



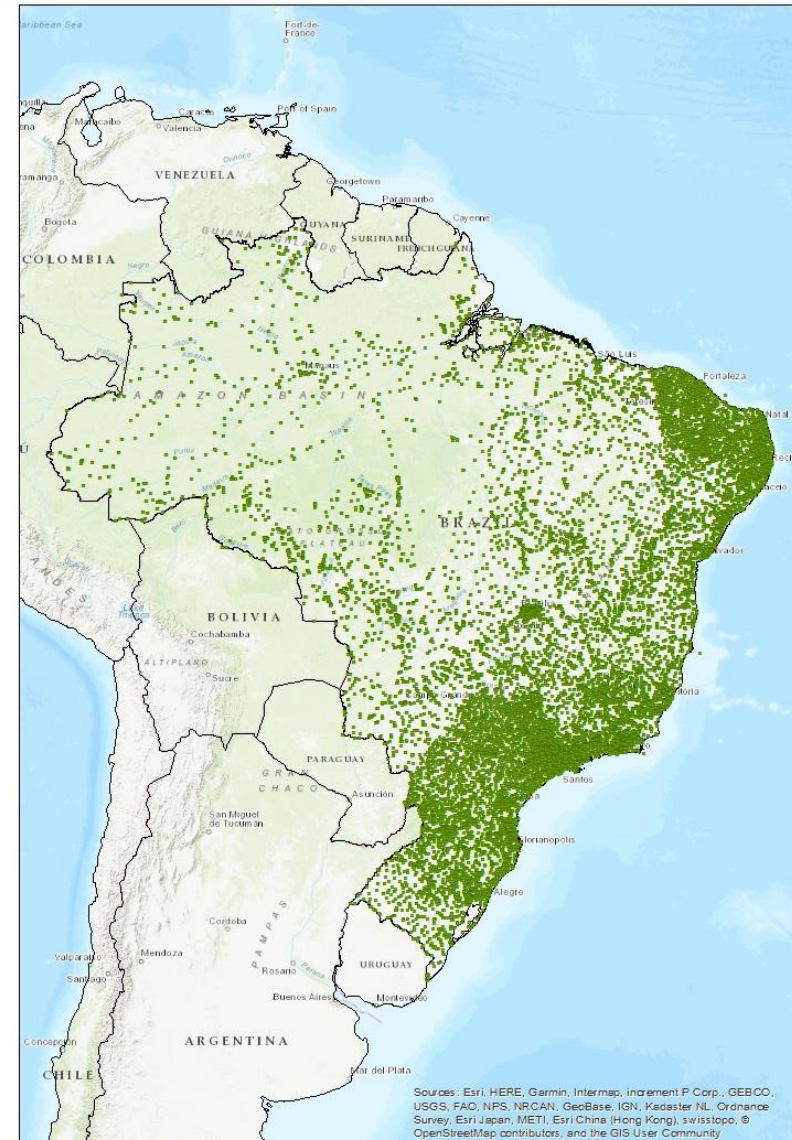
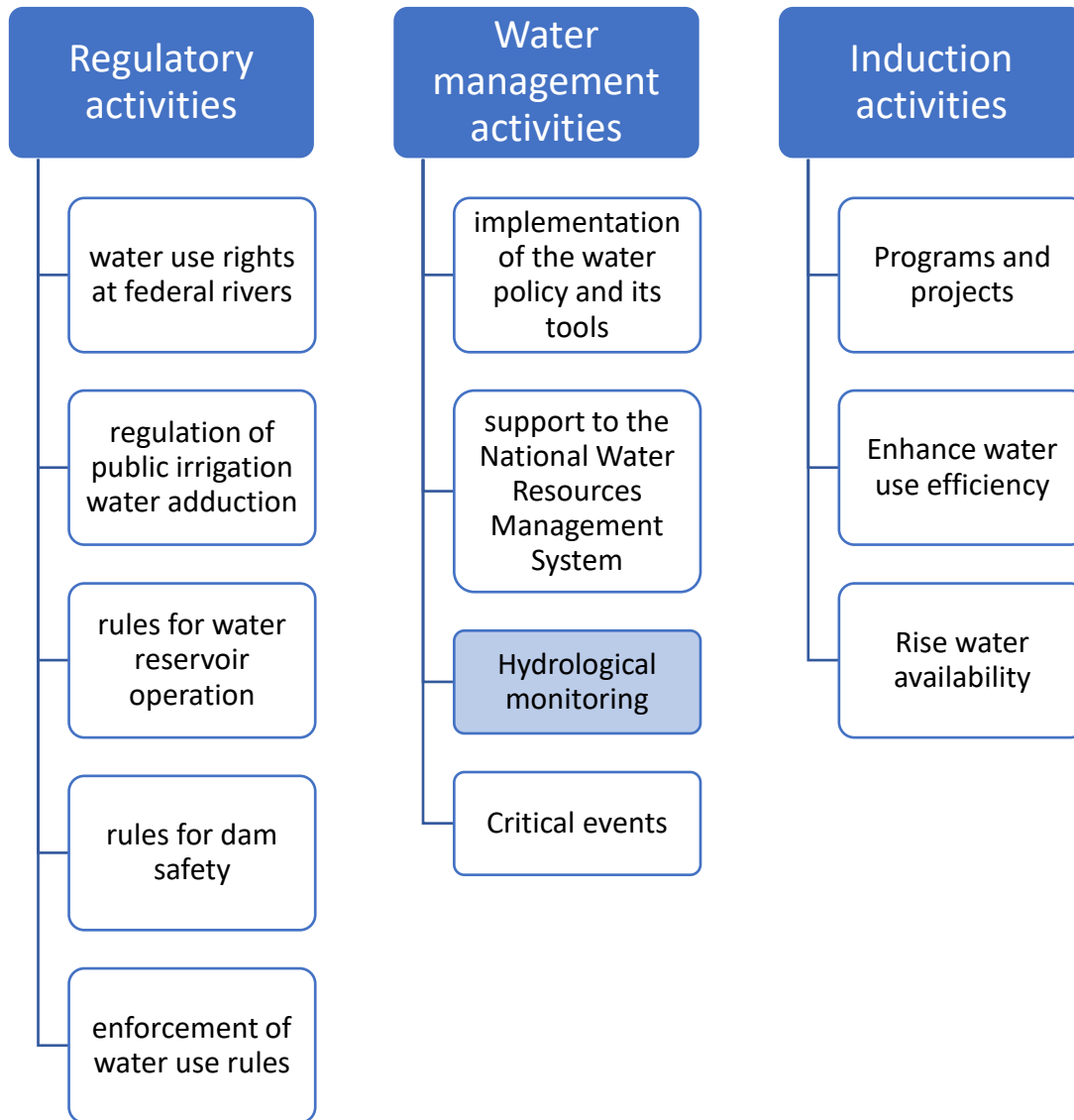
WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

