



GEOHERMAL POTENTIAL OF URUGUAY

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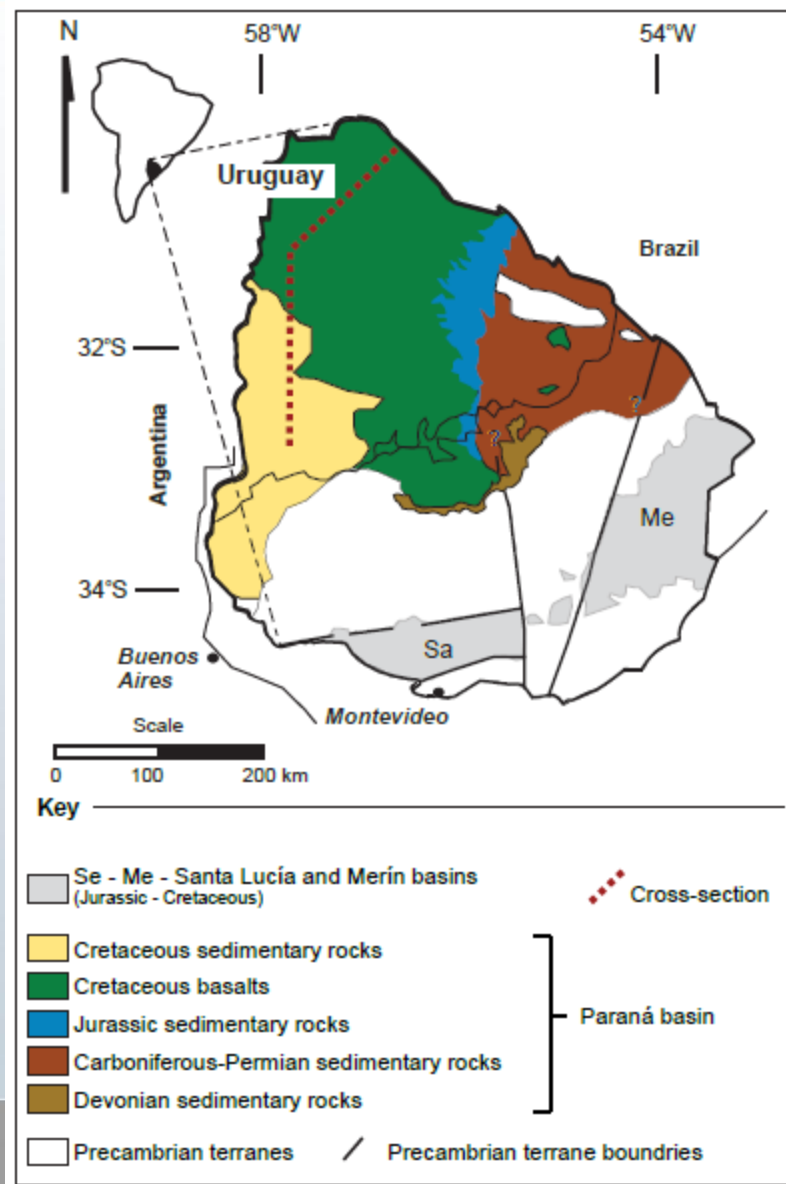
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GEOHERMAL POTENTIAL OF URUGUAY

- The geothermal potential in Uruguay is related to the **GUARANI AQUIFER SYSTEM – NORTE BASIN**, along the Uruguay River.

