



The Climate Action Initiative



Deploying Policy Exercises and the C-ROADS Simulation to Facilitate and Support Long-Term Climate Policy Development

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The Climate Action Initiative
The Heinz Center
Sustainability Institute
Ventana Systems
MIT
Active Philanthropy
Executive Learning Partners
European Environment Agency

11 March 2009



How close do policy choices get us toward climate goals?



350 – 450 ppm
2 ° C
Emission peaking in
2015

Long-term climate
goals

How close?

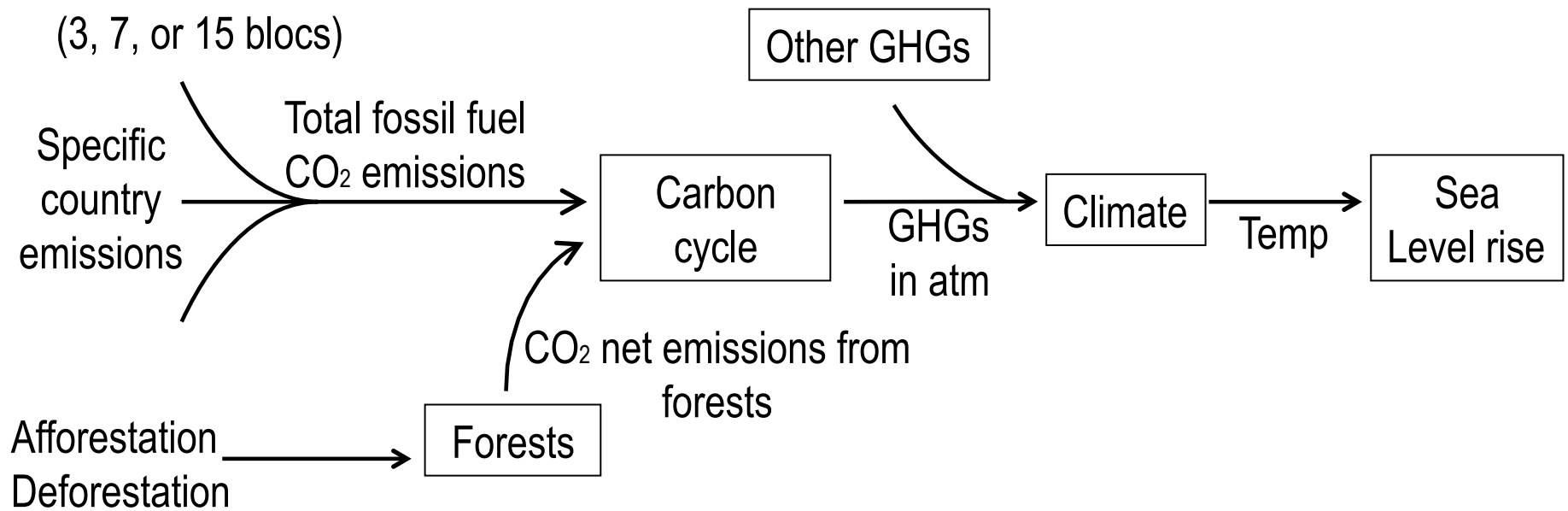
Emissions
reduction proposals
under consideration

Challenges:

- Adding up diverse proposals
- Dynamics of accumulation feedback, and delay



C-ROADS





Settings For Use



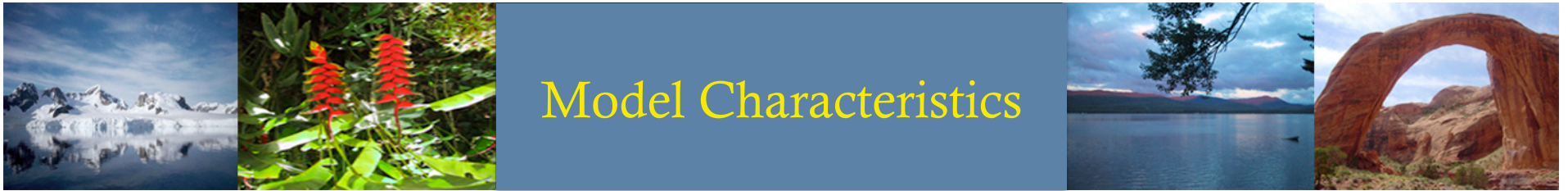
- **Education**

- Mock negotiations
- Online-version

- **Decision Support**

- Policy makers and other non-experts
- Business leaders
- Climate communicators





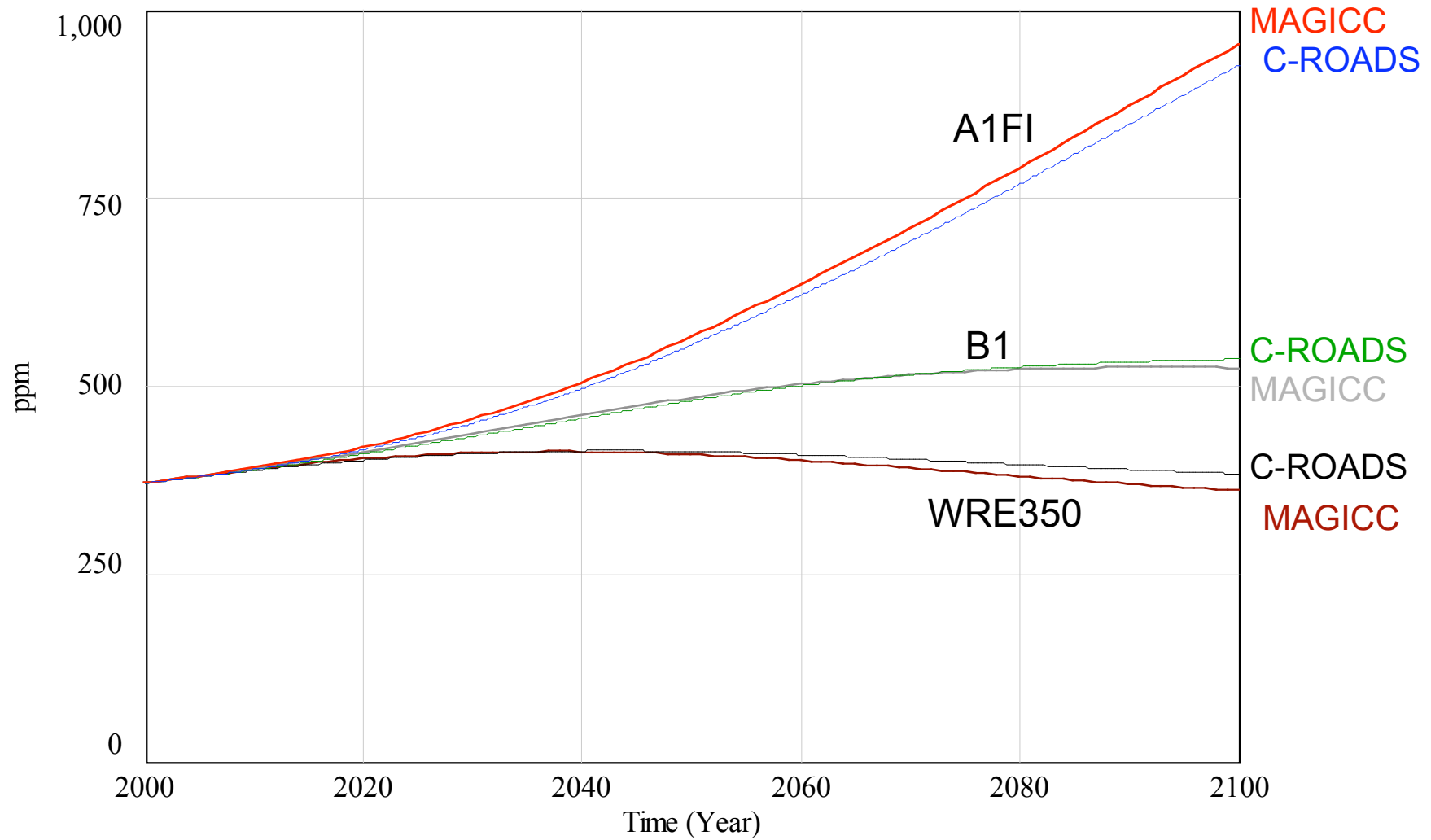
- **Fast**
 - Simulates 500 years in <1 second
- **Accessible**
 - Used easily on a laptop by non-modelers
 - Flexible, intuitive interface
- **Transparent**
 - Open-box; all assumptions easily examined
 - Causal tracing permits auditing of behavior
- **Grounded in and consistent with accepted climate science**
 - Calibrated to and tested against AR4, other models and data



