

Terzo Tavolo Tecnico OIMCE - Roma, 8 maggio 2025

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OSSERVATORIO ITALIANO MATERIE
PRIME CRITICHE ENERGIA



ASSORISORSE

Risorse Naturali ed Energie sostenibili



RSE

Ricerca
Sistema
Energético



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LITIO DAI GEOFLUIDI:

IL POTENZIALE DEI FLUIDI GEOTERMICI E TERMALI



LITIO IN ITALIA?



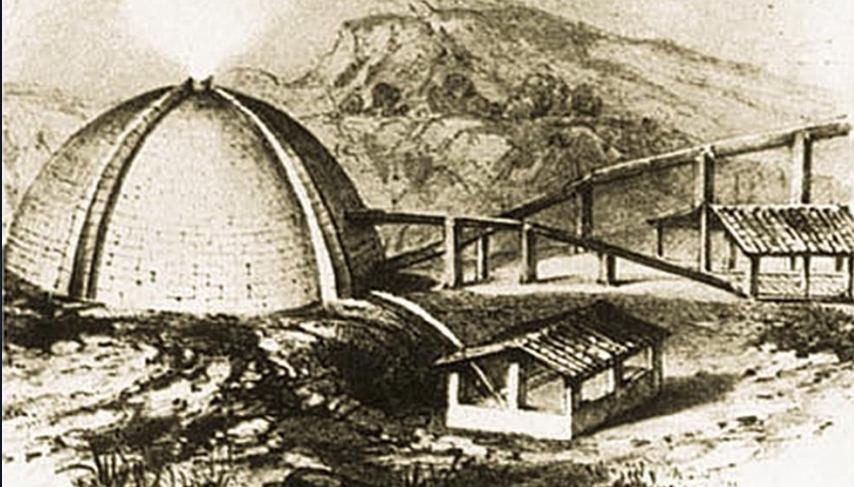
Né salar, né pegmatiti a spodumene

Larderello, 1817

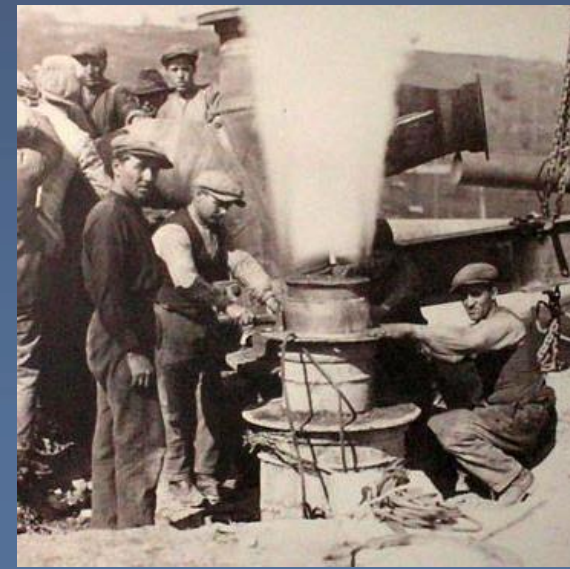
i primi ad estrarre metalli dai geofluidi



Lagone coperto per l'estrazione del boro



BORO



ENERGIA



Larderello, 1904

i primi a produrre energia elettrica dai geofluidi

Oggi: litio in fluidi geotermici e altri geofluidi in Italia?



Risorse non convenzionali di litio in geofluidi

Lithium Occurrence in Italy—An Overview

Andrea Dini ¹, Pierfranco Lattanzi ², Giovanni Ruggieri ^{2,*} and Eugenio Trumpy ¹