Workshop on Standardization of First-mile Data Collection from Automatic Observing Platforms

Hydrology contribution – Brazil case

Marcelo Jorge Medeiros
National Water And Sanitation Agency - ANA
Brazil
Acting Director/Hydrological data and studies

Roles of the National Water Agency - ANA

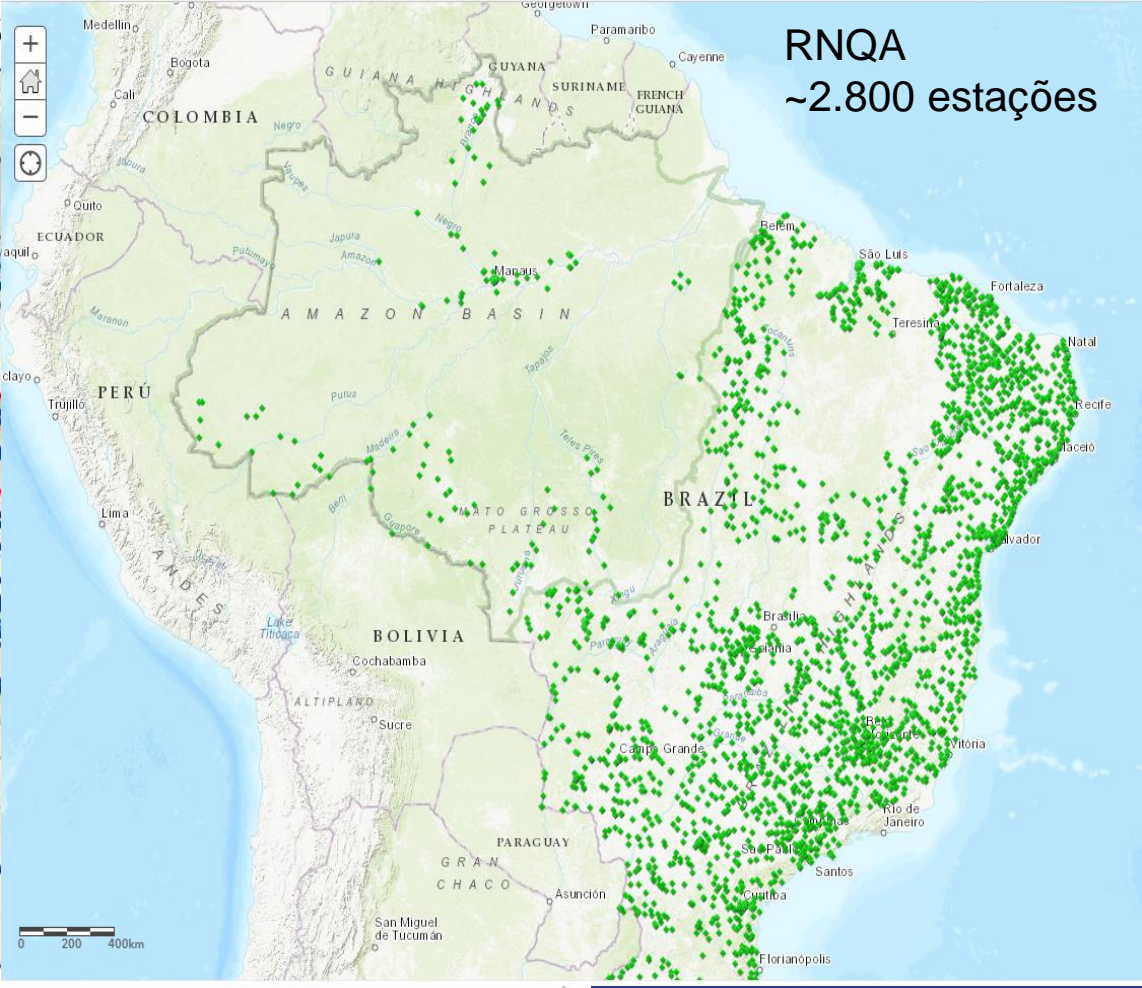
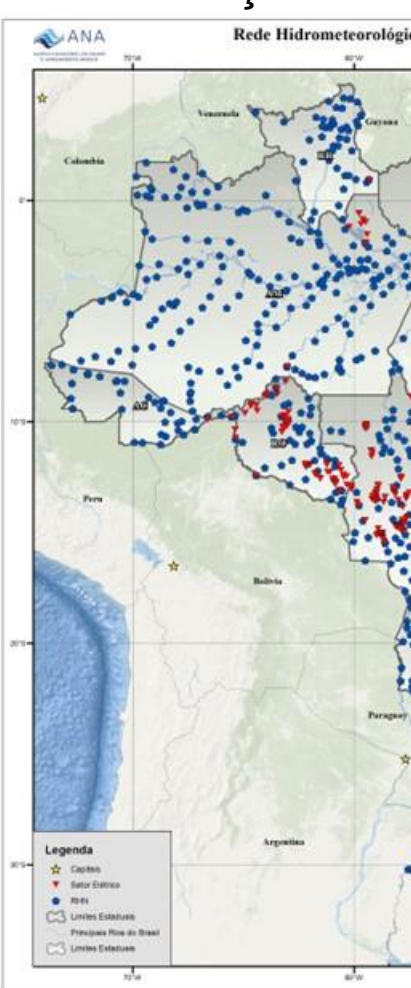


