

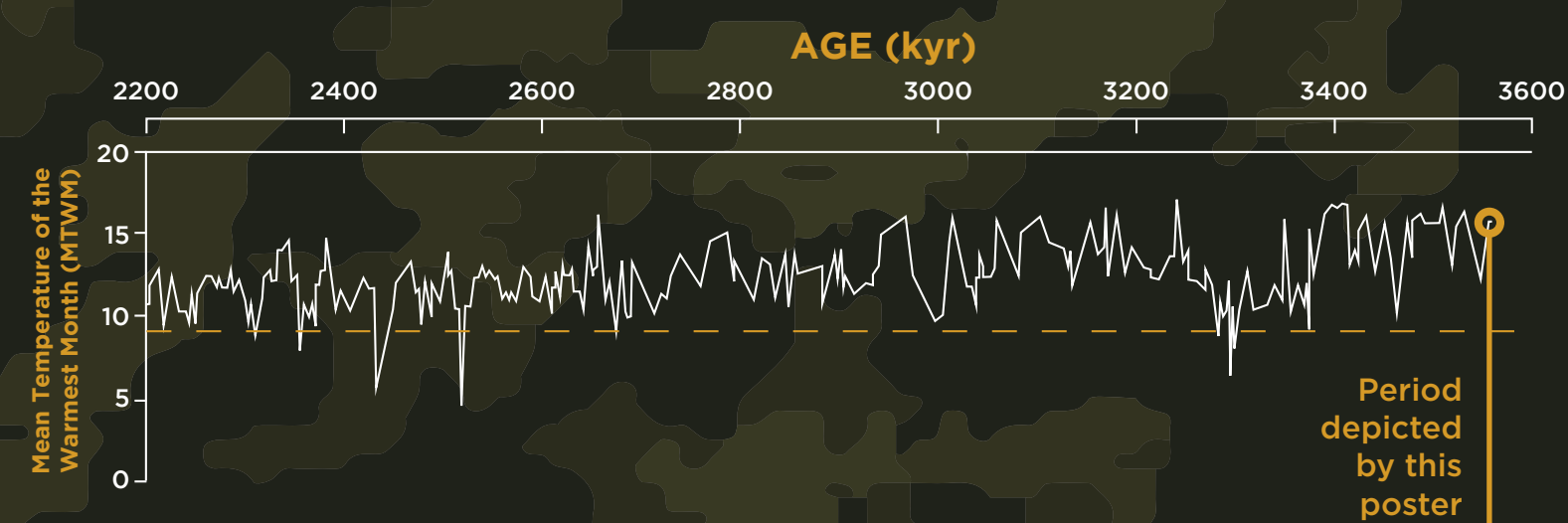
LAKE EL'GYGYTGYN

3.5 MILLION YEARS AGO, A WARM ARCTIC REVEALS A VULNERABLE PLANET

Lake El'Gygytgyn in northeastern Siberia was created 3.6 million years ago by a massive meteorite impact. Reading the sediment layers in this lake upward through time reveals a record of changing climate conditions. The sediment core sample at left contains pollen deposited during the Pliocene, consistent with CO₂ levels in the atmosphere of about 400 ppm. While today's CO₂ levels are similar, the Arctic during the Pliocene looked much different than modern-day tundra. The conditions of the Pliocene provide a glimpse into what may come from warming due to emissions of greenhouse gases.

CORE SAMPLE FINDINGS

CYCLES OF WARMING IN THE LAKE EL'GYGYTGYN SEDIMENT RECORD



In 2009, an interdisciplinary, multinational group of researchers successfully recovered the longest, continuous terrestrial record of climate change found anywhere in the Arctic. This segment of the sediment core sample was deposited about 100,000 years after the meteorite impact.

The Lake El'gygytgyn sediment record can be matched to sediments in the oceans that show that the Pliocene was warm. Scientists now know that very small changes in Earth's orbit over millions of years, or a change in greenhouse gases (like today), can cause large changes in climate—especially in the Arctic and at high latitudes.

CREDITS

Lake El'gygytgyn Science Team, National Science Foundation, German Federal Ministry of Education and Research, and International Continental Drilling Program

NE RUSSIA/ARCTIC CIRCLE

MID-PLIOCENE
GEOLOGICAL PERIOD

CORE LENGTH: 318 METERS

AGE: 3.6 MILLION YEARS
AGO – TODAY



AGU100

ADVANCING
EARTH AND
SPACE SCIENCE

