1st SaltAges Conference – 2nd Circular

31.03–04.04.2025, Kraków, Poland

This is the first in-person meeting of the COST Action SaltAges, an open network of researchers and innovators from Europe and beyond, with the objectives to:

- assess the consequences of salt giant formation on biota, biogeochemical cycles, global and regional climate and ocean circulation;
- investigate the interaction between salt giants, climate and plate tectonics;
- clarify the relationship between local and regional tectonics and marine gateway restriction;
- review the role of evaporites in the evolution of human civilization; and
- identify the importance, environmental effects and geohazards associated with their exploitation.

The aim of this conference is to bring together experts studying salt giants worldwide to identify salt giant archetypes, review the scientific tools for studying salt giants and create openly accessible educational resources on large evaporitic deposits and their exploitation. The conference will run over the course of five days from 31st March to 4th April 2025, with the first three days devoted to scientific sessions and round-tables, followed by two days of fieldtrips to Wieliczka Salt Mine and the Ponidzie region (NE of Kraków) at the northern rim of the Carpathian foreland basin.

The conference is organized by the COST Action SaltAges CA23124 - Social, biological and climatic impacts of salt ages, the Faculty of Geology, Geophysics, and Environmental Protection of Akademia Górniczo-Hutnicza (AGH) University of Kraków, the Polish Association of Salt Mining, and Institute of Geological Sciences of the Polish Academy of Sciences.

Organizing committee: Piotr Krzywiec, Krzysztof Bukowski, Marta Adamuszek, Konstantina Agiadi

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Program

Monday 31.03

09:00-09:30	Welcoming (*Piotr Krzywiec, Krzysztof Bukowski, Marta Adamuszek*)
09:30-10:00	Introduction to SaltAges scope and plan (*Konstantina Agiadi*)
Session 1. Climatic and biological impacts of marine gateway reconfigurations	
10:00-10:15	Introduction to WG1 (*Iuliana Vasiliev, Francesca Bulian, Darja Dankina*)
10:15-10:30	Planktic and benthic foraminifers of the Alboran Basin: a record of environmental change before, during, and after the Messinian salinity crisis (*Francesca Bulian*)
10:30-10:45	Late Miocene alkenones of Eastern Paratethys track the basin restriction (*Geanina Butiseaca*)
10:45-11:00	The paleo-environmental conditions of the Western Mediterranean Basin during the Messinian Salinity Crisis: New insights from IODP expedition 402 in the Tyrrhenian Basin (*Fadl Raad*)
11:00-11:15	Coffee break
11:15-11:30	Formation and Sequence Stratigraphy of the Zechstein Basin: Impacts on Biota (*Darja Dankina*)
11:30-11:45	Before, during, and after: Anatolian fossil fauna dynamics across the Messinian salinity crisis (*Serdar Mayda*)
11:45-12:00	Sr isotopes and organic geochemical results for a new evaporite record from the South Aegean (Exp IODP-398): insights into the environmental evolution of the Aegean during the Messinian Salinity Crisis (*Caroline Aparecida Pereira Dias*)
12:00-12:15	Unravel paleoenvironmental dynamics: multivariate analysis of biomarker data across the Messinian-Zanclean transition (*Franscesco Pilade*)
12:15-12:30	Discussion
12:30-14:00	Lunch break
14:00-14:15	Challenges in the salinity reconstructions of restricted marine basins (*Iuliana Vasiliev*)
14:15-14:30	Gateway induced Early Miocene (~20 Ma) anoxia in the Central Mediterranean (*Ray Zammit*)
14:30-14:45	Reconstructing surface ocean density using planktonic foraminifera (*Stergios Zarkogiannis*)
14:45-15:00	The impact of the Messinian Salinity Crisis on Conidae (Gastropoda): Biogeographic isolation and faunal turnover (*Christos Psarras*)
15:00-15:15	Revised timing and evolution of the Messinian Salinity Crisis in the Mediterranean area (*Antonio Caruso*)