C-ROADS Review Panel

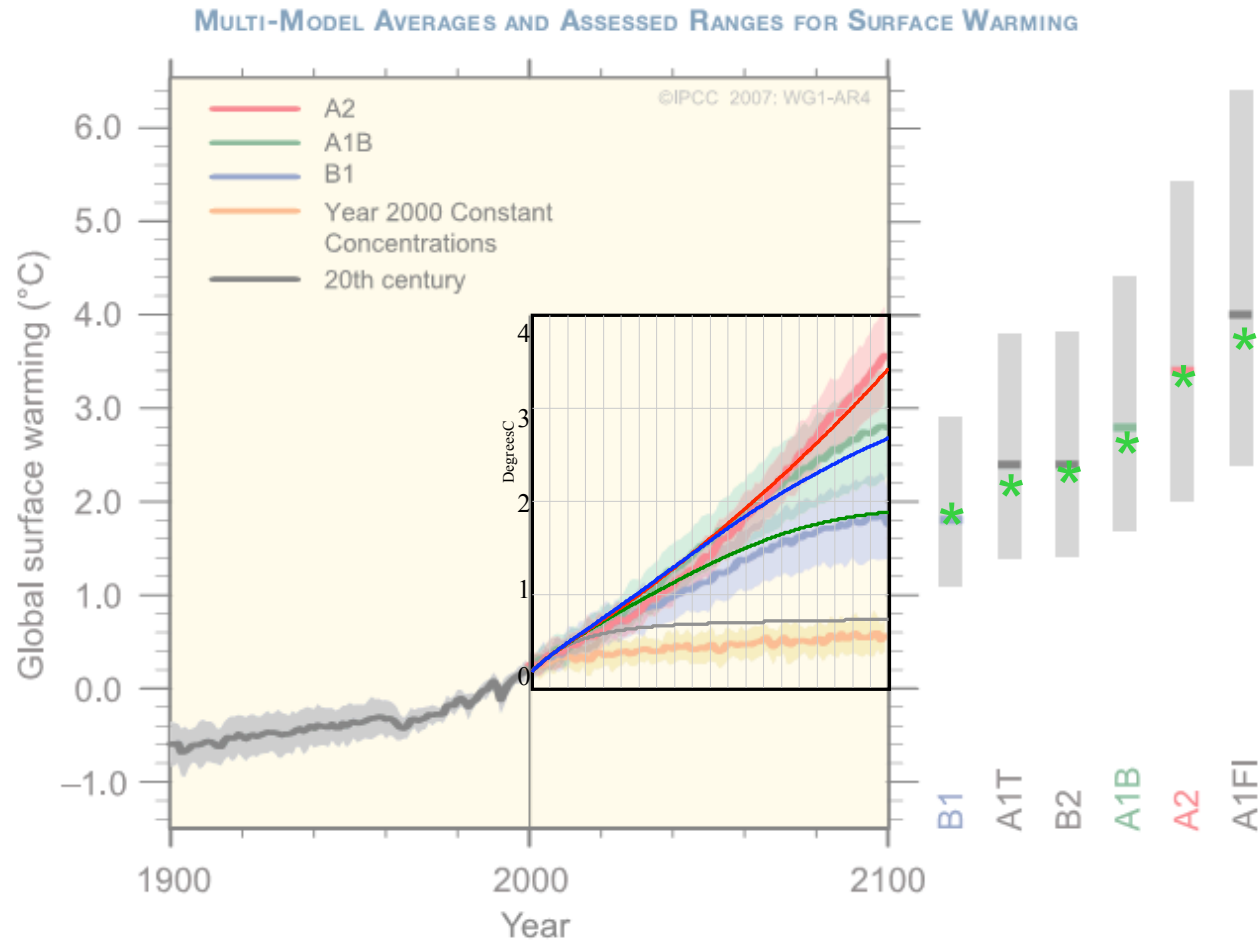
- Dr. Robert Watson, Chair, Department for Environment, Food and Rural Affairs (DEFRA)
- Dr. Eric Beinhocker, McKinsey Global Institute
- Dr. Bert de Vries, Netherlands Environmental Assessment Agency
- Dr. Klaus Hasselmann, Max-Planck Institut für Meteorologie
- Dr. David Lane, London School of Economics & Political Science
- Dr. Jørgen Randers, Norwegian School of Management BI
- Dr. Stephen Schneider, Stanford University

Carbon Cycle Projections vs. MAGICC



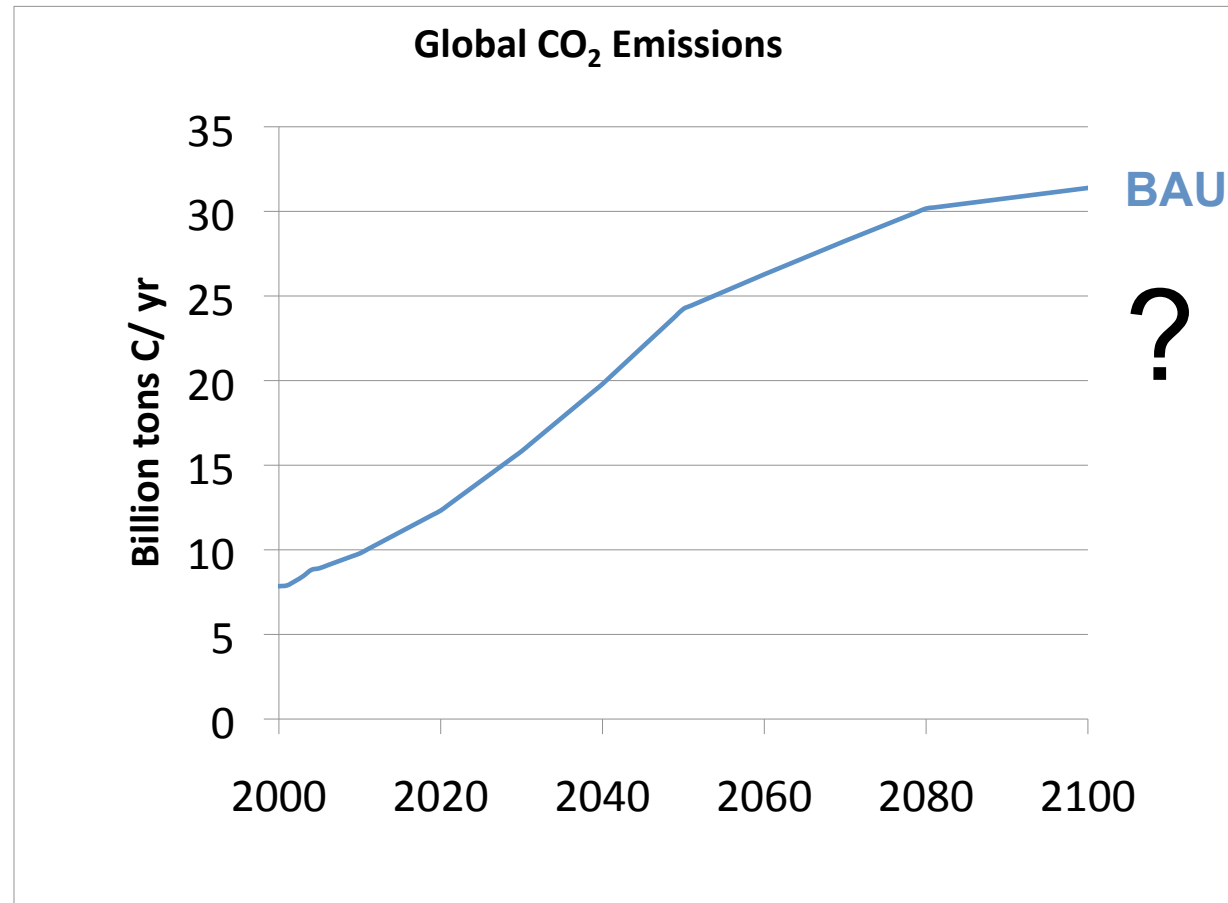


Temperature Projections vs. AR4 Ensemble





What Might We Expect From “Current Proposals”