Minerals 2022, 12, 945. <https://doi.org/10.3390/min12080945>

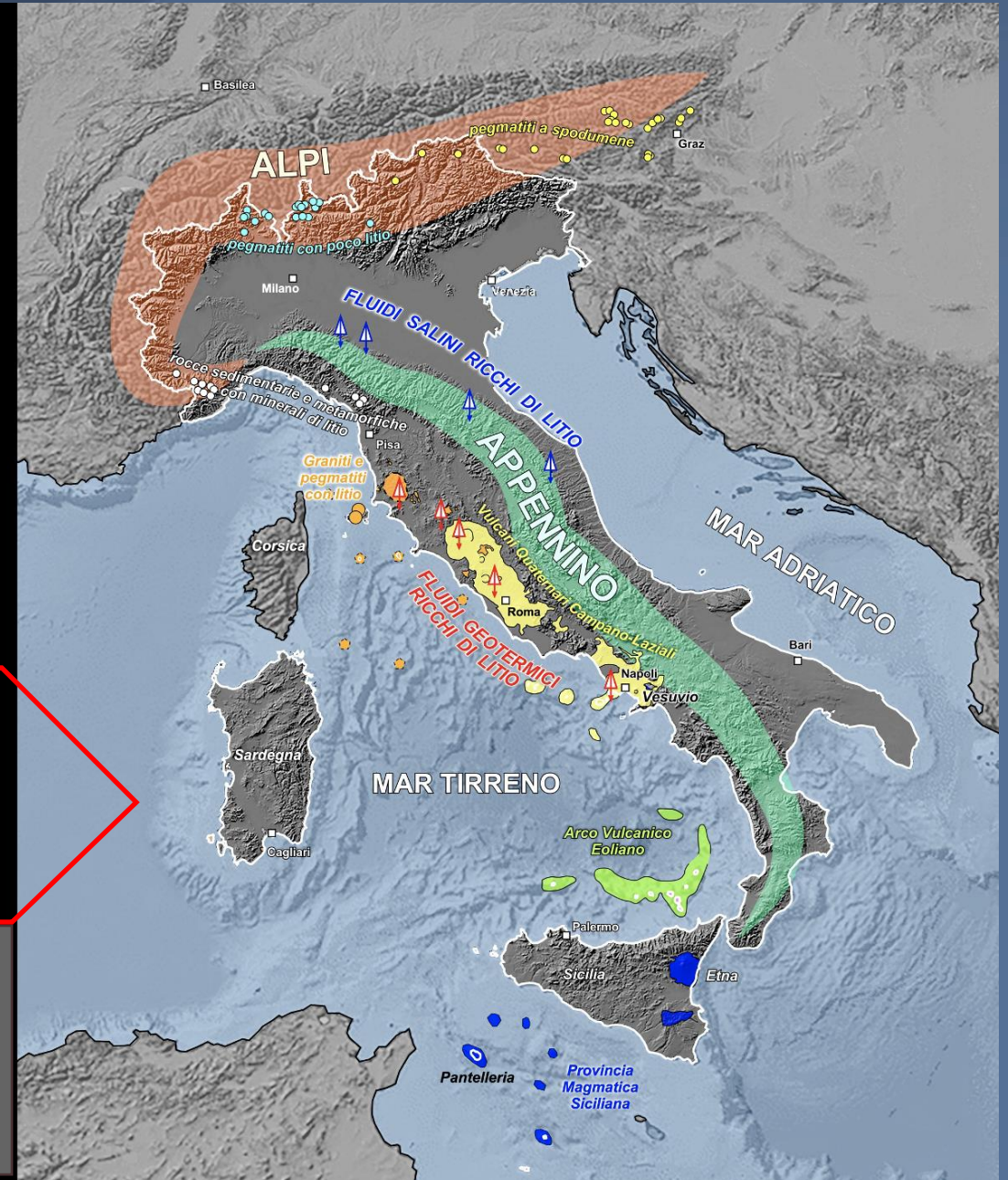
<https://www.mdpi.com/journal/minerals>

Contesto geologico-geografico-climatico **sfavorevole** per giacimenti convenzionali: pegmatiti a spodumene e salars.

