Combining Black-Box Climate Policy Analysis Models doesn't result in White-Box Policy output.
It results in what amounts to a planned political and economic failure to achieve UNFCCC-compliance

The United Kingdom Meteorological Office [UKMO] modelled the scenario underpinning the UK Climate Act. It is called '2016 4% Low' and is shown in solid Yellow below. In this scenario they claimed to *'have modelled all known feedbacks'* and they defended this assertion aggressively in a Parliamentary hearing. However, the negative and/or the positive feedbacks that were modelled in their 3 concentrations curves, lack consistency or any credible explanation [at least in the *climate system*] for the shape of the concentration curves that were drawn. It is classic output from a 'Black-Box' climate model being used by Governments to generate economic policy-computations from even more contestable 'Black-Box' economic models [vide Garnaut].

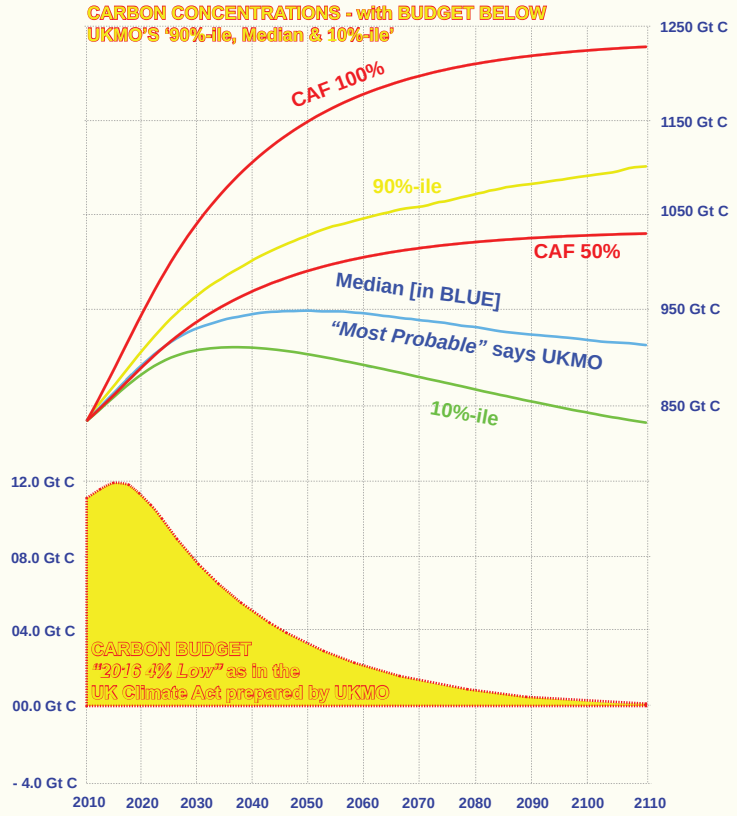
It is clear that the UKMO '90%-ile' curve accelerates faster than CAF 50%. This portrays rising *positive* feedback, or that emissions are being released increasingly in excess of 'the Budget accumulating as concentrations at CAF 50%. However, as can be see clearly against the 40 graduated curves of 'constant acceleration' [the grey lines above CAF 50% in the image on the right], their '*positive* feedback' then slows down to well below CAF 50%, even though the UKMO's temperature curve for this scenario [not shown here] continues to rise throughout the 21st Century. This is counter-intuitive as it suggests that this rate of *positive* feedback will lessen though temperature is continuing to rise which would, if anything, accelerate this curve.

