

Visualising uncertainty in climate model projections for the DECC Global 2050 Calculator

Aims

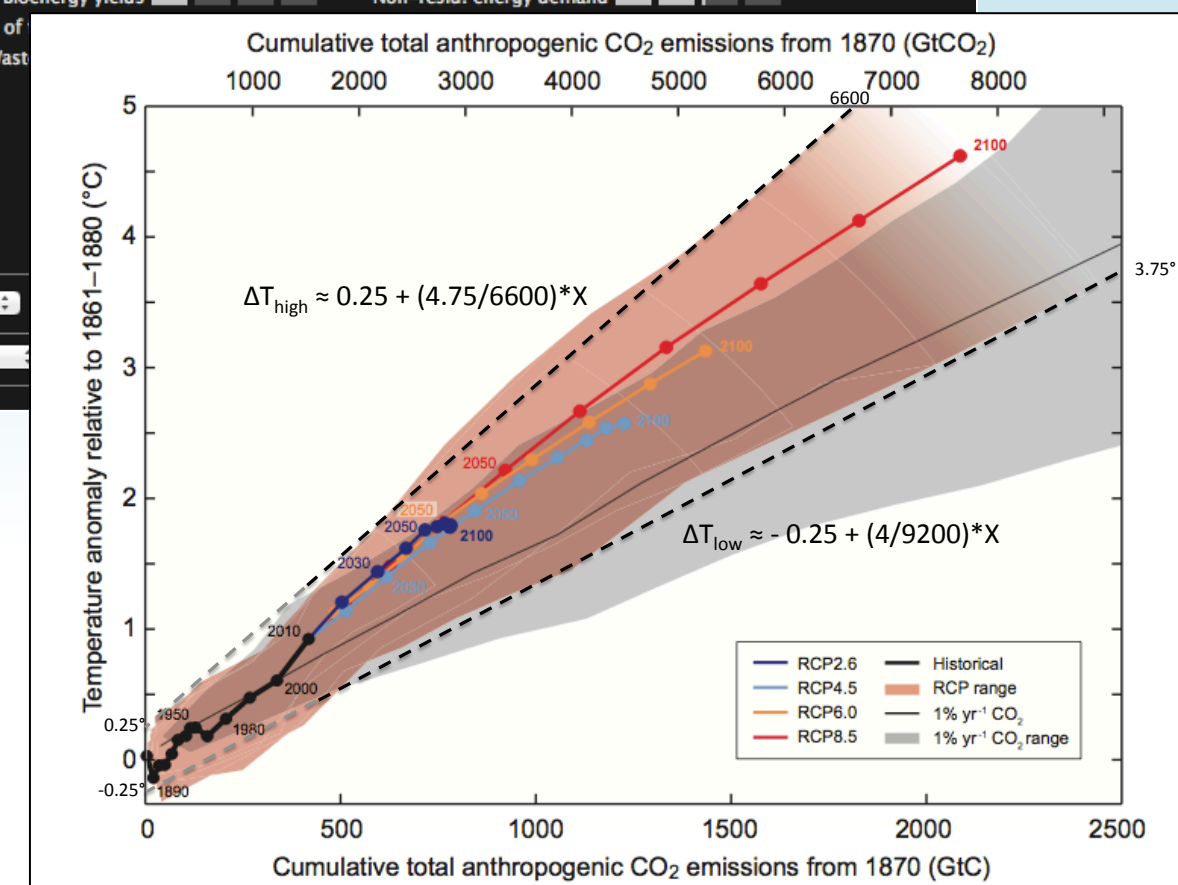
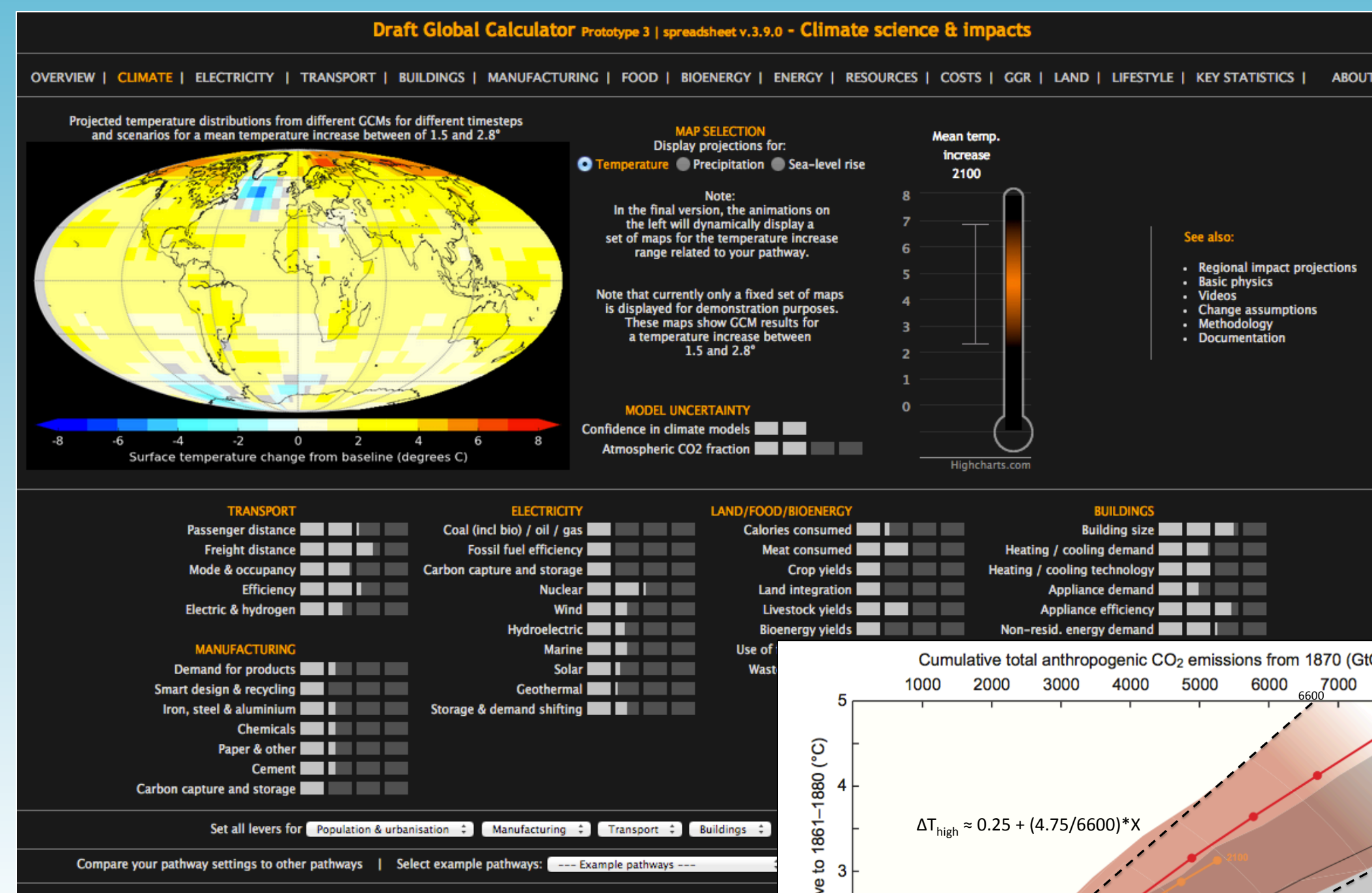
- Simple
- Transparent (fully documented, clear about reasoning used and possible alternative choices)
- User-friendly
- Quick to run
- Implemented in an Excel spreadsheet
- Shows reliable projections of real-world climate impacts
- Visualises uncertainties
- Based on sound scientific evidence

Implementation

- Temperature change derived using fit to IPCC synthesis
- Animations produced showing model-worlds consistent with that change in temperature
- IPCC statement about model inadequacy (“very likely” -> “likely”) used to inflate temperature change uncertainty bounds
- Clear warning messages when user choices create pathway which goes beyond the limits of the IPCC assessment, e.g. very high emissions

“The Global Calculator will enable the user to explore choices for the global energy system in 2050 and view the impact these choices could have on the climate system by 2100. This work will help to bring the climate science to life by presenting it to users in an accessible and engaging way.”

David MacKay, Chief Scientific Advisor, DECC



Challenges

- Forcing scenarios are limited to 4 RCPs, so adequate exploration of outcome is infeasible with state-of-the-art models
- Much of IPCC refers to model-world frequencies, not to real world probabilities
- Where real-world probabilities are defined, they leave ~30% of probability mass unspecified
- How to communicate this epistemic uncertainty to non-technical users?
- How to deal with impacts?
- Impacts models do not explore this uncertainty
- Recommendations: CMIP6 experimental design?

Tell me more

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