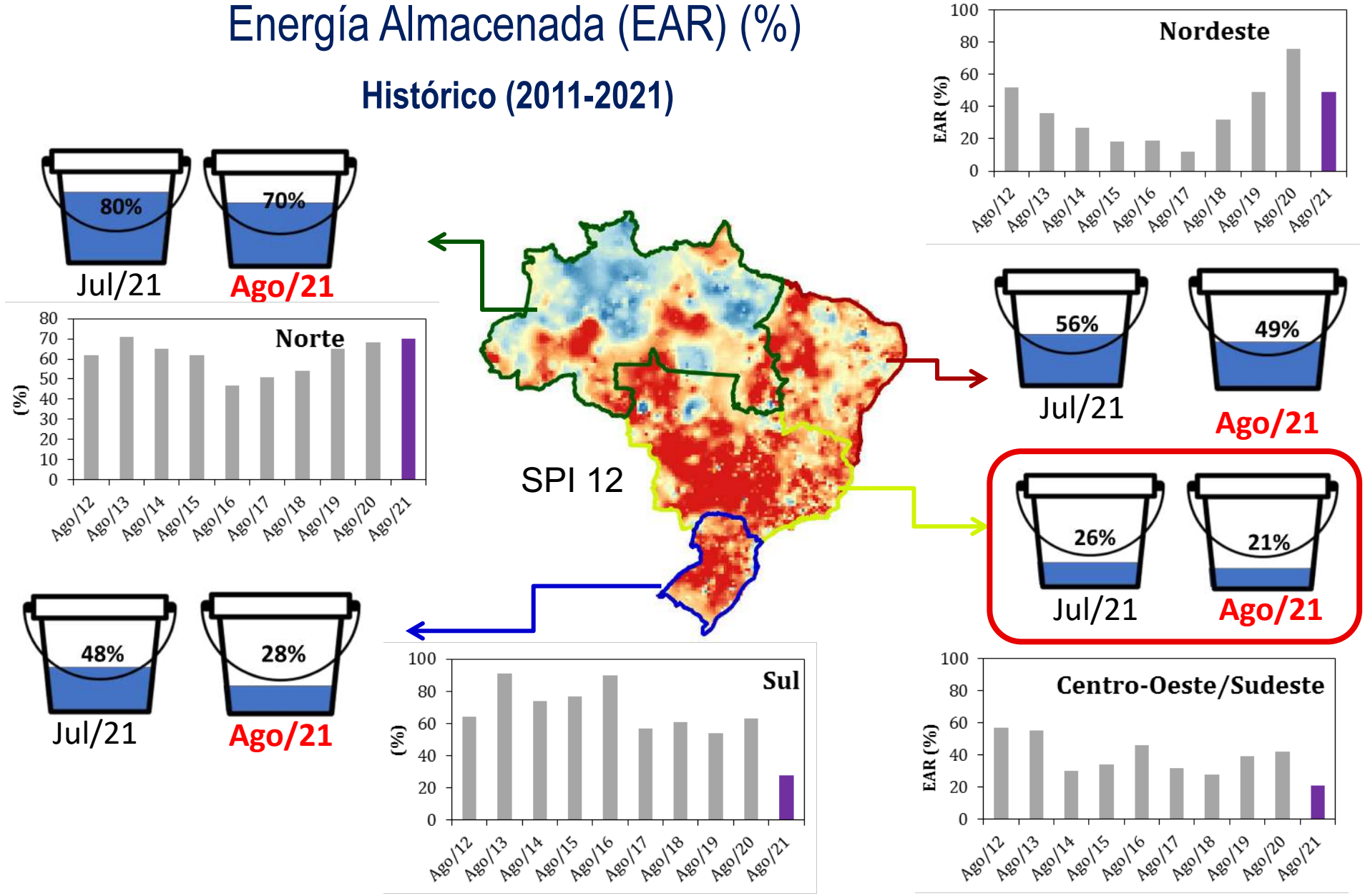


Datos: SPI - CPTEC/INPE, VHI - AVHRR/NOAA y Humedad del Suelo (SMAP/NASA)
Desarrollo y procesamiento del IIS: Cemaden

Impactos en el Sistema Hidroeléctrico

Energía Almacenada (EAR) (%)

Histórico (2011-2021)



Datos: Operador Nacional del Sistema Eléctrico/ONS. Gráficos: Cemaden.