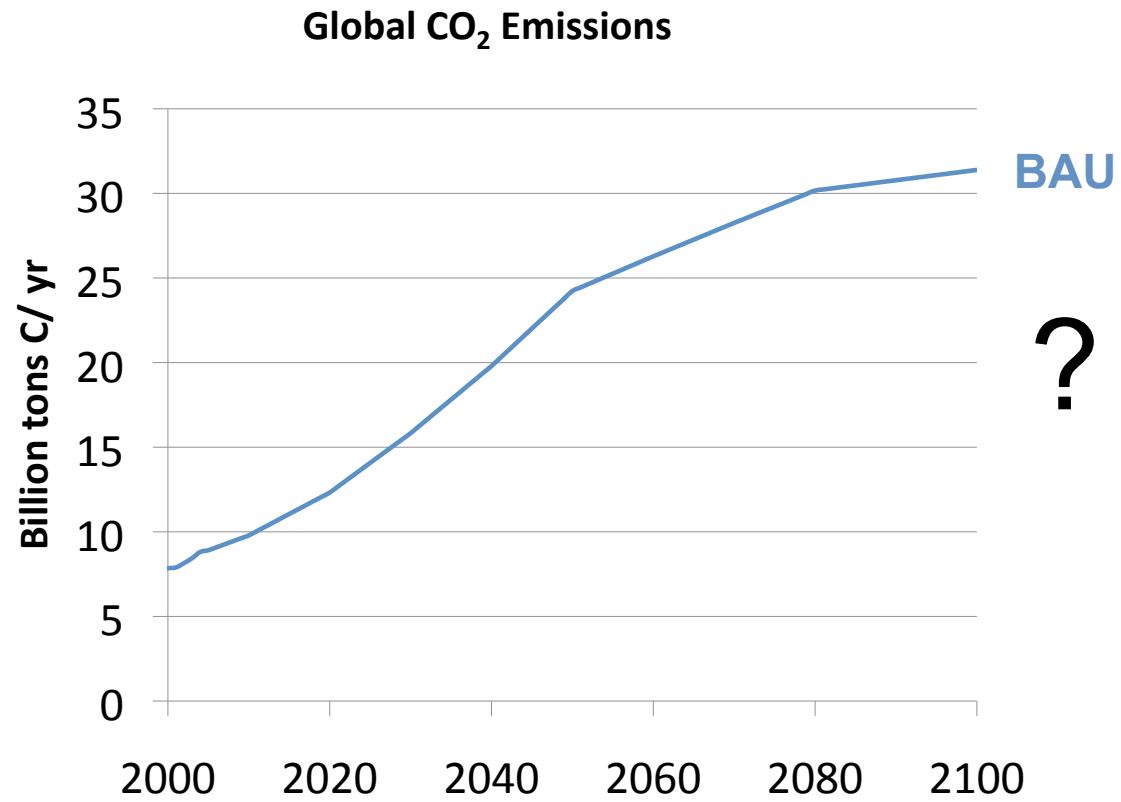




SI's simplified estimates of "current proposals"

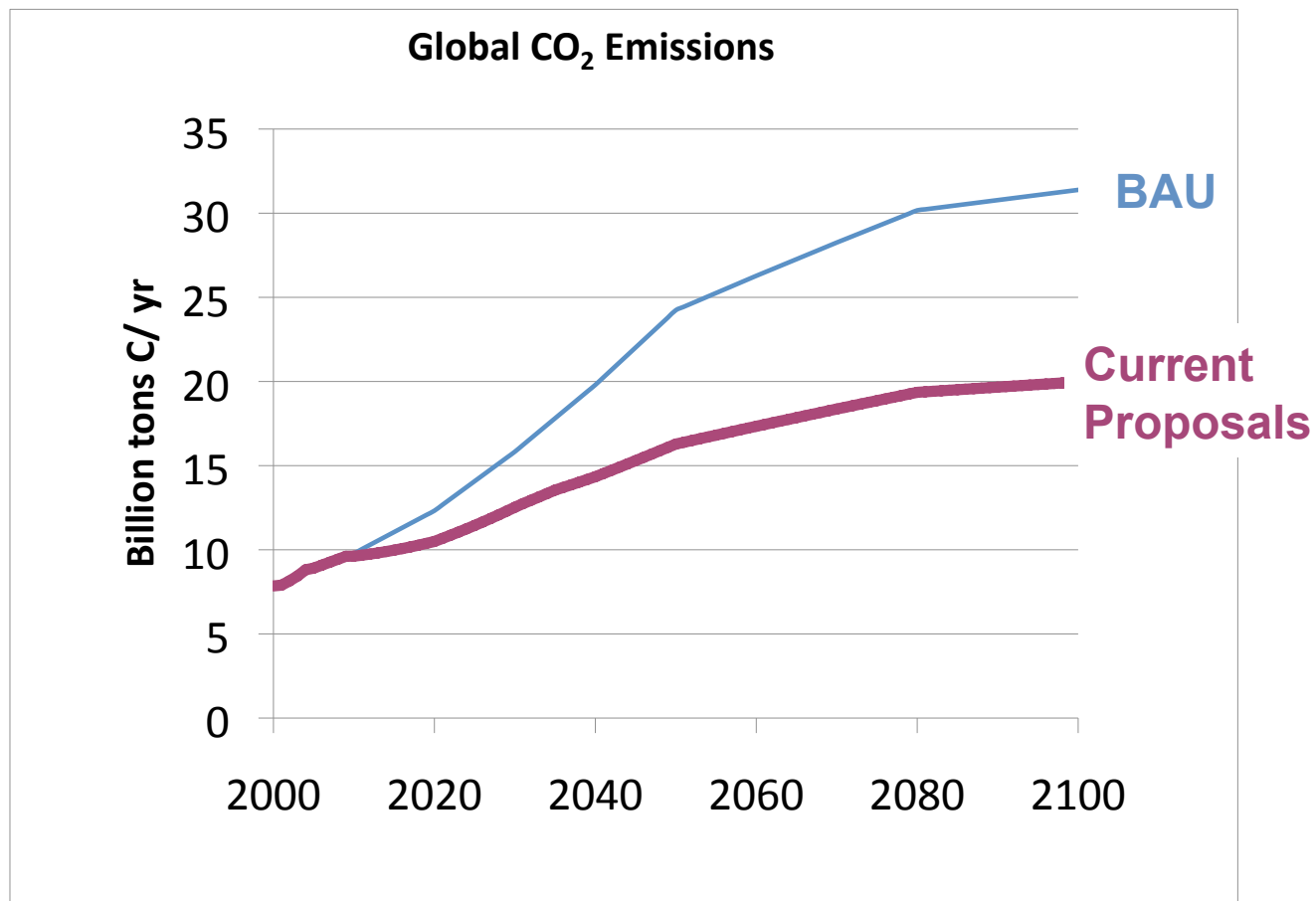
Brazil Eliminate deforestation by 2050	Canada 70% below 2006 by 2050	China	Europe 80% below 1990 levels by 2050	India BAU rate until 2035 and then constant emissions
Middle East	Mexico 50% below 2002 levels by 2050	OECD Pacific 60% below 2000 by 2050	Other Africa	Other Large Asia
Other Latin Am.	Other Small Asia	Russia/FSU 1990 levels by 2012	South Africa BAU until 2022; emissions constant until 2032, then 1% per year annual decline	US 80% below 1990 by 2050