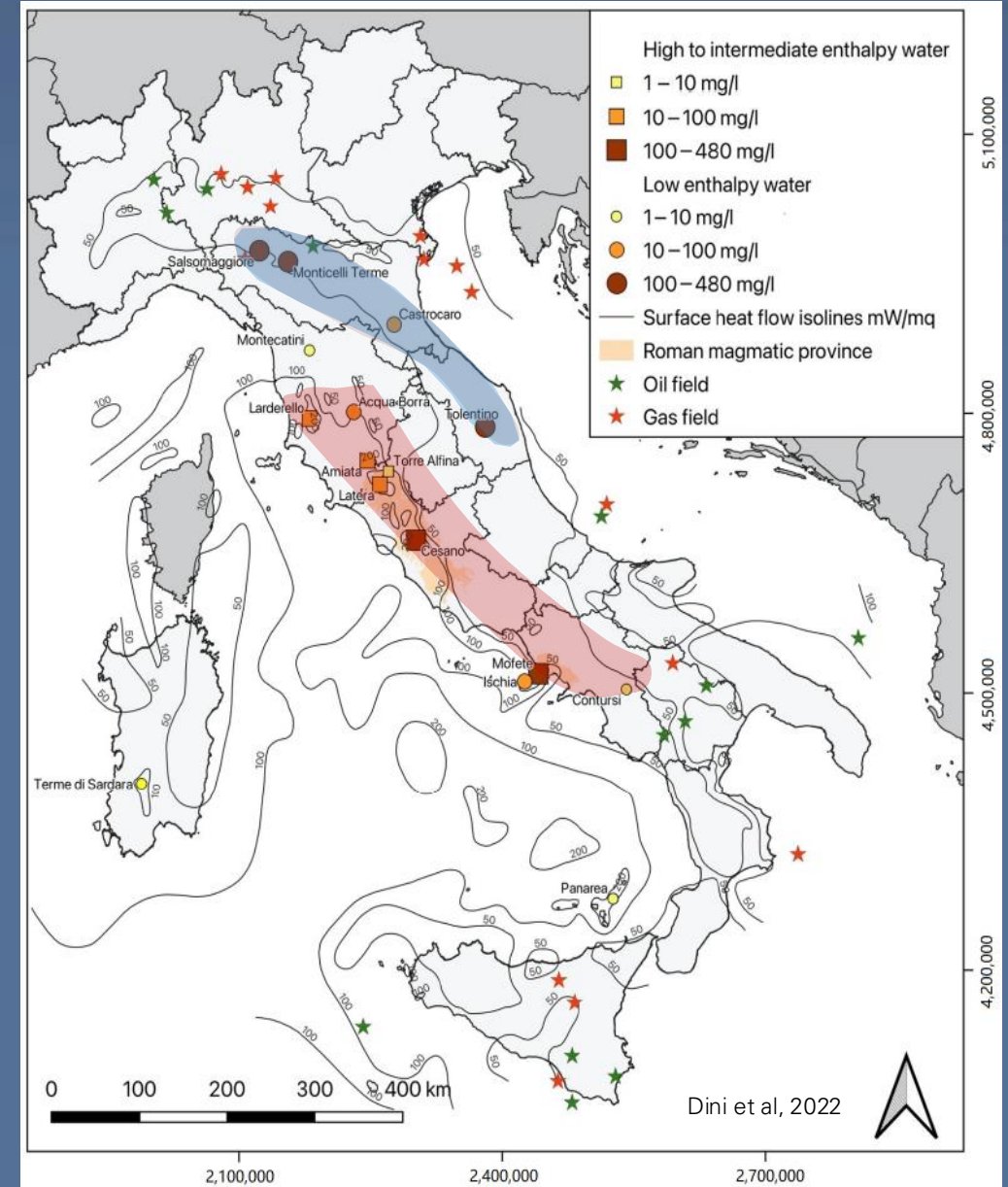
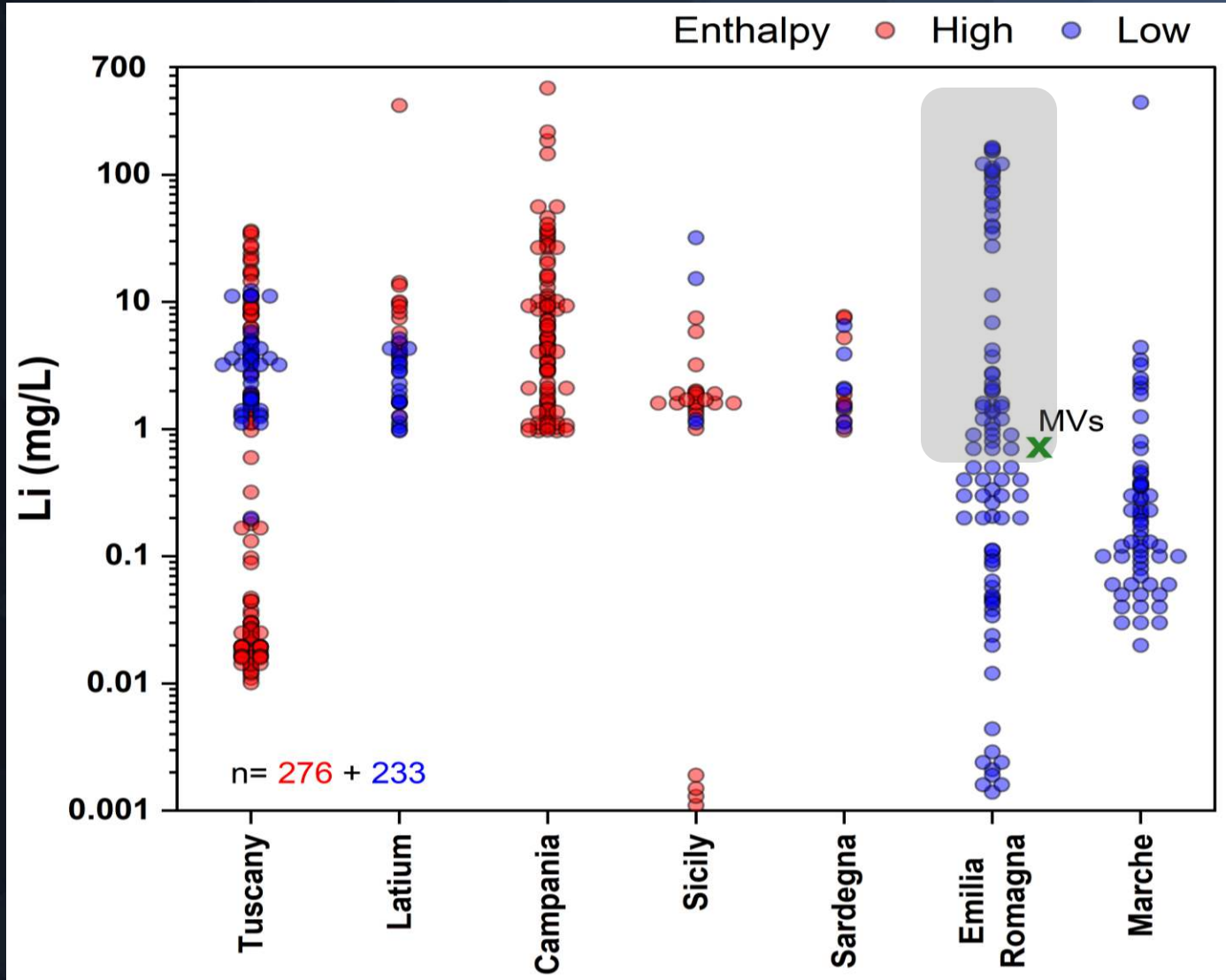
Poche pegmatiti a spodumene nelle Alpi orientali.

