

YEARS / ANS **CERN**

Towards a Globally Focused Earth Simulation Centre

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Future generations & policy makers would benefit greatly

if society had a clear picture of the various Earth Systems such as

- underlying biogeophysical processes
- causes, effects & consequences
- the impact of human society

It would improve public safety, well-being & sustainability

Time to seriously improve our understanding of

- extreme weather, floods, droughts
- climate change & global warming
- natural capital resource depletion
- energy-food-water security
- disaster risk management
- risk & resilience
- sea level rise

This could be achieved through a Swiss based,
CERN-like organisation

but with some differences in the areas of governance & funding:

- NGO, NPO, For the public good
- Public-Private-Partnership
- Funded via philanthropy

Requiring strong collaboration with agencies & universities

Globally focused because many Earth Systems are global and trans-boundary

as well as highly coupled & connected over distance and time ...

- the atmosphere, ionosphere, ozone layer
- oceans, rivers, lakes,
- tectonic plates

These systems are integrated in Nature and should be treated
'holistically' by science

A science-based visual narrative of Planet Earth is needed

revealing data in an intuitive visceral way & thereby improving civic engagement ...

- using interactive, immersive visualization
- modelling & simulation
- flowing time

And calling on all available data, tools, instruments & experts

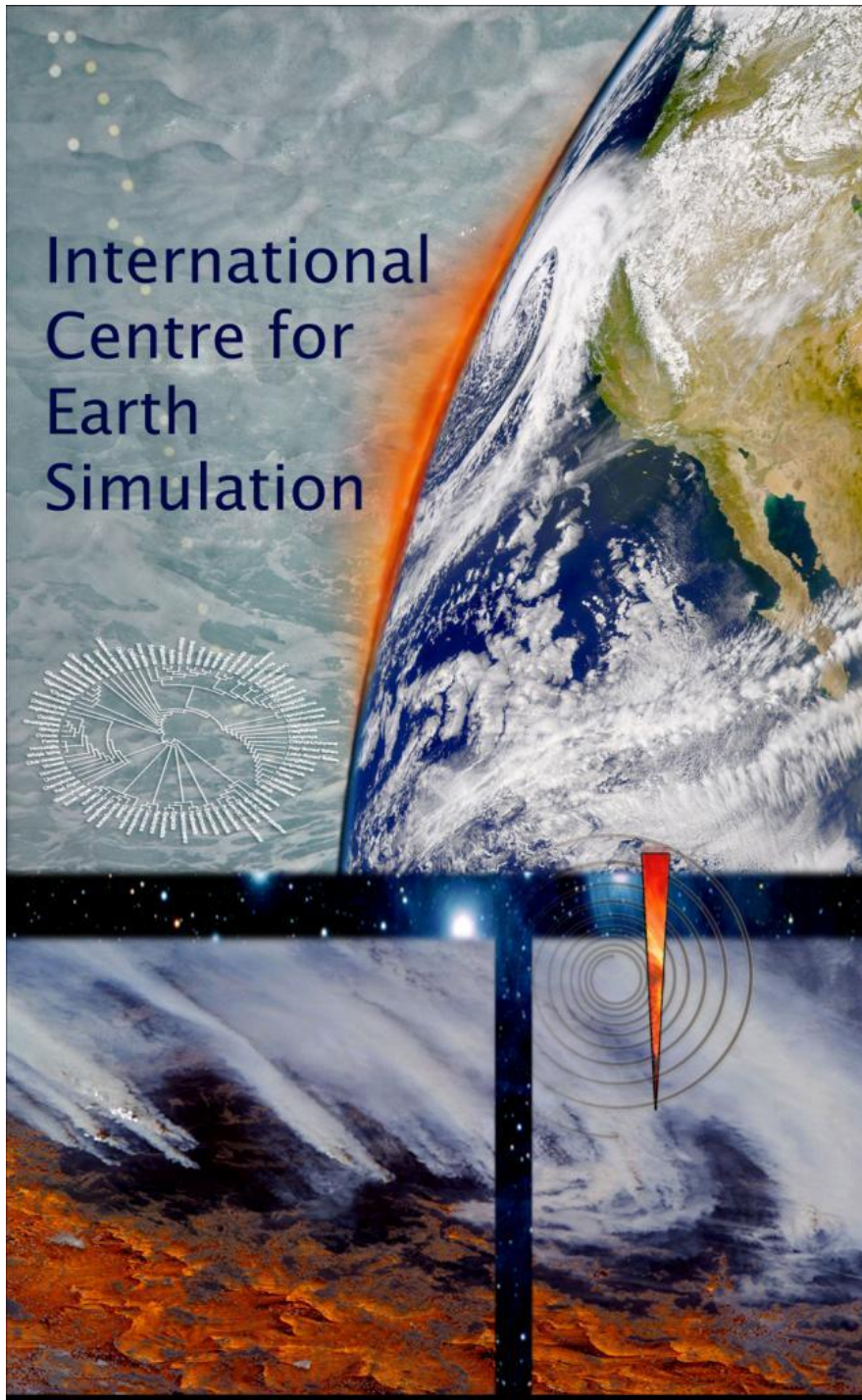
Open Science is the best way forward
engaging both professional & citizen scientist

