CRU CORRESPONDENCE 1997
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From: Richard Warrick <cearsr@waikato.ac.nz>
To: 'Mike Hulme' <m.hulme@uea.ac.uk>
Subject: RE: Scengen and CC:Train
Date: Thu, 16 Jan 1997 10:00:48 +-1300

Dear Mike,

Thanks for your detailed reply concerning Scengen and CC:Train. I was not proposing to incorporate Scengen in a major way into the training package, and I am quite aware of the problems of consistency regarding aerosol effects, natural variability, etc. Rather, I thought that the training package would be an excellent way to introduce the existence of Scengen (and MAGICC) to the Country Teams which are responsible for coordinating national assessments. (the intention was NOT to provide intensive technical training in its use -- the country team members are largely coordinators, not technical climate experts). In this way, when it comes time to actually carry out the national assessments, Scengen would be recognised as a major tool for scenario generation and, if appropriate, CRU could be contacted regarding its application, technical training or collaboration. You had mentioned to me at the IPCC meeting in London that one of your major aims was to get Scengen recognised as the "standard" for scenario generation for impact assessments, and I simply thought I saw a way of furthering that aim through the CC:Train mechanism.

Given the training programmes that you are currently proposing through ENRICH and others, I can understand your fears that we might "muddy the waters". Let me pose the following options; that we

(1) use some hard-copy examples from Scengen;
(2) incorporate a demonstration diskette (do you have one?);
(3) just mention the existence of Scengen;
(4) not mention Scengen at all.

Frankly, I am quite happy with any of these. The part on climate change scenarios is really only a small bit of the overall V&A training package in any case.

Good luck with your proposals.

Cheers,
Dick

From: Mike Hulme[SMTP:m.hulme@uea.ac.uk]
Sent: Thursday, 16 January 1997 00:45
To: Richard Warrick
Cc: m.kelly@uea.ac.uk; tim.carter@fmi.fi; wigley@ncar.ucar.edu
Subject: Re: Scengen and CC:Train

Dick,

And Happy New Year to you also.

You've posed me a tricky one re. SCENGEN and my answer about it being incorporated into the CC:Train package as a component tool is going to have

to be 'no'. Let me explain.

We too here have plans to exploit SCENGEN (and MAGICC) in a training/educational context. I ran a pilot seminar here for UNEP before Christmas on scenario construction, although this was using the new WINDOWS/Unix versions of both MAGICC and SCENGEN (MAGICC 2 and SCENGEN 2; IPCC 1995 compatible) we have re-written. Also, I have just submitted a proposal (called SPARCCS) to ENRICH in DGXII for a support package for regional climate change scenarios. This would be a 2-year project with emissions people, as well as MAGICC, SCENGEN and our new global historic climatology. I think we have a good chance of funding.

With this background I do not want SCENGEN (and especially the old DOS version) 'leaking' out into the climate training community at this stage.

I am confirmed in this view by thinking that the complex issues surrounding scenario creation (and the new IPCC Taskgroup on scenarios for the 3rd assessment is grappling with these - ask Tim Carter about it) should _not_ be an essential part of a vulnerability/adaptation package. And even if you
think differently then let me suggest the following: if you think it should be a minor part then I do not think that you need SCENGEN formally incorporated; if you think it should be a major part then not only do I think you are wrong in thinking so, but there is more to the scenario issue than can be supplied by SCENGEN - for example, you need MAGICC, you need to consider how you handle aerosols, and you need to think about natural variability and signal/noise issues.

My feeling is that by all means use SCENGEN within CEARS in thinking about the training package and coming up with some off-line examples (either sample scenarios or guided sensitivity), but do _not_ incorporate it in the package. [By the way SCENGEN does not have imaginery countries!]. If people want more detailed thinking on scenarios then you could always refer them to CRU (which is what our speciality is).

I hope you understand my feelings on this - I am not trying to be negative, but am thinking ahead and about the complexity of the scenario issue. I have talked with Tim Carter recently at some length about some of these things so I will copy this correspondence to him.

Good luck with CC:Train anyway and I'm sure you'll come up with something good.

Regards,

Mike

At 14:41 10/01/97 +-1300, you wrote:
>Dear Mike,
>
>Happy New Year's Greetings from Downunder!
>
>I have a question for you regarding Scengen that relates to a "training
>package" which CEARS have agreed to develop for CC:Train (under UNITAR).
> CC:Train is currently developing about four such training packages
>pertaining to climate change, of which CEARS has agreed to undertake one,
>on Vulnerability and Adaptation assessment. The V&A and other packages
are
>supposed to be flexible enough to be used under a variety of regional and
>country contexts. These packages build upon existing guidelines and
>manuals (e.g. Carter et al's IPCC Guidelines...) and are designed for
>trainers who will be conducting training workshops for the coordinators of

>national assessments (the CC:Train "Country Teams"). Beginning on 21
>January, Tim Carter will be here for 3 weeks, as will Stephanie Lenhart
>(U.S. Country Studies Program), in order to help with this task. The V&A
>training modules will closely follow the IPCC Guidelines. I have proposed
>developing the package as a kind of role-playing simulation exercise in
>which the participants carry out a mini-assessment for a hypothetical
>country.
>
>One of the major steps in the assessment, of course, is the development of
>climate change scenarios. I thought it would be very effective to use
>Scengen for this purpose, and to make Scengen a component tool of the
>training package. Can I use Scengen for this purpose? One possible
>advantage of doing so is that Scengen could, de facto, quickly become the
>standard method used by various Country Teams in carrying out national
>assessments for UNFCCC reporting (or is this not an advantage?!).
>
>Please advise on how I should proceed.
>
>Best wishes to all at CRU.
>
>Cheers,
>Dick
>
>

Dr Mike Hulme tel: +44 1603 593162
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Norwich NR4 7TJ

Mean temperature in C.England during 1996 was 0.3degC below the 1961-90
average.
The maximum temperature in Norwich: Tuesday 13 January: 9.1degC.

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From: druid@ldgo.columbia.edu (Gordon Jacoby)
To: k.briffa@uea.ac.uk
Subject: Russia
Date: Sun, 26 Jan 1997 14:16:32 -0500

Hi Keith:

As you are aware, the situation in Russia is very uncertain with their
unfortunate economic condition, especially science support. There is
interest, hope, and dots on maps showing intent but actual activity is
difficult to judge. In the particular area I am interested in, the Taymyr,
there is no current active tree-ring research going on although it has been
previously sampled and some reports are in preparation. Ed probably told
you that I have submitted a proposal to do work there. My understanding is
that unless there is some external funding support, such as my project,
tree-ring sampling there is in abeyance. Several people, including
yourself, recognize the great potential in the region. From my perspective

it seems that the Polar Urals are being studied, Yokutia to the far east is being studied, some work has been done by Szeicz and Macdonald at the Lena but there is need for more intensive effort in Taymyr. I would like to hear your perspective on the situation.

In a related topic, I am thinking of using the option in Ed's new ARSTAN to use the regional standardization method. In Russia and other locales the establishment of trees is episodic. In particular, in Alaska Glenn Juday has data showing cohort groups being established in favorable times. In Taymyr also, the establishment of trees is not evenly distributed through time. There are times of growth and times of demise. This concerns me as it could affect the development of a regional curve. do you see problems arising from this?

I am also curious to hear any comments you care to make about my recent letter to Fritz Schweingruber. He obviously will pursue any style of sampling and analyses he chooses to. My only contention is that he should not represent his data as the definitive tree-ring information, particularly ring-width data. His opinions are influential but there is an accumulating body of ring-width data that clearly shows him to be missing much important information with his style of sampling. Scientists and others should be aware of this fact.

Cheers, Gordon

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From: Arnulf GRUBLER <gruebler@iiasa.ac.at>
To: naki@iiasa.ac.at, becon@public3.bta.net.cn, ja_edmonds@pnl.gov, hm_pitcher@pnl.gov, Fewewar@ternet.pl, t-morita@nies.go.jp, rob.swart@rivm.nl, alcamo@usf.uni-kassel.de, knut.alfsen@cicero.uio.no, kennethgregory@compuserve.com, akimoto@atmchem.rcast.u-tokyo.ac.jp, amann@iiasa.ac.at, Jean-Paul.Hettelingh@rivm.nl, m.hulme@uea.ac.uk, schlesin@uiatma.atmos.uiuc.edu, streetsd@anl.gov, wagner@iiasa.ac.at
Subject: sulfur discussion paper
Date: Wed, 05 Mar 1997 17:18:58 +0000

Sulfur Emissions in New IPCC Scenarios

Arnulf Gruebler, IIASA

SUMMARY OF PROPOSED ACTIVITIES

1. Review and comments of present sulfur discussion paper
2. Revision by sulfur paper lead author
3. Preparation of comparison of regional sulfur scenarios (by lead author with inputs from other members of writing team and experts)

Timing: August 1997.

4. Specification of minimum and desirable sulfur emission scenario characteristics and specification (for modeling teams in open process)
5. Establishment of key relationships between sulfur emissions and other salient scenario driving force variables (income, technological change environmental, non-GHG policies) using the simple metric of sulfur to carbon emission ratios.

6. Adoption of specific sulfur control scenarios in conformity with overall scenario ``storylines''.
7. Distribution of ``template'' sulfur scenarios to selected modeling teams for assessment of climate and acidification impacts of sulfur scenarios.

Timing: End of 1997.

DISCUSSION PAPER

1. Introduction

The purpose of this discussion paper is to review briefly the assumptions on sulfur emissions in the IS92 IPCC scenarios, advances in knowledge and modeling of future sulfur emission scenarios since IS92, as well as to initiate a discussion on how to incorporate future sulfur emissions trends into the new IPCC emissions scenarios. The present draft will be revised based on feedback received within the members of the IPCC writing team as well as additional outside experts.

2. Sulfur emissions in IS92

The treatment of sulfur emissions in the IS92 scenarios was comprehensive. In addition to the dominant energy sector emissions, also sulfur emissions from industrial processes and land-use changes (biomass burning) and (a constant flow) of natural sources were included in the scenarios.

1990 base year values in IS92 were as follows in MtS (Million tons, or Tg, elemental sulfur; to obtain weight as SO2 multiply by 2.):

Energy Sector: 65 MtS
Other Industry: 8 MtS
Biomass burning: 2 MtS
Natural: 22 MtS
TOTAL: 98 MtS

These global base year values are well within the range given by global sulfur emission inventories of 4 to 45 MtS natural sources and 65 to 90 MtS anthropogenic sources in 1990 (IPCC, 1995:135-141). A comparison of 1990 base year sulfur emission values from a number of scenarios and integrated assessment models is enclosed as attachment.

However, as observed in the evaluation of the IS92 scenarios (Alcamo et al., 1995) regional sulfur emissions assumed in IS92 (e.g. for China) are much more uncertain. There is for instance up to a factor two difference between regionalized estimated of global inventories and aggregates of national and regional emissions inventories. Thus, the good agreement of base year values of IS92 at the global level masks important differences and uncertainties at the regional level.

A first important task for the new IPCC scenarios is therefore to update the regional sulfur emissions baseline values with the results of latest regional sulfur emissions inventories. Such inventories are available for Europe through EMEP and CORINAIR, North America (NAPAP), and more recently also for Asia (e.g. the Worldbank sulfur project, Foell et al., 1995).

Improved modeling of regional sulfur emissions (and deposition, i.e. impacts) patterns would also require a redefinition of the world

regions as used in the IS92 scenario series. For instance, Canada is included in the region OECD-Europe, and the IS92 region "South Asia" includes both the Indian subcontinent as well as Indonesia. Their important differences in resource endowments lead to different patterns of sulfur emissions. Their differing predominant weather patterns and distinct ecosystems lead to differing acidic deposition patterns and impacts. Both factors preclude their aggregation into one single regional model. Active inputs from representatives of all respective modeling communities (regional acidification impacts, regional climate modelers, energy systems analysts) will be sought on this issue and lessons learned within EMF activities (M. Schlesinger) on appropriate sulfur regionalization (6 world regions) will be extremely valuable.

Concerning future emissions of sulfur the IS92 scenarios project global anthropogenic emissions of between 150 to 200 MtS by 2050 and between 140 to 230 MtS by 2100 in the high growth cases, and of around 80-90 and 60 MtS in the two low scenarios (IS92c and IS92d) by 2050 and 2100 respectively. The IS92 scenario evaluation (Alcamo et al., 1995:281-282) concluded that the IS92 scenario series only partially reflect recent legislation to reduce sulfur emissions (e.g. the amendments to the Clean Air Act in the US or the Second European sulfur protocol). Hence, particularly regional sulfur emissions in OECD countries projected in IS92 are much higher than more recent scenarios taking account these legislative changes (as also discussed by IPCC, 1995:155-156). For instance the recent scenarios of the Commission of the European Communities (EC, 1996) indicate that sulfur emissions by 2020 will be between 64 to 77 percent below 1990 emissions levels, or between less than 2 to 3 MtS, compared to 8 in 1990. For comparison, the IS92 scenarios project for OECD Europe (including Canada) sulfur emissions between 8.4 (IS92a and IS92b) and 11.7 (all other scenarios) MtS by 2020, i.e. between 2 to 30 percent lower than in 1990 (12 MtS).

In addition, integrated assessment models are increasingly able to model in greater detail driving forces of sulfur emissions as well as acidification impacts (cf. discussion below). These model simulations suggest that particularly in Asia acidification impacts would require substantial sulfur emission control measures already much earlier than 2050. The resulting global sulfur emissions are substantially lower than suggested in the IS92 series: typically in the range between 20 to 80 MtS by 2050 and between 20 to 120 MtS by 2100. (A comparison of global sulfur emissions scenarios with and without specific sulfur control assumptions in enclosed as attachment.)