Notevole **potenziale** per giacimenti non convenzionali:

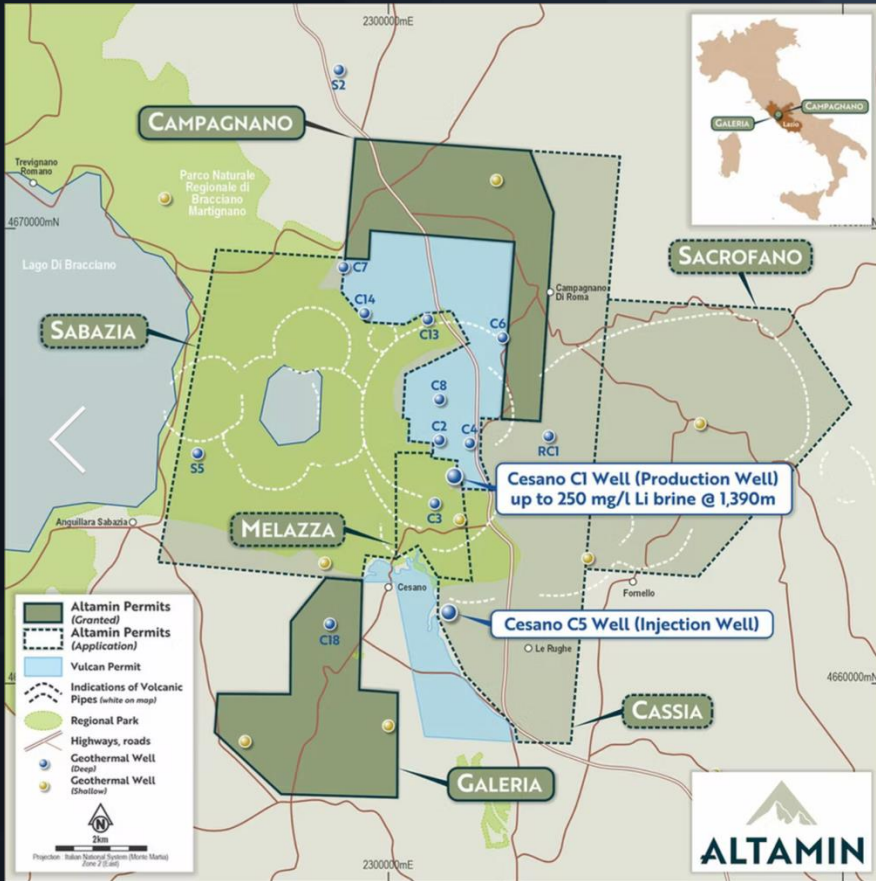
- Fluidi geotermici in italia centro-meridionale ➤ Li fino a 500 mg/l
- Fluidi salini al fronte della catena appenninica ➤ Li fino a 400 mg/l
- Graniti litiniferi in Toscana ➤ Li fino a 2500 mg/kg
- Rocce vulcano-sedimentarie nelle Alpi Marittime ➤ Li fino a 3000 mg/kg



Litio in geofluidi geotermici e «termali»

