Public Outreach and Interactive Learning with En-ROADS Global Energy and Climate Simulator

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Simple climate models enable not only rapid simulation of a large number of climate scenarios, especially in connection with the integrated assessment models of economy and environment, but also provide chances for outreach and education. En-ROADS, (Energy Rapid Overview and Decision Support)[1], is a publicly available, online policy simulation model designed to complement integrated assessment models for rapid simulation of climate solutions. En-ROADS is a globally aggregated energy-economy-climate model based on a simple climate model, and supports outreach and education about the causes and effects of climate change. It has an intuitive user interface and runs essentially instantly on ordinary laptops and tablets, providing policymakers, other leaders, educators, and the public with the ability to learn for themselves about the likely consequences of energy and climate policies and uncertainties.

En-ROADS is a behavioral system dynamics model consisting of a system of nonlinear ordinary differential equations solved numerically from 1990-2100, with a time step of one-eighth year. En-ROADS extends the C-ROADS model, which has been used extensively by officials and policymakers around the world to inform positions of parties to the UNFCCC[2][3]. In En-ROADS' climate module, the resulting emissions from the energy system, from forestry and land use, and carbon removal technologies, determine the atmospheric concentrations of each GHG, radiative forcing, and climate impacts including global surface temperature anomaly, heat and carbon transfer between the surface and deep ocean, sea level rise, and ocean acidification. It is calibrated to fit historical data of temperature change and carbon cycle elements, as well as the projections within the RCP-SSP framework. Both En-ROADS and C-ROADS are further developed to account for the details of the terrestrial carbon cycle.