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15:15-15:45	Discussion
15:45-16:15	**The STSM tool** (*Rachel Flecker*)
16:15-16:30	Coffee break
16:30-17:30	**Evaporite database** (*Eloi Gonzalez-Esvertit*)
17:30-19:30	**Icebreaker and posters**

Tuesday 01.04

Session 2. Salt and Humans	
09:00-09:15	Introduction to WG2 (*Ivana Pandzic*)
09:15-09:30	Salt wall welding in the Moroccan High Atlas - smearing of clay and evaporites along fragmented igneous intrusions (*Prokop Zavada*)
09:30-09:45	Salt-driven submarine landslides induce tsunami waves in hypersaline anoxic brine pools (*Alexey Portnov*)
09:45-10:00	Exploring the subsurface energy storage potential in salt structures in the Southern North Sea (*Sjastri Hansen*)
10:00-10:15	Late Miocene-Quaternary reactivation of a salt nappe in the Algarve Basin (SW Iberian Margin): geohazard and energy storage implications (*Debora Pascoal Duarte*)
10:15-10:30	Developing an atlas of salt-related geomorphology as a foundation for geohazard assessment (*Oscar Fernandez*)
10:30-11:00	Discussion
11:00-11:15	Coffee break
11:15-11:30	Tuzla - a city on a "grain of salt", from the Neolithic to the present day (*Ljiljana Tankosic*)
11:30-11:45	The role of salt in the Central and Eastern Anatolian lifeways: crossroads of prehistoric and current times (*Dardeniz Gonca*)
11:45-12:15	**STSM offers and preparing your proposal** (*Rachel Flecker)*
12:15-14:00	Lunch break
Session 3. Modeling evaporitic systems	
14:00-14:15	Introduction to WG3 (*Daniel Garcia-Castellanos*)
14:15-14:30	How numerical modelling advances our understanding of the behaviour of salt-related systems (*Marta Adamuszek*)
14:30-14:45	Hybrid extensional-compressional origin of salt diapirs in intracontinental basin –

	Mesozoic evolution of the Goleniów salt structure, NW Poland (*Łukasz Grzybowski*)
14:45-15:00	Recent breakthroughs in halite fluid inclusion analysis as new gateways to water chemical composition, volume, lake level and temperature (*Emmanuel Guillerm*)
15:00-15:15	Salt on Asteroid Bennu (*Tim McCoy - online*)
15:15-15:30	Microdynamic behaviour of salt rocks: insights from numerical simulations (*Enrique Gomez-Rivas - online*)
15:30-15:45	3D forward models of salt flow and deformation in the Gulf of Mexico (*Naiara Fernández*)
15:45-16:00	Recent advances in numerical modeling of salt basins and salt tectonics - from entire basins to diapir-minibasin scale (*Leonardo Muniz Pichel*)
16:00-16:15	Coffee break
16:15-16:30	Framing the modelling experiments that evaluate the global impact of the Messinian Salinity Crisis (*Rachel Flecker*)
16:30-16:45	Global carbon cycle signals of the Messinian Salinity Crisis in a spatially-resolved Earth system model (*Markus Adloff*)
16:45-17:00	Model of the impact of basin restriction on the marine biodiversity (*Konstantina Agiadi*)
17:00-17:15	Puzzling together the Mediterranean drawdown during the Messinian salinity crisis (*Daniel Garcia-Castellanos*)
17:15-17:30	Discussion
17:39-18:30	**STSM writing**
18:30-20:00	**Sightseeing tour of the city center (registration required)**

Wednesday 02.04

Session 4. Salt deposition through Earth's history	
09:00-09:15	Introduction to WG4 (*Dan Palcu, Anneleen Foubert, Hana Jurikova*)
09:15-09:30	Trace and rare earth element (REE) geochemistry of salt formations: indication and identification (*Biljana Balabanova*)
09:30-09:45	The history of ocean chemistry from evaporites: advancing beyond the state of the art (*Hana Jurikova*)
09:45-10:00	Nature and significance of evaporites in the northern Afar (Ethiopia) (*Anneleen Foubert*)
10:00-10:15	Connection pathways of marine incursions in an active rift basin: the Danakil Depression, Northern Afar (*Oliver Neame*)