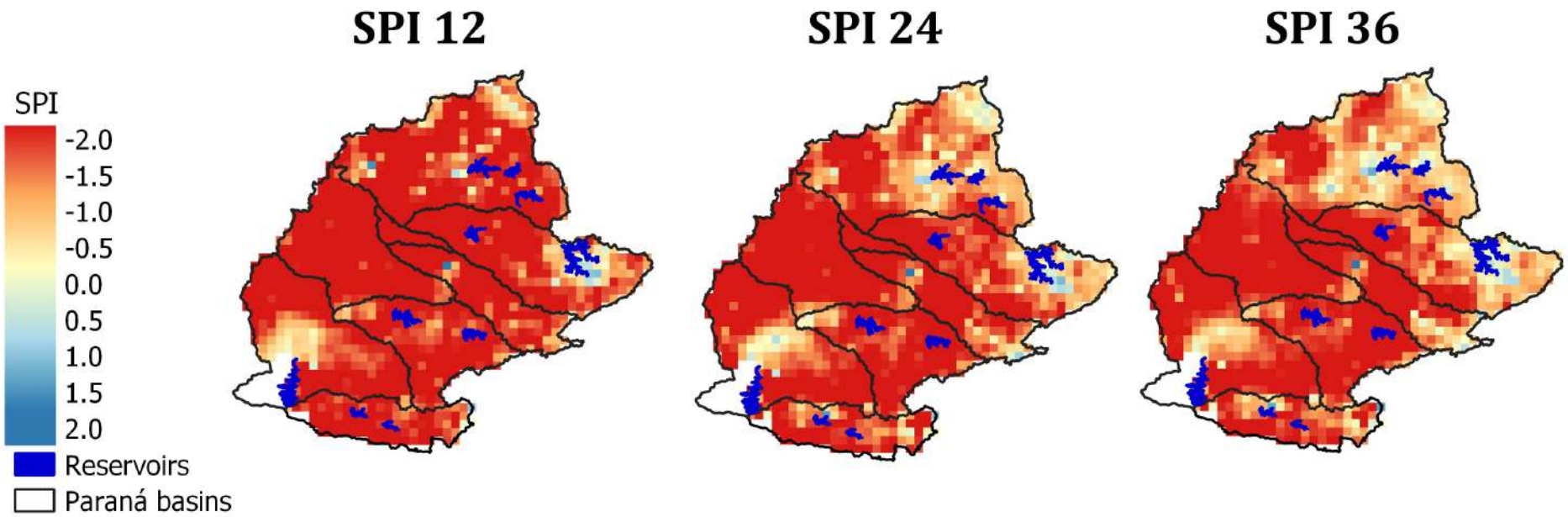
Cuenca del Rio Paraná

Subsistema Sudeste / Centro-Oeste - EAR atual 21,10%

PRINCIPAIS BACIAS	PRINCIPAIS RESERVATÓRIOS		VOLUME ÚTIL ATUAL
GRANDE 25,29% do subsistema*	A. VERMELHA	2,13% do subsistema*	18,07%
	M. MORAES	2,13% do subsistema*	17,45%
	FURNAS	17,21% do subsistema*	17,18%
	MARIMBONDO	2,63% do subsistema*	12,67%
PARAIBA DO SUL 3,64% do subsistema*	PARAIBUNA	2,21% do subsistema*	26,55%
PARANA 1,81% do subsistema*	I. SOLTEIRA	1,81% do subsistema*	23,11%
PARANAIBA 38,42% do subsistema*	SERRA DO FACÃO	3,22% do subsistema*	23,16%
	BATALHA	1,35% do subsistema*	21,95%
	SÃO SIMÃO	2,46% do subsistema*	19,64%
	NOVA PONTE	11,13% do subsistema*	11,84%
	EMBORCAÇÃO	10,72% do subsistema*	11,41%
	ITUMBIARA	7,68% do subsistema*	10,81%
PARANAPANEMA 5,81% do subsistema*	CAPIVARA	1,91% do subsistema*	52,31%
	CHAVANTES	1,66% do subsistema*	26,08%
	JURUMIRIM	2,02% do subsistema*	23,63%