3. What's New since IS92 (scientific front)

The importance of aerosols including those from sulfur emissions is by now widely recognized and considerable progress has been made to quantify their effect on regional climate, both in large GCM simulations as well as in more simplified integrated assessment models, e.g. MAGICC's SCENGEN module (needs checking for details with Mike Hulme) or Michael Schlesinger's work within the EMF (current status: uncertain). The importance of sulfur emissions as input to climate models is therefore larger than ever.

As a result of a major World Bank study on acid rain in Asia also improved national and regional sulfur emissions inventories have become available (Foell et al., 1995). Improved emissions inventories outside North America, Europe (including the European part of the former USSR), and Asia (excluding Oceania, for which

only sparse data seems to be available) have not been made available since publication of IS92.
As a result, models and scenarios continue to rely on estimates, largely based on approximate mass and sulfur balance approaches in the world regions for the Middle East, Southern Africa, and Latin America (cf. discussion of data availability below).

Similarly, acidification impact models are increasingly being refined for regions outside OECD in particular for Asia. Acidification impact studies for unabated sulfur emissions of coal intensive ``business as usual'' scenarios indicate exceedance of critical loads of up to a factor 10 already within the next three to four decades (Amann et al., 1995) with enormous impacts on natural ecosystems as well as important foodcrops (Fischer et al., 1996).

Increasingly also energy sector and integrated assessment models link regional acidification models with simplified climate models enabling joint analysis of sulfur and climate policies and impacts. Examples include the IMAGE model (Posch et al., 1996) and the IIASA integrated assessment model (Rogner and Nakicenovic, 1996) that are linked with the acidification model RAINS for Europe and Asia, the AIM (Morita et al., 1994) model for Asia, or ???? for North America. These models extend earlier energy sector models that dealt with a comparative costs assessment of isolated sulfur and carbon reductions, and joint mitigation respectively, such as the OECD GREEN model (Complainville and Martins, 1994). The state of knowledge of joint benefits of sulfur and carbon emission reductions was reviewed in the 1995 IPCC WG III report (IPCC, 1996: 215-218) and is expanding rapidly.

4. Data requirements

The most obvious data requirements concern of course comprehensiveness of sulfur emissions by major source category (anthropogenic and natural, energy sector and other industrial sources). Here the data model of the IS92 scenarios appears appropriate and would only require a reassessment in view of most recent data concerning regional emissions (particularly in China, where data uncertainties seem largest).

A more difficult question concerns spatial disaggregation. Independent from the question of which formal models are being used to check for scenario consistency, the outmost spatial detail currently in driving force models with global coverage available is at the level of world regions (typically around 10, but going up to around 20 world regions). Both climate as well as acidification models require inputs at finer spatial resolution. It is unclear at present what would constitute a ``minimum'' or ``desirable'' level of spatial disaggregation for the variety of user communities of new IPCC scenarios. Existing model links (like with the RAINS model) could be used in some regions like Europe and Asia to generate spatially highly disaggregated sulfur emission and deposition maps as inputs for climate models and for impact assessment studies (e.g. for agricultural crop yield models). In their most advanced versions the model links even incorporate regionalized differential growth trends and thus improve on the standard practice of renormalizing base year spatial emission and deposition patterns linearly with a particular sulfur emissions scenario.

For regions where similar links are unavailable, more simplified procedures will need to be devised, keeping in mind the overall tight time frame of the

scenario exercise. Two data sets (are there more??) appear available for regionalized sulfur emission patterns: the Oak Ridge GAIA data set (spatial resolution: ????) and the Spiro et al. (1992) data set (spatial resolution: one degree by one degree).

An open (but extremely critical) issue remaining to be resolved is to identify mechanisms and responsible groups that could provide the link between the spatial resolution of the new IPCC scenarios sulfur emissions to whatever final geographical scales required by impact assessment and climate models.

5. Scenarios and Sulfur Policies

There are two major sets of driving force variable that influence future sulfur emissions. 1. Level and structure of energy supply and end use, and 2. degree of sulfur control policies assumed. (Because of the dominance of energy related sulfur emissions, they should receive particular attention in the new scenarios. Industrial sources could be included in the scenarios with much a simpler driving force model, e.g. coupling to industrial output.)
Ceteris paribus, highest sulfur emissions occur in scenarios of high demand growth, rapid resource depletion, limited technological change and absence of sulfur control policies outside OECD countries. In terms of energy supply structures such scenarios imply a massive use of coal, including synfuel production. Typical examples would include the IS92e and IS92f scenarios. Up to ca. 2050 sulfur emissions in such scenarios roughly grow in line with fossil fuel use and resulting carbon emissions, i.e. a roughly constant sulfur to carbon emissions ratio. Post 2050, still in absence of sulfur control policies, growth rates of sulfur emissions start to fall short of growth in fossil fuel use due to the internal technology logic of synfuel production: synfuel production requires prior coal conversion (e.g. gasification) and removal of sulfur prior to further conversion, e.g. to synliquids. Ceteris paribus, therefore sulfur emissions relative to those of carbon decline.

Sulfur emissions are lower in scenarios with 1. lower demand, 2. more ample resource availability (especially for natural gas), 3. higher rates of technological change (especially for non-fossil energy technologies), and 4. extent and timing of direct sulfur control policies especially outside OECD countries (itself function of projected impacts like acidification), and finally, 5. level of other environmental control measures and valuation of environmental goods (e.g. sulfur emissions are also lower in scenarios imposing limits on GHG emissions).

Next to environmental impacts and policies, there are also other key relationships that need to be considered for the formulation of future sulfur scenarios. For instance, the literature on environmental Kuznets curves (cf. e.g. World Bank, 1992, or IIASA-WEC, 1995) argues that with increasing affluence and valuation of environmental goods, sulfur emissions decline. This hypothesis is corroborated by both longitudinal and cross-sectional empirical data. Thus, in the process of industrialization and economic development, emissions rise initially, pass through a maximum (say at income levels around 2000 $/capita) and decline thereafter with rising per capita incomes and the resulting preference of cleaner end-use fuels, valuation of clean environments, etc.

A scenario taxonomy along the dimensions of demand, resource availability, and technological change in any case is necessary to respond to the critique on the IS92 series that these important driving forces were not varied appropriately to reflect both

uncertainty as well as new scientific knowledge and empirical evidence. They form part of the overall scenario design process and the scenario ``storylines'' and need not to be addressed specifically in the work on sulfur emissions.

Separate ``sulfur stories'' could be developed in addition, based on various relationships between sulfur emissions and levels of affluence, industrial structure, etc. within the overall framework of the scenario ``storylines''. Here sulfur emissions would be part of other environmental policies (e.g. on water quality, urban traffic related pollutants, etc.) that form integral part of particular scenario ``storylines''.

A key variable remains the timing and extent of sulfur control policies to be assumed for the new scenarios. First of all the scenarios need to reflect changes in actual policies implemented. As noted above, IS92 did not take full account of recent environmental legislation in both North America and the second European sulfur protocol. Secondly, the sulfur policies to be assumed, need to reflect recent scientific findings, in particular the very large local and regional impacts on agricultural crops and ecosystems of unabated high sulfur emission scenarios, particularly in Asia. Therefore, all scenarios should assume faster and deeper reductions in sulfur emissions outside OECD countries than were assumed for IS92 in light of this recent scientific evidence. The exact timing and extent of such sulfur reduction measures could then be scenario dependent. Also no specific reference to individual policy measures would need to be made (to avoid normative policy elements, or recommendations, in the scenarios), as reduction profiles could be adopted from existing sulfur reduction scenarios in the scientific literaursement by UE (Action COST) for the lecturer, but for this I hope to
>have an answer as soon as possible.
>
>Thank you for your answer
>
>Best regards
>
>I'm Bernardo Gozzini and I work with Marco Bindi in the organisation of this
>seminar because Marco in the next week will leave for USA for two months and
>he cannot follow it
>**********
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From: Eugene Vaganov <evag@ifor.krasnoyarsk.su>
To: k.briffa@uea.ac.uk
Subject: from Vaganov
Date: Thu, 6 Mar 97 14:40:15 +0000 (KRS)

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"MULTI-MILLENNIAL-LENGTH DENDROCLIMATIC RECONSTRUCTIONS AT HIGH-LATITUDE REGIONS OF SIBERIA".

By signing this declaration, I certify that the information given

in this proposal relating to me and the team I represent is to the best of my knowledge true and complete. I have been involved in the preparation of the full proposal and I agree with its contents. I am fully authorised to commit myself and the team I represent to be ready to set up and execute all tasks, duties and obligations assigned to us in this research proposal, if selected.

I hereby authorise the co-ordinator as lawful attorney and administrator and empower him to act all of the necessary actions to administrate validly the herein said rights on behalf of me in case the proposal should be selected by INTAS, inter alia, to negotiate and to conclude the co-operation agreement, as well as any amendments, variations or additions to the co-operation agreement on my behalf.

Laboratory of Dendrochronology
Institute of Forest SB RAS
Krasnoyarsk

Dr.Eugene A.Vaganov

5 March, 1997

fAJL projid.txt

1.1 Multi-millennial-length dendroclimatic reconstructions
    at high-latitude regions of Siberia.
1.2 5
1.3 600
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By signing this proposal, I certify that the information given in this proposal is the best of my knowledge, true and complete as received from all project participants; that all participants were involved in the preparation, agree with this project proposal and have declared themselves ready to perform the project as proposed in case of selection.

I am fully authorised to commit myself and the team I represent to be ready to set up and execute all tasks, duties and obligations assigned to us in this research proposal and I am ready to act as the co-ordinator of the project.

The proposal contains ..... pages.

PROJECT CO-ORDINATOR First name and family name:
Fritz Schweingruber

Date: ..... March,1997 Original signature:

fAJL sum.txt

4.1. TITLE OF THE PROJECT
Multi-millennial-length dendroclimaticreconstructions
at high-latitude regions of Siberia

4.2. SUMMARY
This research will make a major contribution to our knowledge of high-resolution climate variability at high latitudes of Western and Middle Siberia throughout the Holocene using the unique potential of tree-ring data.

The specific objectives of this proposal are the development of two supra-long (each spanning 6-9000 years up to present) continuous larch ring-width chronologies at two distant each other high-latitude locations of Siberia (Yamal and Taimyr peninsulas). Ring-width chronologies developed from coniferous trees growing at the polar timberline in Siberia contain a very strong climatic signal, mainly summer air temperatures. With these chronologies high-resolution continuous and quantitative reconstruction of summer temperatures will be made.

As in the areas of the past and present polar and upper timberlines trees megafossils have been preserved properly in large quantities in the Holocene deposits (alluvial, lacustrine and peat), there is a good possibility to develop continuous, multi-millennial tree-ring chronologies.

Now the material already collected and measured (1800 subfossil wood samples from Yamal and 280 samples from Taimyr) has yielded the ring-width chronologies continuously spanning the last 3200 years (Yamal) and 950 years (Taimyr).

However, there are also many more samples that have been measured and have provided data, now assembled in a number of provisionally "floating" chronologies covering much of the period from 7000 to 1700 B.C. (based on some 70 radiocarbon dates of samples of this wood). There is a fair chance that a 6-9000-year continuous chronologies will be constructed within the span of the proposed project.

These chronologies and temperature reconstructions will be the first to be so long, reliable, annually-resolved and precisely-dated with known reliability across the whole of northern Hemisphere. These reconstructions will allow to compare and contrast the details of temperature changes at the moderate-continental region of Yamal Peninsula with the continental region of Taimyr Peninsula and allow modern and predicted temperature patterns to be compared with variability patterns of pre-industrial era. Participants of the proposed project are the well-known institutions which are engaged in the field of dendrochronology and dendroclimatology and have collaborated with each other during the last 6 years.

fAJL workpro.txt

3.1 TITLE
Multi-millennial-length dendroclimatic reconstructions
at high-latitude regions of Siberia

3.2 OBJECTIVES

This research will make a major contribution to our knoweledge of high-resolution climate variability at high latitudes of Western and Middle Siberia throughout the Holocene using the unique potential of tree-ring data.

The specific objectives of this proposal are as follows:
- to develop two supra-long (each spanning 6-9000 years up to present) continuous ring-width larch chronologies at two high-latitude locations of Siberia;
- using these tree-ring chronologies, tomake a multi-millennial high-resolution continuous and quantitative reconstruction of summer temperatures;
- to analyse spatio-temporal patterns of temperature variability at these locations over a range of timescales (annual, decadal, multi-decadal and centennial) and their connections with various forcing factors and other annual resolution records being developed elsewhere in the Arctic and Subarctic.

3.3. BACKGROUND

Reconstruction and analysis of natural climatic changes through the whole Holocene at high latitudes are of great importance as climatic conditions, especially air temperature, are most variable and sensitive to various forcing functions (Budyko, 1980; Jones and Kelly, 1983; Intergovernmental Panel on Climate Change, 1990). However, there are a minute quantity of long, precisely-dated and high-resolution proxy climatic series for these regions.

The territory of Yamal Peninsula located on the eastern boundary of influence of the Atlantic air masses and the territory of the eastern part of Taimyr Peninsula located between the Arctic High and Siberian High are of major importance for monitoring regional and global-mean air temperatures and assessing theories and models concerned with past, current and future climate changes (Lamb, 1977; Briffa and Jones, 1993; Moses et al., 1987).

Tree rings as a proxy indicator of the past climatic conditions are of special interest as they allow to reconstruct climatic parameters with seasonal and annual resolution for many hundred and thousand years, to provide an exact absolute and relative dating of the tree-ring data, to establish high-frequency climate changes (from interannual to centennial timescales) with high confidence, to obtain dendroclimatic information practically for every site where trees grow at present or grew in the past.

