GLOBAL HEATING AND CLIMATE CATASTROPHE completing the picture

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UGLY SCIENTISTS.....

“Sometimes you see beautiful people with no brains. Sometimes you have ugly people who are intelligent.....like scientists”

José Mourinho. Chelsea FC Manager
BBC Online. February 20th 2005
Complete picture of the potential consequences of global heating and climate breakdown is not in the accessible public domain.

IPCC reports and announcements are inevitably conservative and consensus based.

Widely regarded as the climate bible that drives news stories in the media.

Many (if not most) climate scientists have a problem with telling it like it is – at least in public.
SOME MISSING PIECES

Sea-level rise

Solid Earth response

Gulf Stream (AMOC) shutdown

Extreme heat
TREADING A FINE LINE

Compulsive Risk Assessment Psychosis
SEA LEVEL RISE: HOW FAST?

 반드시 IPCC SROCC (2019) Worst case likely range 51 – 92cm for 2081-2100. Up to 110cm by 2100

 More rapid breakup of West Antarctic Ice Sheet. Worst case → 292cm by 2100

 Ice melt doubling times lower end of 10 - 40y range → multi-metre rise by 2100

 Rate of Antarctic ice loss tripled 2012 – 17

 Tripling time of 5 years → SL rising by ~ 5cm a year by mid-2040s

Sea-level rise increase

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate (mm/y)</th>
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<tbody>
<tr>
<td>1901-90</td>
<td>1.4</td>
</tr>
<tr>
<td>2006-2015</td>
<td>3.6</td>
</tr>
<tr>
<td>2019</td>
<td>5</td>
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Hansen et al. 2016 Atmos. Chem. Phys., 16, 3761-3812
The IMBIE Team 2018 Nature 558, 219-222
IPCC SREX 2012
'....modulations of seismicity and volcanic activity on.....century to millennium time scales'

'....low confidence in the nature of recent and projected future seismic responses to climate change'

Seismic response already recognised in southern Alaska

100m ice loss on glaciated volcanoes may promote more explosive eruptions

Seismic response to Greenland ice unloading → timescales as short as 10 – 100y

Hampel, A. et al. 2010 Phil. Trans. R. Soc. A., 368, 2501-18
Tuffen, H. 2010 Phil. Trans. T. Soc. 368,2535-2558
BACK TO THE FUTURE?

The great Storegga landslide
THE HEAT THAT KILLS IN HOURS

- IPCC AR5 '…it is very likely that heat waves will occur with a higher frequency and duration.'
- Sustained wet-bulb temperature of 35°C and above is unsurvivable
- Fit, healthy, human in the shade has six hours to live
- Conditions almost met in Iran in July 2015
- Forecast to affect Ganges and Indus valleys, Persian Gulf and China
- BAU scenario – 400 m people in irrigated North China Plain

Human physiology cannot handle wet-bulb temperatures of 35°C

Kang, S. & Eltahir, E. A. B. 2018 Nature Communications Article 2894
Im, E & Eltahir, E. A. B. 2017 Science Advances3 (8), e1603322
SROCC (2019) on the Atlantic Meridional Overturning Circulation

'....AMOC has weakened relative to 1850-1900.....insufficient data to quantify magnitude of weakening...or to properly attribute it to anthropogenic forcing....'

'....AMOC is projected to weaken in the 21st century....although collapse is very unlikely.'

Has declined by 15% since mid C19

Weakest for at least 1500, probably 11,500y

Shutdown could occur as quickly as 1-2 years resulting in widespread consequences


Later observations of climate system (e.g. ice extent, SL rise) typically worse than earlier predictions

Clear underestimation of key climate indicators

Perceived need for consensus (univocality)

- Scientists worry about how they will be perceived when they know the world is watching

Consensus should not be a goal – it will emerge

But substantive differences in opinion must be acknowledged and explained
THE BOTTOM LINE

16 DEGREES C