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Nota di contenuto	1. Introduction -- 2. Climate change and theories -- 2.1 Introduction -- 2.2 Milankovitch theory -- 2.3 Sunspot cycle -- 2.4 Sea surface temperature and pressure oscillations in the Pacific Ocean -- 2.5 Sea surface temperature and pressure oscillations in the Atlantic Ocean -- 2.6 Discussion and conclusion -- References -- 3. The second law of thermodynamics and heat discharge to the environment by human activities -- 3.1 Background -- 3.2 Discussion and proof -- 3.3 Conclusion -- References -- 4. Greenhouse effect and climate change -- 4.1 Background -- 4.2 Understanding electromagnetic radiation -- 4.3 Planck's law and radiated energy -- 4.4 Greenhouse effect -- 4.5 Characteristics of a greenhouse gas -- 4.6 Evidence of global climate changes -- References -- 5. Anthropogenic heat release into the environment -- 5.1 Introduction and statement -- 5.2 Hypothesis of method and the method -- 5.3 Heat based on world energy consumption -- 5.4 Heat from net electricity generation -- 5.5 Heat from oil refineries -- 5.6 Heat from garbage incineration -- 5.7 World output of carbon dioxide -- 5.8 Heat from formation of sulfur dioxide from combustion -- 5.9 Heat from animal bodies -- 5.10 Discussion and conclusion -- 5.11 Nomenclature -- References -- 6. Climate change and all evidences of global warming -- 6.1

Sommario/riassunto

Climate Change is a collection of a number of papers as well as chapters about the science of the subject. This collection is meant to inflame and excite conversation among engineers, scientists, and society at large. It would serve as a catalyst for a three-credit course, as a relatively new engineering subject, for both engineering and nonengineering university students. As university education develops to better prepare future leaders to appreciate science, technology, engineering, and mathematics, engineering courses for a mix of engineering and nonengineering majors are essential and so is the requirement for worthy textbooks. This monograph intends to be one of the useful tools available on this timely topic. The wide range of topics includes climate change and theories, the second law of thermodynamics, the global greenhouse effect, anthropogenic heat

release, evidence around us owing to environmental change, sea level rise, jungles and forests, heat islands, atmospheric carbon dioxide removal via technology, nanotechnology, other innovations in response to climate change, and the energy-water-food nexus.