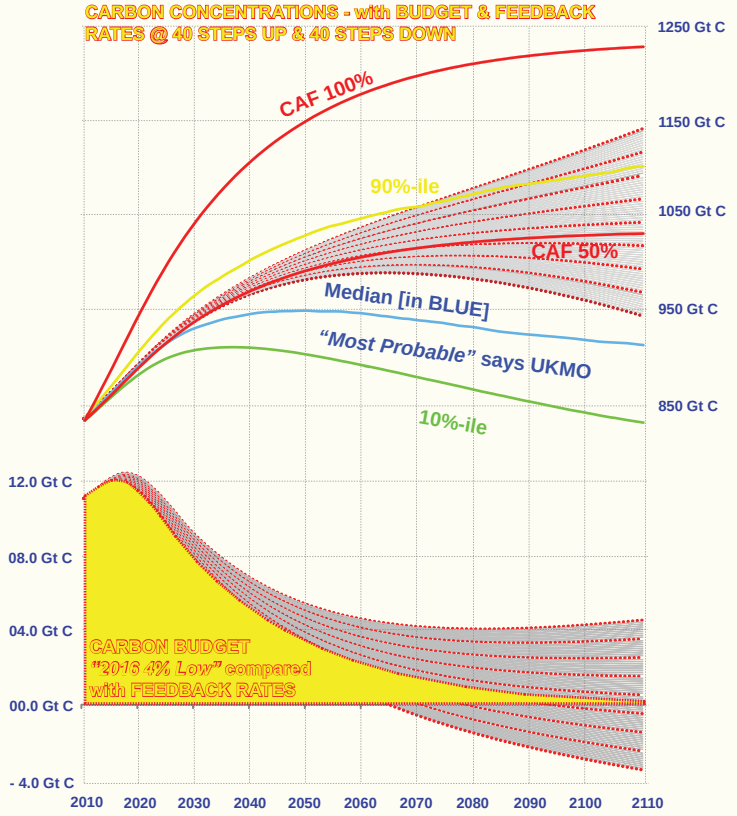
That noted, the UKMO stated that, 'the Median curve' is 'the most probable curve'. This median curve initially accelerates the concentration build-up from 44% to CAF 50% [2010-2020] and then falls back so fast that even concentrations are falling from 2050 onwards. This indicates the UKMO's extraordinary view [quite unsupported by any evidence] that *sinks will have become more than 100% efficient from 2050 on*. In other words, while feedback becomes strongly *negative* from around 2030 onwards, it is *so strongly negative* by 2050 that the sinks are absorbing more than all human sources a releasing! Then, after that, their median curve indicates that feedback becomes *less strongly negative*. Once again, though clearly modelled, it is not supported by any evidence and is completely unexplained. None of this approximates any of the 40 deceleration curves on the right in the image above [the grey lines below CAF 50%]. They said this whilst also assigning only 44% odds for staying below 2 degrees with this median concentration curve over their '2016 4% Low' emissions scenario. In this it is extraordinary that they should have chosen to exhibit - what is widely acknowledged as a C&C scenario but *prescribing Convergence at 2050* - with odds that augur failure - both scientifically and politically - to achieve UNFCCC-compliance at two degrees. Given what happened at COP-9 in Copenhagen, one might even argue that was an instance of planned failure in what was in reality a politically constructed budget-scenario. Overall, UKMO's arbitrarily varying rates of acceleration & deceleration in future sink performance, present a detailed but dubious array of prescience that actually renders their analysis opaque and un-trustworthy.

The main point surely is that UNFCCC-compliance is the primary and over-riding purpose of the exercise. Consequently, it makes far more sense to pose a single trajectory to safe and stable concentrations and then vary the size of the contraction-budgets to reflect the varying rates of sink-performance [*positive* to *negative* feedback effects] that need to be projected due to the uncertainty about this issue that remain. This, as portrayed with C&C for example is transparent.

Proceeding this way has to more sensible and transparent, than - as the UK Government did - to simply: -

- 'fix a carbon-budget' with a 'Black-Box climate model' with rates of failure attached, then
- project an arbitrary array of hugely varied rates of concentration build-up and arbitrarily varied rates of switching between *positive* and *negative* feedback effects
- as a preliminary to prescribing 2050 as 'the' convergence year and then generating a plethora of contestable economic computations from a range of 'Black-Box' economic models
- present this inflexibly as a substantial causative part of what became an almost inevitable political fiasco as at COP-9 where
- being able to blame the other side was arguably a deliberate part of this 'planned failure' - it failed and Chinese Government was blamed because they would not accept 2050 as the convergence date.