Intensive dendroclimatic investigations are carrying out in many countries and regions, mainly in temperate and subtropic zones (Fritts, 1976, 1991). At high latitudes such works began later (during the last two decades) and living trees were used primarily for developing tree-ring chronologies of 200-500 years long (Aniol and Eckstein, 1984; Shiyatov, 1984, 1986; Jacoby and D'Arrigo, 1989; Schweingruber, Briffa and Nogler, 1993; Briffa, Jones, Schweingruber, Shiyatov and Vaganov,1996; Jacoby, Wiles, D'Arrigo, 1996; Vaganov, Shiyatov and Mazepa, 1996). As in the areas of the past and present polar and upper timberlines trees megafossils have been preserved properly in large quantities on the surface and in the Holocene deposits (alluvial, lacustrine and peat), there is a possibility to develop continuous, multi-millennium and sensitive to climate tree-ring chronologies. Such works began in the Polar Ural Mountains (Shiyatov, 1986; Graybill and Shiyatov, 1992; Briffa, Jones, Schweingruber, Shiyatov and Cook, 1995), in the southern part of Yamal Peninsula

(Shiyatov, Surkov, 1980; Hantemirov, 1995), in Finnish Lapland and Northern Sweden (Zetterberg, Eronen and Briffa, 1995), in the eastern part of Taimyr Peninsula (Vaganov, Naurazbaev, Schweingruber and Briffa, in press) and in the Lower Indigirka River at present. Now the longest, continuous and absolute-dated ring-width chronologies developed for the Yamal Peninsula (spanning 3200 years) and for the Northern Scandinavia (spanning 2160 years) and the "floating" chronologies dated by the radiocarbon method extended back 9500 and over 7000 years respectively.

Ring-width chronologies developed from coniferous trees growing at the polar timberline in moderate-continental and continental regions of Siberia contain a very strong climatic signal, mainly summer air temperatures of tree growth year (Graybill and Shiyatov, 1992; Briffa, Jones, Schweingruber, Shiyatov and Cook, 1995; Hantemirov, 1995; Vaganov, Shiyatov and Mazepa, 1996).The explained variance over the calibration and verification periods is highest reported in the literature to date (65-70%) and it allows to make a quantitative reconstructions of summer temperatures. These chronologies and temperature reconstructions will be the first to be so long, reliable, annually-resolved and precisely-dated with known reliability across the whole of northern Hemisphere. These reconstructions will allow to compare and contrast the details of temperature changes at the moderate-continental region of Yamal Peninsula with the continental region of Taimyr Peninsula and allow modern and predicted temperature patterns to be compared with variability patterns of pre-industrial era.

Participants of the proposed project are the well-known institutions which are engaged in the field of dendrochronology and dendroclimatology and have collaborated with each other during the last 6 years.

- The Group of Tree-Ring and Site of the Swiss Federal Institute for Forest, Snow and Landscape Research (Birmensdorf, Switzerland). The Group is currently engaged on a major programme of densitometric and ring-width chronology development involving many sites across the whole of the Northern Hemisphere including sites with living trees in the polar timberline area of Russia. This work is specifically designed to provide climatically-sensitive data for use in large spatial climate reconstruction work. Dr. F.H.Schweingruber, Head of the Group, is known throughout the world for his work in wood anatomy and dendrochronology and the development of tree-ring densitometry. He has published extensively in different areas of wood anatomy and tree-growth research and has authored several classic books.

- The Laboratory of Dendrochronology of the Institute of Plant and Animal Ecology of the Russian Academy of Sciences, Ekaterinburg, Russia is one of the leading laboratory in the field of dendrochronology in Russia. The Laboratory has an international reputation for its work on the developing ring-width chronologies at high latitudes and altitudes, reconstruction of climatic conditions, developing long-term chronologies, studying cycles in tree-ring series, using tree-ring data for studies of the upper and polar timberlines dynamics and forest succession. Dr. S.G.Shiyatov, Head of the Laboratory, is one of the pioneers of dendrochronology in Russia and has worked for more than 30 years in the Far North and mountains of the Urals, Siberia, Far East and Middle Asia. He has published more than 130 articles and three monographs. Dr.

Shiyatov was the first who began to collect subfossil wood in Russia for developing long-term chronologies.

- The Laboratory of Dendrochronology of the Institute of Forest of the Russian Academy of Sciences, Krasnoyarsk, Russia is another leading laboratory in the field of dendrochronology in Russia. Dr. E.A.Vaganov, Director of the Institute of Forest and Head of the Laboratory of Dendrochronology, has an international reputation for his work on the cell structure of wood lyers of coniferous trees, seasonal growth variations and cambium activity, developing simulation models of seasonal tree growth, developing ring-width and cell chronologies, reconstructing climatic conditions of the past using tree-ring chronologies. He has published more than 100 articles and 5 monographs.

- The Climatic Research Unit of the University of East Anglia, Norwich, Great Britain is one of the world's leading research organisation specialising in the study of climate change: climate history, current climates, projected changes and impacts. Dr. K.R.Briffa, Senior Research Associate at the Climatic Research Unit, has considerable experience in climatology and with the use of statistical methods of climate analyses and dendroclimatic reconstruction, especially with regard to large-spatial-scale reconstructions of climate patterns and published many articles on the theoretical and practical aspects of dendrochronology and dendroclimatology, and on use of paleoclimate data for understanding current and possible future climates.

3.4 SCIENTIFIC AND TECHNICAL DESCRIPTION

3.4.1. RESEARCH ACTIVITIES

Tree-ring data will be obtained from living trees and subfossil wood of Siberian larch (Larix sibirica Ledeb.) in western Siberia and Gmelini larch (Larix Gmelini Pilger) in central Siberia. The first location is situated in the southern part of Yamal Peninsula (67-688N, 69-718E), the second location in the eastern part of Taimyr Peninsula (71-738N, 98-1058E). There is a great many properly preserved subfossil wood in the Holocene deposits at both locations, mainly in the alluvial and peat deposits.

The main variable measured will be ring width. This variable reflects properly climate influences on tree growth at the polar timberline areas of Siberia having a continental climate.

Ring-width chronologies for the last 400-500 years will be developed from the oldest living trees. Extensions to these chronologies back further in time will be made by using subfossil material, joined with the living material by standard crossdating procedures. High-precision radiocarbon dates will be used for rough dating of "floating" tree-ring chronologies.

The sampling subfossil wood and development of the Yamal's supra-long chronology began since 1982 by the workers of the Laboratory of Dendrochronology (Ekaterinburg). Most intensively this work was carried out during the last five years. Now the material already collected and measured (1800 subfossil wood cuts) has yielded the ring-width chronology continuously spanning the last 3200 years. However, there are also many more samples that have been measured and have provided data, now assembled in a number of provisionally "floating" chronologies covering much of the period from 7000 to 1700 B.C. (based on some 45 radiocarbon dates of samples of this wood). These chronologies separated by 50 to 500 year length gaps. There is a fair chance

that a 9000-year continuous chronology will be constructed for this location within the span of the proposed project.

Similarly, work with a shorter history than the Yamal's research has clearly established potential to build a chronology at least as long in the Taimyr Peninsula where the modern polar timberline extends to about 72830'N, most northern over the world. This work is not so advanced as in Yamal, but the work to date suggests that very rapid progress is likely. Samples from living and dead trees have already been assembled at the Laboratory of Dendrochronology (Krasnoyarsk) into the 950-year continuous chronology. The collections from this location are not so extensive as those made to date at Yamal (280 subfossil wood samples), but there is an abundant supply of subfossil trees, many with over 300 annual rings. 25 radiocarbon dates of samples of this material suggest major phases of tree growth around 8500 B.P. and 5000 B.P. The general distribution of the radiocarbon dates suggests that, eventually, sufficient trees can probably be located to span the whole of the last 10000 years. It is not expected that a continuous 10000-year ring-width chronology will be produced within timeframe of this project. However, there are good prospects of producing a 5-6000- year chronology to the present.

3.4.2 RESEARCH RESULTS
During three years we expect to develop the continuous and good-replicated tree-ring 9000-year larch chronology for the Yamal Peninsula and the 5-6000-year larch chronology for the Taimyr Peninsula. Using these chronologies we intend to reconstruct and analyse a summer temperature variation at several time scales (annual, decadal, multi-decadal and centennial) and compare the data obtained with other high-resolution Holocene-length proxy data (ice cores, laminated sediments, historical documents).

The results of this project will be published primarily in the scientific literature in Russian and English and presented at different national and international conferences. Because of the fundamental interdisciplinarity and collaborative interaction within the subgroups, a number of multi-authored papers will be produced. The individual and mean ring-width chronologies and the reconstructions produced will be distributed to the international scientific community through submission to the International Tree-Ring Data Bank (Boulder, Colorado, USA) and to other national and international institutions and data centres.

3.5 MANAGEMENT INFORMATION

3.5.1 TASK DIVISION
Dr F.H.Schweingruber (Swiss Federal Institute for Forest, Snow and Landscape Research) will be the project co-ordinator on the proposed project from the INTAS countries.

Dr S.G.Shiyatov (Institute of Plant and Animal Ecology) will be the responsible scientist on the proposed project and he will take part in collecting, dating, developing and analysing the multi-millennial ring-width chronology at the area of Yamal Peninsula. The next young scientists of the Institute will be involved in the project:
Rashit M. Hantemirov, Candidate of Biological Sciences, 34 years old. He will take part in collecting, cross-dating and analysing the material.
Alexander Yu. Surkov, technician, 30 years old. He will take part

in collecting, preparing and measuring the subfossil wood samples.

Dr E.A.Vaganov (Institute of Forest) will be the responsible scientist on the proposed project and he will take part in collecting, dating, developing and analysing the multi-millennial ring-width chronology at the area of Taimyr Peninsula. The next young scientists will be involved in the project:
Mukhtar M. Naurazbaev, junior research fellow,35 years old.
He will take part in collecting, preparing, measuring, cross-dating and analysing the material.
Alexander V.Kirdyanov, post-graduate, 25 years old.
He will take part in data processing, density measurements, chronology analysis.
Dmitry V.Ovchinnikov, post-graduate, 26 years old.
He will take part in cross-dating, data processing, chronology analysis.

Dr K.R.Briffa (Climatic Research Unit) will be the responsible scientist on the proposed project and he will take part in analysing growth-climate relationships, developing statistical models of tree growth, extracting climatic signal, reconstructing and analysing climatic conditions of the remote past.

3.5.2 PLANNING
To carry-out the objectives of this proposal the workers of the Russian laboratories will carry out an intensive collecting subfossil wood during summers of 1997-1998 at two high-latitude locations (Yamal and Taimyr peninsulas) using helicopters, boats and ships. To finish the development of the Yamal chronology it is necessary to collect additionally no less than 300-400 cuts of subfossil wood. Much more intensive collecting (600-800 cuts for two field seasons) is needed to develop the Taimyr chronology. All samples collected during these two years and earlier will be measured and cross-dated at Ekaterinburg and Krasnoyarsk laboratories until the middle of 1999.

The Russian laboratories together with the Climatic Research Unit of the University of East Anglia during 1997-1999 will be analysing the material obtained (standardization of individual series, development of mean chronologies, studying growth-climate relationships, developing statistical models of tree growth, extracting climatic signal, reconstructing and analysing climatic conditions of the remote past). This work will be finished at the end of 1999.

3.5.3 EQUIPMENT
Participants of the proposed project have the necessary equipment for fieldwork, measuring equipment and compatible software.

3.5.4 SCIENTIFIC REFERENCES
Briffa, K.R., Jones, P.D., Schweingruber, F.H., Shiyatov, S.G. and Cook, E.R. Unusual twentieth-century summer warmth in a 1,000-year temperature record from Siberia. Nature, 1995, Vol. 376, 13 July, 156-159.

Briffa, K.R., Jones, P.D., Schweingruber, F.H., Shiyatov, S.G., Vaganov, E.A. Development of a North Eurasian chronology network: Rationale and preliminary results of comparative ring-width and densitimetric analyses in Northern Russia. Radiocarbon, 1996, 25-41.

Hantemirov, R.M. A 2,305 year tree-ring reconstruction of mean June-July temperature deviations in the Yamal Peninsula.

Publication of the Academy of Finland,1995, 6, 124-127.

Shiyatov, S.G., Mazepa, V.S., Vaganov, E.A., Schweingruber, F.H.
Summer temperature variations reconstructed by tree-ring Data at
the polar timberline in Siberia. Radiocarbon, 1996, 61-70.

Vaganov, E.A., Shiyatov, S.G., Mazepa, V.S. Dendroclimatic Study
in Ural-Siberian Subarctic. Novosibirsk: "Nauka", Siberian
Publishing Firm RAS, 1996, 246 pp. (in Russian).

