

Detecting Climate Change During Trilobite Time

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Terms and Abbreviations

GSSP—Global Stratotype Section and Point, indicating a boundary/transition in time

Cambrian—first era of time in the phanerozoic indicating the onset of complex marine life

Drumian—small stage of time in the Cambrian

DICE—Drumian Isotope Carbon Excursion, a climatic event in the rock record that I'm researching

Stratotype Ridge—section of the Drum Mountains near Delta where I'm researching, contains a GSSP

Ma: Millions of years/million years ago



What is a trilobite?

Marine arthropod fossils (think horseshoe crabs)

Lived in shallow water to deep water

Indicate the onset of more complex life (life had been microscopic in the Precambrian)

Come in two flavors: shallow water and deep water



Why are trilobites important?

Two important trilobites for my research: *P. atavus* and *P. gibbus*

Deep water trilobites that got preserved in limestone

Trilobites are important time indicators

When one dies, another will become dominant



Where am I researching?

Stratotype Ridge: located near Delta, UT

Made up of calcium carbonate (CaCO_3) limestones

Indicates deeper water in warmer environment

Currently a mountain in the middle of a desert

Contains *P. atavus* and *P. gibbus*

Death of *P. gibbus* is base of GSSP



Carbon Isotope and Climate Crash Course

Carbon comes in 3 flavors—C12, C13, C14

C12: more abundant

C13: less abundant/heavier

Come from volcanoes

Limestones store this carbon

More C13=more biological activity

Less C12=little to no biological activity, CLIMATE
EVENT



What is the DICE?

Drumian Isotope Carbon Excursion

Takes place from 506-503.5 Ma(?)

Has lower concentration of C13—what does this show?

Main theory: glaciation



What do I hope to learn?

More refined date for the GSSP using zircons from hypothetical sandy material

More refined DICE data—get more than 8 data points

Discover if the DICE is a global event



Questions? Comments?