BAU – A1FI



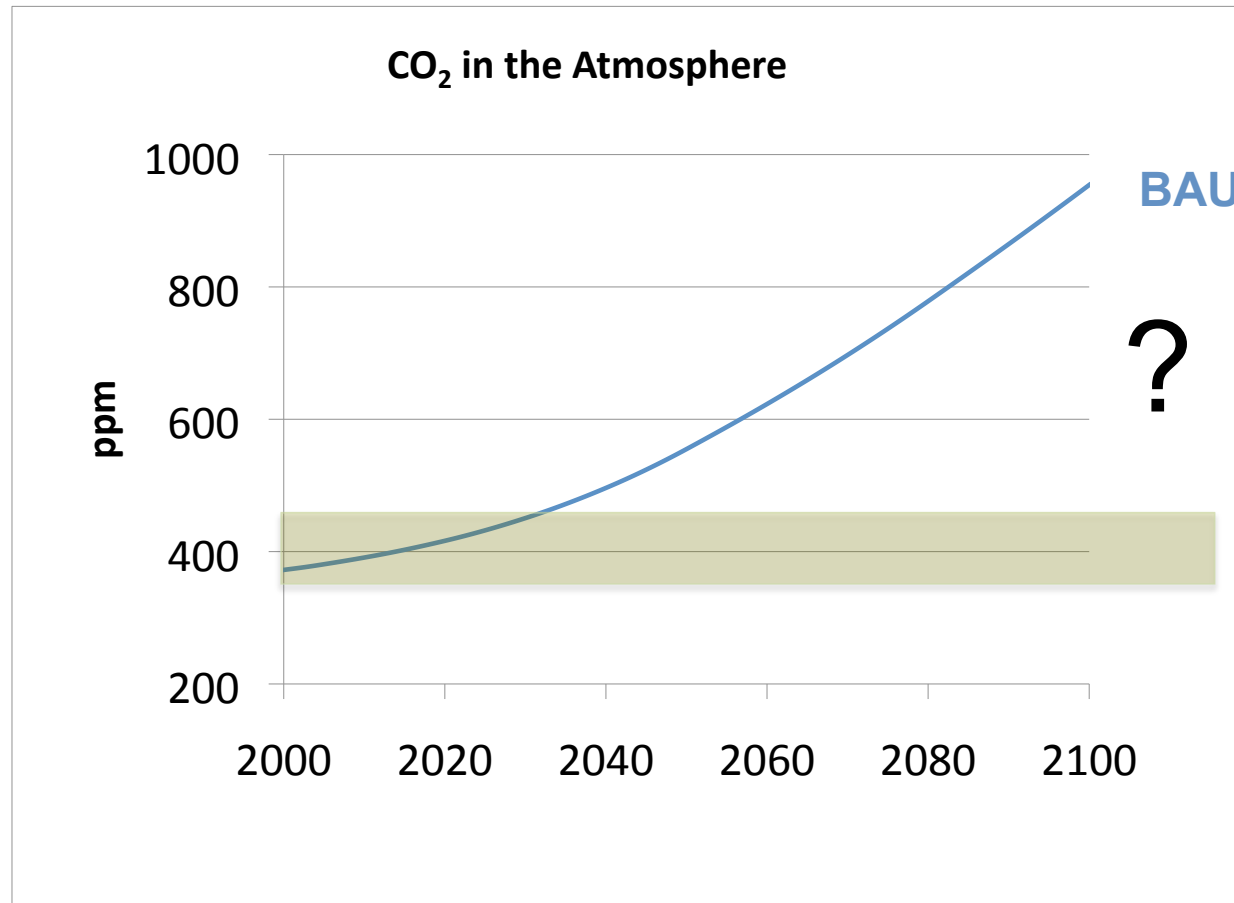


CO₂ Fossil Fuel Emissions



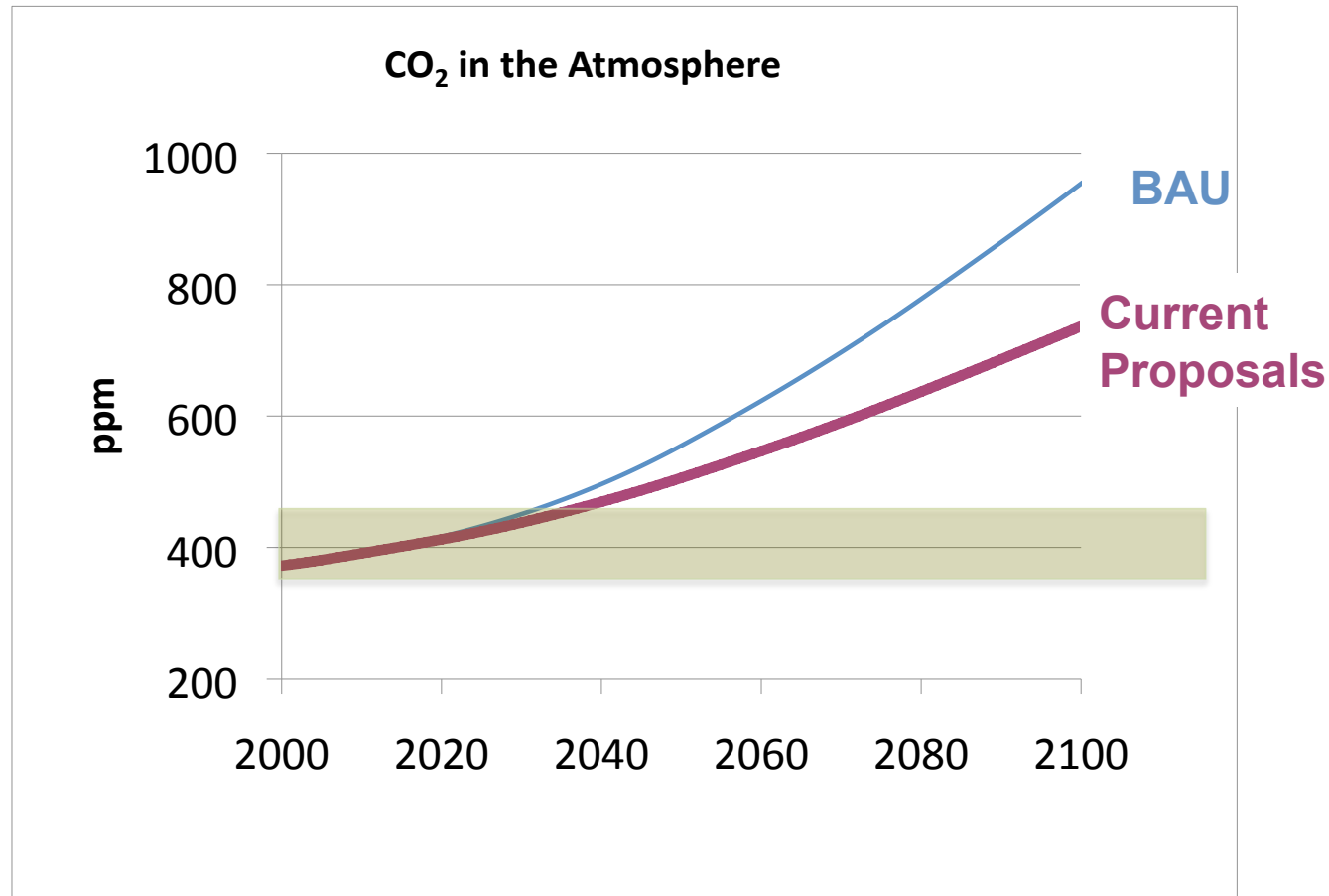


Atmospheric CO₂ levels



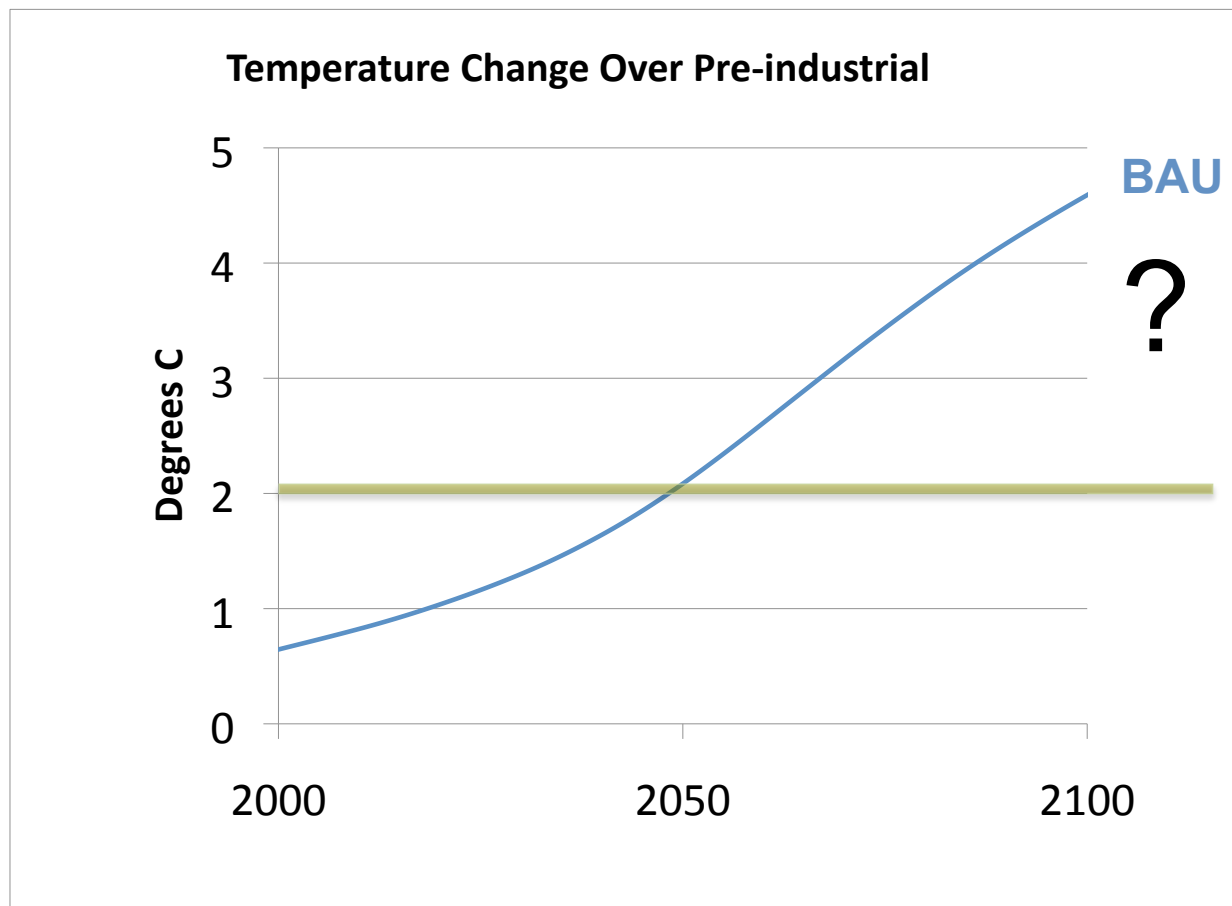