The Carbon Budget "2016 4% Low" as in the UK Climate Act is shown alongside in Yellow.

Also shown below are potential [positive/negative] feedback gradations above & below this Carbon Emissions Budget. These are shown in Grey.

These are directly linked tonne-for-tonne by weight to the arrary of constant rates for the build-up or accumulation of Atmopsheric Carbon Concentrations shown in Grey above. This is in view of this context of this very real potential for feedback responses like this. These response rates are shown above & below the red-line of CAF 50% of the fixed-budget [2016 4% Low] only.

Above and below CAF 50% [Budget-only], this changing concentrations potential is shown by adding 40 steps of *positive* feedback upwards whilst also subtracting 40 steps of *negative* feedback downards.

All these possible concentration response rates are measured as combinations of the Carbon Budget *plus* the feedback rates shown above and below the budget, but now with CAF held constant at 50% for the combinations of the Budget + the Feedback.

The rate of acceleration/deceleration - the *shape* of the curvature - in the concentration path **is the issue** as concentrations are '*cumulative-emissions*'.

It is essential to understand that once we are on one of these paths, they are not easily changed, especially if increasingly dominated by the add-on effects of positive feedback.

At worst this could trigger what is portrayed in the graphic assembly shown on the next page.

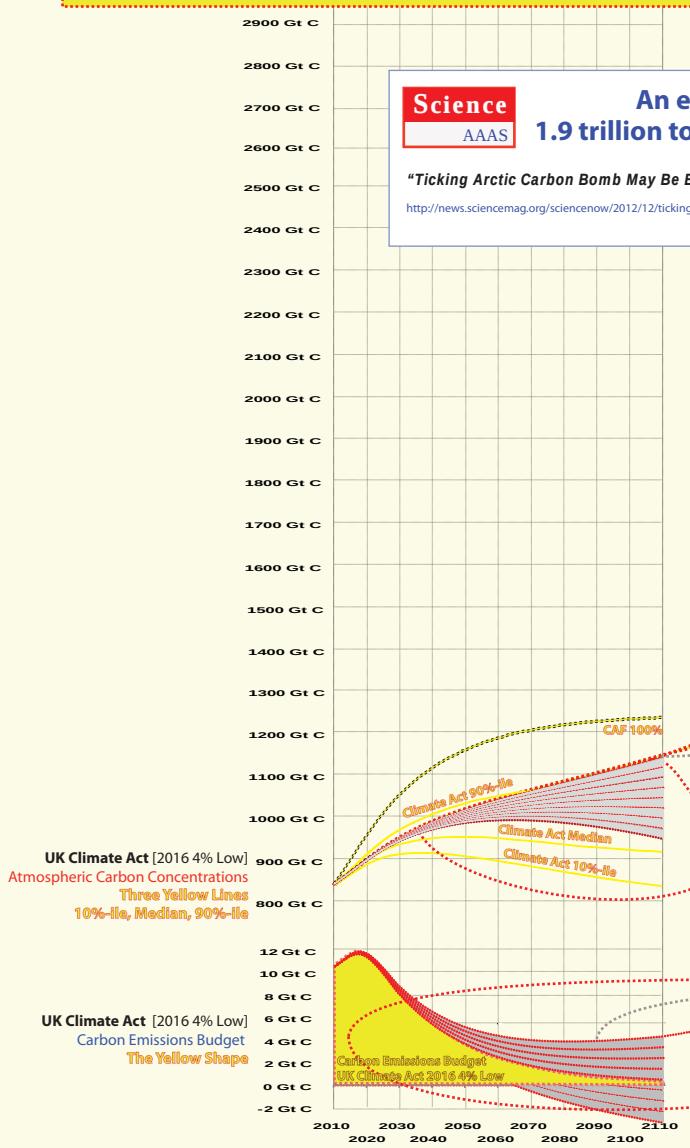
CBAT
http://www.gci.org.uk/CBAT.html

"Ticking Arctic Carbon Bomb May Be Bigger Than Thought."

