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## The travel-related carbon dioxide emissions of atmospheric researchers

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**Abstract.** Most atmospheric scientists agree that greenhouse gas emissions have already caused significant changes to the global climate system and that these changes will accelerate in the near future. At the same time, atmospheric scientists who – like other scientists – rely on international collaboration and information exchange travel a lot and, thereby, cause substantial emissions of CO<sub>2</sub>. In this paper, the CO<sub>2</sub> emissions of the employees working at an atmospheric research institute (the Norwegian Institute for Air Research, NILU) caused by all types of business travel (conference visits, workshops, field campaigns, instrument maintainance, etc.) were calculated for the years 2005–2007. It is estimated that more than 90% of the emissions were caused by air travel, 3% by ground travel and 5% by hotel usage. The travel-related annual emissions were between 1.9 and 2.4 t CO<sub>2</sub> per employee or between 3.9 and 5.5 t CO<sub>2</sub> per scientist. For comparison, the total annual per capita CO<sub>2</sub> emissions are 4.5 t worldwide, 1.2 t for India, 3.8 t for China, 5.9 t for Sweden and 19.1 t for Norway. The travel-related CO<sub>2</sub> emissions of a NILU scientist, occurring in 24 days of a year on average, exceed the global average annual per capita emission. Norway's per-capita CO<sub>2</sub> emissions are among the highest in the world, mostly because of the emissions from the oil industry. If the emissions per NILU scientist derived in this paper are taken as representative for the average Norwegian researcher, travel by Norwegian scientists would nevertheless account for a substantial 0.2% of Norway's total CO<sub>2</sub> emissions. Since most of the travel-related emissions are due to air travel, water vapor emissions, ozone production and contrail formation further increase the relative importance of NILU's travel in terms of radiative forcing.

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