

1. Record Nr.	UNINA9910814519503321
Autore	Summerhayes C. P.
Titolo	Earths evolving climate : a geological perspective // Colin Summerhayes
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley-Blackwell, , 2015 ©2015
ISBN	1-118-89737-4 1-118-89738-2 1-118-89736-6
Descrizione fisica	1 online resource (413 p.)
Disciplina	551.609/01
Soggetti	Atmospheric carbon dioxide Climatic changes - Research Geological carbon sequestration Paleoclimatology Ice cores
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Published in association with the Scott Polar Research Institute."
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Cover; Title Page; Copyright; Dedication; Contents; Author Biography; Foreword; Acknowledgements; Chapter 1 Introduction; References; Chapter 2 The Great Cooling; 2.1 The Founding Fathers; 2.2 Charles Lyell, 'Father of Palaeoclimatology'; 2.3 Agassiz Discovers the Ice Age; 2.4 Lyell Defends Icebergs; References; Chapter 3 Ice Age Cycles; 3.1 The Astronomical Theory of Climate Change; 3.2 James Croll Develops the Theory; 3.3 Lyell Responds; 3.4 Croll Defends his Position; 3.5 Even More Ancient Ice Ages; 3.6 Not Everyone Agrees; References; Chapter 4 Trace Gases Warm the Planet 4.1 De Saussure's Hot Box 4.2 William Herschel's Accidental Discovery; 4.3 Discovering Carbon Dioxide; 4.4 Fourier, the 'Newton of Heat', Discovers the 'Greenhouse Effect'; 4.5 Tyndall Shows How the 'Greenhouse Effect' Works; 4.6 Arrhenius Calculates How CO2 Affects Air Temperature; 4.7 Chamberlin's Theory of Gases and Ice Ages; References; Chapter 5 Moving Continents and Dating Rocks; 5.1 The

Continents Drift; 5.2 The Seafloor Spreads; 5.3 The Dating Game; 5.4 Base Maps for Palaeoclimatology; 5.5 The Evolution of the Modern World; References; Chapter 6 Mapping Past Climates
6.1 Climate Indicators 6.2 Palaeoclimatologists Get to Work; 6.3 Palaeomagneticians Enter the Field; 6.4 Oxygen Isotopes to the Rescue; 6.5 Cycles and Astronomy; 6.6 Pangaeon Palaeoclimates (Carboniferous, Permian, Triassic); 6.7 Post-Break-Up Palaeoclimates (Jurassic, Cretaceous); 6.8 Numerical Models Make their Appearance; 6.9 From Wegener to Barron; References; Chapter 7 Into the Icehouse; 7.1 Climate Clues from the Deep Ocean; 7.2 Palaeoceanography; 7.3 The World's Freezer; 7.4 The Drill Bit Turns; 7.5 Global Cooling; 7.6 Arctic Glaciation; References
Chapter 8 The Greenhouse Gas Theory Matures 8.1 CO₂ in the Atmosphere and Ocean (1930-1955); 8.2 CO₂ in the Atmosphere and Ocean (1955-1979); 8.3 CO₂ in the Atmosphere and Ocean (1979-1983); 8.4 Biogeochemistry: The Merging of Physics and Biology; 8.5 The Carbon Cycle; 8.6 Oceanic Carbon; 8.7 Measuring CO₂ in the Oceans; 8.8 A Growing International Emphasis; 8.9 Reflection on Developments; References; Chapter 9 Measuring and Modelling CO₂ Back through Time; 9.1 CO₂: The Palaeoclimate Perspective; 9.2 Fossil CO₂; 9.3 Measuring CO₂ Back through Time; 9.4 Modelling CO₂ and Climate
9.5 The Critics Gather References; Chapter 10 The Pulse of the Earth; 10.1 Climate Cycles and Tectonic Forces; 10.2 Ocean Chemistry; 10.3 Black Shales; 10.4 Sea Level; 10.5 Biogeochemical Cycles, Gaia and Cybertectonic Earth; 10.6 Meteorite Impacts; 10.7 Massive Volcanic Eruptions; References; Chapter 11 Numerical Climate Models and Case Histories; 11.1 CO₂ and General Circulation Models; 11.2 CO₂ and Climate in the Early Cenozoic; 11.3 The First Great Ice Sheet; 11.4 Hyperthermal Events; 11.5 Case History: The Palaeocene-Eocene Boundary; 11.6 CO₂ and Climate in the Late Cenozoic
11.7 Case History: The Pliocene

Sommario/riassunto

To understand climate change today, we first need to know how Earth's climate changed over the past 450 million years. Finding answers depends upon contributions from a wide range of sciences, not just the rock record uncovered by geologists. In *Earth's Climate Evolution*, Colin Summerhayes analyzes reports and records of past climate change dating back to the late 18th century to uncover key patterns in the climate system. The book will transform debate and set the agenda for the next generation of thought about future climate change. The book takes a unique approach to the subject providing