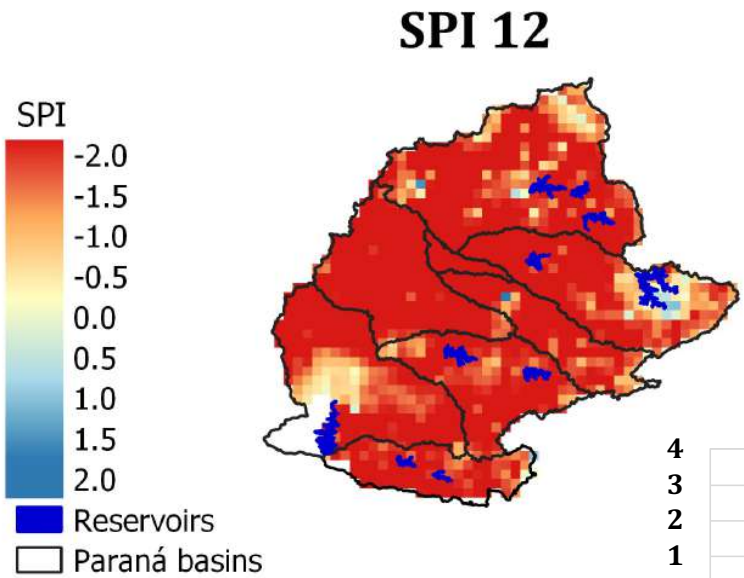
Cuenca del Rio Paraná

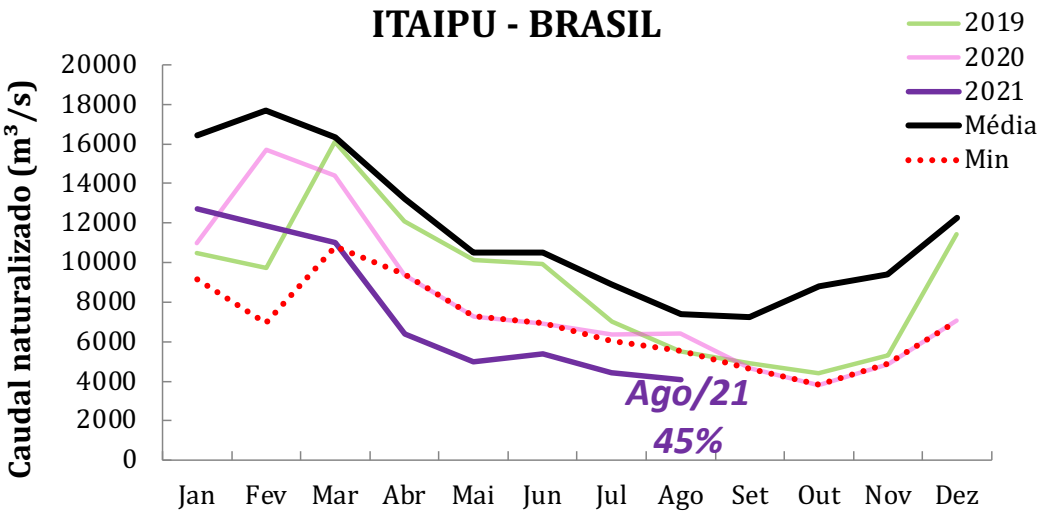
SITUACIÓN ACTUAL
Agosto de 2021

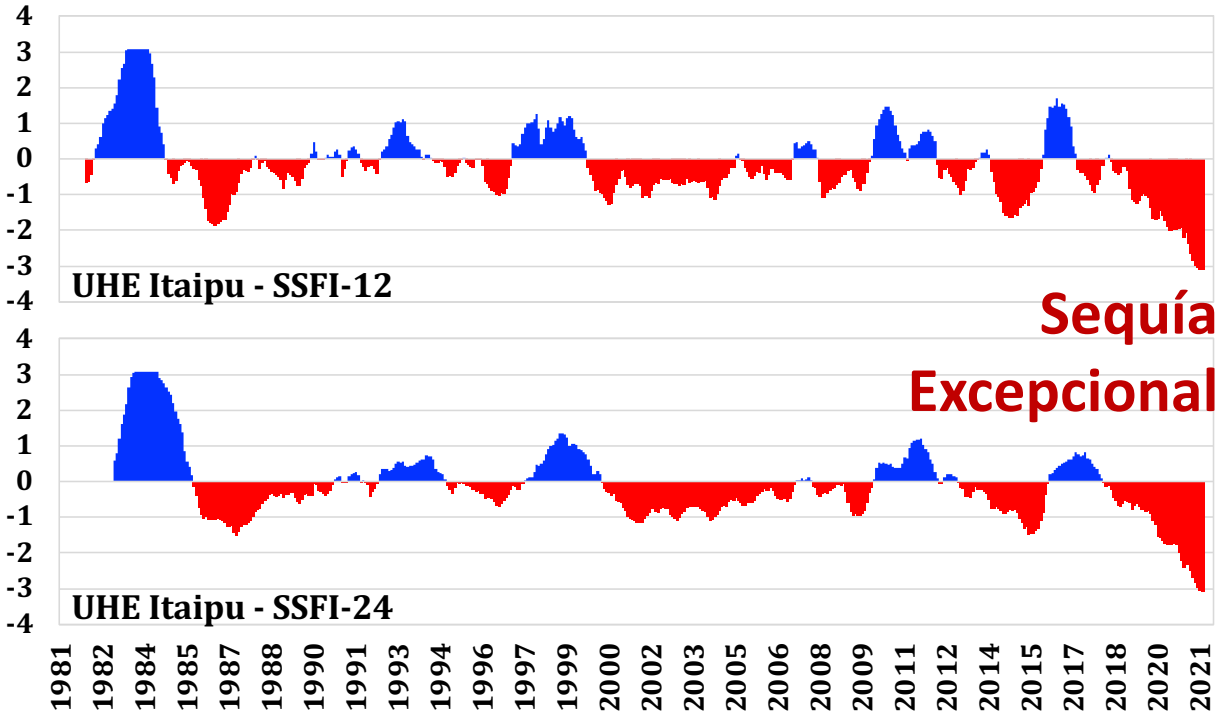


Índice de Precipitación Estandarizado