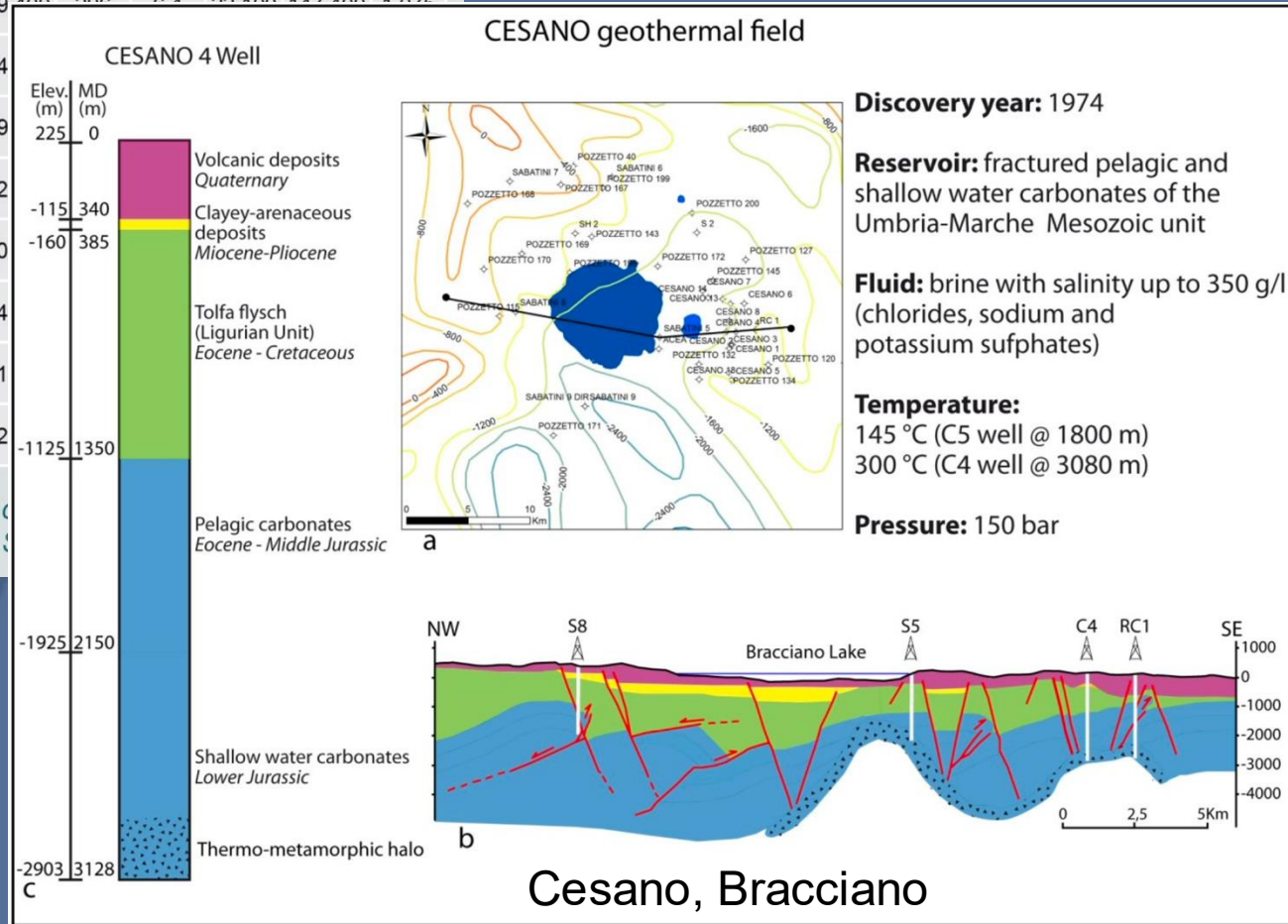


Litio in fluidi geotermici: Lazio, Campania (e Toscana)



Well	Temp. T°C	Li mg/kg	Na mg/kg	K mg/kg	Rb mg/kg	Mg mg/kg	Cl mg/kg	SO4 mg/kg	B mg/kg
C-1	212	196	49,386	76,823	384	54.1	21,165	156,625	1,121
C-1	212	163	54,800	78,340	285	6.9	22,100	151,600	1,084
C-1	212	158	53,800	79,400	266	6.4	22,100	147,400	1,075
C-1	212	165	51,000	64,000	266	6.4	22,100	147,400	1,075
C-1	212	196	47,921	69,000	266	6.4	22,100	147,400	1,075
C-1	212	173	47,136	62,000	266	6.4	22,100	147,400	1,075
C-1	212	141	44,779	60,000	266	6.4	22,100	147,400	1,075
C-5	141	75	20,544	14,000	266	6.4	22,100	147,400	1,075
C-7	221	96	19,200	11,000	266	6.4	22,100	147,400	1,075
C-7	221	-	13,500	12,000	266	6.4	22,100	147,400	1,075