27. 0860182002.txt
##########

From: Keith Briffa <k.briffa@uea.ac.uk>
To: m.salmon@uea
Subject: from Rashit
Date: Fri Apr 4 14:26:42 1997

>To: k.briffa@uea.ac.uk
>Organization: ECOLOGY INSTITUTE
>From: "Tatiana M. Dedkova" <tatm@insec.quorus.e-burg.su>
>Date: Mon, 9 Dec 96 14:19:37 +0500
>Return-Receipt-To: tatm@insec.quorus.e-burg.su
>Subject: from Rashit
>Return-Receipt-To: tatm@insec.quorus.e-burg.su
>Lines: 106
>
>Dear Keith,
>we received your letters concerning our paper for Dendrochronologia
>and three long chronologies.
>1. As regards individual ring width data of living trees from
>Yamal we would remind you that you have them. Stepan gave to you
>in England one diskette. There are data for Larix sibirica from
>three sites (KHA - from Khadyta river, 67812'N 69850'E; JAH -
>from Yahody river 67807'N 69854'E and POR - from Portsa river
>67827'N 71800'E) and for Picea obovata from two points (SCH -
>Shtshutshya river 66849'N 69850'E and KHD - from Khadyta river
>67807'N 69854'E).
>2. We would be very gratefull if you can do some corrections and
>additions in the paper for Dendrochronologia. We did not quite
>understand what we have to do on missing rings? Just enumerate
>years when missing rings occur? If so, these are following years:
>

Year	absent	%	ind %	Year	absent	%	ind %
-1172	1 of 4	25%	51	700	2 of 8	25%	31
-1171	1 of 4	25%	12	707	1 of 9	11%	31
-1168	1 of 4	25%	13	718	1 of 8	13%	33
-1142	1 of 5	20%	50	773	1 of 8	13%	38
-1127	1 of 5	20%	15	777	1 of 9	11%	67
-1126	1 of 5	20%	10	814	3 of 9	33%	12
-1029	1 of 10	10%	57	816	3 of 9	33%	10
-1021	1 of 10	10%	55	818	3 of 10	30%	14
-988	1 of 10	10%	17	867	1 of 11	9%	34
-987	1 of 10	10%	12	903	1 of 11	9%	12
-986	2 of 10	20%	17	904	1 of 10	10%	30
-971	1 of 12	8%	44	914	1 of 9	11%	25
-969	1 of 12	8%	67	915	1 of 9	11%	61
-964	1 of 12	8%	14	959	1 of 10	10%	59
-899	1 of 10	10%	29	1006	1 of 12	8%	28
-886	1 of 9	11%	42	1007	1 of 12	8%	28

```
> -882  4 of  9  44%   5     1170  2 of 12  17%    8
> -860  1 of 11   9%  20     1259  1 of 10  10%   28
> -823  2 of  8  25%  18     1270  1 of 11   9%   36
> -792  1 of  6  17%  15     1278  3 of 11  27%   15
> -547  2 of  5  40%  61     1290  1 of 10  10%   44
> -543  1 of  6  17%  91     1300  1 of  9  11%   18
> -318  1 of  5  20%  29     1302  1 of  9  11%   58
> -294  1 of  5  20%  66     1323  1 of  7  14%   18
> -292  1 of  6  17%  24     1334  1 of  8  13%   53
> -288  1 of  6  17%  61     1342  1 of  9  11%    8
> -287  2 of  6  33%  25     1347  1 of  9  11%   14
> -261  1 of  5  20%  30     1380  1 of 12   8%   38
> -248  1 of  5  20%  13     1453  5 of 13  38%    9
> -246  1 of  5  20%  25     1456  1 of 13   8%   20
> -241  1 of  5  20%  12     1460  1 of 13   8%   24
> -239  1 of  5  20%  25     1466  1 of 12   8%   30
> -139  2 of  7  29%   9     1529  2 of  7  29%   10
> -119  1 of  7  14%  14     1560  1 of  7  14%    6     living
> -118  1 of  7  14%  11     1714  1 of 11   9%   49   1 of 16  6%
>   16  1 of  8  13%  26     1718                73   1 of 16  6%
>   49  1 of  9  11%  11     1730                45   1 of 20  5%
>  134  1 of 22   5%  33     1732                28   2 of 20 10%
>  143  4 of 21  19%   7     1739  3 of  9  33%   50   1 of 20  5%
>  155  1 of 21   5%  54     1742                23   3 of 20 15%
>  207  1 of 16   6%  54     1749                57   1 of 20  5%
>  426  1 of  6  17%  19     1752                67   1 of 21  5%
>  492  1 of  9  11%  19     1755                72   1 of 21  5%
>  493  1 of  9  11%  16     1783                39   1 of 22  5%
>  495  1 of  9  11%  16     1788                83   1 of 22  5%
>  536  1 of 12   8%  38     1789                92   1 of 22  5%
>  546  1 of 12   8%  12     1795               102   1 of 22  5%
>  579  1 of 16   6%  41     1806                68   1 of 22  5%
>  589  1 of 19   5%  31     1808                97   1 of 22  5%
>  596  1 of 18   6%  22     1812                35   1 of 22  5%
>  598  1 of 18   6%  51     1814                54   1 of 22  5%
>  623  3 of 17  18%   6     1815                30   1 of 22  5%
>  636  2 of 17  12%  32     1816  2 of  3  67%    2  16 of 22 73%
>  637  4 of 17  24%   9     1817                33   1 of 22  5%
>  639  3 of 17  18%   9     1818  3 of  3 100%    4  14 of 22 64%
>  640  7 of 17  41%   7     1819                22   6 of 22 27%
>  644  1 of 18   6%  22     1820  1 of  3  33%    9  12 of 22 55%
>  646  2 of 18  11%  26     1824  1 of  3  33%   66
>                             l  i   v   i   n   g
>                             1825  2 of 22   9%   38
>                             1828  1 of 22   5%   47
>                             1831  5 of 22  23%   28
>                             1833  4 of 22  18%   31
>                             1837  1 of 22   5%   49
>                             1867  3 of 23  13%   21
>                             1882  1 of 23   4%   39
>                             1883  1 of 23   4%   50
>                             1884  1 of 23   4%   29
>                             1885  1 of 23   4%   28
>                             1889  1 of 24   4%   20
>                             1891  1 of 24   4%   32
>                             1903  2 of 24   8%   46
>                             1934  1 of 24   4%   45
>                             1946  1 of 24   4%   46
>                             1947  1 of 24   4%   40
>                             1967  1 of 20   5%  102
>                             1971  1 of 20   5%   50
>                             1975  1 of 20   5%   40
>
```

>We have to note that frequency of missing rings on increment
>cores of living trees higher, because on samples of subfossil
>trees we try to find this kind of rings on whole disc.
>Some periods are notable for missing rings: 988-964 BC, 882 BC,
>143 AD, 623-646 AD (especially 640 AD), 814-816-818 AD, 1453 AD
>and beginning of 1800th AD.
>3. Stepan ask what about book by Bailey?
>Best wishes,
>Rashit
>
>

28. 0862839883.txt
##
##########

From: "Tatiana M. Dedkova" <tatm@insec.quorus.e-burg.su>
To: k.briffa@uea.ac.uk
Subject: from Shiyatov
Date: Mon, 5 May 97 09:44:43 +0500

Dear Keith,

After our long silence we would like inform you about our
sucesses, problems and plans.

1. The main success to our mind is the next. We have filled up
the gap (1350-1250 BC) between the absolutely dated 3250-year
Yamal chronology and the nearest floating chronology. It was
happened few weeks ago using samples collected in 1996. Now
there are no obstacles to develop in the nearest future the
7000-7500-year length continuous chronology. Now we are
working with ancient samples: searching the places of missing
and false rings, making more precise datings of individual
chronologies and so on. During this time interval we have some
problems. For example, no more samples were found up to now to
confirm the absence of false ring near 360 BC.

2. This summer we intend to hold an expedition from the end of
June to the middle of August in the southern part of Yamal
peninsula to collect more samples of subfossil wood which have
a great many of rings, are sensitive and cover the intervals
represented by insufficient quantity of samples at present. We
think that during this field season we must collect a necessary
quantity of samples to develop a well represented 7000-7500
years chronology. Next year we intend to collect subfossil
samples of wood from the middle part of Yamal peninsula to
reconstruct the dynamics of polar timberline during the
Holocene in detail using a large number of tree remnants
absolutely dated by dendrochronological method.

2. This year we have a small grant the from the Russsian
Science Foundation for developing the Yamal supra-long
chronology (approximately 4000 USD). But we are not sure
that all this sum we will receive. For example, last year we
have received 37% from the promised sum of money. As cost of
helicopter's rent is increased again this year (about $ 2.000
for one hour), we have the problem how to reach our research
area in the Yamal peninsula. E. Vaganov have the same problem
with organisation of field works over the territory of Taimyr
peninsula. That is why we and E.Vaganov ask you to transfer
each of us 7-8.000 USD until the end of June from the ADVANCE

project, if it is possible. Last summer, when I was in England, you promised to help us with money to organise field works this year.

3. I am finishing a measurements of rings of subfossil wood samples collected last year on the surface and in one lake and some bogs in the Polar Ural Mountains. I found a little more ancient wood (not all samples are dated until now) and can prolong this chronology at least up to one hundred years. This summer I will be in the mountains and try to collect wood from other lakes. I want to develop the Polar Urals chronology for the last 2.000 years.

4. Now we are preparing the paper concerning Yamal project in Russian and we need to cite the paper prepared for Dendrochronologia in English. Could you send to us the last version of this articles by e-mail or by post?

We wish you and your family the best. We wish the same to Phil Jones and his family.

Sincerely yours
Stepan Shiyatov and Rashit Hantemirov

29. 0865941506.txt
##########

From: "Isaak M. Khalatnikov" <khalat@itp.ac.ru>
To: k.briffa@uea.ac.uk
Subject: Keith Briffa
Date: Tue, 10 Jun 97 07:18:26 +0400 (MSD)

Dear Keith,

Thank you for the message of 5 June, 1997.

I am anderstanding your difficulties with transfering money and I think the best way for us if you will bring money to Krasnoyarsk and I give you a receipt.

Rashit will go to Yamal at the end of June and I go to the Polar Urals at the beginnind of July. We can find money temporary at our Institute and other sources for three months to fulfill our fieldworks. Now I am at two weeks holiday with my wife and granddother near Moscow after the meeting of Russian Academy of Sciences where E.Vaganov was elected as the Academician. It is important for dendrochronological srudies at our country and international collaboration.

Sincerely yours Stepan Shiyatov

30. 0866572566.txt
##########

From: "Tatiana M. Dedkova" <tatm@insec.quorus.e-burg.su>
To: k.briffa@uea.ac.uk

Subject: from Shiyatov
Date: Tue, 17 Jun 97 14:36:06 +0500

Dear Keith,

I am not sure you received my message sent the last week from
Moscow. Therefore I decided to repeat it.

Thank you for the message of 5 June,1997.

I am anderstanding your difficulties with transfering money and I
think the best way for us if you will bring money to Krasnoyarsk
and I give you a receipt.

Rashit will go to Yamal at the end of June and I go to the Polar
Urals at the beginning of July. We can find money temporary at our
Institute and other sources for three months to fulfill our fieldworks.
Now I am at two weeks holiday with my wife and grand-daughter near Moscow
after the meeting of Russian Academy of Sciences where E.Vaganov was
elected as the Academician of RAS. It is important for dendrochronological
studies at our country and international collaboration.

Sincerely yours Stepan Shiyatov

31. 0870465098.txt
##########

From: Arnulf Gruebler <gruebler@iiasa.ac.at>
To: alcamo@usf.uni-kassel.de, knut.alfsen@cicero.uio.no, dennis.anderson@ic.ac.uk,
becon@public3.bta.net.cn, g.r.davis@pxg.silon.simis.com, fisher@iiasa.ac.at,
gruebler@iiasa.ac.at, ja_edmonds@pnl.gov, j.fennhann@risoe.dk, stuart@edf.org,
Fewewar@ternet.pl, kennethgregory@msn.com, ehaites@hookup.net,
bhare@ams.greenpeace.org, m.hulme@uea.ac.uk, jefferson@wec.co.uk,
tyjung@ccmail.keei.re.kr, emilio@ppe.ufrj.br, brahman@ktmp.kaist.ac.kr,
vc@vc.udsm.ac.tz, dpid@[169.158.128.138], d.mckay@pxg.silon.simis.com,
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t-morita@nies.go.jp, rmoss@usgcrip.gov, naki@iiasa.ac.at, ynassef@s1.minfor.gov.eg,
wpepper@icfkaiser.com, hm_pitcher@pnl.gov, lkprice@lbl.gov,
crosenzweig@giss.nasa.gov, shs@leland.stanford.edu, shukla@iimahd.ernet.in,
J.F.Skea@sussex.ac.uk, leena@teri.ernet.in, ipcc_sec@gateway.wmo.ch,
rob.swart@rivm.nl, rwatson@worldbank.org, weyant@leland.stanford.edu,
e.worrell@nwsmail.chem.ruu.nl, rogner@iiasa.ac.at
Subject: No Subject
Date: Fri, 01 Aug 1997 15:51:38 +0200

<x-rich>

Dear Participants,

Please find attached the Minutes of the SRES Meeting in Laxenburg, June 14-16. 1997.

Please note that the list of participants will be sent additionally Monday, 4th of
August.

Best regards,

Arnulf

</x-rich>

Attachment Converted: "c:\eudora\attach\finalmin.doc"
<x-rich>

Dr. Arnulf Gruebler

Environmentally Compatible Energy Strategies

International Institute for | Email: gruebler@iiasa.ac.at

Applied Systems Analysis | Phone: +43 2236 807 470

A-2361 Laxenburg, Austria | Fax: +43 2236 71313 </x-rich>

32. 0872202064.txt
##########

From: "Wallace, Helen" <helen.wallace@uk.greenpeace.org>
To: "'t.mcmichael@lshtm.ac.uk'" <t.mcmichael@lshtm.ac.uk>, "'m.hulme@uea.ac.uk'" <m.hulme@uea.ac.uk>
Subject: Letter
Date: Thu, 21 Aug 1997 18:21:04 +0100

Dear Tony and Michael,

The final draft of the letter to the Times is attached, incorperating your changes (I hope I have combined them in a way that you are both happy with).

Brian Hoskins and Adrian Jenkins have both decided that they prefer not to sign the letter, although agreeing with its message. I haven't been able to contact anyone else in the short time available, so I leave it up to you to decide whether you are still both happy to go ahead.

If so, Mike could you please reply to both Tony and myself and let us know, and Tony could you then send it as agreed?

Thank you both very much for your time and trouble.