RÍO PARANÁ
UHE ITAIPU



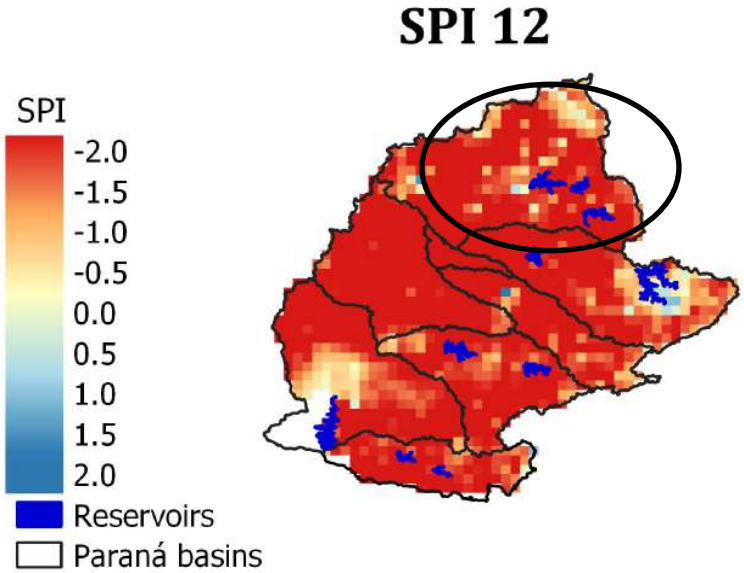


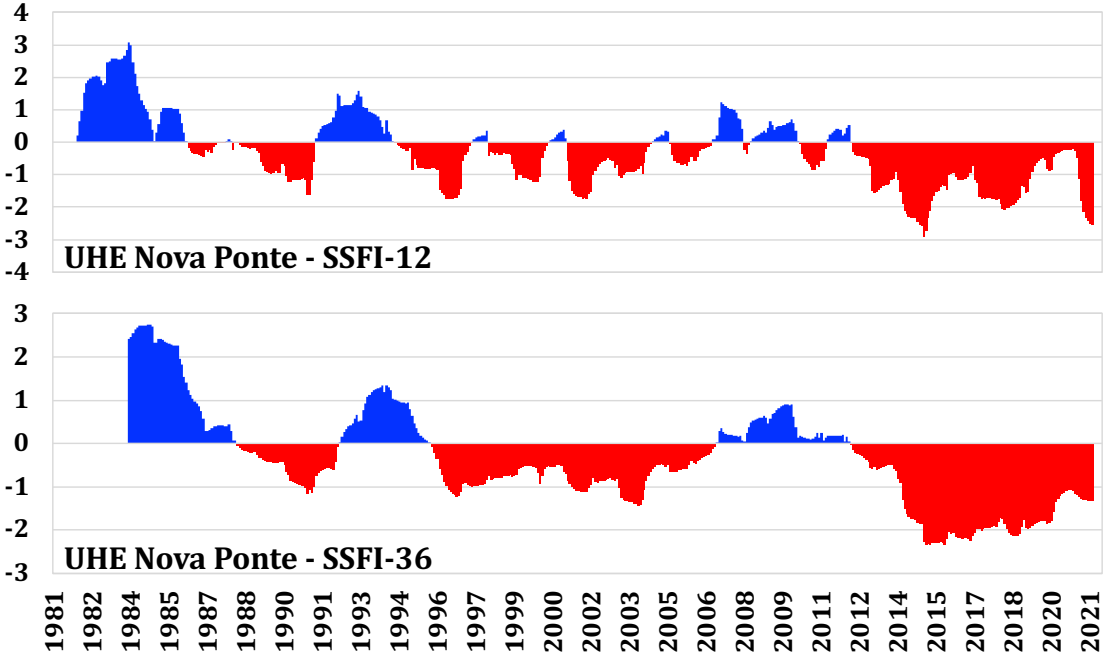


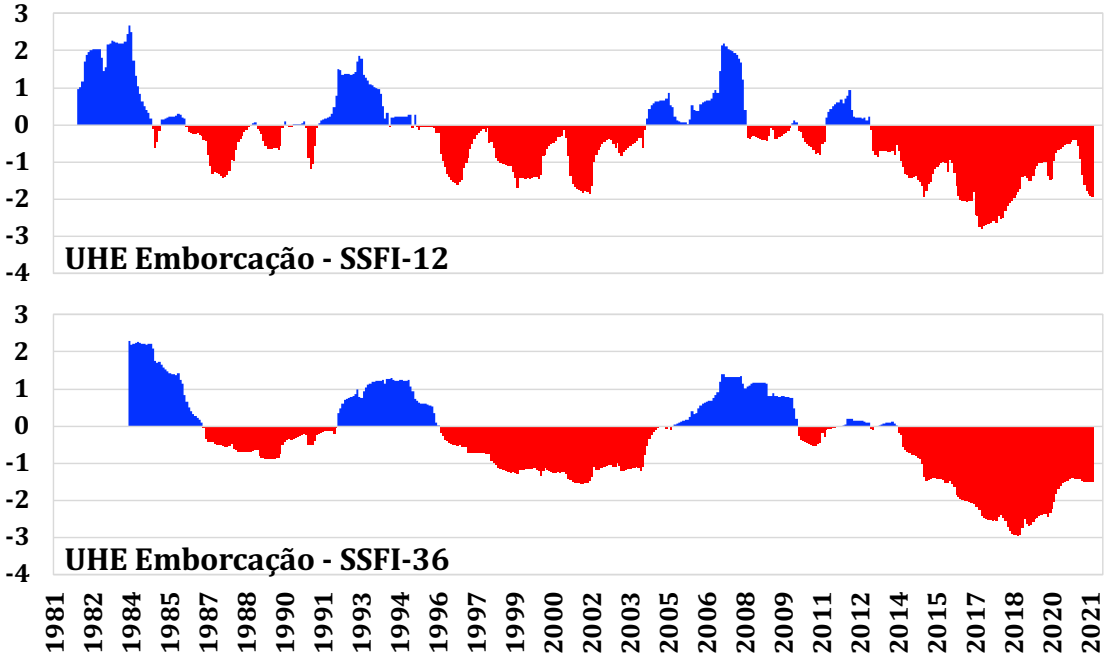
Índice de Caudal Estandarizado – SSFI (Standardized Streamflow Index)

