1.139 Hemispheric and regional source-receptor relationships for air pollution in East Asia.

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Abstract:

Within the UN Convention of Long-range transported air pollution (LRTAP), the EMEP MSC-W chemical transport model has been used for source-receptor calculations (SR) for several decades (published at the http://emep.int website). SR relationships quantify the contributions of emissions from one country to air pollution and depositions in another. SR relationships are presented annually for Europe and western parts of Asia. Since recently, SR relationships have been calculated on regional scales, down to large cities and agglomerations, also for regions in East Asia.
This presentation will review results obtained with the EMEP MSC-W model within the Task Force on Hemispheric Transport of Air Pollution (organized under the LRTAP convention) and for the EU project PANDA for East Asia. Relevant questions to be addressed are 1) how much of the regional air pollution in East Asia is due to indigenous emission sources and how much is due to long-range transport (e.g. from Europe or North America) and 2) how much of the air pollution in large cities (e.g. the megacities of Beijing and Shanghai in China) is indigenous and how much is imported?
These questions are of high relevance for air quality policy makers, both as a basis for decisions on local and regional emission reduction measures and for the assessment of compliance with air quality standards. On episodical time scales (a few weeks or less) source-receptor relationships depend not only on the agglomeration-specific distribution of emissions but also on meteorological conditions that can vary strongly from day to day. Thus, SR relationships need to be re-assessed regularly (e.g. weekly), as an important supplement to air pollution forecasts, or as reanalyses of specific air pollution episodes in the past.