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Nota di contenuto	1. Introduction -- Part I - Scientific principles and the scientific method -- 2. scientific principles -- 3. The scientific method and its use -- Part II - Overview of climate change science -- 4. Earth’s energy budget -- 5. Climate change trends -- 6. Earth’s surface temperature -- 7. Climate change science as earth science -- Part III - Earth’s atmosphere -- 8. Introduction to earth’s atmosphere -- 9. Carbon dioxide, other greenhouse gases, and the carbon cycle -- 10. Earth’s albedo, radiative forcing and climate change -- 11. Atmospheric circulation and climate -- Part IV - The world ocean and climate -- 12. The world ocean -- 13. Ocean heat content and rising sea level

Sommario/riassunto

Climate Change Science: A Modern Synthesis introduces the principles of climate change science, emphasizing the empirical evidence for climate change and a warming world. Divided into eleven sections, this comprehensive book opens with an introduction to basic scientific principles including the scientific method, the laws of thermodynamics, the gathering and interpretation of data, biographical notes on a few of the giants of science and their contributions, profiles of selected climate change scientists and their contributions, Newton’s laws of motion and more. The remaining sections include an Overview of Climate Change Science; Earth’s Atmosphere; The World Ocean and Climate; Earth’s Cryosphere and Climate History; Land and Its Climates; Climate Models; Paleoclimatology; Future Climates and Mitigation; Skeptics and Deniers of Global Warming and Specific Declarations against Climate Science and Climate Scientists. The book offers extensive coverage of the major aspects of climate change and its effects and interactions with the atmosphere, the World Ocean, glaciers and land. Modeling the Climate receives its own chapter, and there are sections on past climates and a chapter outlining the ideas of climate change skeptics and deniers and the scientific evidence that either refutes or substantiates their claims. Each chapter opens with a list of “Things to Know.” The book goes on to offer chapter-length discussion of the atmosphere, biosphere, geosphere, hydrosphere and anthroposphere and their inter-relationships and much more. Designed as an introductory text for use at the undergraduate level, Climate Change Science assumes no science background on the part of the reader.