

EARLY EARTH



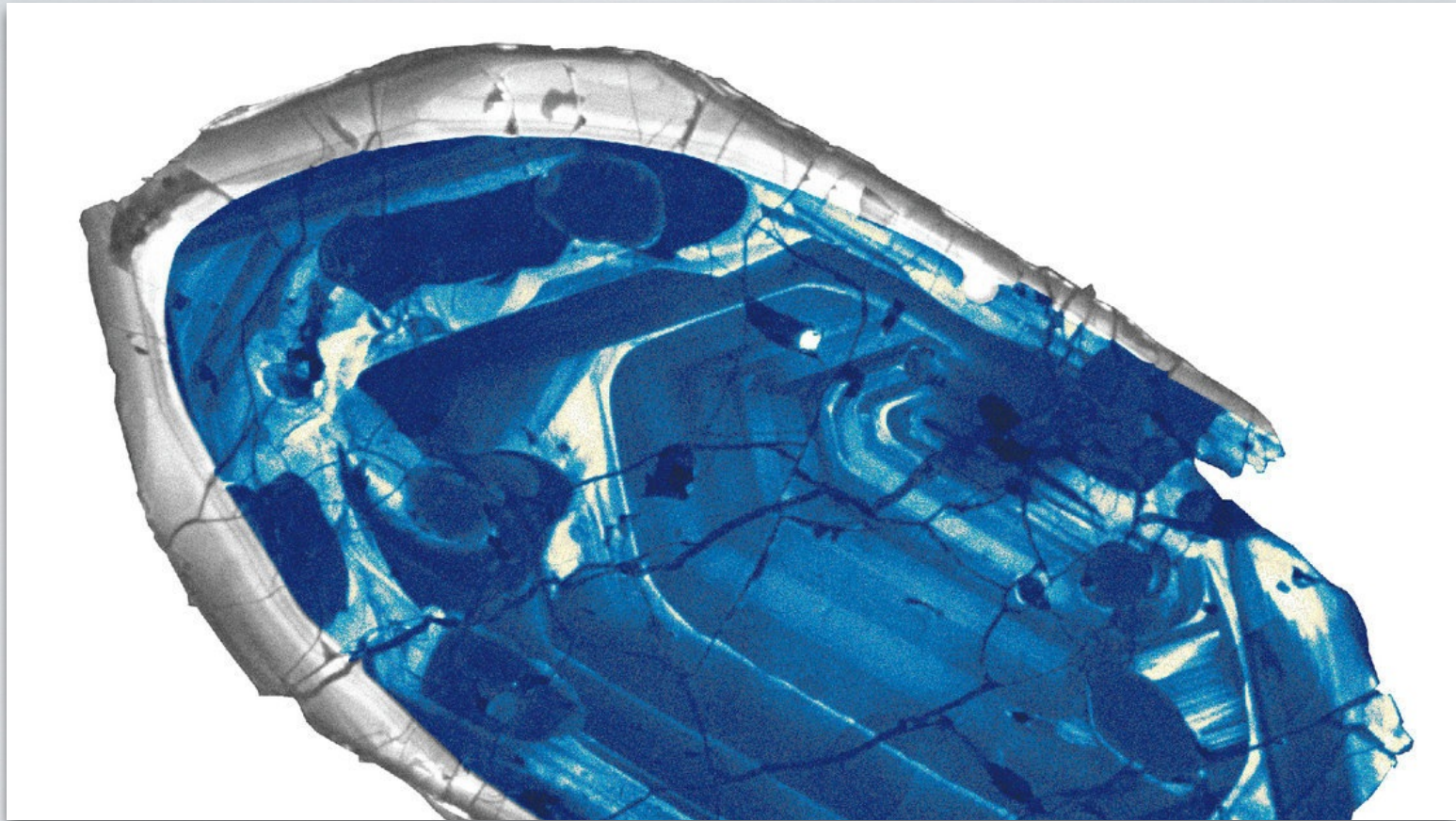
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- Radioactive decay shows that Earth formed 4.54 billion years ago
- During the early formation Earth heated up due to radioactive decay of isotopes within the Earth's interior



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- During early Earth's melting, materials separated into zones according to their densities
 - Fe and Ni settled into the core
 - Silicates formed the earliest crust
 - Gaseous compounds made up the atmosphere



Oldest Zircon Crystals - 4.4 billion years old - Australia

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- 4.28 billion years ago
Earth's solid crust began to form
- Around 3.9 billion years ago plate tectonics began and gases trapped inside the seeped out





Oldest Rocks - 4.28 billion years old - Canada

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- Around the same time water begins to accumulate on Earth
- Where is it from [theory]?
 - Comets
 - Meteorites
 - Outgassing



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- 3.8 billion years ago weathering, erosion, and deposition began and the first sedimentary rock was formed



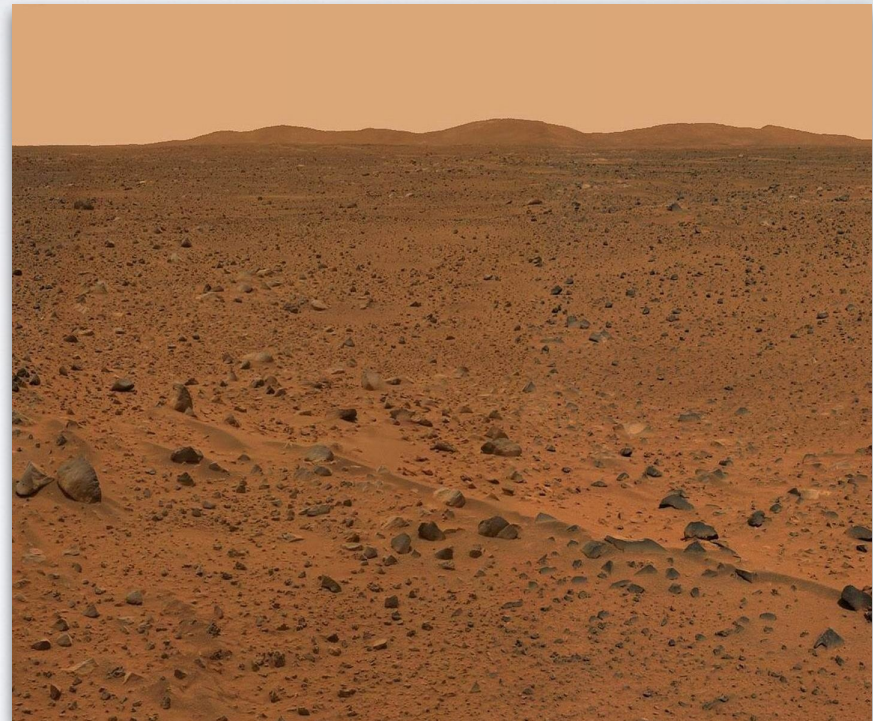
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- 3.5 billion years ago life forms [bacteria] used sunlight to make sugar from water and CO_2 and released free oxygen as waste
 - This allowed for oxygen to start collecting in our atmosphere



EARLY EARTH

- 3.5 to 2.8 billion years ago oxygen in the atmosphere reacted with iron in the soil to produce rust
- Earth froze over into a 'Snowball Earth' by stripping the greenhouse gas methane from the air



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- After 2.8 billion years most of the iron that could have reacted with the oxygen had done so, thus oxygen in the atmosphere increased and life began to evolve





Strange Life Forms