Best regards,
Helen

Dr Helen Wallace
Senior Scientist
Greenpeace UK

Greenpeace, Canonbury Villas, London, N1 2PN

Tel: +44-171-865-8241
Fax: +44-171-865-8202

FINAL DRAFT

Letters Editor
The Times

Fax: 0171-782-5046

Email: letters@the-times.co.uk

21 June 1997
Dear Sir,

Without wishing to comment on the dispute between BP and Greenpeace (Editorial, 20 August), we would like to remind your readers of the seriousness of the potential threat caused by our continued use of fossil fuels. This damage occurs both locally - as evidenced by the deterioration of air quality in UK cities in the past few weeks - and also globally.

As scientists studying the impacts of climate change, we consider the global threat from greenhouse gases to be serious and to need addressing. Adverse effects on human populations are likely to result from changes in weather patterns, shifts in storm frequencies, rises in sea level and the spread of certain pests and infectious diseases. A wide variety of ecosystems throughout the world will be at increasing risk.

We have little idea whether or not we can manage such adverse effects and therefore the prudent course of action is to limit the cause of the threat.

Major shifts in investment away from fossil fuels will therefore be required to make the necessary reductions in emissions of carbon dioxide to the atmosphere. Large companies like British Petroleum seem to us to be well placed to take an active part in investing in these changes. There is no doubt the need for precautionary, preventative action is urgent.

Yours sincerely,

Prof. A.J. McMichael
London School of Hygiene and Tropical Medicine
University of London
Keppel Street
London
WC1E 7HT

Dr. M. Hulme
Climatic Research Unit
University of East Anglia
Norwich
NR4 7TJ

33. 0876171248.txt
##########

From: Nebojsa Nakicenovic <naki@iiasa.ac.at>
To: alcamo@usf.uni-kassel.de, knut.alfsen@cicero.uio.no, dennis.anderson@ic.ac.uk,

becon@public3.bta.net.cn, Ged.R.Davis@si.simis.com, ja_edmonds@pnl.gov,
j.fenhann@risoe.dk, fisher@iiasa.ac.at, stuart@edf.org, Fewewar@ternet.pl,
kennethgregory@msn.com, gruebler@iiasa.ac.at, ehaites@hookup.net,
bhare@ams.greenpeace.org, m.hulme@uea.ac.uk, jefferson@wec.co.uk,
tyjung@his.keei.re.kr, kram@ecn.nl, emilio@ppe.ufrj.br, brahman@ktmp.kaist.ac.kr,
Rik.Leemans@rivm.nl, vc@vc.udsm.ac.tz, dpid@[169.158.128.138],
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nassef@hotmail.com, wpepper@icfkaiser.com, hm_pitcher@pnl.gov, lkprice@lbl.gov,
rogner@iiasa.ac.at, crosenzweig@giss.nasa.gov, shs@leland.stanford.edu,
leo@iiasa.ac.at, shukla@iimahd.ernet.in, J.F.Skea@sussex.ac.uk, leena@teri.ernet.in,
rob.swart@rivm.nl, Bert.de.Vries@rivm.nl, weyant@leland.stanford.edu,
e.worrell@nwsmail.chem.ruu.nl, dgvictor@iiasa.ac.at
Subject: IPCC - a) Meeting, 17-19. Sept. 97; b) New Bureau
Date: Mon, 06 Oct 1997 16:54:08 +0200
Cc: macdon@uea.ac.uk, jaeger@uea.ac.uk, leo@uea.ac.uk, johnson@uea.ac.uk,
mcdonald@uea.ac.uk

<x-rich>Dear Colleagues,

I would like to take this opportunity to thank all of you who have attended the SRES Lead Authors' meeting (17-19 September 1997) and Rob Swart and his colleagues from RIVM for organizing and hosting the meeting.

We have achieved a lot in the three short days as you will soon also see from the minutes. The minutes of the meeting will be forwarded to you later this week together with the revised SRES work plan that we have discussed during the meeting.

Sorry that it took a while longer this time for the completion of the minutes, but I hope that they will refresh you memory about the outcome of the meeting.

Erik Haites just e-mailed that he returned from the IPCC plenary meeting in Maldives and that the new IPCC Bureau has been appointed. It consists of 30 members: the Chair (Bob Watson), 5 Vice-Chairs (R. Pachuari (India), R. Odingo (Kenya), G. Meira Filho (Brazil), Y. Izrael (Russia), K. Seiki (Japan), and 8 Bureau members for each of the three Working Groups. The Bureau for Working Group III (responsible for SRES) is B. Metz (Netherlands), O. Davidson (Sierra Leone), E. Jochem (Germany), M. Munasinghe (Sri Lanka), E. Calvo (Peru), R. Madruga (Cuba), R.T.M. Sutamihardja (Indonesia), and L. Lorentsen (Norway).

Best regards,

Naki

Nebojsa Nakicenovic

Project Leader

Environmentally Compatible Energy Strategies

 International Institute for | Email: naki@iiasa.ac.at

  Applied Systems Analysis | Phone: +43 2236 807 411

  A-2361 Laxenburg, Austria | Fax: +43 2236 71313
</x-rich>

34. 0876250531.txt
##
##########

From: Angela.LIBERATORE@DG12.cec.be
To: "m.hulme" <m.hulme@uea.ac.uk>, "Martin.OConnor" <Martin.OConnor@c3ed.uvsq.fr>,
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<t.jackson@surrey.ac.uk>, jaeger <jaeger@iiasa.ac.at>, vertic <vertic@gn.apc.org>,
"pier.vellinga" <pier.vellinga@ivm.vu.nl>, pweingart
<pweingart@bird.zif.uni-bielefeld.de>, fy1 <fy1@soas.ac.uk>
Subject: Copy of: climate: Japanese proposal
Date: Tue, 7 Oct 1997 14:55:31 +0200

From: Andrew Kerr <101322.3724@compuserve.com>
Sender: Andrew Kerr <101322.3724@compuserve.com>
To: Peter DEBRINE <Peter.Debrine@wwfus.org>,
    Patricia DESMARES <patricia.desmares@wwf.be>,
    Cherry FARROW <cfarrow@wwfnet.org>, Elizabeth FOLEY <EFOLEY@wwfnet.org>,
    Karen GILL <kgill@wwfnet.org>,
    "Merylyn HEDGER (wwfnet)" <mmhedger@wwfnet.org>,
    Martin HILLER <mhiller@wwfnet.org>, Aldo IACOMELLI <aldo.jacomelli@wwf.it>,
    Lars Georg JENSEN <wwf2@post4.tele.dk>, Steve JUDD <smjudd@sun.ihep.ac.cn>,
    Paolo LOMBARDI <mc2236@mclink.it>, Tony LONG <tlong@wwfnet.org>,
    Sten LUNDBERG <sten.lundberg@wwf.se>, Nick MABEY <nmabey@wwfnet.org>,
    Adam MARKHAM <ADAM.MARKHAM@wwfus.org>,
    Gisele McAULIFFE <gisele.mcauliffe@wwfus.org>,
    Konrad MEYER <konrad.meyer@WWF-CH.wwf-switzerland.inet.ch>,
    Stefan MOIDL <STEFAN_MOIDL@BLACKBOX.AT>, Lee POSTON <LEE.POSTON@wwfus.org>,
    Michael RAE <wwfmrae@ozemail.com.au>,
    Andrea RIES <andrea.ries@WWF-CH.wwf-switzerland.inet.ch>,
    Sible SCHONE <sschone@wwfnet.org>, Stephan SINGER <singer@wwf.de>,
    Marc van den TWEEL <mtweel@wwfnet.org>,
    Marijke UNGER <marijke.unger@wwfus.org>,
    Koichi WATANABE 2 <LDN02771@niftyserve.or.jp>,
    Helge WEINBERG <weinberg@wwf.de>
Cc: Michael Brown <mvbrown@compuserve.com>,
    "Kornelis BLOK (ecofys)" <k.blok@ecofys.nl>,
    "Kornelis BLOK (univ)" <blok@chem.ruu.nl>,
    Yvo de BOER <y.y.deboer@dle.dgm.minvrom.nl>,
    Michael BROWN <100563.1340@compuserve.com>,
    Renate CHRIST <Renate.CHRIST@DG11.cec.be>,
    Kirsty HAMILTON <KIRSTY.HAMILTON@green2.greenpeace.org>,
    Kirsty HAMILTON 2 <khamilton@ams.greenpeace.org>,
    Sabri ZAIN <sabriz@wwfnet.org>, Bill HARE 1 <BHARE@ams.greenpeace.org>,
    Bill HARE 2 <bill.hare@green2.greenpeace.org>,
    Martina KRUEGER <MKRUEGER@ams.greenpeace.org>,

Penehuro LEFALE <lefale@talofa.net>,
Yasuko MATSUMOTO <yasuko.matsumoto@dialb.greenpeace.org>,
Paul METZ <pemetz@worldonline.nl>, Katarina PANJI <KPanji@wwfnet.org>,
"Michel RAQUET (dg11)" <Michel.RAQUET@DG11.cec.be>,
Holger ROENITZ <hroenitz@ams.greenpeace.org>,
Cornelia SIDLER <Cornelia.Sidler@WWF-CH.wwf-switzerland.inet.ch>,
"Ad van WIJK (ecofys)" <a.vanwijk@ecofys.nl>,
"Ad van WIJK (uu)" <vwijk@chem.ruu.nl>
Subject: climate: Japanese proposal
Message-ID: <199710051347_MC2-22DC-A5E4@compuserve.com>
MIME-Version: 1.0
Content-type: text/plain; charset="iso-8859-1"

From: Andrew Kerr, WWF Climate Change Campaign
re.: "scandalous" Japanese climate change proposal
Dear All
I am in Japan for the next week. If you need to, you can contact me by phone at the following numbers:
* Monday - +81 10 760 5022 (Yurika?s mobile)
* Tuesday-Thursday - via WWF Japan. Tel: +81 3 3769 1711; fax: 3326 1717.
* Friday - Tokyo Grand Hotel. Tel: +81 3 3456 2222
Tomorrow the Japanese government is due to formally announce its emission reduction proposal for the industrialised world for the Kyoto climate summit: a maximum of a 5% reduction from 1990 levels for a basket of three greenhouse gases over the period 2008-2012. In a second period up to 2017, industrialised countries would not be obliged to make further reductions.
See below for fuller details and an analysis of the emission reduction implications for various industrialised nations.
The information has been well-leaked. In a talk to the Foreign Correspondents Club of Japan last Friday I described the proposal as a "joke". This was well picked up by the written press here.
Now more details have emerged, the proposal is even weaker than first thought. We are faxing a press release out this afternoon to Japan-based agencies and press with WWF?s reaction (see below). You might like to join in the condemnation of what Japan is proposing and ensure that your country flatly rejects the proposal.
Japan?s Special Ambassador, Toshiaki Tanabe, is on a world tour canvassing for the support of other industrialised nations. After visiting Washington DC he moved on to Hawaii a few days ago for an informal conference including Australia, New Zealand, Canada and the US. Today's Yomiuri Shimbun gave front-page coverage to Australia?s outrage over the stringency of the Japanese proposal!
Tanabe is moving to Europe for talks in the next few days. It is vital that European governments reject the proposal in no uncertain terms and urge Japan to at least support the EU standpoint. (Note: the WWF policies and measures study for Japan identifies how to cut CO2 emissions 8.8% below 1990 levels by 2005 and 14.8% by 2010 - very similar to the EU position).
It would also be very useful if progressive business groups would express their horror at the new economic opportunities which will be foregone if Kyoto is a flop.
Best wishes, Andrew

CLIMATE CHANGE: JAPANESE PROPOSAL FOR KYOTO
To be formally announced by the Japanese government, Monday 6 October 1997
Following information is from the Nikkei Journal, 4 October 1997
A. Content of the proposal
1. First period: the five years from 2008 to 2012
Reduction of 5%; Base year: 1990
1) Gases: CO2, methane, Nitrous oxide
2) Target figures will be flexible according to the future energy situation, changes in industrial structures, etc. But in any case, the total emission should not exceed 1990 level.
3) Each country's target would be based on emission per GDP, emission per

capita, and population growth rate.
If emission per GDP of 1990 (A) is smaller than emission per GDP of all countries (B), the reduction rate should be 5%x(A/B)
If per capita emission of 1990(C) is smaller than per capita emission of all countries (D), the reduction rate should be 5%x(C/D).
If population growth rate from 1990 to 1995 is more than the population growth rate of all other countries, the reduction target of that country should put into consideration their high population growth rate.
Banking, Borrowing, Joint Implementaion and Emission Trading schemes should be introduced with certain conditions.
2. Second period: 2013-2017
Emission should not exceed the level of the first period.
More sophisticated differentiation scheme should be adopted for the second period.
B. Implications of the proposal
Resulting emission reduction targets for the five years 2008-2012, relative to 1990:

	%
Australia	1.8
Czech Republic	5.0
Denmark	2.5
Germany	3.1
Italy	2.5
Japan	2.5
Portugal	1.6
Russia	5.0
Spain	2.2
Switzerland	1.3
UK	3.7
US	2.6