~ 24,000 hydrological stations at national database

THE NATIONAL HYDROLOGICAL NETWORK



ANA - Hydropowersector 2.200 estações



Hydrological Data Collection Platform



Typical variables:
Rainfall
Water level
Discharge
Water quality
Groundwater

Satellite or mobile or radio
Transmission

Integrated equipment

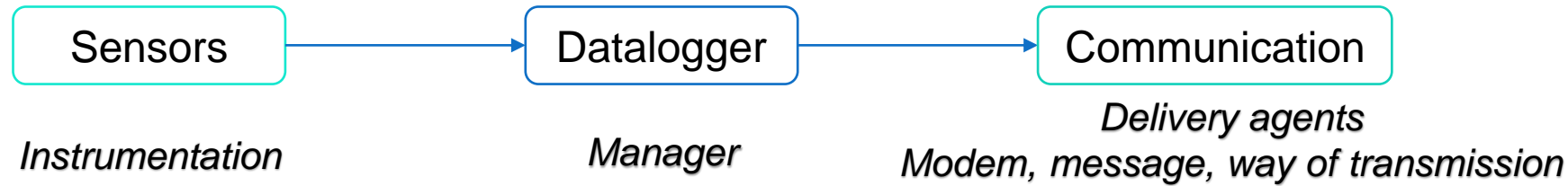
Regulatory action:
Water consumption



Hydrological Data Collection Platform

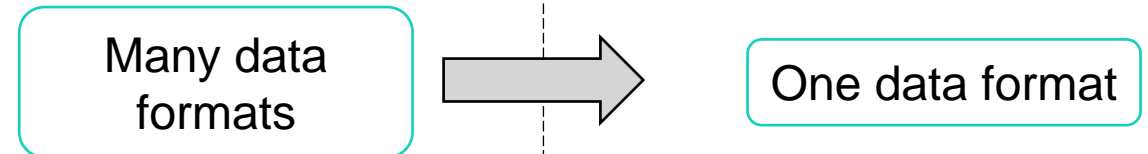


Main components



Data collection system

Data outputs

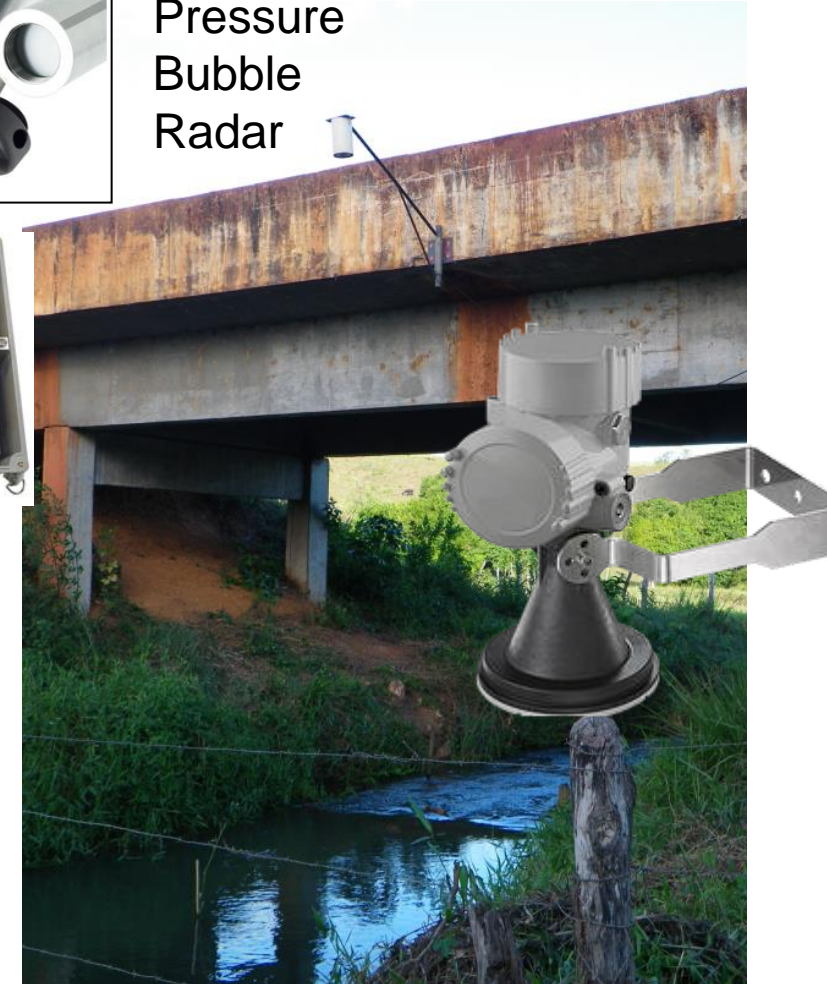


Hydrological Data Collection Platform

Sensors



Pressure
Bubble
Radar



Protocols

SDI 12

- Low energy consumption
- Smart sensors
- Standard for environmental variables
- Limited cable length

More dataloggers

RS 485

- High energy consumption
- Smart sensors
- Standard for industry/other uses
- Long cables

More sensors

Hydrological Data Collection Platform

Datalogger

Able to understand:

- SDI 12
- RS 485
- RS 232 etc.