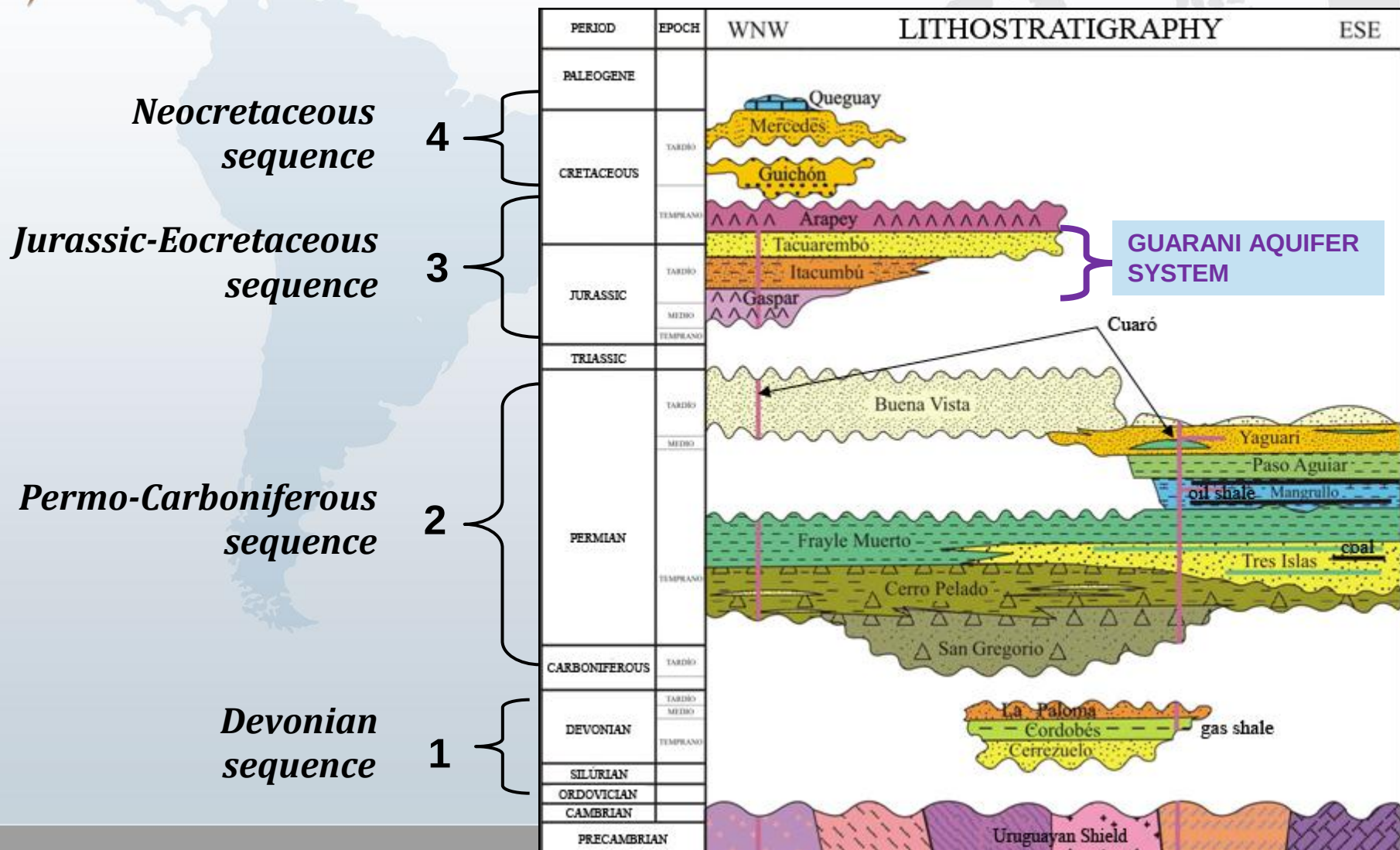
NORTE BASIN

- 90.000Km²
- Early Devonian to Late Cretaceous vulcano-sedimentary fill
- Maximum drilled thickness of 2.500m