Overall reduction for all industrialised countries: 3.2 %

WWF PRESS RELEASE
JAPAN PROPOSAL FOR KYOTO SUMMIT SCANDALOUS, WWF SAYS
KYOTO, JAPAN, 5 October 1997 ? The World Wide Fund for Nature condemned as "scandalous" the Japanese government?s proposal for reducing greenhouse gases responsible for climate change, Sunday, and called on industrialised nations to flatly reject it.
As full details of the proposal emerged over the weekend, it was revealed that Japan suggests allowing industrialised countries to make extremely marginal reductions in their emissions by as late as 2008-2012. In a second five-year period up to 2017, countries would only be required to ensure their emissions were lower than in 1990.
"The Japanese plan presents a bleak future for the environment, already suffering from the serious impacts of global warming including rising sea-levels, rising sea temperatures, and increased extreme weather patterns ? to name just a few," said Andrew Kerr of WWF?s international Climate Change Campaign. "The plan is laughable when you consider that some European nations already have cut their greenhouse gas emissions by several times more than the amount Japan proposes for emission reductions more than a decade from now."
According to the just released "WWF State of the Climate" report that evaluates the global impacts of climate change, a long list of impacts already are visible today including the destruction of several land and marine ecosystems in Asia and around the world because they cannot keep up with the pace of global warming.
The Japanese proposal also proves the government is back-tracking on a Ministerial Declaration concluded at the 1996 climate summit in Geneva. At that conference, 130 countries, including Japan, agreed that the Kyoto Summit should agree on "legally-binding objectives for emission limitations and significant overall reductions" of greenhouse gases. At the Geneva meeting, the Ministers recognised that climate change science showed human

activities, primarily the burning of coal, oil and gasoline, are already affecting the planet?s climate and the impacts would be wide-ranging and irreversible, posing threats to food supplies, public health and the survival of many species. Nations also agreed that "significant reductions in net greenhouse gas emissions are technically possible and economically feasible".
WWF is calling on industrial nations to cut their carbon dioxide emissions 20 percent below 1990 levels by 2005. A WWF report written by Dr. Haruki Tsuchiya of the Research Institute for Systems Technology, in Tokyo, (to be released by WWF later this month) shows that Japan can reduce its carbon dioxide emissions by nearly nine percent by 2005 and by almost 15 percent by 2010 without damaging the economy. Policies and measures suggested by the WWF report would stimulate the economy and help position Japan as a world leader in the development of new, energy efficient technologies.
"Environmentally, Japan?s plan is worse than no plan whatsoever because it pretends to legitimise an emissions cut that is so low it will produce no tangible result in the effort to combat climate change, " said Kerr. "Even more alarming, it encourages many nations also to cut their emissions by much less than they now plan. This proposal is an embarrassment for Japan because it spells disaster for the Kyoto Summit in December which will be seen as an absolute failure by several European nations and the entire environmental community if such meagre greenhouse gas emission cuts are adopted."
The complicated emission-reduction formulae that Japan proposes would require Japan to make only a 2.5 percent cut in emissions. The United States, responsible for over one-fifth of world releases of carbon dioxide, would only need to make a 2.6 percent reduction. Highlighting the political irrelevance of the Japanese formula, Germany, Denmark and the UK would have to make reductions of 3.1 percent, 2.5 percent and 3.7 percent respectively. But Germany already has achieved around half of its national target of cutting carbon dioxide emissions by 25 percent by 2005. Denmark is aiming for a 20 percent reduction by the same date and the UK?s target is a 20 percent cut by 2010.
Contact: Andrew Kerr or Yurika Ayukawa. Mobile tel: 010-760 5022 and Hearton Hotel, 075-222 1300.

35. 0876437553.txt
##########

From: Joseph Alcamo <alcamo@usf.uni-kassel.de>
To: m.hulme@uea.ac.uk, Rob.Swart@rivm.nl
Subject: Timing, Distribution of the Statement
Date: Thu, 9 Oct 1997 18:52:33 0100
Reply-to: alcamo@usf.uni-kassel.de

Mike, Rob,

Sounds like you guys have been busy doing good things for the cause.

I would like to weigh in on two important questions --

Distribution for Endorsements --
I am very strongly in favor of as wide and rapid a distribution as possible for endorsements.   I think the only thing that counts is numbers. The media is going to say "1000 scientists signed" or "1500 signed". No one is going to check if it is 600 with PhDs versus 2000 without. They will mention the prominent ones, but that is a different story.

Conclusion -- Forget the screening, forget asking them about their last publication (most will ignore you.) Get those

names!

Timing -- I feel strongly that the week of 24 November is too late.
1. We wanted to announce the Statement in the period when there was a sag in related news, but in the week before Kyoto we should expect that we will have to crowd out many other articles about climate.
2. If the Statement comes out just a few days before Kyoto I am afraid that the delegates who we want to influence will not have any time to pay attention to it. We should give them a few weeks to hear about it.
3. If Greenpeace is having an event the week before, we should have it a week before them so that they and other NGOs can further spread the word about the Statement. On the other hand, it wouldn't be so bad to release the Statement in the same week, but on a diffeent day. The media might enjoy hearing the message from two very different directions.

Conclusion -- I suggest the week of 10 November, or the week of 17 November at the latest.

Mike -- I have no organized email list that could begin to compete with the list you can get from the Dutch. But I am still willing to send you what I have, if you wish.

Best wishes,

Joe Alcamo

Prof. Dr. Joseph Alcamo, Director
Center for Environmental Systems Research
University of Kassel
Kurt Wolters Strasse 3
D-34109 Kassel
Germany

Phone: +49 561 804 3898
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36. 0876860264.txt
##########

From: Ben Santer <bsanter@pcmdi.llnl.gov>
To: ritson@slac.stanford.edu, p.jones@uea.ac.uk, covey@cirrus.llnl.gov, tbarnett-ul@ucsd.edu, k.briffa@uea.ac.uk
Subject: (Fwd) Re: Your Holocene paper with Barnett et al 6.3 1996 page 255
Date: Tue, 14 Oct 1997 16:17:44 -0700

Dear Dr. Ritson,

Your email to Phil Jones suggests that there are serious discrepancies between the ECHAM1/LSG power spectrum that I computed for the 1995 Barnett et al. Holocene paper and the ECHAM1/LSG power spectrum that Curt Covey posted on the WWW. This is not the case. At the time that Tim Barnett, Phil Jones, Keith Briffa and I performed the research that is the subject of the Holocene paper, only 600 years of control run data were available from ECHAM1/LSG. This is stated on page 256 of the Holocene paper. The first ca. 200-250 years of this control integration incorporated a large, non-linear climate drift component. This was manifested both in globally-averaged temperature and in other climate variables (see Santer et al., 1995, JGR 100, 10,693-10,725).

Prior to computing the spectrum I removed the overall (i.e., 600-year) least-squares linear trend. There is still considerable low-frequency variance in the residuals, in part (but not wholly) due to the non-linearity of the drift component in the first few centuries. This residual drift explains some portion of the GFDL-versus-ECHAM1 power discrepancies at timescales of >100 years.

The CMIP project received data from MPI well after the completion of the research described in the Barnett et al. paper. At that time, I believe that 1,250 years of ECHAM1/LSG control run data were made available. My understanding is that Curt did not use the first (drift-contaminated) 250 years of the ECHAM1/LSG control run when he computed the ECHAM1 spectrum displayed on the CMIP WWW page. HIs analysis relied on the last 1,000 years of the data.

Not surprisingly, neglecting the first 250 years makes a big difference to the computed spectrum. This is particularly apparent at low frequencies, and also in the variance ratio (between periods of 300 and 2 years) that you compute.

I hope this clarifies things. Should you still have residual concerns about our method of spectral analysis (which is standard and follows Jenkins and Watts), I'd be happy to provide you with a copy of the program that was used to generate the spectra.

Sincerely,

Ben Santer

--- Forwarded mail from Phil Jones <p.jones@uea.ac.uk>

Date: Tue, 14 Oct 1997 10:42:29 +0100
To: ritson@slac.stanford.edu
From: Phil Jones <p.jones@uea.ac.uk>
Subject: Re: Your Holocene paper with Barnett et al 6.3 1996 page 255
Cc: bsanter@rainbow.llnl.gov

David,
I can only suggest you contact Ben Santer who did the analysis for Table 1. Ben is generally very busy - his email is bsanter@rainbow.llnl.gov .

Cheers
Phil

At 01:10 PM 10/13/97 -0700, you wrote:
> Two quick questions about your Fig 1, power spectrum of global mean
>averaged temperature.
>
>1) You don't provide units. I would have expected that
>
>   <DT**2> Integral(G(f).df)
>
>would be the normalization with G(f) being the power spectrum and DT the
>RMS variance. Obviously this is not what you used. What are your units?
>
>2) I checked your ECHAM1 results for the ratio of the power spectrum at
>a period of 300 years to the value at 2 years against the posted CMIP

>LLNL power spectrum on the WWW. Aside from units the ratios of CMIP
>and yours appear to differ by a factor of the order of 6. As you are both
>using the same data base(?) and Curtis Covey of LLNL said he used Ben Santers
>program for power spectra this discrepancy seems a litle strange. Who is
right
>or are you both right?
>
>I would check it myself in a matter of day(s) but getting model data bases
>is a bureacratic nightmare.
>
>Dave
>
Dr Phil Jones
   Climatic Research Unit   Telephone +44 (0) 1603
592090   School of Environmental Sciences   Fax   +44 (0)
1603 507784   University of East Anglia
                                Norwich
   Email   p.jones@uea.ac.uk   NR4 7TJ
                                     UK

---End of forwarded mail from Phil Jones <p.jones@uea.ac.uk>

37. 0878654527.txt
##########

From: Keith Briffa <k.briffa@uea.ac.uk>
To: Tom Wigley <wigley@meeker.ucar.edu>
Subject: Re:
Date: Tue Nov 4 09:42:07 1997

Tom
  please do. Actually I would be interested to know whether Malcolm mentioned these
results to Dave as he was in Krasnoyarsk a few months ago when I showed this stuff.
I will be over in New York in a few weeks to discuss with Ed the possibility of
putting in an NSF/NERC proposal to look at the tree biomass change question.
Also,the initial impetus to redo this stuff was as part of a NERC project we have
running in colllaboration with Ian Woodward - i which we are inputting high
resolution climate data to Dolly to assess the roll of such variability on carbon
uptake
                            cheers
                                     Keith

At 02:54 PM 11/3/97 -0700, you wrote:
>Keith,
>
>Malcolm Hughes was here on Friday to see Dave Schimel about precisely the
>issue you raise. Dave wants to see if he can validate his ecosystem model
>using tree ring data. Sounds as if you already have the data to do this.
>Can I show your e-mail to Dave?
>
>Tom
>
>On Mon, 3 Nov 1997, Keith Briffa wrote:
>
>>
>> Tom

>>   thanks for the info. Actually this is a chance for me to to mention that
>> we have for the last few months at least, been reworking the idea of
>> looking in the Schweingruber network data for evidence of increasing tree
>> growth and hence ,potentially at least, evidence of changing tree(read
>> biomass) uptake of carbon.
>> The results are dramatic - not to say earth shattering because they
>> demonstrate major time-dependent changes - but changes that are consistent
>> in different areas of the network. We have regionalised over 350 site
>> collections , each with ring width and density data , age-banded the data
>> so that we look only at relative growth in similar ages of trees through
>> time and recombined the standardisd curves to produce growth changes in
>> each region. Basically growth is roughly constant (except for relatively
>> small climate variablity forcing) from 1700 to about 1850. It then
>> increases linearly by about up until about 1950 after which time young (up
>> to 50 year old) basal area explodes but older trees remain constant . The
>> implication is a major increase in carbon uptake before the mid 20th
>> century - temperatue no doubt partly to blame but much more likely to be
>> nitrate/Co2 . Equally important though is the levelling off of carbon
>> uptake in the later 20th century. This levelling is coincident with the
>> start of a density decline - we have a paper coming out in Nature
>> documenting the decline . In relative terms (i.e. by comparison with
>> increasing summer temperatures) the decline is represented in the ring
>> width and basal area data as a levelling off in the long-timescale inrease
>> (which you only see when you process the data as we have). The density
>> data do not show the increase over and above what you expect from
>> temperature forcing.
>> I have been agonising for months that these results are not some
>> statistical artifact of the analysis method but we can't see how. For just
>> two species (spruce in the western U.S. Great Basin area and larch in
>> eastern Siberia) we can push the method far enough to get an indication of
>> much longer term growth changes (from about 1400) and the results confirm
>> a late 20th century apparent fertilization! The method requires
>> standardizing (localized mean subtraction and standard deviation division)
>> by species/age band so we reconstruct relative (e.g. per cent change) only .
>> We have experimented with integrating the different signals in basal area
>> and density(after extracting intra ring ring width and density data where
>> available) within a 'flat mass' measure which shows a general late 20th
>> century increase - but whether this incorporates a defensible relative
>> waiting on the different components (and what the relative carbon
>> components are) is debatable. We now need to make some horrible simplistic
>> assumptions about absolute carbon in these (relatively small) components of
>> the total biomass carbon pool and imlpications for terrestrial and total
>> carbon fluxes over the last few hundred years - and beyond! Without these
>> implications we will have difficulty convincing Nature that this work is
>> mega important.
>> There are problems with explaining and interpreting these data but they are
>> by far the best produced for assessing large scale carbon-cycle-relevant
>> vegetation changes - at least as regards well-dated continous trends. I
>> will send you a couple of Figures (a tiny sample of the literally hundreds
>> we have) which illustrate some of this. I would appreciate your reaction.
>> Obviously this stuff is very hush hush till I get a couple of papers
>> written up on this. We are looking at a moisture sensive network of data at
>> the moment to see if any similar results are produced when
>> non-temperature-sensitive data are used. You would expect perhaps a greater
>> effect in such data if Co2 acts on the water use efficiency .
>> At 09:30 AM 11/3/97 -0700, you wrote:
>> >Dear Keith,
>> >
>> >Look at Tremblay et al. GRL 24, 2027-30 (1997) and Dyke et al. Arctic 50,
>> >1-16 (1997). These papers deal with driftwood in the Arctic over the past
>> >9000 years. They note that genera can be distinguished, but not species
>> >Hence, they can't say where the wood comes from, North America versus
>> >Europe. Surely cross-dating could do this? May be worth getting in touch

>> >with Dyke et al.
>> >
>> >Tom
>> >
>> --
>> Dr. Keith Briffa, Climatic Research Unit, University of East Anglia,
>> Norwich, NR4 7TJ, United Kingdom
>> Phone: +44-1603-592090   Fax: +44-1603-507784
>>
>
>
>   **
>   *Tom M.L. Wigley   *
>   *Senior Scientist   *
>   *National Center for Atmospheric Research   *
>   *P.O. Box 3000   *
>   *Boulder, CO 80307-3000   *
>   *USA   *
>   *Phone: 303-497-2690   *
>   *Fax: 303-497-2699   *
>   *E-mail: wigley@ucar.edu   *
>   **
>
>

38. 0879365369.txt
##
##########

From: richard.tol@ivm.vu.nl
To: "m.hulme" <m.hulme@uea.ac.uk>
Subject: re: positives and negatives
Date: Wed, 12 Nov 97 15:09:29 CET
Cc: "timothy.mitchell" <timothy.mitchell@christ-church.oxford.ac.uk>

>It would indeed be interesting to poll all of our invitees using a more
>sophisticated
>questionnaire, but this is not what we are about. For example, if you
>disagree
>with the Statement I would be interested to know the grounds of your
>disagreement.

