

Pangaea

the real-time, international climate simulator for decision-makers

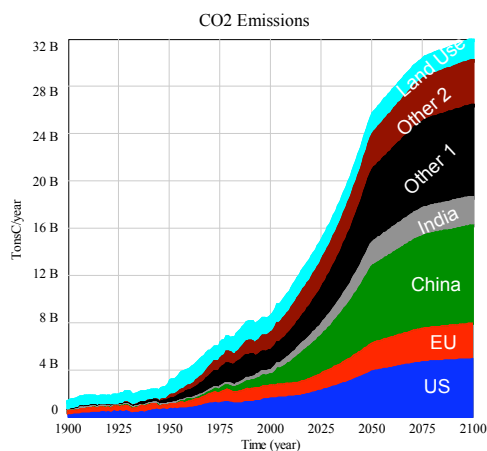
Pangaea is a simple, flexible, real time decision support tool for climate negotiators, policy makers, and educators. It assesses and communicates the impacts of emissions from countries and regions of the world on global climate change, translating the fossil fuel emissions of each region and global sequestration into CO₂ atmospheric concentrations, temperature, and sea level rise impacts.

Why a regional model?

Research tells us that nonscientists often misunderstand the fundamental dynamics of the accumulation of carbon and heat in the atmosphere. As a result, their intuitive predictions about the response of the global system to emissions cuts are frequently incorrect.

In addition, our conversations with negotiators and other stakeholders suggest that there is a need for better understanding of the aggregate effects of individual regional or sectoral mitigation efforts.

Pangaea is a regional climate model that can close these gaps in understanding with a simple, real time decision support tool.

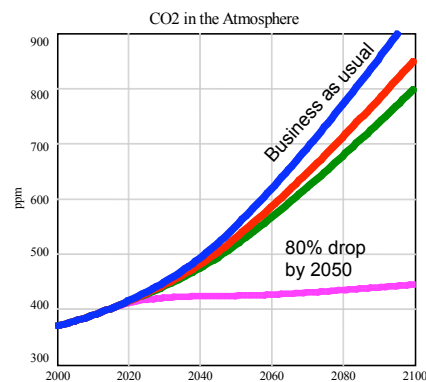


Pangaea assesses and communicates the impacts of emissions from regions of the world on global climate change.

The model translates the fossil fuel emissions of each region into CO₂ atmospheric concentrations, temperature, and sea level rise impacts. It offers a common basis for analysis and policy decisions for each region. By visually and iteratively conveying the

projected impacts of decisions, the model aids in consistent communication of a decision rationale.

Our team can customize the model to address a range of issues, such as GDP intensity, per capita emissions, and emissions from specific economic sectors and fuel types.



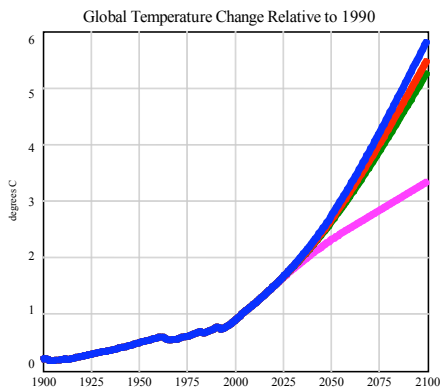
What the model offers

Pangaea is a synthesis of several sub-models: regional CO₂ emissions; other greenhouse gasses (CH₄ and N₂O); land use; carbon cycle; relative temperature; and sea level rise. It is designed to provide:

- **Transparency:** equations are available, easily auditable, and presented graphically.
- **Understanding:** model behavior can be traced through the chain of causality to origins; we don't say "because the model says so."
- **Flexibility:** the model supports a wide variety of user-specified scenarios at varying levels of complexity.
- **Consistency:** the simulator is consistent with historic data, the structure and insights from larger models, and the IPCC AR4.

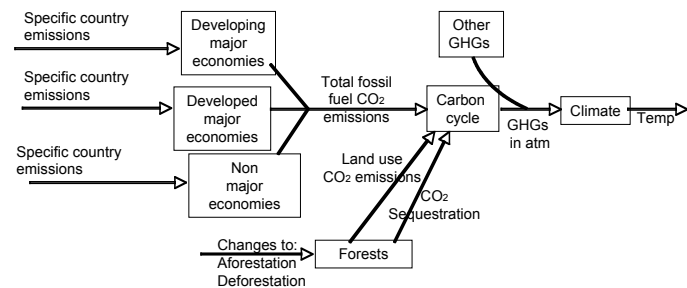
- *Accessibility*: the model runs with a user interface on a laptop in real time.
- *Robustness*: the model captures uncertainty around the climate outcomes associated with emissions decisions.

The model is not a substitute for larger integrated assessment models (IAMs) or detailed scientific models. Instead, it captures some of the key insights from such models and makes them available for rapid policy experimentation. This is important for negotiators and other stakeholders who need to appreciate the consequences of commitments quickly.



Confidence Building

We have built confidence in model behavior through a suite of rigorous tests. The core of the model is derived from Dr. Tom Fiddaman’s MIT thesis. And model output has been tested against the output of large, disaggregated models such as MiniCAM, AIM, CETA and MERGE.



Settings for Use

Pangaea has been used in strategic planning sessions, IPCC meeting presentations, role-playing “mock” U.N. negotiations, and in university classrooms (most recently the business school at MIT). We are currently creating an online version.

The Modeling Team

Pangaea is a model of Ventana Systems and Sustainability Institute.

- Dr. Tom Fiddaman, Ventana Systems
- Dr. Lori Siegel, Sustainability Institute
- Andrew Jones, Sustainability Institute
- Dr. John Sterman, MIT System Dynamics Group
- Dr. Beth Sawin, Sustainability Institute
- Dr. Phil Rice, Sustainability Institute

Pangaea will be available for use and extension through a “creative commons” license as part of a new effort called Climate Interactive.

Where Next

We are currently seeking partners and sponsors to adapt, extend, and use Pangaea so that it may help the transition to a stable climate.



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