

From: gjjenkins@meto.gov.uk  
To: m.hulme@uea.ac.uk  
Subject: RE: WGI emissions/scenarios conference  
Date: Wed, 16 Sep 1998 09:15 +0000 (GMT)

Mike

I think the problem is the same one as in 1988 and 1994. In order to answer the question: "what is IPCC's best estimate of climate change over the next hundred years, and the uncertainties?" we need a single best estimate of emissions (plus a range of uncertainty). In the same way as modellers say "here is our best estimate of climate sensitivity plus a range" then the SRES group should do the same thing. Of course they can make all the usual disclaimers and talk about surprises just as the climate modellers do. But NOT to come up with an estimate for a Business as Usual emissions scenario (plus a range, of 6GtC to 30GtC at 2100) seems to be ducking responsibilities. "Getting away from single number answers" is very laudable scientifically, but it presents policymakers (for whom the whole IPCC exercise is undertaken) with a problem. As long as there is a central estimate and a range, the surely both communities could be happy, as they ultimately were with BaU in 1990 and IS92a in 1995?

Geoff

-----Original Message-----

From: m.hulme@uea.ac.uk  
Sent: 15 September 1998 20:23  
To: scenarios  
Subject: WGI emissions/scenarios conference

Dear All,

Here are three comments on the questions raised by WGI TSU on 7 Sept. and by some of the other contributions to the discussion about scenarios for IPCC TAR. I am commenting from the perspective of a climate scenario constructor servicing the impacts research community:

1. The SRES Working Group have identified 4 Marker Scenarios (out of a much larger range, although these 4 largely capture the range). I think the choice is good. I do not see why some modelling centres should not be able to run all 4 emissions scenarios through their GCM. From an impacts perspective I believe this would be very desirable and would enable a fair range of climate change scenarios to be used in impacts work using direct GCM output (without the need for scaling). And if all four Markers could be run through more than one GCM (i.e., with different climate sensitivities) then impacts work would have an even better sample of the possible climate change space to analyse. These aspects of uncertainty seem to me to be critical for impacts people (and integrated assessors) to explore, to get us away from single number 'answers'.
2. If a single emissions scenario \*has\* to be adopted by some GCM groups, B2 seems to have the recommendation from Naki (and maybe SRES too - the storyline refers to it as 'dynamics as usual'). I think there are probably good reasons why SO2 emissions fall so much in this storyline - regional rather than global solutions and the encouragement of environmental protection. The fact that the reduced C emissions relative to IS92a are offset by the big fall in SO2 emissions (the net global warming in B2 is actually slightly higher than IS92a if aerosol effects are included) should simply be seen as a reflection of a more carefully worked out storyline than was the case with IS92a. I do not think it a good idea (indeed, I think it would be a very \*bad\* idea) for GCM centres to mix-and-match elements of IS92 and SRES98 scenarios - the TAR should try and stick with the SRES stories and emissions wherever possible. The internal consistency in these storylines (and hopefully emissions) is important to maintain (especially later on for impacts work), and the thinking behind the SRES scenarios is considerably better than was achieved in the IS92 scenarios.
3. The problem of different Markers having different 1990 emissions values (and the fact that 1990s C emissions diverge from those observed) is more

serious. By 2000 the four Markers range in C emissions from energy sources from 6.6GtC (B1) to 8.0 GtC (A1). Given where we are right now (about 6.7GtC in 1997) it seems daft to have such a range for only 2 years hence (as Tom Wigley has pointed out). For example, by the time TAR is published we will know that A1 C emissions for 2000 are too high by, say, 15%. Surely we need to impose a 'fix' on all 4 Markers to account for this. Such amendment may occur as a result of the SRES 'open-process', but this will take up to 12 months to be agreed and published. Should not someone (WGI or WGIII TSUs) impose a temporary solution now for climate modellers?

Similarly, something needs to be done for CH4 and N2O 1990 emissions. CH4 1990 emissions range from 281 to 481Tg in the 4 Markers (compared with 506Tg in IS92). Surely this range is not defensible. I think at the least we need some assurance from SRES that there has been some investigation into these differences and that they will withstand scientific scrutiny in peer review. Again, maybe the open-process may lead to revisions, but what do climate modellers do in the meantime? [By the way, the difference in global warming by 2100 that the SRES CH4 and N2O scenarios generates relative to those in IS92a is between 0.05 and 0.3degC - lower in all cases].

Mike

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Mean temp. in Central England during 1998 is running  
at about 1.2 deg C above the 1961-90 average  
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The global-mean surface air temperature anomaly estimate for the  
first half of 1998 was about +0.60 deg C above the 1961-90 average,  
the warmest such period yet recorded  
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