10:15-10:30	Salt-Sediment interaction during Mesozoic evolution of the Polish Basin (*Piotr Krzywiec*)
10:30-10:45	Anomalously thick anhydrite networks in the Zechstein of the Southern North Sea - insights from seismic forward modelling (*Łukasz Słonka*)
10:45-11:00	Radiocarbon dating and InSAR Mapping of Quaternary salt diapir uplift in the Romanian Eastern Carpathians (*Dan Tamas*)
11:00-11:15	Coffee break
11:15-11:30	Badenian salt deposition in the Carpathian Region: insights from geochemical and sedimentological studies (*Krzysztof Bukowski*)
11:30-11:45	Age and mode of the Badenian Salinity crisis (*Wout Krijgsman*)
11:45-12:00	From Neotethys to Paratethys: Changing marine gateways across the Anatolian Landmass (*Murat Ozkaptan*)
12:00-12:15	Three million years of salt deposition in the Salar de Uyuni (Bolivia) (*Luis Gibert*)
12:15-12:30	Modern halite deposition in the Dead Sea as an analog for the formation of salt giants (*Ido Sirota*)
12:30-12:45	Unveiling deep-time microbial ecosystems: biomarker evidence from ~820 Ma hypersaline environments (*Richard Schinteie*)
12:45-13:00	Paleoenvironmental evolution of the Eastern Paratethys: tracing the Tethys Ocean legacy through geochemical proxies (*Dan Palcu*)
13:00-13:30	Discussion
13:30-15:00	Lunch break
Session 5. Education and Public Engagement	
15:00-15:15	Introduction to WG5 (*Marija Bosnjak, Efterpi Koskeridou*)
15:15-15:30	Gypsum deposits in Albania, their types and practical importance (*Ana Fociro*)
15:30-15:45	The crucial role of human capital in the sustainable development of the raw materials sector (*Ledi Moisiu*)
15:45-16:00	Experiential fieldtrips and transformative learning on iconic Messinian evaporite outcrop enhance climate change education among young Italian students (*Francesca Lozar*)
16:00-16:15	Coffee break
16:15-16:30	Drawing to visualize science: studying microplastics in salts (*Maria Leria*)
16:30-16:45	Dissemination based on the interaction between science and art (*Romana Kacic*)
16:45-17:15	Discussion

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17:00-17:30	**Field trip logistics and info**
17:30-18:30	**STSM writing**

Thursday 03.04

08:30	Departure from Kraków by bus (meet at the parking lot of AGH University)
09:30/09:45	Arrival at Wieliczka Salt Mine
10:00–10:30	Refreshments in the Gothic Hall, Saltworks Castle at Wieliczka
10:30–12:30	Geology and history of the Wieliczka salt mine (*historians from the mine Museum, Piotr Krzywiec, Krzysztof Bukowski*)
12:30–13:00	Refreshments and technical break
13:00–13:30	Tour of the Central and Northern Castle
13:30–14:30	Tour of the graduation towers
15:00–18:00	Tour of the Wieliczka Salt Mine (including the underground exhibition of the Museum of the Saltworks in Kraków)
18:00–20:00	Dinner at the "Sztolnia" Restaurant (**individual payment**)
20:00	Return to Kraków by bus

Friday 04.04

07:30	Departure by bus from Kraków (meet at the parking lot of AGH University)
	Field trip destination: Ponidzie region (approx. 100 km NE of Kraków) Required gear: Field boots. Packed lunch Stops: 1. Gacki – Overview of Badenian evaporites, largest gypsum crystals 2. Skorocice – Gypsum karst and caves, 3. Siesławice – Curved gypsum crystals, brine paleocurrents 4. Chotel Czerwony - giant gypsum intergrowths 5. Wiślica – Historical place, tectonic structures of the Nida Basin
16:30/17:00	Arrival at Kraków