Table: Concentrations of elements in reservoir brines [Source: Altamin]



CESANO geothermal field

Discovery year: 1974

Reservoir: fractured pelagic and shallow water carbonates of the Umbria-Marche Mesozoic unit

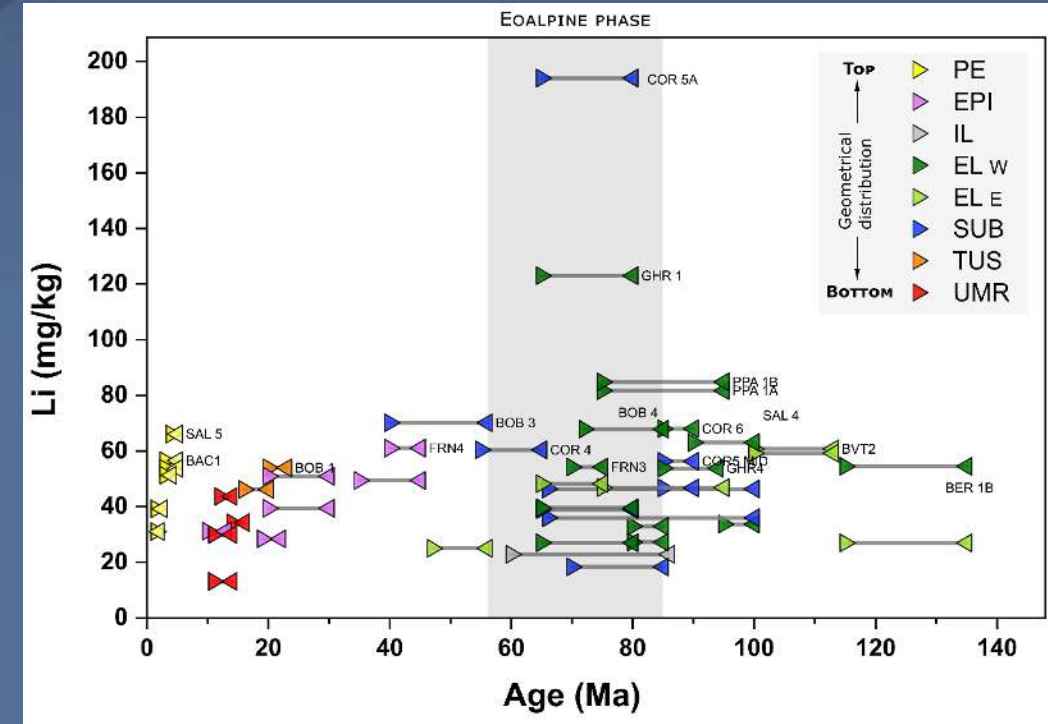
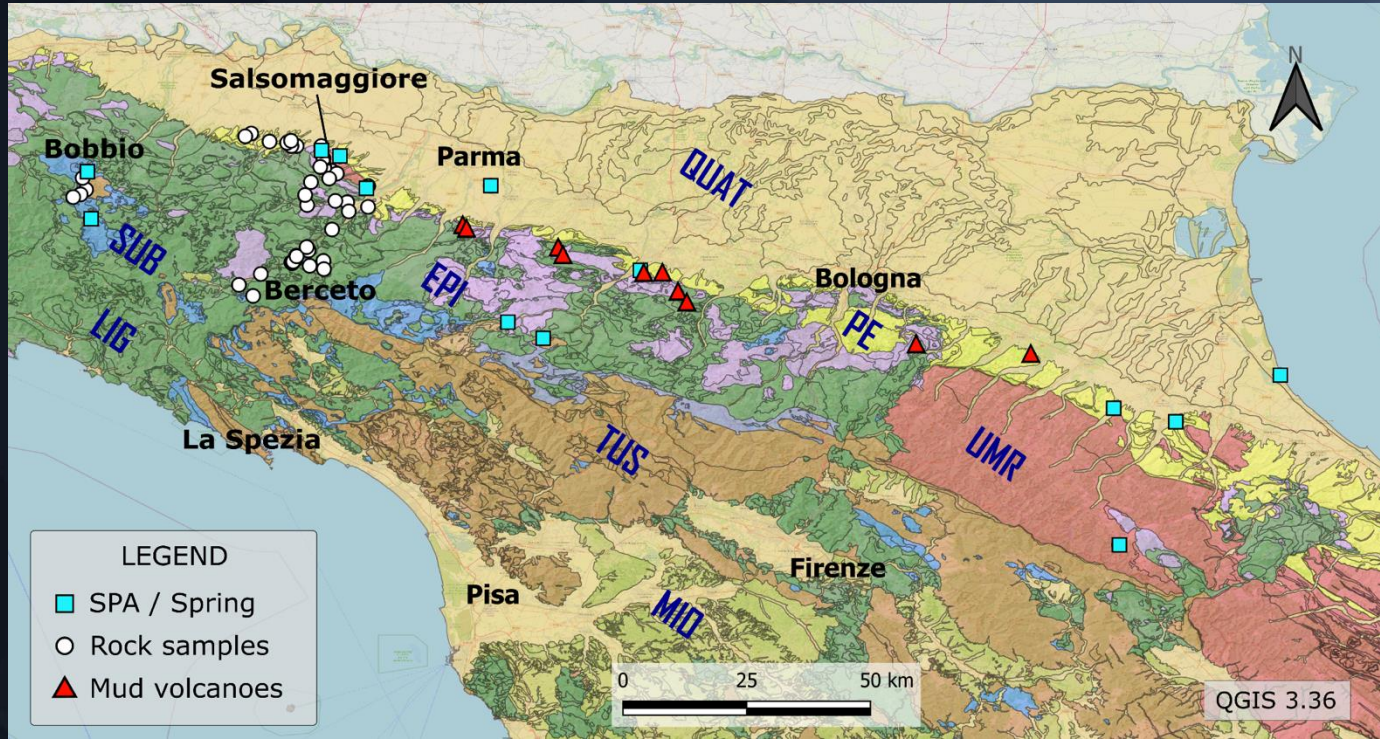
Fluid: brine with salinity up to 350 g/l (chlorides, sodium and potassium sulphates)

