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Arctic Warming and the CMIP6 Climate Models

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During the first decade of the 21st century the Arctic Amplification (AA) has reached values between four and five. The CMIP6 (Coupled Models Intercomparison Project phase 6) climate models have difficulty reproducing the observed high values of the AA. The main reason for this difficulty is that the CMIP6 models have overestimated global warming since about 1990. Only seven models simulate global warming that is within ±15% of the observed warming. Ten models overestimate global warming by more than 15% and only one of the models underestimates it by more than 15%. The Arctic warming is simulated by the CMIP6 climate models much better than the mean global warming. The reason is an equal spread of over and underestimates of Arctic warming by the models. Eight models are within ±15% of the observed Arctic warming. Only three models are accurate within ±15% for both mean global and Arctic temperature simulations. Earlier versions of models (CMIP5 and CMIP3) simulated global warming more accurately than the latest CMIP6 models. The range of CMIP6 models' projected warming up to the year 2100 from the 1961-1990 average is 1.7 to 4.3oC for the global and from 4 to 13oC for the Arctic warming.

Biography:

Petr Chylek received the MS degree from the Department of Theoretical Physics of Charles University in Prague and the Ph. D. from the University of California in Riverside. Before joining the Los Alamos National Laboratory he was a professor of Physics and Atmospheric Science at several US and Canadian Universities. He is an author of over 150 publications in scientific Journals. For his contribution to scientific research, he was elected a Fellow of the American Geophysical Union, a Fellow of the Optical Society of America, and a Fellow of the Los Alamos National Laboratory.