Poster presentations

1. Three-dimensional maps of salt structures from northwestern Poland (*Patryk Bladusiak*)
2. Stability of the chemical composition of rock and potassium salt solutions (*Paulina Cyran*)
3. The trap method for monitoring hydrogen and soil gas leaks in underground gas storage (UGS) in salt caverns for environmental safety (*M. Gierek*)
4. The cooling event Mi3b symptoms of the Middle Miocene Climate Transition period in the Skawina Formation deposits (Rybna 90, Chełmek s-15; the Carpathian Foredeep; Poland) – stratigraphic implications (*Monika Pilarz*)
5. The South Pyrenean Potash Basin as an analog for the Messinian Salt Giant (*Luis Gibert*)

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Presentation guidelines

Posters should be prepared in portrait format and size A0; they can be setup at any time during the first day, but must be taken down by the end of the third day of the conference (before we leave for the fieldtrips).
Each oral presentation should be planned to last ~12 min and will be followed by 2–3 min of questions.

Logistical information

Venue: Faculty of Geology, Geophysics, and Environmental Protection

AGH University of Kraków, Mickiewicza 30

A-0 building

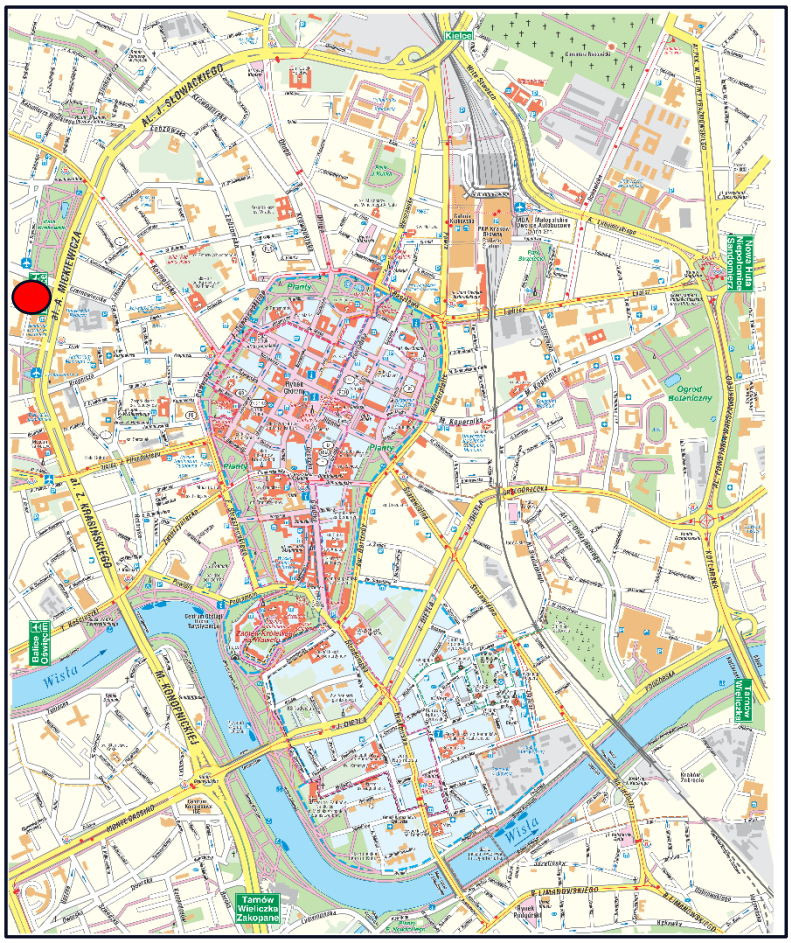
(main)

Room 133

15 min
1,1 km

from

Old Town Center



Contact: saltages2024@gmail.com

SaltAges (https://sites.google.com/view/saltages) is open and inclusive. To join the network, please apply through e-cost here. COST (European Cooperation in Science and Technology) is a funding agency for research and innovation networks. Our Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation. More information on COST may be found at www.cost.eu

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