Agosto 2021

Río Paranaíba



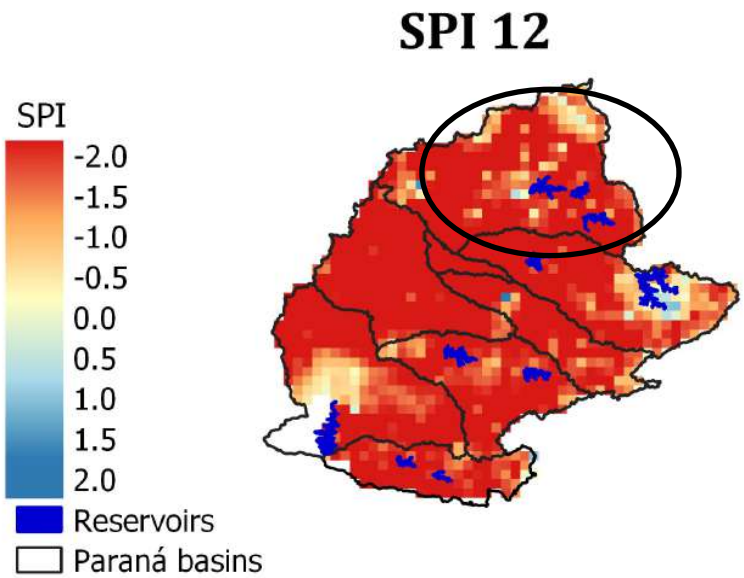


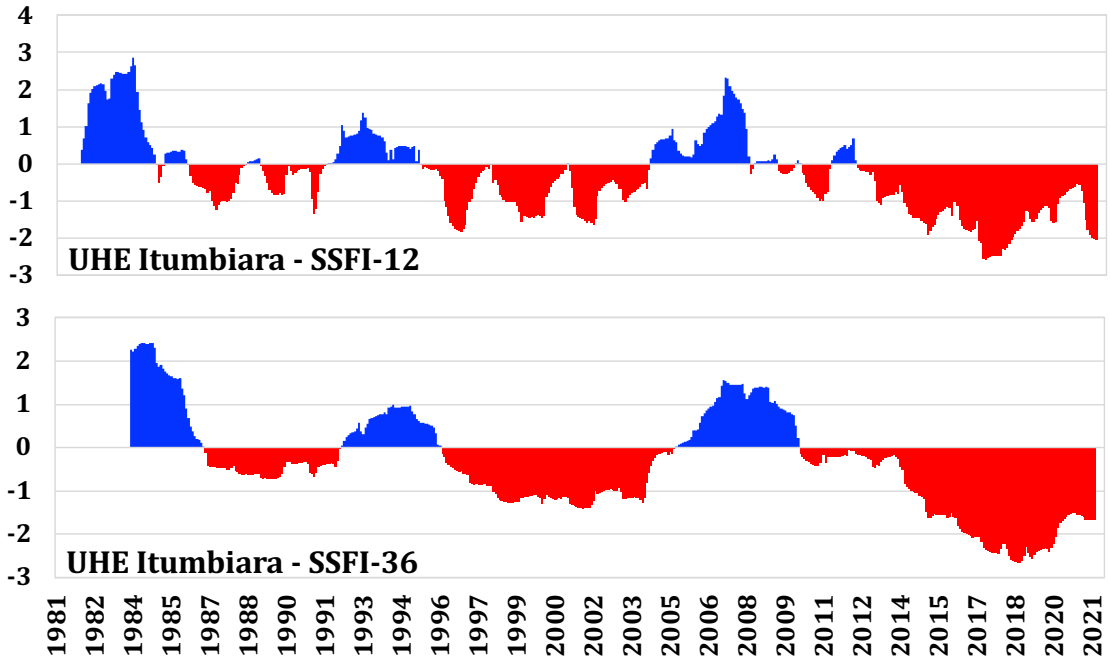


Sequía hidrológica Severa a Extrema

Agosto 2021

Río Paranaíba

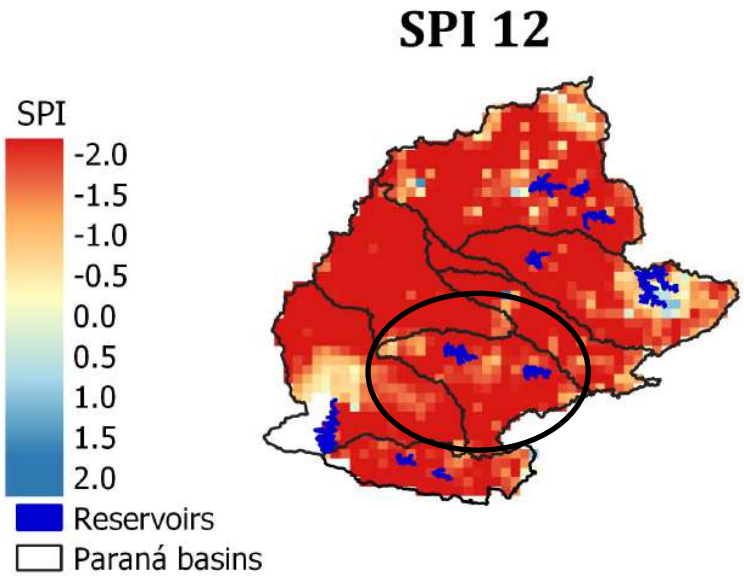


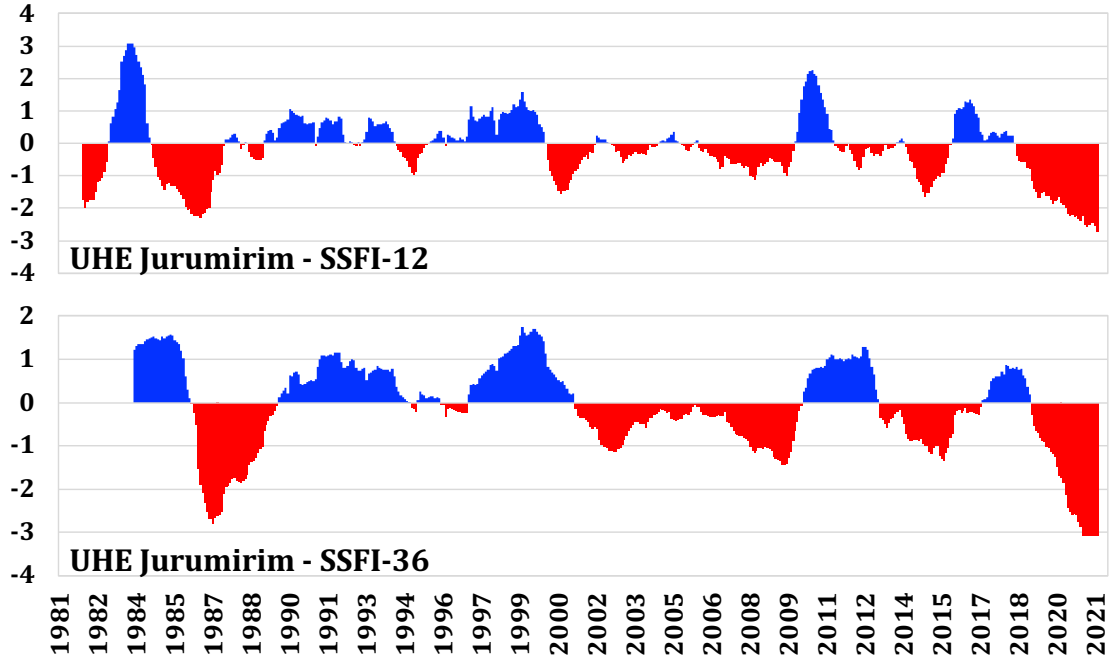


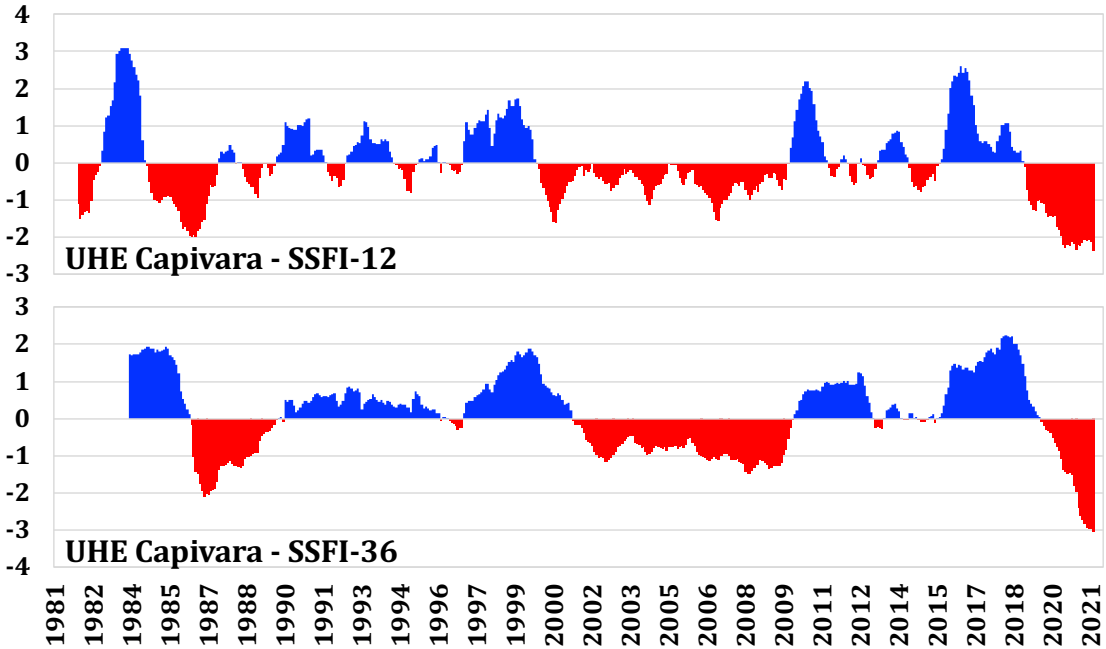
Sequía hidrológica Extrema

Agosto 2021

Río Paranapanema