NORTE BASIN TECTONO – STRATIGRAPHIC SEQUENCES



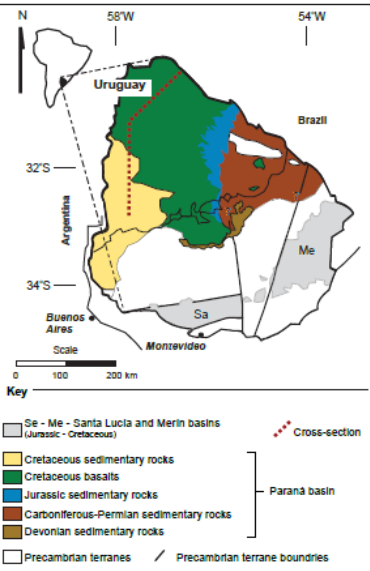
Source: de Santa Ana 2004



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GEOHERMAL POTENTIAL OF URUGUAY – NORTE BASIN



1

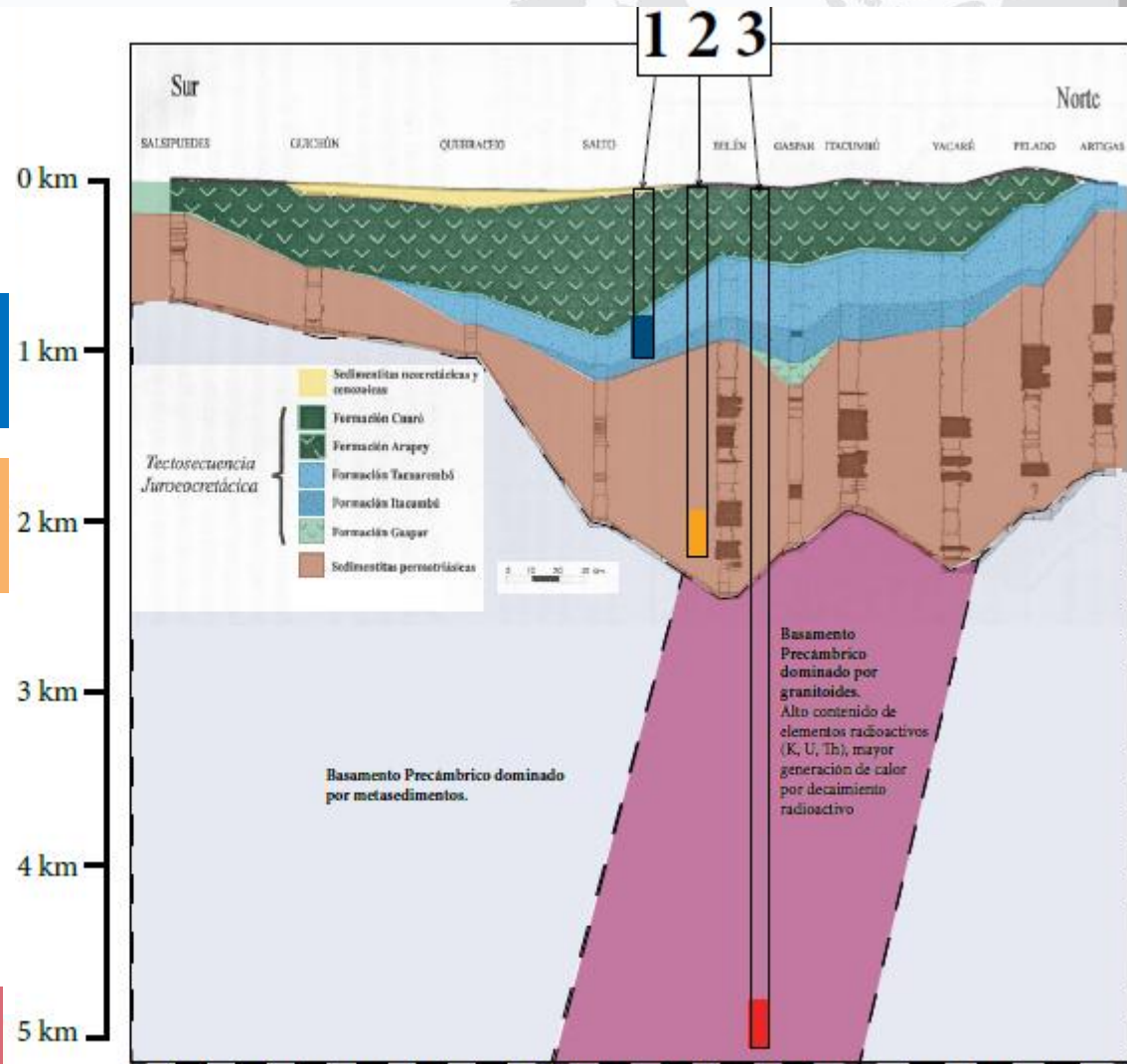
Temperature: ~ 45°C
Depth: ~ 1000 m
Lithology: Jurassic sandstones
Groundwater: freshwater-pressurized

2

Temperature: ~ 75°C
Depth: ~ 2300 m
Lithology: Permian sandstones
Groundwater: brackish water-pressurized