Mike,

Thanks.

I am always worried about this sort of things. Even if you have 1000
signitures, and appear to have a strong backup, how many of those asked did
not sign?

Also, I happen to be of the opinion that the US proposal for Kyoto is too
ambitious. But of course I am thinking of real policies, not of
negotiation-rhetoric.

Finally, I think that the text conveys the message that it is a scientific
defense for the EU position. There is not any. Even DG11 finds a hard to
defend (at least, in the draft version of their attempt -- I don't think the
final version has appeared yet). Whatever you think about long-term goals,
2010 is pretty soon. At the moment, no country has any experience with
serious emission reduction POLICY. Minus 15% is serious, particularly because
of the effort that will be spend on the monetary union and because the UK and
Germany are too optimistic on their baseline emissions. Rash action instead

careful thinking may well run serious, international climate policy deep into the ground.

Cheers

Richard

39. 0879803996.txt
##########

From: Richard Baker <r.baker@csl.gov.uk>
To: Mike Hulme <m.hulme@uea.ac.uk>
Subject: Re: Finalising PRAPROC! 21st November 1997
Date: Mon, 17 Nov 1997 16:59:56 -0800
Reply-to: r.baker@csl.gov.uk

Mike

> I hope you had my comments from a few weeks ago.

Yes, sorry I've taken so long to reply.

> 1. Overheads: we charge EU projects 20% overheads and these are totally
> acceptable

Yes, you are quite right.

> 2. Budget: I will need to redraft our budget. Please tell me estimated
> start data and for how long the project will run. I envisage our budget
> remaining in the bracket 60-70k ECU

I guess we are looking to April 1998 at the very earliest. I heard that some SMT projects take up to 2 years to get going even after they've been approved due to wrangles over the budget. We have 1 million ECU for 3 years....so some project budgets will have to be cut. Yours looks fine.

> 3. Workplan: I am assuming the basic climate tasks remain pretty much as
> before, namely:
>
> a) 10' gridded monthly climate data for Europe for 1961-90 linked to a weather
> generator that will yield daily data. Key variables: precip., tmin, tmax,
> vapour pressure, sunshine/radiation, wind, wet days, frost days.

Yes, that'll do nicely!

> b) for the world a 0.5deg gridded dataset for 1961-90 at monthly timesteps

Excellent!

> c) what was decided about very high resolution climate surfaces for 1-2
> regions?
> This was in the original proposal but got dropped I think. Adding this back
> to our work plan would involve extra time and hence resources. How
> important are
> these test 1km (?) resolution datasets?

We've had a problem contacting the Spaniards which is a bit of a blow because they gave a nice geospatial feel to the project. The Norwegians are proposing to conduct a high resolution study near Oslo..I think

they'll be interpolating locally collected data. I'll send you their proposal as soon as I can get it into a little better shape but, in principle, I think it would be best if you could, at this stage, just stick to the low resolution work.

> 4. Other EU projects: I suggest you mention my involement in CLIVARA
> which is
> funded through the Environment/CLimate programme of DGXII. This is running
> from
> 1996-1999 and is concerned with mapping and modelling agriculture across the
> EU under 1961-90 conditions and also under future climate change.
> Co-ordinated
> by Environmental Change Unit at University of Oxford. let me know if you want
> more info. on this.

A brief update to your "partner information" would be great.

> Can you confirm for me which forms I need to get completed? Do you
> have copies to send me or should I get them from here.

I'm putting some in the post for you.

> I shall not be able to be with you in York on Friday, but I am here
> all this week if there are questions.

many thanks..there are sure to be some.

All the very best

Richard

40. 0880476729.txt
##########

From: Tom Wigley <wigley@meeker.ucar.edu>
To: jan.goudriaan@staff.tpe.wau.nl, grassl_h@gateway.wmo.ch, Klaus Hasselmann <klaus.hasselmann@dkrz.de>, Jill Jaeger <jaeger@iiasa.ac.at>, rector@iss.nl, oriordan@enviro.uct.ac.za, uctpa84@ucl.ac.uk, john@pik-potsdam.de, mparry@geog.ucl.ac.uk, pier.vellinga@ivm.vu.nlam.de
Subject: Re: ATTENTION. Invitation to influence Kyoto.
Date: Tue, 25 Nov 1997 11:52:09 -0700 (MST)
Reply-to: Tom Wigley <wigley@meeker.ucar.edu>
Cc: Mike Hulme <m.hulme@uea.ac.uk>, t.mitchell@uea.ac.uk

Dear Eleven,

I was very disturbed by your recent letter, and your attempt to get others to endorse it. Not only do I disagree with the content of this letter, but I also believe that you have severely distorted the IPCC "view" when you say that "the latest IPCC assessment makes a convincing economic case for immediate control of emissions." In contrast to the one-sided opinion expressed in your letter, IPCC WGIII SAR and TP3 review the literature and the issues in a balanced way presenting arguments in support of both "immediate control" and the spectrum of more cost-effective options. It is not IPCC's role to make "convincing cases" for any particular policy option; nor does it. However, most IPCC readers would draw the conclusion that the balance of economic evidence favors the emissions trajectories given in the WRE paper. This is contrary to your statement.

This is a complex issue, and your misrepresentation of it does you a

dis-service. To someone like me, who knows the science, it is apparent that you are presenting a personal view, not an informed, balanced scientific assessment. What is unfortunate is that this will not be apparent to the vast majority of scientists you have contacted. In issues like this, scientists have an added responsibility to keep their personal views separate from the science, and to make it clear to others when they diverge from the objectivity they (hopefully) adhere to in their scientific research. I think you have failed to do this.

Your approach of trying to gain scientific credibility for your personal views by asking people to endorse your letter is reprehensible. No scientist who wishes to maintain respect in the community should ever endorse any statement unless they have examined the issue fully themselves. You are asking people to prostitute themselves by doing just this! I fear that some will endorse your letter, in the mistaken belief that you are making a balanced and knowledgeable assessment of the science -- when, in fact, you are presenting a flawed view that neither accords with IPCC nor with the bulk of the scientific and economic literature on the subject.

Let me remind you of the science. The issue you address is one of the timing of emissions reductions below BAU. Note that this is not the same as the timing of action -- and note that your letter categorically addresses the former rather than the latter issue. Emissions reduction timing is epitomized by the differences between the Sxxx and WRExxx pathways towards CO2 concentration stabilization. It has been clearly demonstrated in the literature that the mitigation costs of following an Sxxx pathway are up to five times the cost of following an equivalent WRExxx pathway. It has also been shown that there is likely to be an equal or greater cost differential for non-Annex I countries, and that the economic burden in Annex I countries would fall disproportionately on poorer people.

Furthermore, since there has been no credible analysis of the benefits (averted impacts) side of the equation, it is impossible to assess fully the benefits differential between the Sxxx and WRExxx stabilization profiles. Indeed, uncertainties in predicting the regional details of future climate change that would arise from following these pathways, and the even greater uncertainties that attend any assessment of the impacts of such climate changes, preclude any credible assessment of the relative benefits. As shown in the WRE paper (Nature v. 379, pp. 240-243), the differentials at the global-mean level are so small, at most a few tenths of a degree Celsius and a few cm in sea level rise and declining to minuscule amounts as the pathways approach the SAME target, that it is unlikely that an analysis of future climate data could even distinguish between the pathways. Certainly, given the much larger noise at the regional level, and noting that even the absolute changes in many variables at the regional level remain within the noise out to 2030 or later, the two pathways would certainly be indistinguishable at the regional level until well into the 21st century.

The crux of this issue is developing policies for controlling greenhouse gas emissions where the reductions relative to BAU are neither too much, too soon (which could cause serious economic hardship to those who are most vulnerable, poor people and poor countries) nor too little, too late (which could lead to future impacts that would be bad for future generations of the same groups). Our ability to quantify the economic consequences of "too much, too soon" is far better than our ability to quantify the impacts that might arise from "too little, too late" -- to the extent that we cannot even define what this means! You appear to be putting too much weight on the highly uncertain impacts side of the equation. Worse than this, you have not even explained what the issues are. In my judgment, you are behaving in an irresponsible way that does

you little credit. Furthermore, you have compounded your sin by actually putting a lie into the mouths of innocents ("after carefully examining the question of timing of emissions reductions, we find the arguments against postponement to be more compelling"). People who endorse your letter will NOT have "carefully examined" the issue.

When scientists color the science with their own PERSONAL views or make categorical statements without presenting the evidence for such statements, they have a clear responsibility to state that that is what they are doing. You have failed to do so. Indeed, what you are doing is, in my view, a form of dishonesty more subtle but no less egregious than the statements made by the greenhouse skeptics, Michaels, Singer et al. I find this extremely disturbing.

Tom Wigley

On Tue, 11 Nov 1997, Tim Mitchell wrote:

> Reference: Statement of European Climate Scientists on Actions to Protect
> Global Climate
>
> Dear Colleague,
>
> Attached at the end of this email is a Statement, the purpose of which is
> to bolster or increase governmental and public support for controls of
> emissions of greenhouse gases in European and other industrialised
> countries in the negotiations during the Kyoto Climate Conference in
> December 1997. The Statement was drafted by a number of prominent European
> scientists concerned with the climate issue, 11 of whom are listed after
> the Statement and who are acting as formal sponsors of the Statement.
>
> ***** The 11 formal sponsors are: *****
>
> Jan Goudriaan   Hartmut Grassl Klaus Hasselmann   Jill Jäger
> Hans Opschoor   Tim O'Riordan   Martin Parry   David Pearce
> Hans-Joachim Schellnhuber   Wolfgang Seiler Pier Vellinga
>
> After endorsements from many hundreds of other European climate-related
> scientists are collected (and we hope that you agree to be one of these), the
> Statement will be brought to the attention of key decision-makers (e.g. EU
> Kyoto negotiaters and Environment Ministers) and other opinion-makers in
> Europe (e.g. editorial boards of newspapers) during the week beginning 24th
> November. The UK and other European WWF offices have agreed to assist in
> this activity, although the preparation of the Statement itself has in no
> way been initiated or influenced by WWF or any other body. This is an
> initiative taken by us alone and supported by our 11 Statement sponsors.
>
> WHAT WE ASK FROM YOU
>
> We would very much like you to endorse this Statement. Unfortunately, at
> this time we can no longer take into account any suggested modifications.
> Nevertheless, we hope that it reflects your views closely enough so that
> you can support it. If you agree with the Statement, then:
>
> 1. PLEASE IMMEDIATELY FILL OUT the form below and either reply via email
> (preferably) or telefax (only if necessary) to the indicated fax number.
> Replies received after Wednesday 19th November will not be included. If
> replying by email please do not use the 'reply all' option. If this
> invitation has been forwarded from a colleague, please make sure your reply
> is directed to the originators of this invitation, namely:
> t.mitchell@uea.ac.uk (on behalf of Mike Hulme and Joe Alcamo).
>

> 2. We have identified about 700 climate-related scientists in Europe who
> are receiving this email directly from us. If you feel it is appropriate,
> PLEASE FORWARD THIS MESSAGE to up to three colleagues in your country who
> are working in climate-related fields, who you think may support the
> Statement and whom we have not targeted. To identify colleagues whom we
> have already invited you can examine the email address list we have used
> for your country in the email header (or else appended to the end of this
> email).
>
> We realize that you are very busy, but this action may have a very positive
> influence on public discussions during the critical period leading up to
> Kyoto and during the Conference itself.
>
> With best wishes,
>
> Michael Hulme, Climatic Research Unit, UEA, Norwich
> Joseph Alcamo, University of Kassel, Germany
>
> (On behalf of the other signatories of the Statement)
>
>
> _____
>
> I agree to have my name placed on the list of scientists that endorse the
> Statement of European Climate Scientists on Actions to Protect Global
> Climate.
>
> Full Title and Name
>
> Affiliation   Country
>
> Signature (for fax replies only)
>
> Date
>
> Other comments:
>
> _____
>
> We would prefer you to return this email message to us by email, having
> duly completed the form above. You should be sending the form to:
>
>   **************************
>   **   **
>   ** t.mitchell@uea.ac.uk **
>   **   **
>   **************************
>
> If you would rather not use the email reply function, then please print out
> the form above and fax it (filled in) to:
>
> "Attention: European Climate Statement"
> Climatic Research Unit, University of East Anglia
> Telefax: +44 1603 507784
>
> _____
>
>
> Statement of European Climate Scientists on Actions to Protect Global Climate
> ==
>
> In 1992, the nations of the world took a significant step to protect global
> climate by signing the Framework Convention on Climate Change. This year,