especially since public taxes pay for the majority of science

- open data files
- open source code
- open access publishing

Making full use of HPC, Cloud, Internet, mobile, sensor-networks

International Centre for Earth Simulation



The Southern Ocean from Encounter Bay



1802: Nicolas Baudin & Matthew Flinders



Animations of Earth and Sun

Understanding global aerosol transportation

<http://www.youtube.com/watch?v=t9GgII0tbHA>

Understanding ocean eddy currents

<http://www.youtube.com/watch?v=CCmTY0PKGDs>

Understanding the global ocean conveyor belt

http://www.youtube.com/watch?v=3niR_-Kv4SM

Simulation of Antarctic ice flows

<http://www.youtube.com/watch?v=ptqQmPdHDz4>

The Sun is a continuous nuclear reaction

<http://www.youtube.com/watch?v=jt0Hlc9hTVI>

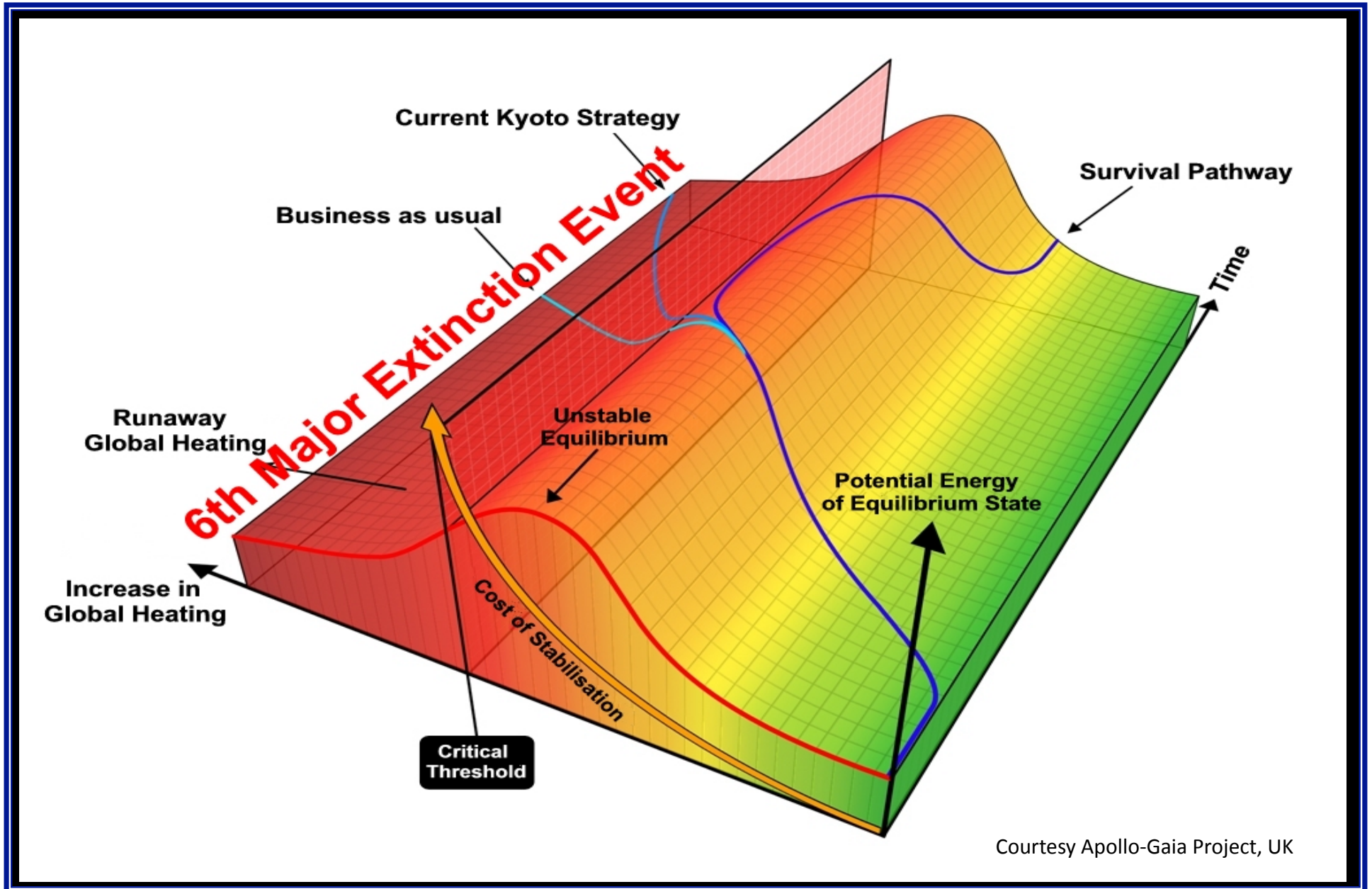
The Sun throws out radiation, high energy particles and CMEs

<http://www.youtube.com/watch?v=sg3NAdOYp8Q>

Understanding potential asteroid impacts

<http://www.youtube.com/watch?v=66mHHaWtlt0&list=PL3wsGij5ig-F130HGWL6acsM1xhd8PEm>

ICES and the looming planetary boundaries





**Helping guide the successful transformation of human society
in an era of rapid climate change and frequent natural disasters.**

www.icesfoundation.org

The ICES Foundation has a 5 year history

- 4 directors
- 5 advisors
- 15 experts
- 12 nationalities
- regional pilot projects in Cascadia & Himalayas
- an active website: www.icesfoundation.org