

Rise in Earth's Oxygen Timed to the Rise of Animals

An evolutionary burst 540 million years ago filled planet Earth with an astonishing diversity of animals, that is related to a rise in atmospheric oxygen.

- Chromium (Cr) cycling in soils is dependent on atmospheric oxygen (O_2), and measuring Cr isotopes provides a way to track O_2 in ancient marine sedimentary rocks.
- Eukaryotic cells - those with distinct nucleus and internal structures – evolved nearly a billion years before fossils of complex animals first appeared in the rock record. The cause of this lag was unclear and many hypotheses have been suggested.
- Newly presented data demonstrate that oxygen was low enough during the long period prior to this increase in animal diversity (the mid-Proterozoic) to have directly hindered the emergence of advanced animals until approximately 800 million years ago.

