

# European Geosciences Union Press Releases 2025

Vienna, Austria and Online | 27 April – 02 May 2025 | media@egu.eu

## EGU25 Press Release: Climate volatility caused Cretaceous marine predators to go extinct

## Embargoed until 01 May 2025

Late Jurassic and Early Cretaceous oceans are known for enormous and fierce predators like pliosaurids with 2-meter-long jaws, toothy thalattosuchia crocodyliforms, and fast, fish-like ichthyosaurians. Then, during the middle Cretaceous, the fossil record shows an abrupt change. Ichthyosaurs, thalattosuchians, and pliosaurids disappeared. Meanwhile, mosasaurs, plesiosaurs, and sharks diversified and expanded. What changed to cause species that had ruled the oceans for millions of years to suddenly die out and new species to evolve? According to a <u>new study</u> to be presented at the General Assembly of the European Geosciences Union next week, it was likely a period of ocean anoxia and climate volatility related to the hottest interval of the last 541 million years. This interval, known as the Cenomanian/Turonian transition, experienced the highest carbon dioxide concentrations during the Cretaceous, as well as disturbances in nutrients like sulphur and iron in the oceans. This transition is associated with a shift in top predators, creating the unique and somewhat short-lived oceanic food webs of the Late Cretaceous, according to Valentin Fischer of the Université de Liège in Belgium and his colleagues.

As Fischer and the team will report on Thursday, 01 May, at 11:25 CEST, they combined data on the phylogenetic relationships of hundreds of marine reptile lineages to analyze how extinctions were distributed in the tree of life. Then, they used the largest sample of 2D and 3D data on marine reptiles ever assembled to analyze the effect of these extinctions on the predatory capabilities of Cretaceous marine reptiles.

"Our analyses showed that the Cenomanian-Turonian transition is associated with elevated rates of extinction and that these extinctions disproportionally targeted some groups of large and fast



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predators, in a stepwise manner," Fischer says. For example, skull shapes of predators were significantly different before and after the transition, "notably resulting in distinct bite force," he says.

Dr. Valentin Fischer will be available to journalists after the session.



Caption: 3D models of the skull of typical species before (top) and after (bottom) the Cenomanian-Turonian transition: the fast ichthyosaur Sveltonectes insolitus (top) and the large mosasaurid Mosasaurus hoffmanni (bottom). Credit: Valentin Fischer, Francesco Della Giustina.



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#### Note to the media

When reporting on this story, please mention the EGU General Assembly 2025, which is taking place from 27 April – 02 May 2025. This paper will be presented in full [Session SSP1.2] at EGU25 on Thursday, 01 May, 11:25–11:35 (CEST) Room G1. If reporting online, please include a link to the abstract: <u>https://meetingorganizer.copernicus.org/EGU25/EGU25-3100.html</u>

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#### **More information**

The European Geosciences Union (EGU) is Europe's premier geosciences union, dedicated to the pursuit of excellence in the Earth, planetary, and space sciences for the benefit of humanity, worldwide. It is a non-profit interdisciplinary learned association of scientists founded in 2002 with headquarters in Munich, Germany. The EGU publishes a number of diverse scientific journals, which use an innovative open access format, and organises several topical meetings, and education and outreach activities. Its annual General Assembly is the largest and most prominent European geosciences event, attracting over 18,000 scientists from all over the world. The meeting's sessions cover a wide range of topics, including volcanology, planetary exploration, the Earth's internal structure and atmosphere, climate, energy, and resources. The EGU General Assembly 2025 is taking place in Vienna, Austria and online from 27 April – 02 May 2025. For information and press registration, please click here. If you wish to receive our press releases via email, please use the Press Release Subscription Form. Subscribed journalists and other members of the media receive EGU press releases under embargo (if applicable) 24 hours in advance of public disseminate EGU25 website (https://www.egu25.eu/) has a tab titled 'Media' where you will find the full list of press conferences and presentations of media interest. We encourage members of the press to browse the virtual EGU25 Press Centre (https://www.egu.eu/gamedia/2025/) for our Media Tip



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The European Geosciences Union (EGU) is the leading organisation for Earth, planetary and space science research in Europe. With our partner organisations worldwide, we foster fundamental geoscience research, alongside applied research that addresses key societal and environmental challenges. Our vision is to realise a sustainable and just future for humanity and for the planet. The annual EGU General Assembly is the largest and most prominent European geosciences event, attracting over 19,000 scientists from all over the world. The meeting's sessions cover a wide range of topics, including volcanology, planetary exploration, the Earth's internal structure and atmosphere, climate, as well as energy and resources. For more information about the meeting please check media.egu.eu or follow EGU on <u>social media.</u>

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