Management:

- Energy
- Sensors/Ports
- Storage
- Communications

Friendly software



Bad integration with communications!

Brazilian network:

- Campbell
- Vaissala
- Ott
- AgSolve
- Iris/Kisters



Hydrological Data Collection Platform



Communication

shapes the

Data collection system

Transmission Protocols

Industry standard

Different protocols for
different models and
brands

Systems

X

My standard

One protocol

System

Hydrological Data Collection Platform



Communication

shapes the

Data collection system

Data collection system

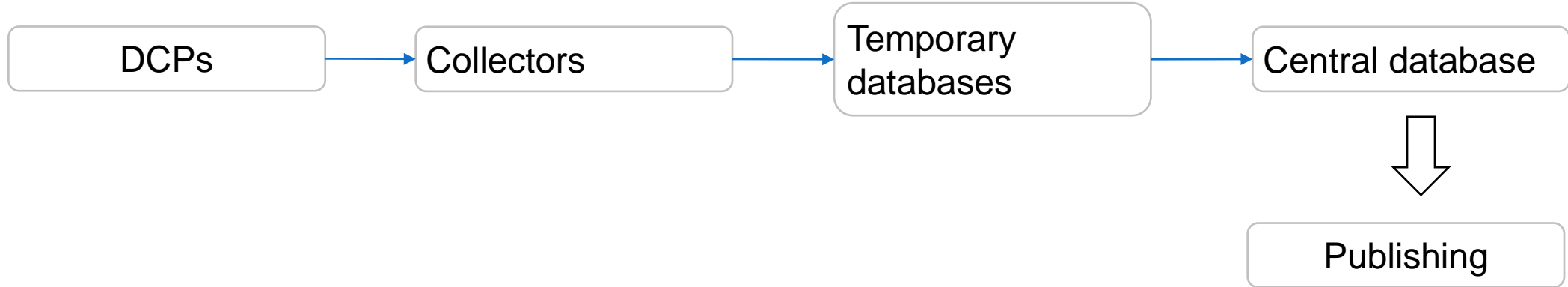
DCPs

Collectors

Temporary
databases

Central database

Publishing



Hydrological Data Collection Platform

Communication

Shapes the

Data collection system

Brazilian case/Scenarios for developing real time data network:



Industry protocols

Lot of data collector systems
High maintenance
Capacity building

Standard message heading + message

Short message/ few data received
One data collector system

Station ID + message

Redundancy data
One data collector system with templates for groups of similar stations



Protocols x sustainability

Sensors,
dataloggers
and parts offer

Design/project

Acquisition cost

Technicians
profile

Capacity
building

Informatics,
soft/hardware,
inhouse/market

Transmission,
data packages

Reliability



#AÁguaÉUmaSó

Obrigado!



MINISTÉRIO DA
INTEGRAÇÃO E DO
DESENVOLVIMENTO
REGIONAL

GOVERNO FEDERAL
BRASIL
UNIÃO E RECONSTRUÇÃO



DATA PUBLISHING



<https://www.gov.br/ana/pt-br>

+ Webservices

16:57

5G

Hidroweb mobile



Sistema HIDRO-Telemetria

Mapa Estações Visualizar Dados Relatórios Gerenciar Fale Conosco

Caro Visitante
Faça o seu Login
Agência Nacional de Águas

Visualização Georreferenciada

Filtrar por: Listas Pesquisa Setor Elétrico

Estados: SC, RJ, AL, AM, AP, AR, BA, CE, ES, GO, MA

Origens: 1- ANAPIME, 2- ANASRAM, 3- Serra Estreia, 4- CotaOnze, 5- Projeto_Especim

Bacias: 1- RIO AMAZONAS, 2- RIO TOCANTINS, 3- ATLÂNTICO TRECHO NORTE, 4- RIO SÃO FRANCISCO, 5- ATLÂNTICO TRECHO LESTE, 6- RIO PARANAÍ, 7- RIO URUGUAI, 8- ATLÂNTICO TRECHO SUEDES