Atmospheric CO₂ levels



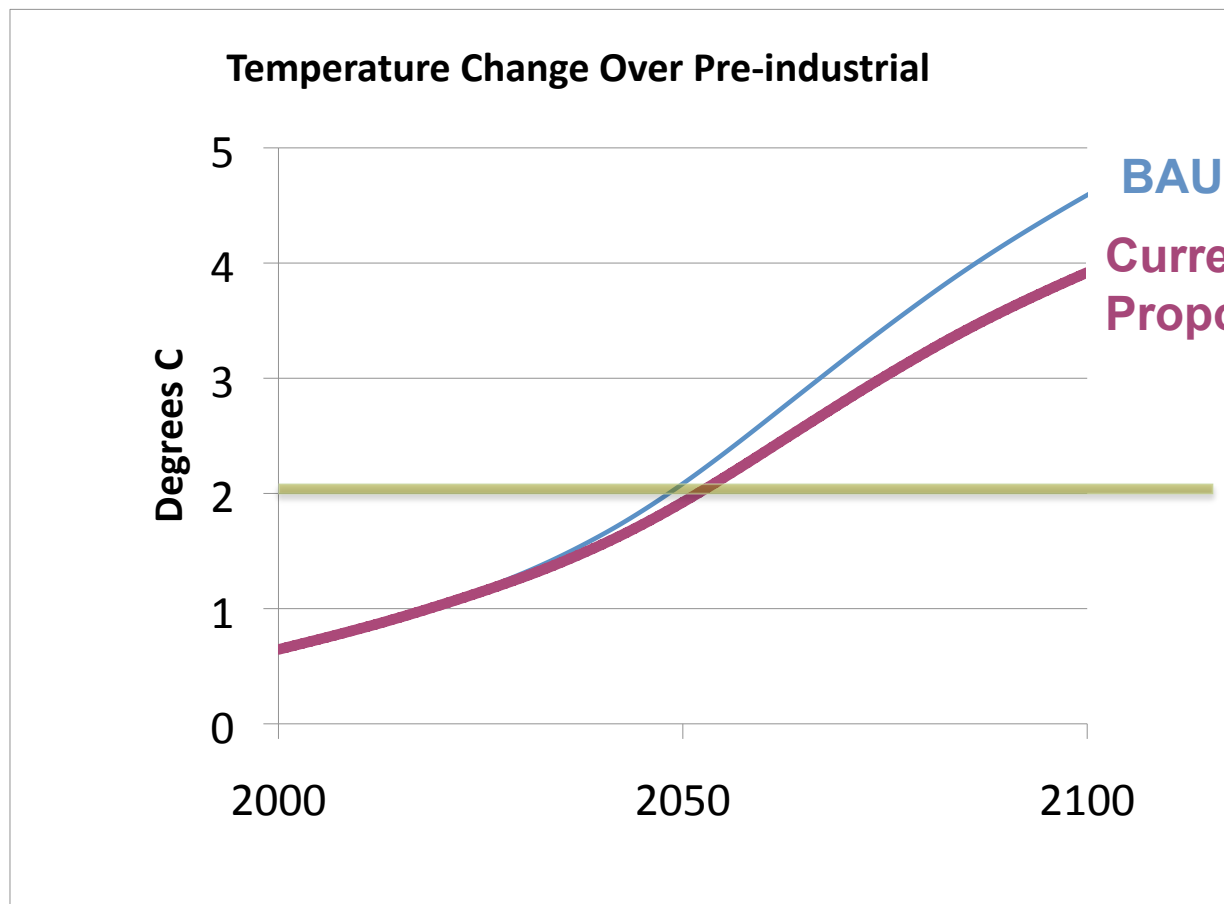


Temperature Increase





Temperature Increase





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350 – 450 ppm
2 ° C
Emission peaking in
2015

