Scientists bore into dinosaur-era asteroid crater

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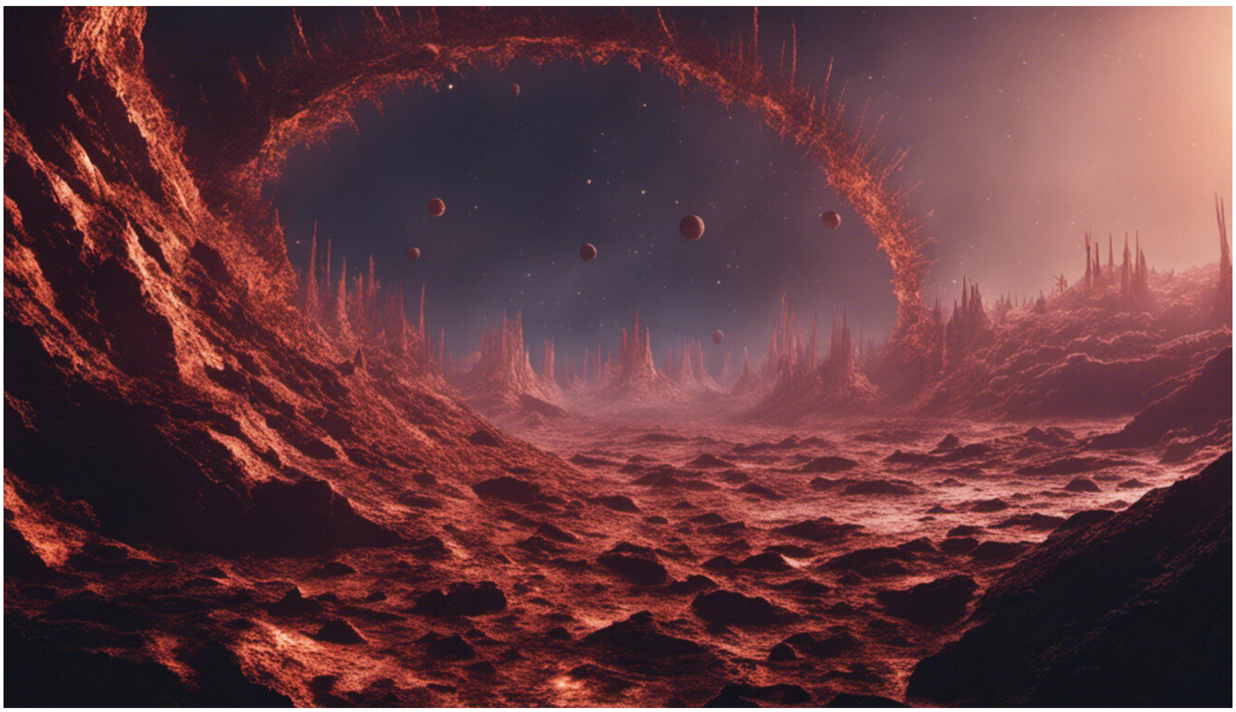

Credit: AI-generated image (disclaimer)

Sixty-six million years ago an asteroid smashed into Earth releasing energy equivalent to 100 million nuclear bombs and creating a massive dust cloud that blocked out the sun for more than a year.

These events caused the famous mass extinction of dinosaurs, and it stopped photosynthesis by destroying many plants, and significant marine and terrestrial organisms in the food chain.

Now, WA scientists are part of an international team working to understand how life recovered and evolved following this catastrophic impact.

Curtin University's geomicrobiologist Associate Professor Marco Coolen is currently in Mexico to sample the impact site of the Chicxulub Impact Crater in the Gulf of Mexico.

The crater is massive, covering 180km in diameter—the distance from Perth to Bunbury—and 30km deep, nearly 3.5 times the height of Mount Everest.

Upon impact, gigantic amounts of pulverized rock exploded into the atmosphere and landed back on Earth forming an 'ejecta layer' that can be found all over the world, A/Prof Coolen says.

"No fossil remains of dinosaurs have been found above this ejecta layer, however, avian dinosaurs—that evolved into modern birds—survived the extinction," he says.

As part of the research A/Prof Coolen will collect more than 1000m of cores of the marine sediment and rock from the site and send the frozen samples back to Perth to study.

The drilling platform L/B Myrtle whihc is being used in the Gulf of Mexico. Credit: ECORD and IODP

DNA found in the sediments and rocks will be studied to identify what animals and plants were present and evolved after the impact.

"We hope to find information about species such as plankton that do not leave behind fossils that can be studied by eye or under a microscope, and can only be identified via molecular fossils left behind such as DNA and lipid biomarkers."

World leading molecular fossil expert Kliti Grice and her team will analyse lipid biomarkers and their isotopic compositions, to reveal what the environmental conditions were like at the time.

"This way we can make connections between past ecosystems and environments and identify reasons for why certain species adapted or disappeared," John Curtin Distinguished Professor Grice says.

The researchers will be looking, and may also find 'diamondoids'—diamond-shaped molecules that represent very high temperatures and can reveal more about the heating of water within the earth's crust.

"We expect the microbes that re-colonised the crater rocks are related to bacteria such as geysers that live on the surface of the planet today, A/Prof Coolen says.

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