



GM9.7 | Fluid venting as a submarine geological process controlling seafloor morphology and biology

► [Orals](#) Mon, 14:00 ► [Posters on site](#) Mon, 16:15

Fluid venting as a submarine geological process controlling seafloor morphology and biology

Co-organized by OS4

Convener: [Daniele Spatola](#)^{ECS}

Co-conveners: [Daniele Casalbore](#), [Marzia Rovere](#), [Martina Pierdomenico](#), [Daniel Praeg](#)

► [Orals](#) | Mon, 15 Apr, 14:00–15:30 (CEST) Room -2.20

► [Posters on site](#) | Attendance Mon, 15 Apr, 16:15–18:00 (CEST) | Display Mon, 15 Apr, 14:00–18:00 Hall X1

Session description

[Orals: Mon, 15 Apr | Room -2.20](#)

Chairpersons: Daniele Spatola, Daniele Casalbore, Marzia Rovere

14:00–14:10 | EGU24-911 | [ECS](#) | On-site presentation

[The role of substrate attributes as a driver for benthic epifaunal communities investigated applying OBIA techniques and image analysis on the Norskebe seep site \(Arctic Ocean\)](#) ►

Fereshteh Hemmateenejad, Luca Fallati, Giuliana Panieri, Pedro A. Ribeiro, Chiara Fusca, Benedicte Ferré, and Alessandra Savini

14:10–14:20 | EGU24-5051 | [ECS](#) | [Highlight](#) | On-site presentation

[Systemic comparisons of the adaptations in symbiotic bathymodiolin mussels from diverse stages of hydrothermal vents and cold seeps](#) ►

Ruoxuan Zhao, Jianzhou Xu, and Yanan Di

14:20–14:30 | EGU24-5523 | [Highlight](#) | On-site presentation

[The unique geomorphology of submarine venting features as revealed by dropping lake levels in the Dead Sea](#) ►

Michael Lazar, Danny Ionescu, and Christian Siebert

14:30–14:40 | EGU24-8298 | [Highlight](#) | On-site presentation

[Fluid escape submarine geomorphological features in the NW Black Sea](#) ►

Gabriel Ion, Adrian Popa, Constantin Lazăr, Vlad Apotrosaei Apotrosaei, and Florin Duțu

14:40–14:50 | EGU24-10370 | On-site presentation

[Discovery of a major seafloor methane release site in Europe: The Landsort deep, Baltic Sea](#) ►

Marcelo Ketzer, Christian Stranne, Cheng Chang, Satoko Owari, Changxun Yu, Sebastien Migeon, Matt O'Regan, and Martin Jakobsson

14:50–15:00 | EGU24-15075 | On-site presentation

[Are the foraminiferal assemblages useful proxy for detecting methane emissions in shallow water environments? the case of Scoglio d'Africa \(Tuscan Arc Northern Tyrrhenian Sea\)?](#) ►

Letizia Di Bella, Daniele Casalbore, Aida Maria Conte, Alessia Conti, Irene Cornacchia, Andrea D'Ambrosi, Giovanni Gaglianone, Michela Ingrassia, Daniele Spatol Pierdomenico, Claudio Provenzani, Tania Ruspandini, and Francesco Latino Chiocci

15:00–15:10 | EGU24-16419 | [Highlight](#) | On-site presentation

[Insights into Seabed Fluid flows: Pockmark dynamics mapping and monitoring in Patras Gulf, Greece. Unveil Correlations to local tectonics and Earthquake BLUEL project.](#) ►

George Papatheodorou, Maria Geraga, Dimitris Christodoulou, Elias Fakiris, Efthimios Sokos, Zafeiria Roumelioti, Giuseppe Etiope, Sotiris kokkalas, Nikos Gian Xenophon Dimas, Nikos Georgiou, Vasileios Giannakopoulos, and George Ferentinos

15:10–15:20 | EGU24-17022 | On-site presentation

[Discovery of a unique submarine hydrothermal system between shallow photic and deep dark sites around the Greek island of Milos \(Aegean Sea, Greece\) Solveig Bühring, Andrea Koschinsky, Wolfgang Bach, Marcus Elvert, Charlotte Kleint, Palash Kumawat, Joely Maak, Eva-Maria Meckel, Paraskevi Nomikou, Clem and Enno Schefuß](#)

15:20–15:30 | EGU24-21390 | [Highlight](#) | On-site presentation

[Submarine Morphology Offshore Crotona \(Calabrian Accretionary Prism, Central Mediterranean\): Pockmark Fields and a Mud Diapir in a Mobile Shale Do](#)

Andrea Argnani and Marzia Rovere

[Posters on site: Mon, 15 Apr, 16:15–18:00 | Hall X1](#)

Display time: Mon, 15 Apr, 14:00–Mon, 15 Apr, 18:00

Chairpersons: Daniele Spatola, Daniele Casalbore, Marzia Rovere

X1.171 | EGU24-1599

GM9.7 | [Fluid venting as a submarine geological process controlling seafloor morphology and biology](#)

► [Orals](#) Mon, 14:00 ► [Posters on site](#) Mon, 16:15

X1.172 | EGU24-1975 | [ECS](#)