> at the coming Climate Summit in Kyoto*, they have the chance to take
> another important step. It is our belief that the nations of the world
> should agree to substantive action for controlling the growth of greenhouse
> gas emissions.
>
> Our opinion is bolstered by the latest assessment of scientific knowledge
> carried out by the Inter-governmental Panel on Climate Change (IPCC). The
> IPCC reported that "the balance of evidence suggests a discernible human
> influence on global climate". They also gave examples of observed climate
> change up to now, including:
>
> · Global mean surface air temperature has increased by between 0.3 to 0.6
> degrees Celsius since the late 19th century, and recent years have been the
> warmest since 1860.
> · Global sea level has risen between 10 and 25 centimeters over the past
> 100 years.
>
> Based on estimates from computer models, the IPCC also maintained that
> humanity will have a continuing and cumulative effect on climate in the
> future. Future society may find that some climate impacts are positive, as
> in the possible increase in rainfall and crop yield in some dry regions;
> and society may be able to adapt to some impacts, such as by building dikes
> against rising sea level. But many, if not most, climate impacts will
> increase risks to society and nature, and will be irreversible on the human
> time scale. Among the possible changes are further increases in sea level,
> the transformation of forest and other ecosystems, modifications of crop
> yield, and shifts in the geographic range of pests and pathogens. It is
> also possible that infrequent but disastrous events, such as droughts and
> floods, could occur more often in some regions. At particular risk are
> people living on arid or semi-arid land, in low-lying coastal areas and
> islands, in water-limited or flood-prone regions, or in mountainous
> regions. The risk to nature will be significant in the many areas where
> ecosystems cannot quickly adapt to changing climate, or where they are
> already under stress from environmental pollution or other factors.
>
> Because of these risks, we consider it important for nations to set limits
> on the increase of global temperature due to human interference with the
> climate system. We recommend that European and other industrialized nations
> use such long-term climate protection goals as a guide to determining
> short-term emission targets. This approach has been adopted, for example,
> by the European Union and the Alliance of Small Island States.
>
> Some may say that action to control emissions should be postponed because
> of the scientific uncertainties of climate change and its impact. Our view
> is that the risks and irreversibility of many climate impacts require
> "precautionary measures to anticipate, prevent, or minimize the causes of
> climate change", as stated in the Framework Convention on Climate Change.
>
> We also acknowledge that economic arguments have been put forward for
> postponing the control of emissions in Europe and elsewhere. However, after
> carefully examining the question of timing of emission reductions, we find
> the arguments against postponement to be more compelling. First, postponing
> action could shift an unfair burden for more severe reductions of emissions
> onto future generations. Second, it will lead to a greater accumulation of
> greenhouse gases in the atmosphere and hence make it more difficult to
> prevent future climate change when action is finally taken. Third, the
> latest IPCC assessment makes a convincing economic case for immediate
> control of emissions.
>
> Rather than delay, we strongly urge governments in Europe and other
> industrialized countries to agree to control greenhouse emissions as part
> of a Kyoto agreement. Some controls can be achieved by reducing fossil fuel
> use at little or no net cost through accelerated improvements in the

> efficiency of energy systems, the faster introduction of renewable energy
> sources, and the reduction of subsidies for fossil fuel use. Moreover,
> reducing the use of fossil fuels will also reduce local and regional air
> pollution, and their related impacts on human health and ecosystems.
>
> We believe that the European Union (EU) proposal is consistent with long
> term climate protection. This proposal would reduce key greenhouse gas
> emissions by 15% from industrialized countries (so-called Annex I
> countries) by the year 2010 (relative to year 1990). Although stronger
> emission reductions will be needed in the future, we see the EU, or
> similar, goal as a positive first step "to prevent dangerous anthropogenic
> interference with the climate system" and to lessen risks to society and
> nature. Such substantive action is needed now.
>
> *Third Conference of the Parties to the Framework Convention on Climate
> Change, Kyoto, Japan, December, 1997.
>
> Signed:
>
> Jan Goudriaan Hartmut Grassl Klaus Hasselmann
> Jill Jäger Hans Opschoor Tim O'Riordan
> Martin Parry David Pearce Hans-Joachim
Schellnhuber
> Wolfgang Seiler Pier Vellinga
> _____
>
>
> **********
> ** This message originated from the
> **   Climatic Research Unit, University of East Anglia, Norwich, UK.
> ** It was sent out by
> **   Mike Hulme and Tim Mitchell on behalf of the 11 key signatories.
> ** If you object to being on this email address list,
> **   please accept our apologies and inform us;
> **   we will then remove your address from the list.
> ** Please direct any comments to:
> **   t.mitchell@uea.ac.uk
> **********
>
> The list below consists of the people with UK email addresses to whom this
> message has been sent:
>
> all CRU staff
> Adger, N
> Alcock, Graeme
> Allan, P
> Allan, Richard P
> Anderson, Dennis
> Armstrong, Adrian
> Arnell, N W
> Audsley, Eric
> Baker, Richard
> Baran, A J
> Barker, Terry
> Benestad, R E
> Bentham, G
> Bigg, G
> Boucher, Keith R
> Bouma, D
> Bramwell, Penny
> Brooks, Roger
> Brown, Philip RA
> Brugge, Roger

> Bullock, P
> Burkhardt, Ulrike
> Butterfield, Ruth
> Cai, Xiaoming
> Cannell, Melvyn
> Carling, Bob
> Castleford, John
> Chan, Angela H Y
> Clark, Douglas B
> Cluckie, I D
> Collins, Matthew
> Colman, Andrew
> Connolley, William M
> Cornford, Dan
> Costigan, Peter
> Cox, Peter
> Cox, Peter M
> Cui, Zhiqiang
> Culf, Alastair
> Cullum, Dave
> Dale, Ian
> Davis, Gerald R
> Dewhurst, Nicola
> Doherty, Ruth
> Dokerty, T
> Dorling, S
> Downey, Ian
> Downing, Tom
> East, M.
> Easthope, Mark
> Evans, Sam
> Favis-Mortlock, David
> Ferris, Rachel
> Fisher, Helen
> Folland, Chris
> Foot, John S
> Ford, I J
> Fowler, David
> Friend, Andrew
> Fruh, Wolf-Gerrit
> Gallop, Rowland
> Gawith, Megan
> Geer, Alan
> George, Glen
> Gibson, J K
> Giles, Brian
> Goode, Helen Rachel
> Gregory, David
> Gregory, Jonathan
> Gregory, Ken
> Griggs, D
> Grubb, Michael
> Hannah, David M
> Hansen, Jim
> Harrison, Paula
> Hawksworth, Kevin Stuart
> Hedger, Merylyn
> Hewitt, Chris
> Highwood, Eleanor
> Holt, Chris
> Horton, Briony
> Houghton, J
> Houseago, Richenda

> Huntingford, Chris
> Hutchings, Jenny
> Ingram, John
> Ingram, W J
> Jackson, Tim
> Jakob, Christian
> Jeffree, Christopher E
> Jenkins, Geoff
> Johns, Tim
> Johnston, Peter
> Jolliffe, Ian
> Jones, Clive
> Jones, Colin
> Jordan, A
> Joyce, Andrew N
> Keen, Ann
> Kennedy, Hamid
> Kenworthy, Joan M
> Keramitsoglou, Iphigenia
> Kilsby, Chris
> King, Ben P
> King, John
> Kings, John
> Kniveton, Dom
> Lamptey, Benjamin Lantei
> Lary, David J
> Liss, P
> Livermore, Matt
> Lloyd, Colin
> Lynagh, Norman
> Marshall, David
> Marshall, Stewart
> Maskell, Kathy
> Matthews, B
> Mavromatis, Theodoros
> Mayes, Julian
> Mayr, Thomas
> McClatchey, John
> McGregor, Glenn Russell
> McKay, Douglas
> McLaren, Alison
> McMichael, Tony
> Medlyn, Belinda
> Merchant, Chris
> Mitchell, John
> Morison, James
> Morse, Andy
> Mulligan, Mark
> Murphy, James
> Murrill, A
> Nicholls, Robert
> Noguer, Maria
> Orr, John
> Palmer, Tim
> Palutikof, Jean
> Parker, David
> Parkinson, Stuart
> Parry, M
> Pedder, Mike
> Perry, Allen
> Pierce, Clive
> Pilling, C
> Pope, V D

> Pugh, D
> Ravetz, Jerome R
> Read, P L
> Rey, N
> Reynard, Nick
> Reynolds, David
> Roberts, D L
> Rosier, Suzanne
> Rounsevell, Mark
> Rowell, Dave
> Ryan, Sonja
> Sanderson, Michael G
> Scaife, Adam
> Sear, Chris
> Semenov, Mikhail
> Shackley, Simon
> Shao, Jianmin
> Shine, Keith P
> Simpson, I
> Simpson, V
> Sims, Graham
> Skea, Jim
> Slingo, Julia
> Smithson, Peter
> Snow, Keith
> Spellman, Greg
> Standley, Andy
> Stott, Peter
> Subak, S
> Sumner, Graham
> Sutton, R T
> Tait, Andrew
> Taylor, C M
> Tett, Simon
> Thorncroft, Chris
> Thornes, John E
> Thornton, Tim
> Thorpe, Robert
> Thuburn, John
> Todd, Martin
> Tullett, Michael
> Turner, R K
> Unwin, David
> Veal, Anthony
> Viterbo, Pedro
> Walker, Malcolm
> Wang, Kuoying
> Warrilow, David
> Washington, Richard
> Webb, Mark
> Wheeler, Tim
> Wigley, Tom
> Wilby, Rob
> Wild, Richard
> Williamson, P
> Woodward, Stephanie
> Wright, Peter
> Wynne, Brian
> Yamin, Farhana
>
>

****
*Tom M.L. Wigley *
*Senior Scientist *
*National Center for Atmospheric Research *
*P.O. Box 3000 *
*Boulder, CO 80307-3000 *
*USA *
*Phone: 303-497-2690 *
*Fax: 303-497-2699 *
*E-mail: wigley@ucar.edu *
****

41. 0881356379.txt

##########

From: Keith Briffa <k.briffa@uea.ac.uk>
To: Stepan,Eugene
Subject: papers/Holocene/etc.
Date: Fri Dec 5 16:12:59 1997
Cc: fritz.schweingruber@wsl.ch

Dear Stepan and Eugene

I don't know whether you have received your copies of the 1996 issue of Dendrochronologia yet but in case not I have seen the issue and it looks very good. Your two papers on Yamal and Taimyr are there and they both look excellent. Stepan I received receipt for money and the data and photographs your sent . I am very grateful for all . Thankyou. Again I can only say sorry about the problems of money transfer.

The first thing I wish to say is that I know we have been unsuccessful with our recent applications to INTAS and COPERNICUS . However , if you agree , I would like to resubmit a new proposal to INTAS in March to continue the development of the long chronologies. I will write it and stress the success todate and the need to carry on the formal collaboration. What is your joint opinion on this?

The Nature paper on the decline story is now officially accepted and I still hope it may come out before Christmas or at least shortly afterwards. I will be writing a story about increasing basal area on the long term as I showed in Krasnoyarsk and I also intend to submit this to Science or Nature and you will be coauthors on that. We also have done a lot of work on the growing season degree day reconstructions and will write up another joint paper on this soon - but I am trying to get the ringwidth data produced by you two incorporated with the ringwidth data produced from the density measurements - because Stepan told me these may be longer and anyway they will help the quality of the ringwidth data anyway. You may therefore get some messages or questions from Harry (Ian Harris) who works for me asking about the locations. Please be patient and try to help him with this if necessay.

Unfortunately, next year I have several major meetings to attend and present our joint results. Each of these meetings is very important. In March, I must give a major review paper at the PAGES open Science meeting in London. This must cover all dendro - or at least the best of it - which of course includes our own work! Early next year I will ask for the full data sets as they then stand, for Yamal and Taimyr so that I can try restandardising and calibrating against regional mean climate data. If there are not likely to be more data than I already have , can you let me know. Also in March, I will go to Copenhagen for an European Community meeting of project leaders of projects dealing with Arctic climates. This is the sort of meeting I must attend and put on a good show if we hope to get further funding in

1999 onwards. Later in the year there is a big climate conference here at which I must give a review of dendroclimatic research.

By January , we are supposed to exchange data within the project for possible research - but with the proviso that nothing can be written about work using others data without full collaboration and coauthorship. Are you both willing to let your chronologies as published be released to the rest of the group at that time?

Finally, I have got permission (provided I can find the money to pay for it) to have a special issue of The Holocene dedicated to the results (todate) of the ADVANCE-10K project. It will contain a series of major articles describing each piece of the work and I wish these to include large ,detailed papers on the Yamal and Taimyr chronologies , and perhaps a separate paper on the Northern Urals work. I hope to get a firm committment now from Both of you that you will be prepared to do this. I would be happy to help with specific ideas and some analysis and plotting of all Figures and retyping if you wish. The provisional deadline for the production of the papers would be late summer or autumn at the earliest.

I am of course very keen to continue our collaboration and next year as soon as I know more about the details of the European Community Framework 5 plan (which , incidently now contains a heading 'Global Change') I will be putting together another application. I will try my best to include you both as full partners in this if it is at all possible.

After the Krasnoyarsk meeting I heard nothing about the final decision regarding an application for a Transect Office in Krasnoyarsk (at some time someone had asked me would I coauthor an application) . Has this idea died? Also will there be a proceedings book arising out of the meeting ? Do I have to prepare something?

Eugene, I have a revised version of the paper you gave me to read some time ago about the cell growth model work. Do you intend me to send this to Dendrochronologia or just send the annotated manuscript back to you? I have a question about meaning that held me up and needs your answer - can I fax you something?

Finally , - I wish you each and everyone in your laboratories and all your families the very best christmas and new year .

Keith