Sub-bacias: 1- RIO SOLIMÕES, 2- RIO SOLIMÕES JARAUÍ, 3- RIO SOLIMÕES JARAUÍ JACUPÉ, 4- RIO SOLIMÕES PURUS COMAR, 5- RIO SOLIMÕES NEGRO BRAHÍ, 6- RIO AMAZONAS MUCUNA, 7- RIO AMAZONAS TROMBETA, 8- RIO AMAZONAS JARAUÍ, 9- RIO TOCANTINS MARANHÃO

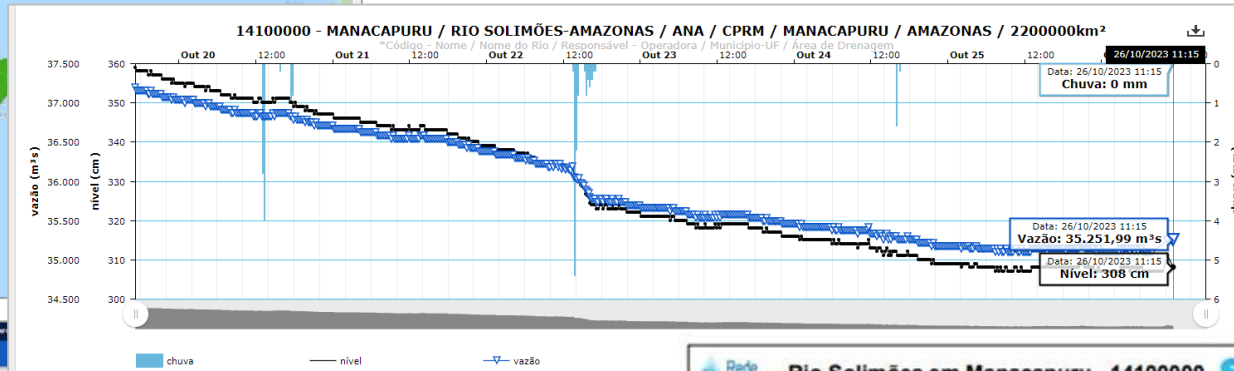
Estações: 1- RIO SOLIMÕES JARAUÍ JACUPÉ, 2- RIO SOLIMÕES PURUS COMAR, 3- RIO SOLIMÕES NEGRO BRAHÍ, 4- RIO AMAZONAS MUCUNA, 5- RIO AMAZONAS TROMBETA, 6- RIO AMAZONAS JARAUÍ, 7- RIO TOCANTINS MARANHÃO

Pesquisar Por: Estação Município Rio

Status da Estação: Ativo, Manutenção, Desativado

Tipo de Informação: Chuva, Nível, Vazão

Total de registros encontrados: 827



ANA

HIDROWEB v1.1

Rede Hidrometeorológica Nacional

Apresentação

Baixar Inventário

Séries Históricas

Mapa

Downloads

Fale Conosco

ANA

Sistema de Acompanhamento de Reservações

Volume Por Estado Nordeste

Filtros: Estado, Sem, Data

Legenda: Todos, Sem informação, Sem, Menos que 10%, Entre 10% e 20%, Entre 20% e 30%, Entre 30% e 40%, Entre 40% e 50%, Entre 50% e 60%, Entre 60% e 70%, Entre 70% e 80%, Entre 80% e 90%, De 90% a 100%, Acima de 100%, Polígono Semáforo

Totais: 41 TOTAL DE RESERVATÓRIOS, 9 VOLUME ACIMA DE 90%

Mapa

Estado	Bacia	Reservatório	Município	Capacidade (km ³)	Cota (m)	V _h (h)
Bahia	CONTAS	PEDRA	JÉQUIE	1640,00	212,37	51
Bahia	PARAGUACU	SÃO JOSÉ DO JACUPE	S. JOSÉ DO JACUPE	357,00	369,98	31
Bahia	RIO DE CONTAS	ANAGE	ANAGE CARAIBAS	255,83	404,90	11
Bahia	VADUI-BABIRÉ	COCOROBÓ	CANAÚDOS	245,95	347,44	61
Bahia	JACUPE	SANTA HELENA	MATA DE SÃO JOSÉ	241,00	177,60	151,20 40,70 1024
Bahia	SÃO FRANCISCO	MIRADORIS	IBIPEBA	158,00	468,20	12,00 7,65 314
Bahia	ITAPICURU	BOA VISTA	ITUBERA	148,82	332,20	87,30 38,00 188