Temperature:
145 °C (C5 well @ 1800 m)
300 °C (C4 well @ 3080 m)

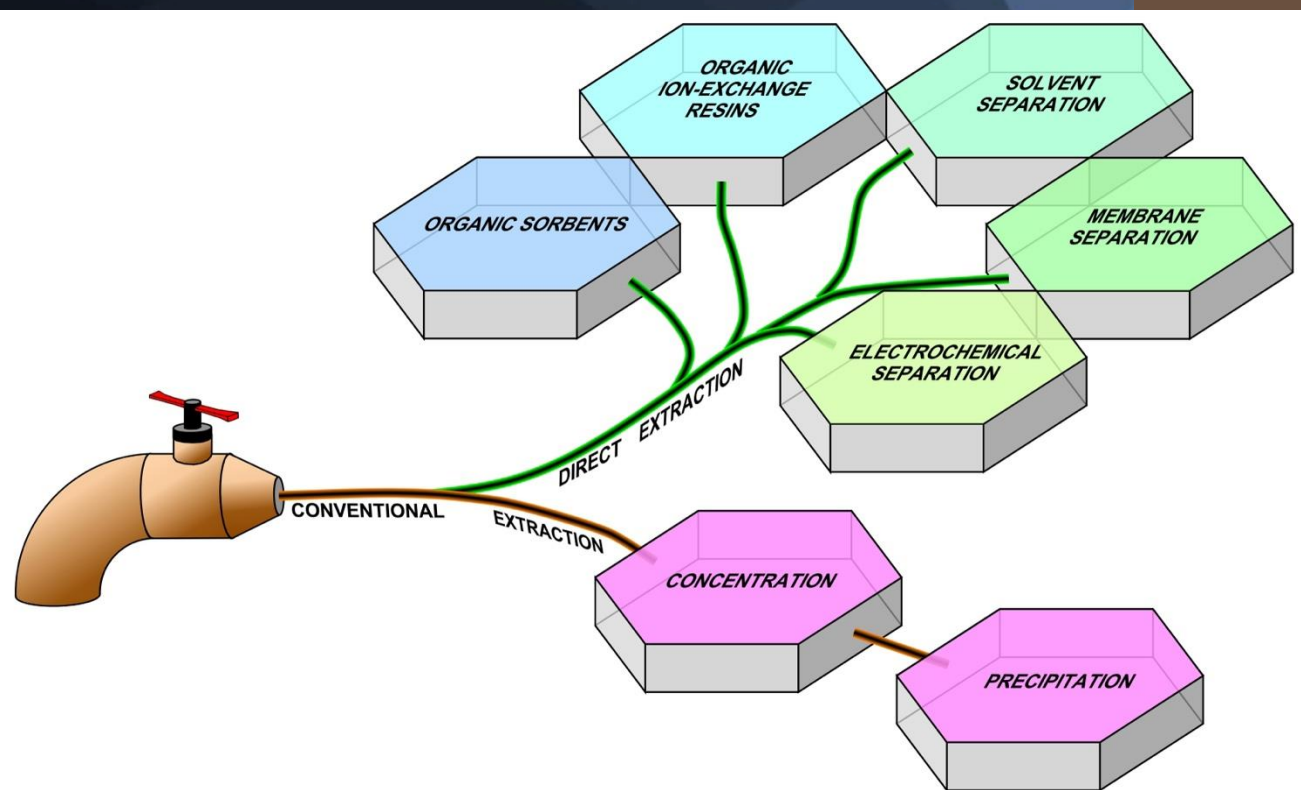
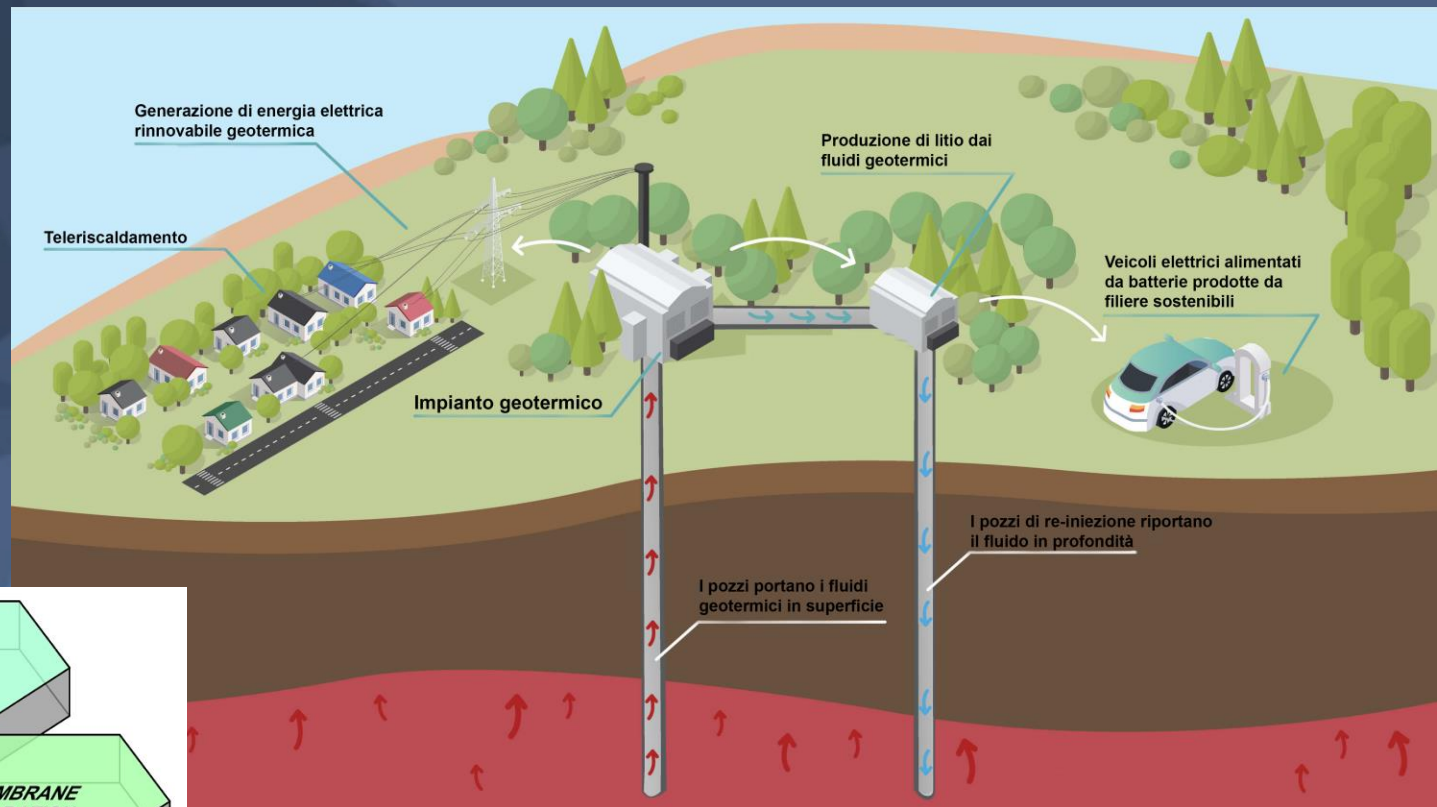
Pressure: 150 bar

Cesano, Bracciano

Litio in fluidi «termali» dell'Appennino Settentrionale



Perché cercare il litio nei geofluidi ?



Dobbiamo esplorare le risorse italiane (ed europee), anche se di dimensioni modeste, per differenziare le zone di approvvigionamento e ridurre i rischi geopolitici per le filiere industriali continentali (CRM Act)

Produzione di shale gas negli USA e lisciviazione litio