[Comprehensive review of pockmarks and first "Susceptibility Map" of the Italian Continental Margins](#) ►

Daniele Spatola, Daniele Casalbore, Francesco Latino Chiocci, Ashok Dahal, Stéphanie Dupré, Gemma Ercilla, Martin Torvald Hovland, Luigi Lombardo, Marzia Sulli, and Juan Tomás Vázquez

Fluids, encompassing gases and liquids, possess lesser density than solids, therefore exhibit an upward movement within sedimentary strata due to buoyant "fluid flow" is a well-established phenomenon in diverse geodynamic settings, spanning active and rifted continental margins, compression zones (subductic depositional environments characterized by high-rate sedimentation such as deltas and contourite drifts. This phenomenon manifests in a range of positive volcanoes) and/or negative seafloor morphologies (pockmarks).

Pockmarks, recognized since the 1970s, represent the dominant morphological features associated with fluid escaping from the seafloor. These seafloor mo can reach diameters and depths of several kilometers and over 100 meters, respectively, featuring circular to elongated planforms and flat-bottomed to con section profiles. Despite insights from geological and geophysical data, the comprehensive understanding of the mechanisms governing pockmark formatio and maintenance remains elusive. Various hypotheses and conceptual models, including those involving near-bottom currents, have been proposed to eluc genesis and development of pockmarks. These models encompass continuous processes (seeps) or sudden episodic events of fluid releases and blowouts (

Pockmarks hold significance for various reasons. Pockmarks are often linked to fluid-driven sedimentary failures, highlighting their role as a significant geoh associated with fluid migration, excess pore pressure, and potential landslide triggering. Therefore, studying pockmarks is crucial for geohazard assessment planning of submarine and seafloor infrastructures, where their inherent instability at the seafloor requires safety assessments. Studies on seismicity in mar suggest that pockmarks may serve as important earthquake precursors, with observed increase in seeping water temperature before seismic events and co venting of gas bubbles immediately afterward. The plausible relationship between fluids and seismicity is due to the lubricating effect of fluids on faults. Fur pockmarks release hydrocarbons, which are of great importance for the global carbon cycle, their implication in the climate change and in the sustaining of : biological communities. Pockmarks are also indicators of petroleum generation, making their study pertinent in oil and gas exploration.

This study, concerning the assessment of approximately 6,000 pockmarks mapped on the central Mediterranean Sea, utilizes morphological, sedimentologic tectonics evidences, employing a GIS-based and data-driven approach to generate the pockmark susceptibility map for the Italian continental margins. The r outcome of a deep learning architecture tasked with the classification of the seafloor based on binary classification obtained by training a neural network wi where pockmarks have been mapped and locations where the same are certain to be absent.

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X1.173 | EGU24-2587

[Geochemical, geophysical and biological features of Black Point shallow hydrothermal vent at Panarea island \(Italy\)](#) ►

Fabio Sposito, Anna Maria Gallo, Agostino Semoprebello, Manfredi Longo, Lorenzo Brusca, Gianluca Lazzaro, Sergio Sirì Scappuzzo, Cinzia Caruso, Valeria Ald Arculeo, Alessandro Gattuso, and Francesco Italiano

X1.174 | EGU24-6358

[Influence of focused fluid flow on the development of submarine lateral spreading. Aguilas high \(Gulf of Vera, Western Mediterranean\)](#) ►

Mariano Yenes, José Nespereira, David Casas, Serafín Monterrubio, Gemma Ercilla, Máximo García, and Belén Alonso

X1.175 | EGU24-8501

[EMAN7: understanding methane seepage dynamics in the Hola Trough](#) ►

Bénédicte Ferré, Thibaut Barreyre, stefan Bünz, Claudio Argentino, Jorge Corrales-Guerrero, Knut Ola Dølven, Marie Stetzler, Luca Fallati, Muhamed Fatih Sert, Panieri, Samuel Rastrick, Tina Kutti, and Manuel Moser

X1.176 | EGU24-10885

[Case study on the multi-year geophysical and acoustic survey in a gas flare site on the southeastern continental shelf of the East Sea, Korea](#) ►

Young-Jun Kim, Mario Enrique Veloso Alarcon, Gee-Soo Kong, Jong-Hwa Chun, Deniz Cukur, Youngho Yoon, and Dong-Geun Yoo

X1.177 | EGU24-14435 | [ECS](#)

[Investigating seabed fluid activities using historical single-beam echo sounder data in the offshore southwestern Taiwan](#) ►

Yi-Chin Lin and Jing-Yi Lin

X1.178 | EGU24-14838

[Geomorphology of the Montenegro slope \(eastern Adriatic Sea\): A tale of slump scars, corals and a chimney forest](#) ►

Andrea Argnani, Lorenzo Angeletti, Federica Fogliani, and Marco Taviani

X1.179 | EGU24-19650

[Repeated multibeam surveys and direct observations for the characterization of fluid-related features off Scoglio d'Affrica islet \(Northern Tyrrhenian Sea\)](#)

Daniele Casalbore, Martina Pierdomenico, Daniele Spatola, Anna Saroni, Federica Maurantonio, Massimo Coltorti, Roberta Ivaldi, Maurizio Demarte, Denise Pe Francesco Chiocci