Science AAAS

This image portrays the effect on the atmosphere of releasing another 1.9 Trillions Tonnes Carbon from CO_2 from Perma Frost melt in a defendably calculated time-frame. AAA's article in Science argues this release has already begun.

3000 Gt C — **1,400 ppmv**



UK Climate Act [2016 4% Low]
Atmospheric Carbon Concentrations
Three Yellow Lines
10%-ile, Median, 90%-ile

UK Climate Act [2016 4% Low]
Carbon Emissions Budget
The Yellow Shape

An extra 1.9 trillion tonnes carbon

Science AAAS

"Ticking Arctic Carbon Bomb May Be Bigger Than Thought"

http://news.sciencemag.org/sciencenow/2012/12/ticking-arctic-carbon-bomb-may-b.html

It is estimated that another 1.9 trillion tonnes of carbon is stored in the 'perma-frost' [Science]. This permafrost has already started slowly melting due to enhanced global warming.

Once on this path, the potential release of this extra CO_2 to the atmosphere, is on a time-frame that is hard to calculate.

However, weighed on a scale of Billions of Tonnes of Carbon [Giga Tonnes or Gt C] it is easy to calculate, and once under way, it is virtually impossible to stop.

The weight reaches the top of this yellow shape at around 3 trill. tonnes of atmospheric carbon, or 1400 ppmv carbon [only].

IPCC estimates 1000 CO_2-e is equal to a temperature rise of 4-8°.

So the worst-case of perma-frost melt alone, dwarfs human emissions control and presages a climate holocaust.

Atmospheric CO_2 concentrations would increase at the rate shown here -

NB - this rate of growth is initially slower than the 90%-ile rate which was given as top rate of concentration build-up in the UK Climate Act. Moreover, it now also appears increasingly unlikely, due to the lack of fossil-source-emissions-control, that the Carbon Budget '2016 4% Low', cited in the UK Climate Act, will be adhered to.

Consequently, if CO_2 emissions, from Perma Frost melt, increased at *this - the highest - rate* above the Carbon Budget '2016 4% Low', on which the UK Climate Act is based.

NB - specifying that temperature would increase throughout the next 100 years, the Climate Act gave just 44% odds for holding to a two degree temperature rise, if the 'median case' for CO_2 concentration rise is what evolved. Omitting permafrost feedback altogether, Climate Act authors incorrectly claimed to have, *'modelled all known feedbacks'.*

The lined 'grey' areas in 'Emissions' and 'Concentrations' mathematically relate the former to the latter in forty theoretical steps downward & upwards from 'the budget' with concentrations at CAF 50-% for Budget + 'feedback' in each of the steps. So these are showing theoretically possible rates of *negative* & *positive* feedback from the process of carbon-cycling as a whole.

In the cause of UNFCCC-compliance, the world might theoretically hold to the '2016 4% Low' Carbon Emissions Budget [as in the UK Climate Act].

However, *positive* feedback in the carbon cycle - e.g. from melting permafrost as suggested here - will release more CO_2. The highest rate of CO_2 emissions:concentration calculated here, shows a steady rate of acceleration across the Century ahead. By mid-Century it is clear that, in this scenario, *positive* feedback is driving the system as a whole, driving to a point where 'human-emission-control' has become completely irrelevant.

There are two simple messages - we need to: -

[1] leave fossil carbon [oil coal & gas] in the ground
[2] get on with 'human-emissions-control' asap.