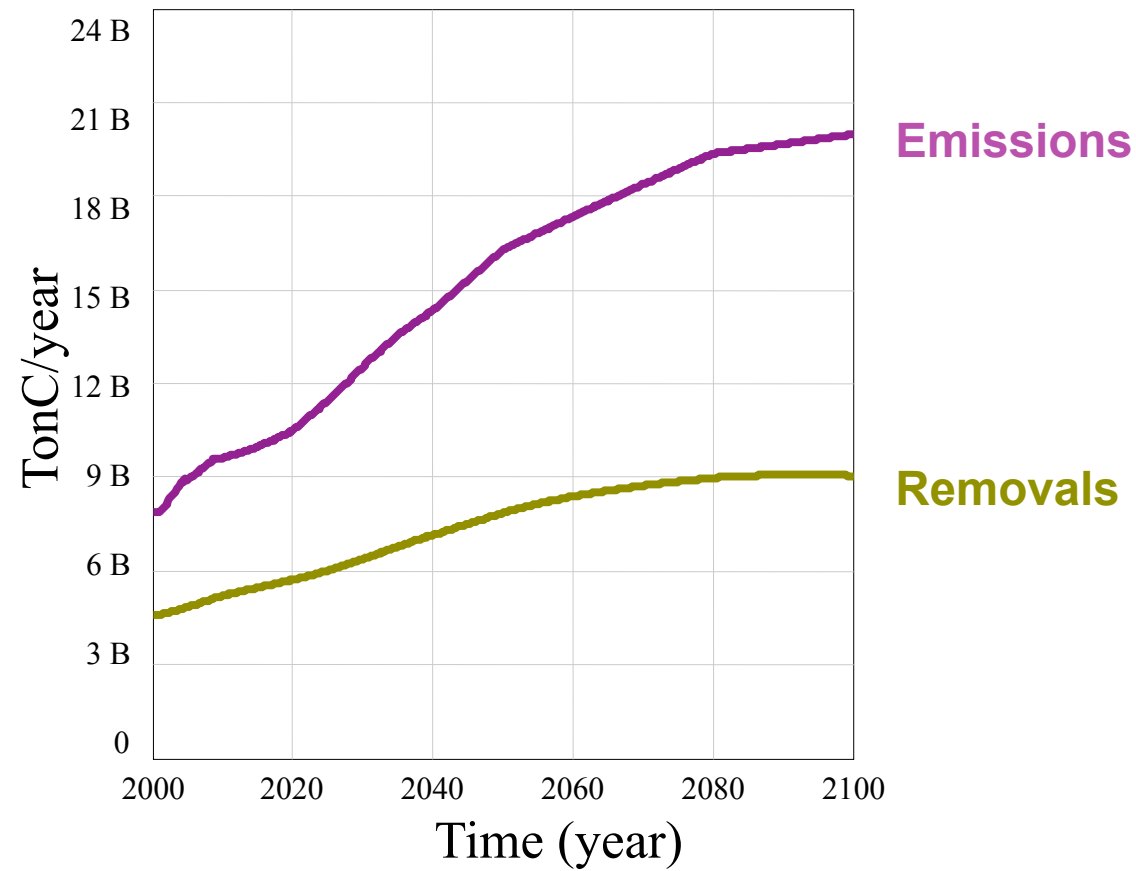
Long-term climate goals

How close?