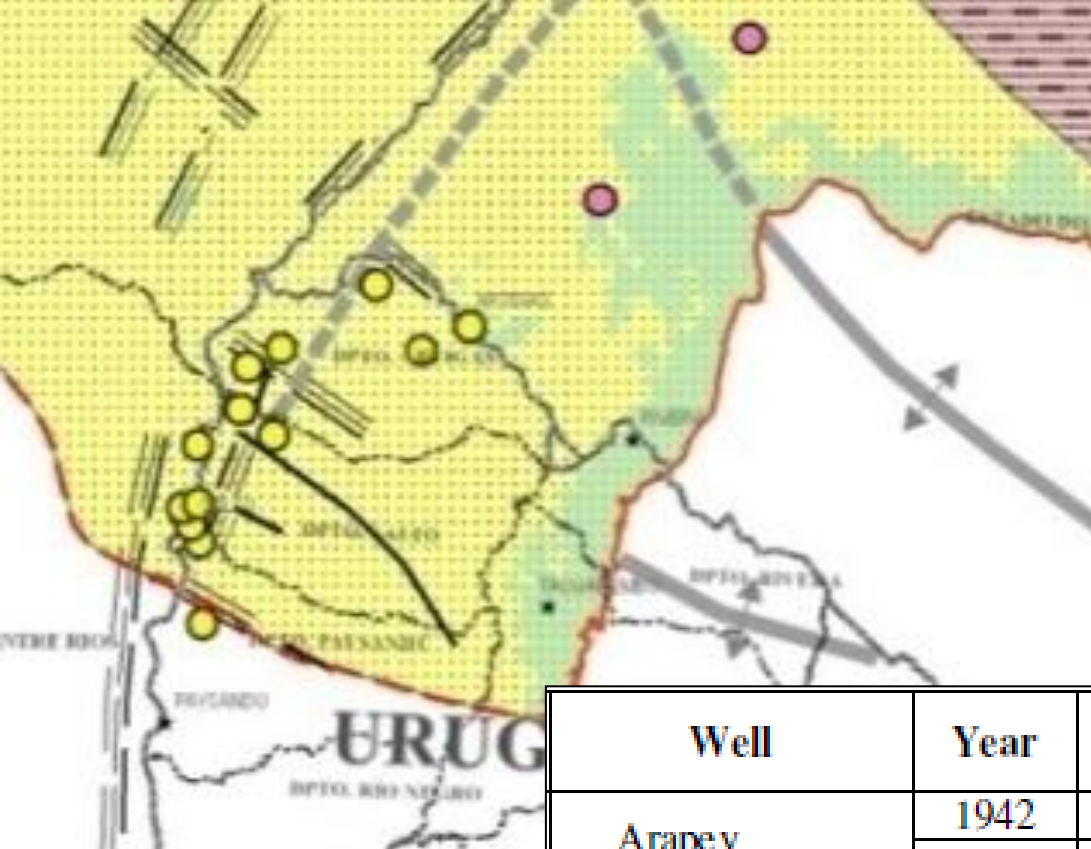
3

Temperature: > 200°C
Depth: ~ 5000 m
Lithology: Precambrian granitic rocks
Groundwater: No Enhanced Geothermal System



Source: Cernuschi 2012

THERMAL WELLS IN URUGUAY



Well	Year	Flow (m ³ /h)	Temp (°C)	Remarks
Arapey	1942	800		Artesian well
	1999	340	39.5	Artesian well
Daymán	1957	550		Artesian well
	2000	134	46	Artesian well
Hotel Quiroga	2000	230	44.5	Artesian well
OSE-Salto	1991	110	47.5	Artesian well
	1992	90	48	Artesian well
	1992	355	48	Pumping flow
Club Remeros	2001	135	47	Artesian well
Guaviyú	1958	450	39	Artesian well
	1992	125	39	Artesian well
Almirón	2000	52	34	Pumping flow
San Nicanor	2001	120	44	Artesian well

THERMAL WATER USES IN URUGUAY

- 100% Thermal resorts



- Heating greenhouses for growing tomatoes.





- Decree 214/000 (being amended): "SAG Management Plan"
- Objective: To regulate the exploitation of SAG.
- Regulator: DINAGUA (Dirección Nacional de Aguas –MVOTMA Ministerio de Vivienda, Ordenamiento Territorial y Medio Ambiente)
 - The maximum flow rate will be lower or equal to 150 m³ / h.
 - The maximum depression of the dynamic level will be lower or equal to 150 m. from the initial piezometric surface of the well.
 - The wells will be located at distances greater than 2000 m. from other ones.
 - The regimen of daily extraction of each well will be no more than 16 hours.



CHALLENGES

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- Assessment of the real geothermal potential of Uruguay.
- Improve and increase the current regulation.
- Development and utilization of thermal effluents (eg. greenhouses).

For more information

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