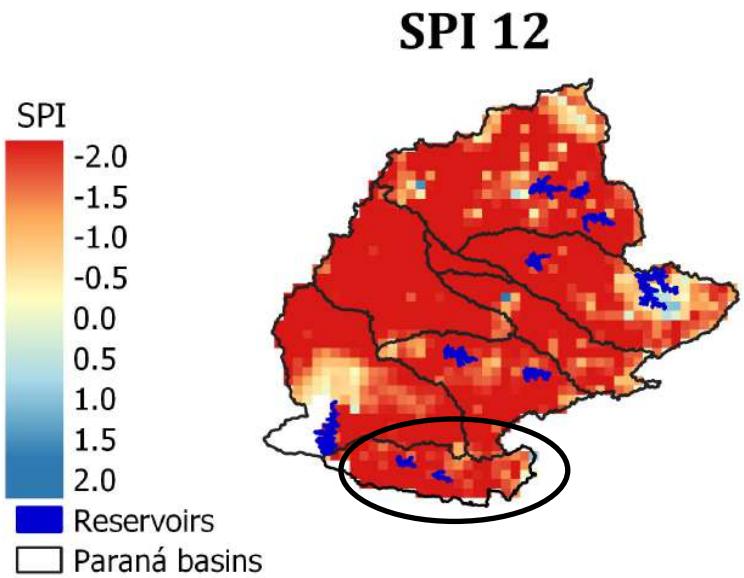


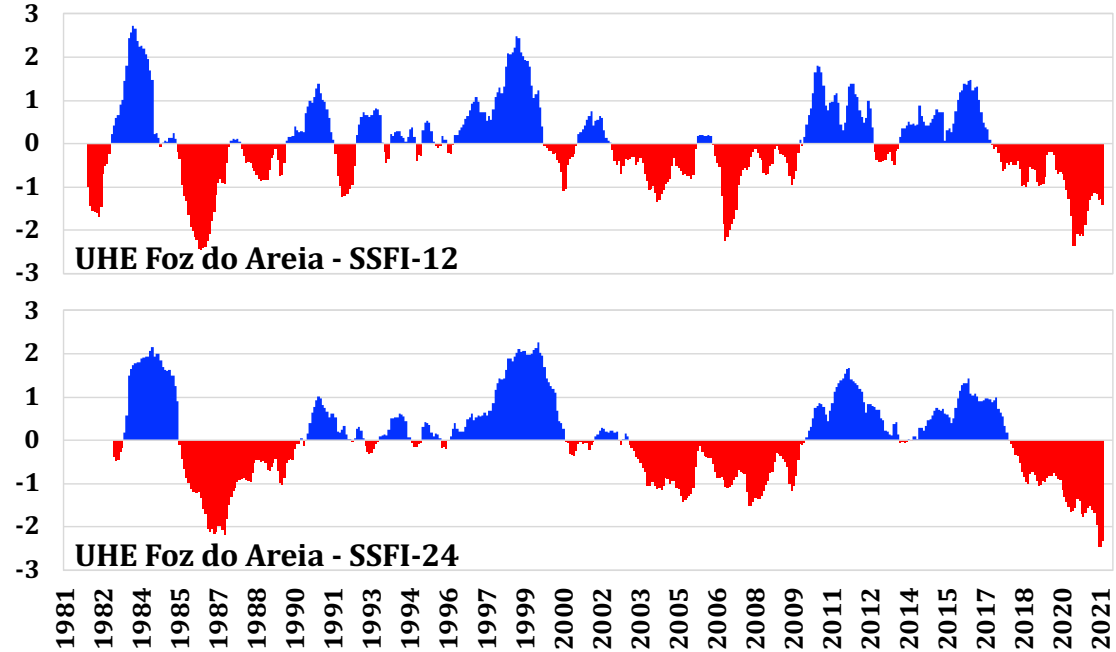


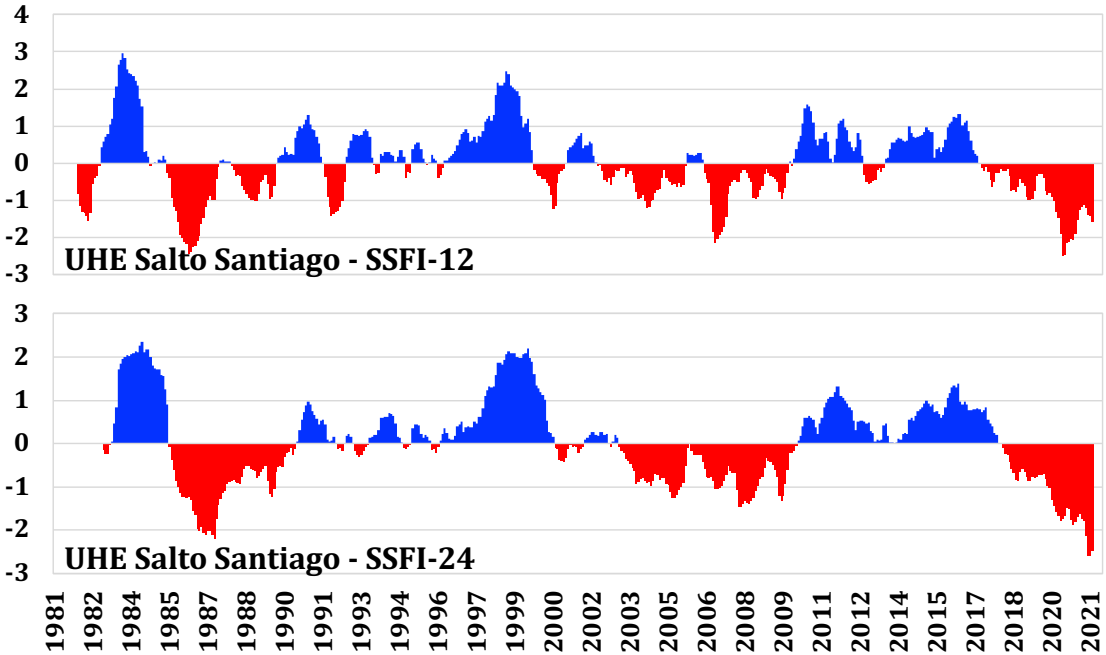


Sequía hidrológica extrema a excepcional

Río Iguazu

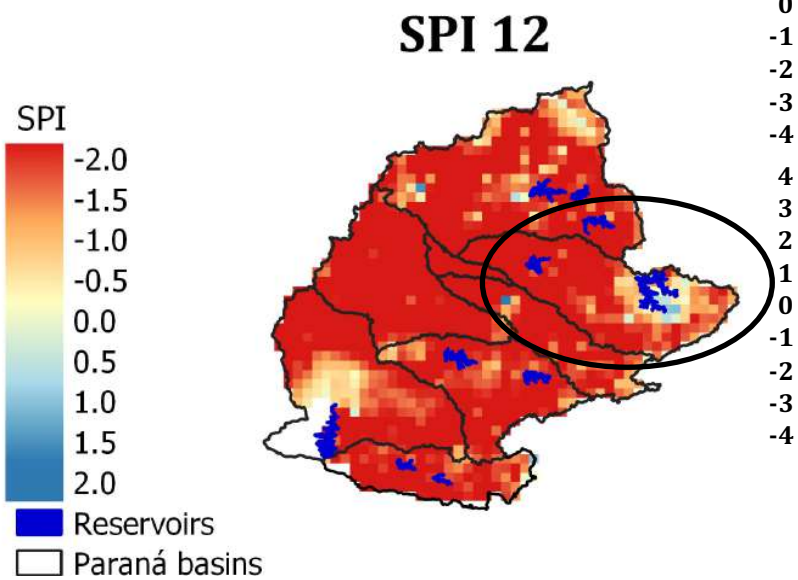


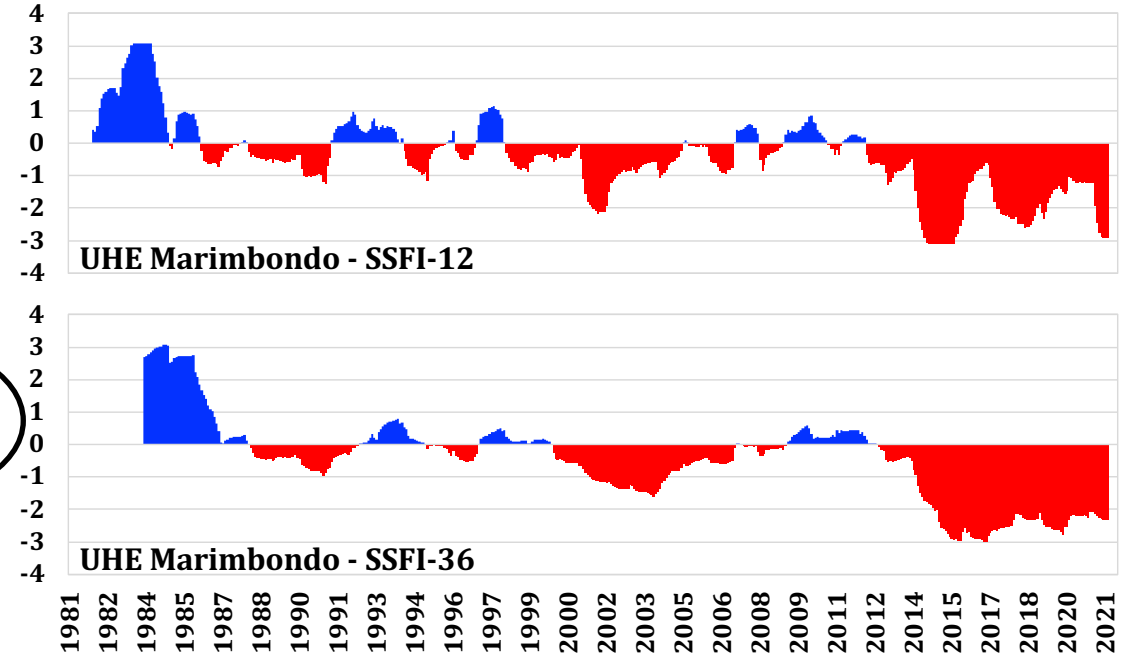


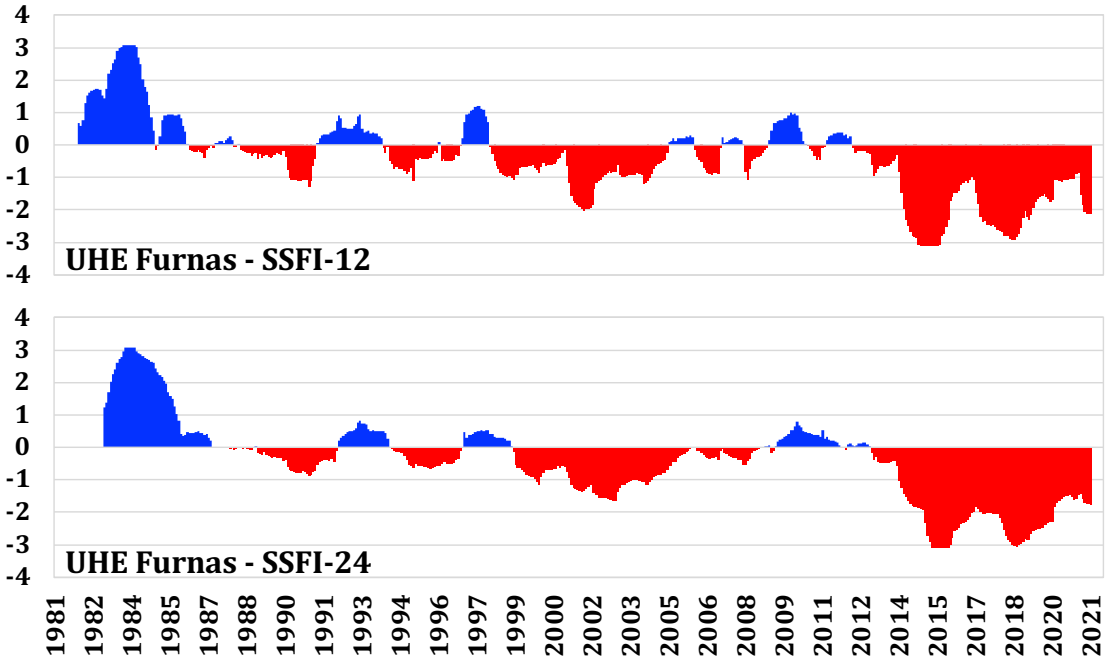


Sequía hidrológica extrema a excepcional

