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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The travel-related carbon dioxide emissions of atmospheric researchers" *by* A. Stohl

Anonymous Referee #1

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I have to say that I had some trouble reviewing this manuscript. In general I agree that scientists should consider their personal carbon or environmental footprint. I also value the effort that has been put into this article. However, I also think that it has been published on the wrong platform. ACPD/ACP is a journal about atmospheric chemistry and physics and – unfortunately – this article is about neither of that. In my opinion, it would have been much more appropriate for a journal that also has an editorial part (like Nature's News & Views) or is more general and community-oriented (like EOS). Other studies [1, 2, 3] which have addressed the same subject have chosen other platforms for publication. But it is not the reviewer's task to decide on the journal's general acceptance policy. This is clearly an editor's decision who has decided to accept the manuscript for ACPD. However, I will still have to judge the article according

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to ACPD/ACP standards.

This manuscript is about a study that tries to estimate the impact of atmospheric scientists to global greenhouse gas emissions as a result of their job-related traveling. The data base is the travel record of NILU's employees between 2005 and 2007. The main result is that business travel causes an additional 3.7 to 5.2 tons of CO_2 per scientist per year. More than 90% of these emissions result from air travel while ground transportation and hotel use account for the rest.

The method that was employed for accounting the travel-related CO_2 emissions of the scientists seems to be valid. The data was directly taken from NILU's travel records, so it should be very accurate and complete. The bigger questions is how representative NILU is for atmospheric scientists or scientists in general. NILU scientists are involved in many international projects. They take part in international conferences and meetings (as do other scientists) and they also take part in campaigns (which many other scientists do not). Fig. 1 gives a very nice summary of the destinations and statistics of NILU staff's air travel. It looks like the vast majority of flights went to places in central Europe – probably to project meetings. The only other major destinations are Svalbard, Tromsøand one destination at the Persian Gulf, probably somewhere in the United Arabian Emirates. So it looks like the major part of the travel-related emissions are caused by typical NILU scientists that have many meetings in Europe and usually go there by air. This is a direct result of the location of NILU which is not representative for other research facilities. A scientist who works in a major city in central Europe with shorter distances and better train connections will have a much smaller travel-related CO_2 footprint. Therefore the question is what we can really learn from the NILU example.

In the conclusions the author estimates that the whole Norwegian scientific community – if they are all like NILU scientists – would cause roughly 0.2% of the total Norwegian CO_2 emissions as a result. To be honest, this does not tell us very much, except that not much would change if all Norwegian scientists suddenly stopped traveling completely.

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However, like other people, scientists have to use electricity, heat their homes, buy food, commute to work and go on vacation. The real question is therefore if scientists are just like average people or if they cause excessive CO_2 emissions as a result of their work. To answer that, the calculated emissions should have been related to the travel-related emissions of other Norwegians for business trips and tourism as well as to emissions that are not travel-related. Unfortunately, none of this was done.

Another interesting question that was not addressed is how the travel footprint of a scientist could be reduced. For example, what was the cost/benefit ratio (in terms of CO_2 emissions) of the meetings that people traveled to? How many trips could have been avoided? Can virtual meetings over the internet be an alternative? Than we should consider that the energy consumption of internet servers and infrastructure is already in the order of 1-2% of the total electrity consumption of industrialized countries like the US and is growing rapidly [4].

My main point of criticism is that the study focuses only on travel-related CO_2 emissions but provides few new results beyond a detailed travel-related CO_2 footprint for NILU. But it was well known before that scientists travel often. It was also well known that especially air travel over short distances produces a lot of CO_2. And the calculation could as well have been done by anyone using a CO_2 calculator on the internet. However, since most scientists live in industrialized countries, they are already bound to produce considerably more CO_2 than the world average anyway. It is still not clear from this study how scientists compare to other groups in the society. Are atmospheric scientists more aware of their carbon footprint? Do they change their behaviour as a result of that? These issue were not considered. It would have required a different approach (e.g. questionnaires etc.) and social science methods.

The conclusions raise questions about the necessity of scientific travel. These questions are not so much scientific but rather political or ethical in nature. As such they cannot be answered scientifically but are important questions nevertheless. Unfortunately, as I have stated before, I do not consider ACP the appropriate platform.

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 7373, 2008.