**Plenary Talk** PV III Tue 9:00 ELP 6: HS 3+4

**Physics as an environmental science: The case of climate history** — •Richard Staley — University of Cambridge, United Kingdom — University of Copenhagen, Denmark

Environmental physics courses began to appear only from the late 1960s and largely treated their subject as the study of pollution, applying physics to the world's environmental problems, before more recently expanding to incorporate Earth System Sciences. This lecture explores instead what we can learn about physics by treating it as always an environmental science, as much grounded in understanding the earth and environment as in the search for the fundamental principles of matter. Drawing on the Leverhulme funded project "Making climate history", the emergence of the climate sciences and long history of temperature as a key climatic index will serve as my case studies. How is global knowledge achieved, practically, when the earth is the subject matter? I explore several key elements (and the relation between projection and achievement) in building the global arguments and long-term histories required to know that man has changed climate. When, why and how has the earth been treated as an instrument? How did natural philosophers first begin to think it had a temperature (and how did they try to measure that)? Why were the oceans understood to have climates, from the 1870s? How did ocean histories resolve the dilemmas of geological eras? And how have scientists constructed hemispheric or global arguments and million-year histories from foraminifera shells? This lecture aims to provide a historical orientation to physics as an environmental science.