Emissions reduction proposals under consideration

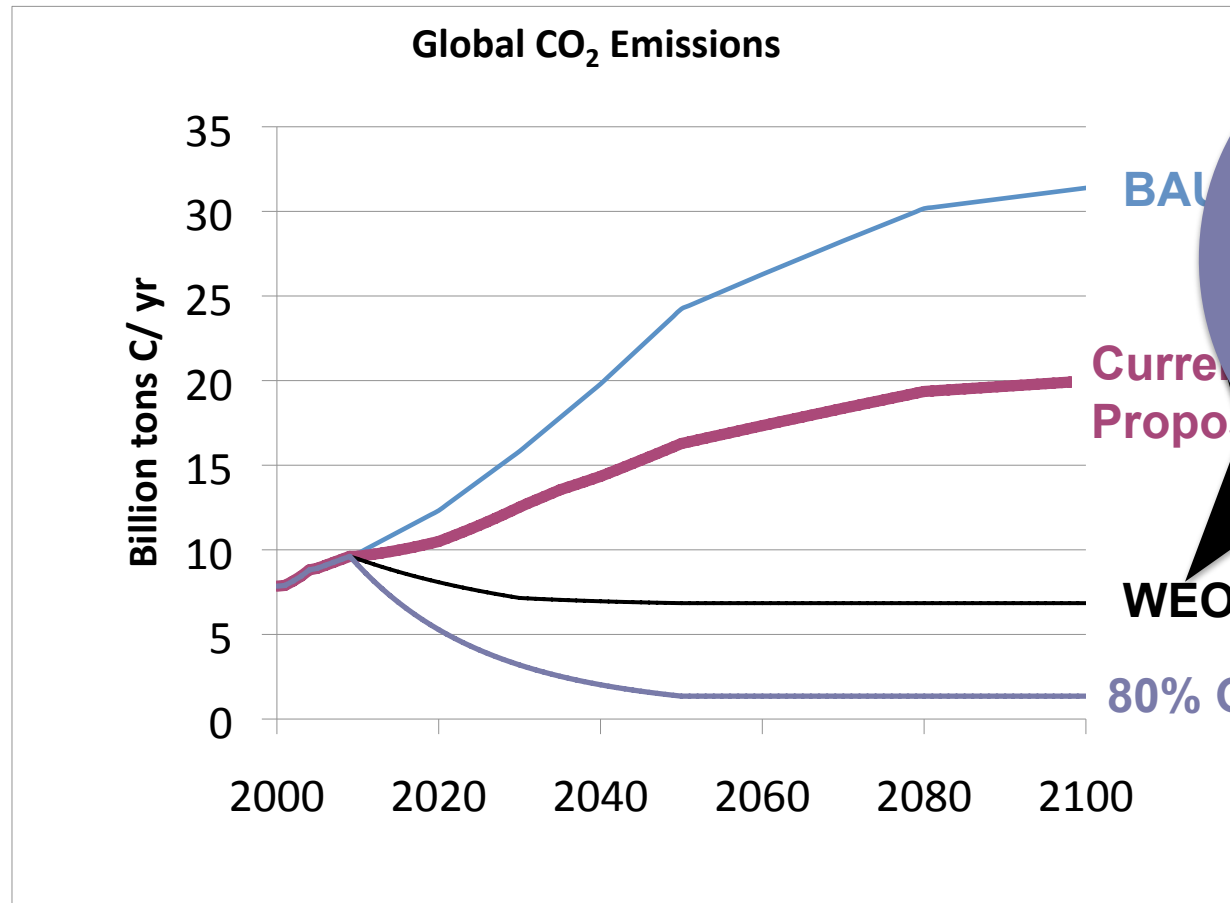


Under current proposals
emissions would exceed
removals





CO2 Fossil Fuel Emissions



BAU

Current
Proposal

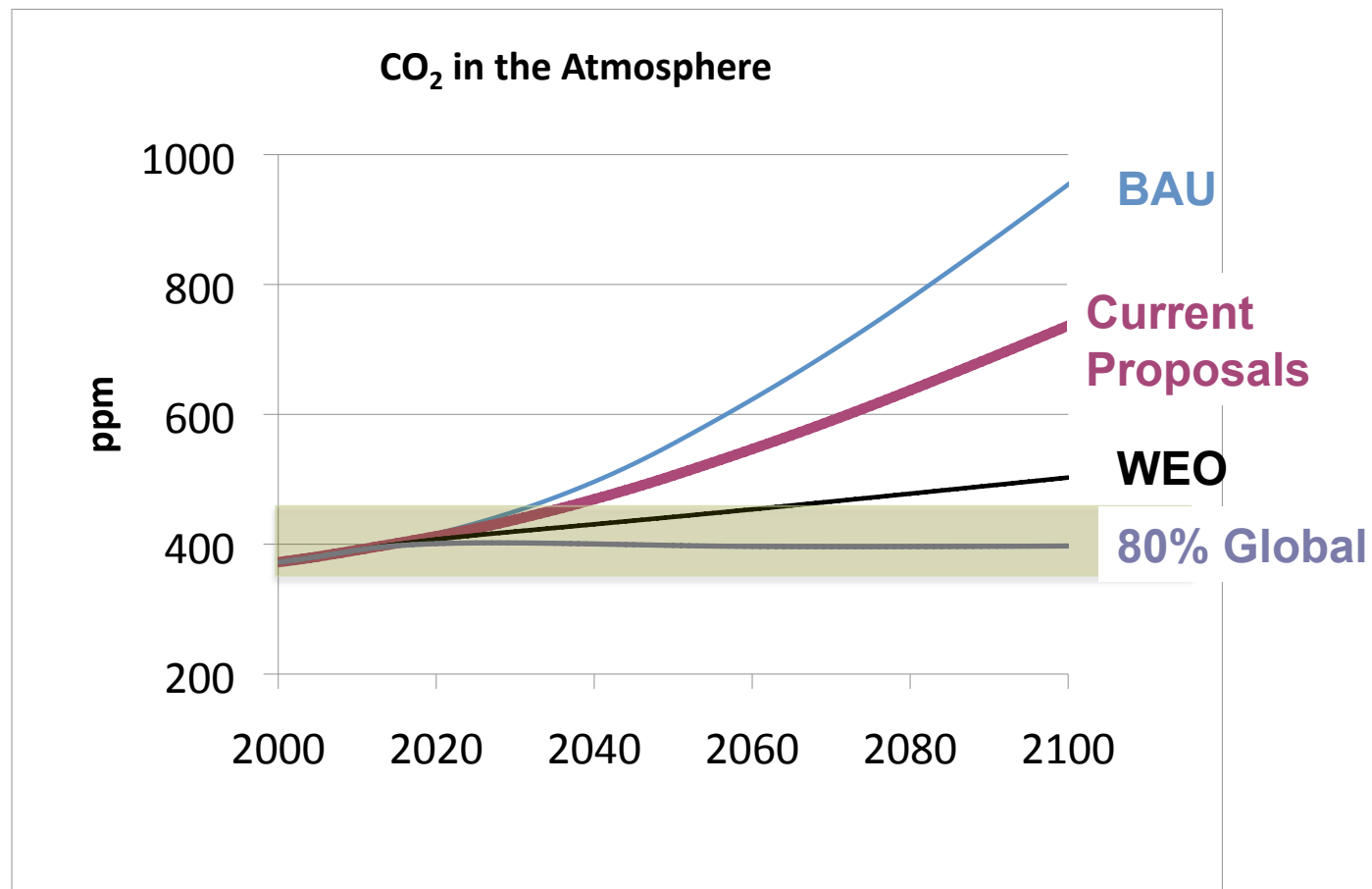
WEO

80% Global

4.6 % per
year
starting now

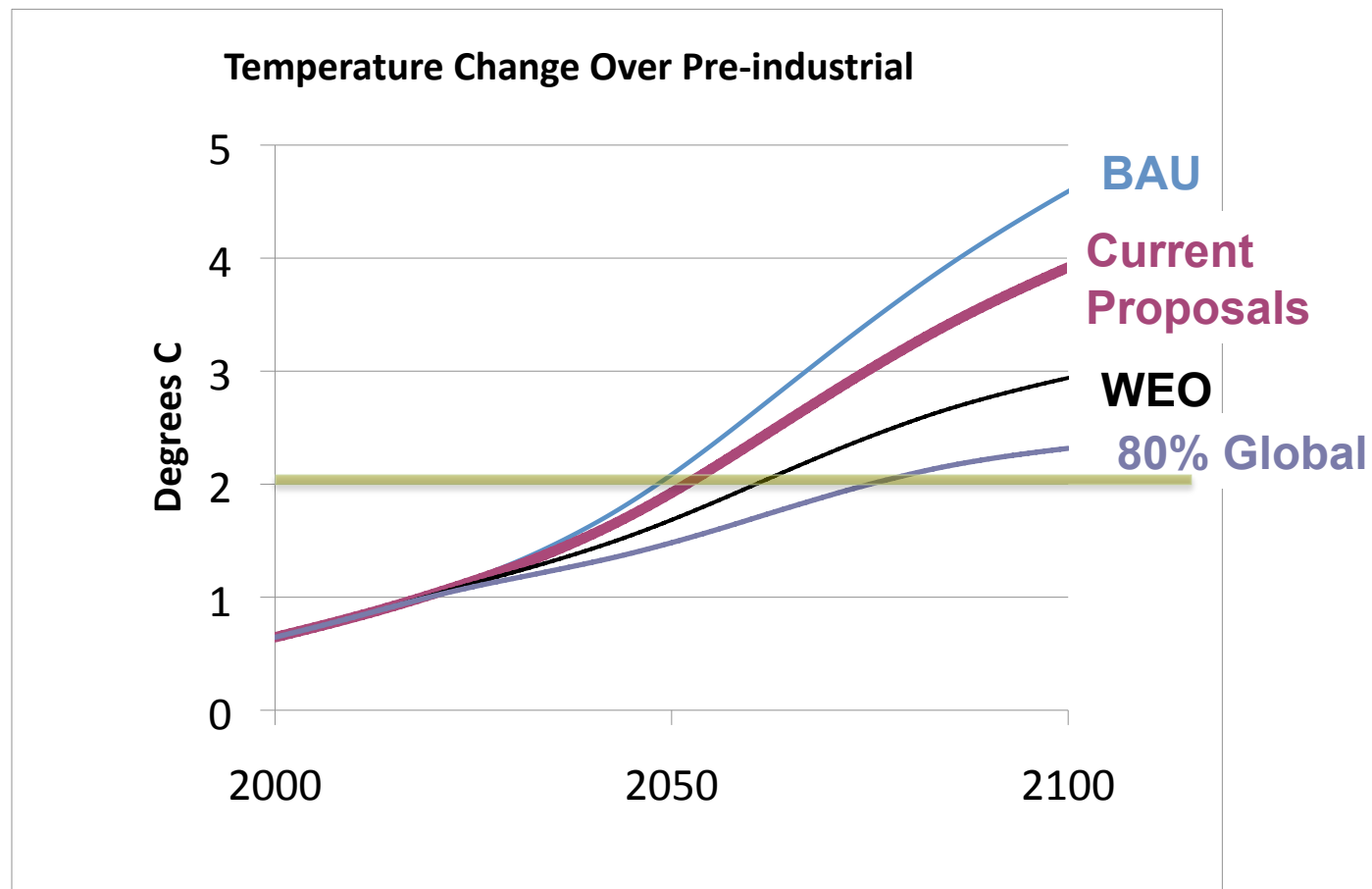


Atmospheric CO₂ levels





Temperature Increase





Implications

- We're not on track to achieve well recognized climate goals, but we could be.
- Getting on track will require many kinds of change,
 - in mobilization, in politics, in global co-operation, in technological innovation and, most of all, in how we think about ourselves and this moment in time



- Through the Climate Action Initiative we are using C-ROADS and other approaches to help spark these understandings in places of leadership and influence:
 - Heads of state and their advisors
 - Business leaders
 - Those helping mobilize and educate civil society
 - Media
 - Scientists and modelers



Contact



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- **www.climateinteractive.org**



Conclusions

It is difficult for decision makers to

- **a) aggregate diverse emissions reductions proposals into a single global emissions projection and**
- **b) mentally simulate from that emissions projection the resulting atmospheric CO₂ level or temperature increase**



Conclusions

Tools are needed to help decision makers assess whether policy options are sufficient to achieve goals for stabilizing CO₂ levels and limiting global temperature increase to within a safe range.



