

# A Cost-Efficient Projection of Complex Climate Models for CO<sub>2</sub> Forcing

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As an aggregate climate module for integrated assessment, we introduce a nonlinear impulse-response representation of sophisticated 3D models of the coupled carbon-cycle-plus-climate system. The module translates anthropogenic CO<sub>2</sub> emissions into the corresponding long-term evolution of atmospheric concentrations, and further into the associated changes in the spatial patterns of annual-mean temperature, cloud cover, precipitation, and sea level. As illustration, the model is applied to a variety of emission and concentration scenarios.