Río Grande





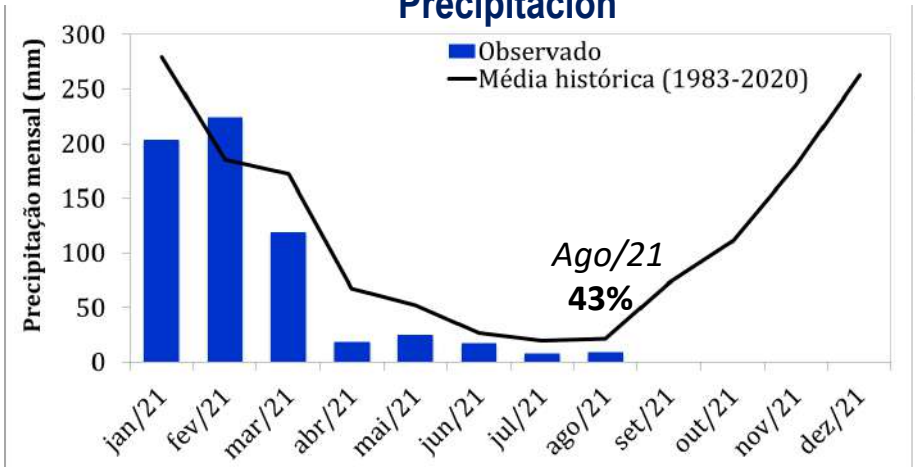


Sequía hidrológica extrema a excepcional

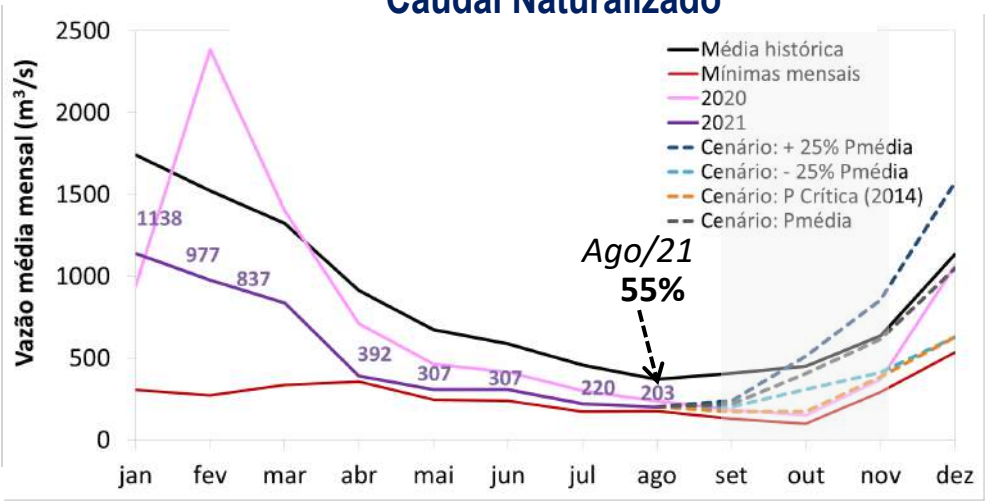
Sub-cuenca Furnas – Río Grande

Representa 17% de EAR del subsistema SURESTE/CENTRO-OESTE

Precipitación

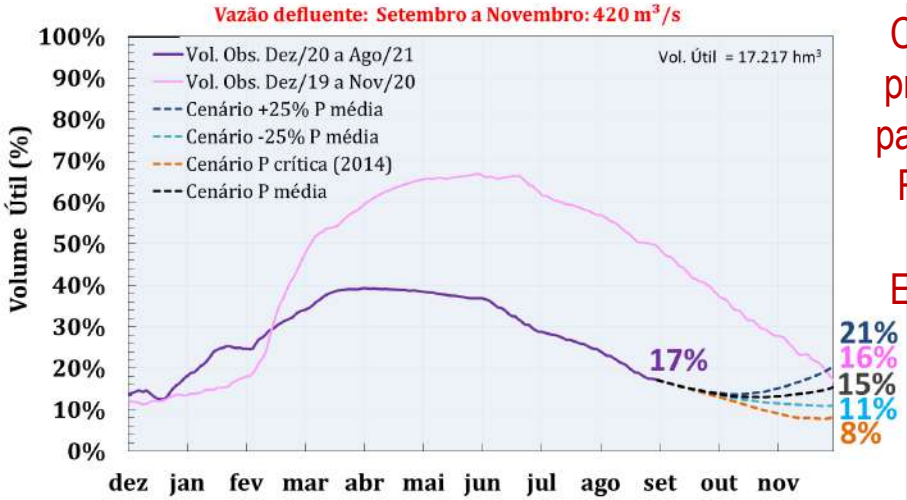


Caudal Naturalizado



SON: 499 m³/s

Almazenamiento em el embalse



Caudal turbinado promedio máxima para cumplir con la Resolución ANA Nº80 para el Escenario Pmed.

Cenário de Precipitação	Projeção de vazão: % da média (SON)
$+25\%P_{média}$	108%
$P_{média}$	83%
$-25\%P_{média}$	62%
$P_{Crítica}$	49%

Fonte dos dados: INMET - ANA – ONS. Gráficos e projeções: Cemaden

Gracias!

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