Conclusions

Our analysis suggests that the sum of current, publicly available emissions reductions proposals are likely to be insufficient to achieve widely accepted goals such as stabilizing atmospheric CO₂ levels between 350 and 450 ppm or limiting temperature increase to less than 2°C.

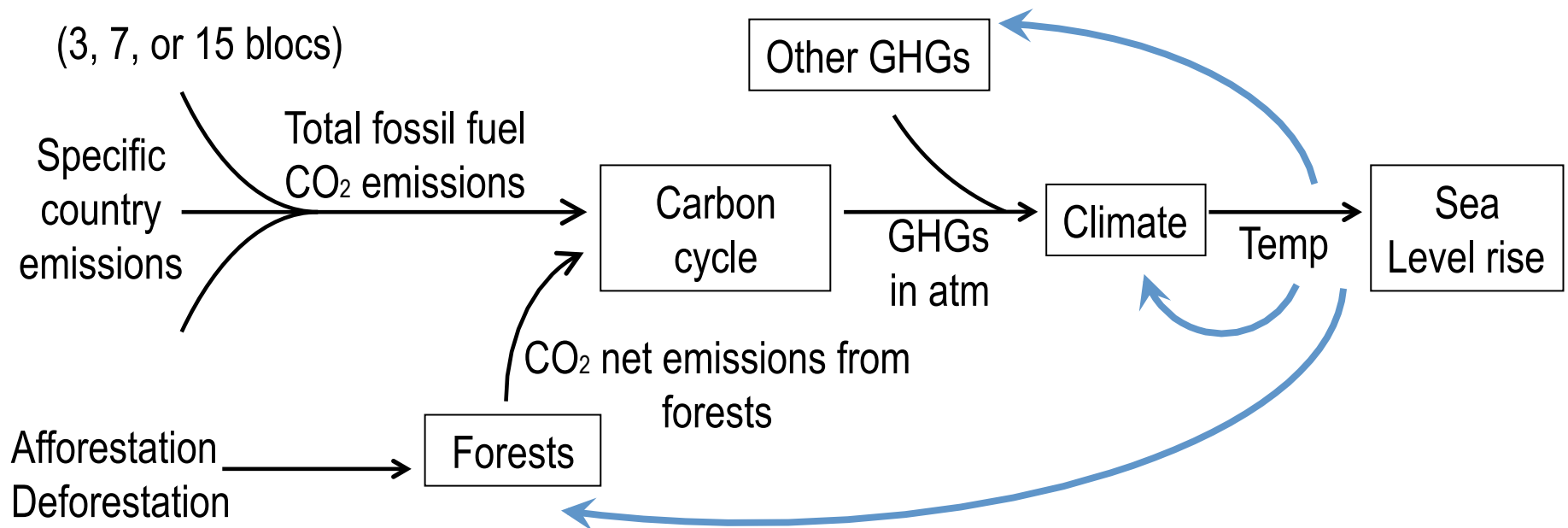


Conclusions

A set of proposals that together add up to a global reduction of around 80% of 1990 emissions by 2050 combined with concerted reductions in deforestation would be in the range to achieve this essential goal.



C-ROADS lacks Key Positive Feedbacks

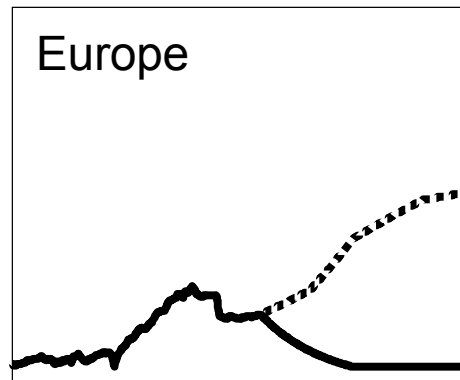
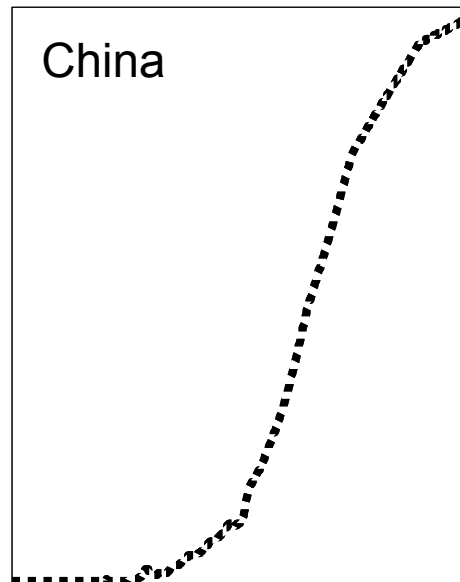




Eliminate deforestation by
2050 (12% of global total)



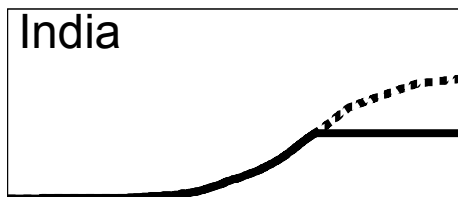
70% below 2006 by 2050



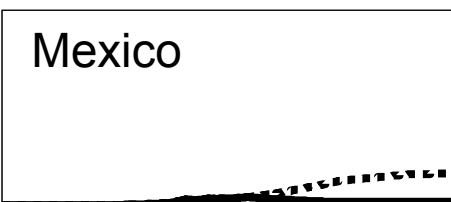
80% below 1990 levels by 2050

***Interpretation (and
simplification) of GHG emissions
reduction proposals in the public
domain, by Sustainability
Institute, as of 1 March 2009***

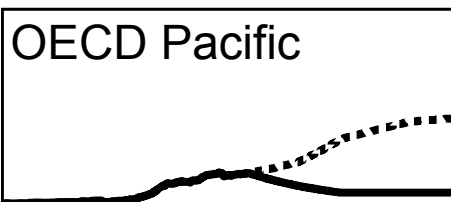
1 billion tons C/yr



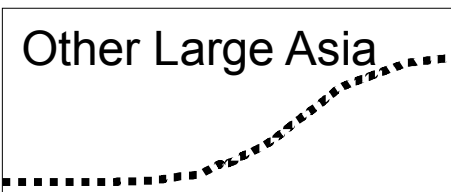
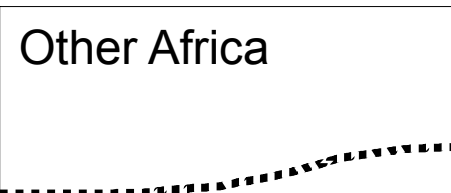
BAU rate until 2035 and
then constant emissions



50% below 2002 levels by 2050



60% below 2000 by 2050



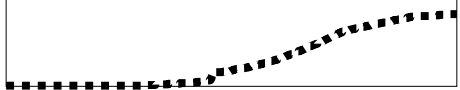
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1 billion tons C/yr

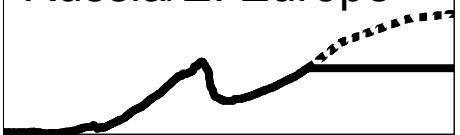
Other Latin Am.



Other Small Asia



Russia/E. Europe



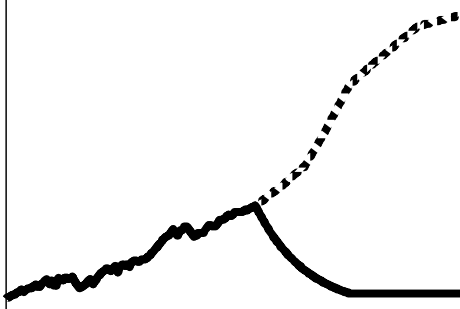
1990 levels by 2012

South Africa



BAU until 2022; emissions constant until 2032, then 1% per year annual decline

US



80% below 1990 by 2050

Interpretation (and simplification) of GHG emissions reduction proposals in the public domain, by Sustainability Institute, as of 1 March 2009

1 billion tons C/yr

