

List of Topics/Themes for Publications Resulting from HTAP2 and AQMEII3

Emissions

Topic	Potential Contributors	Description
HTAP Emissions	Maenhout et al.	Describes baseline emissions for 2008 and regional inventories
HTAP Scenarios	Klimont et al.	Describes HTAP scenarios CLE and MFR
HTAP Scenarios	TBD	Regional variations on HTAP scenarios

TBD = to be determined

Operational, Diagnostic, and Probabilistic Evaluation

(See Dennis et al., Env. Fluid Dynamics, 2010)

Topic	Potential Contributors	Description	Output Needed
Operational evaluation of baseline individual model results			
O3, CO, NO2 Column, N and S, BC Deposition	TBD	Characterization of individual (and ensemble) global model results and comparison to measurements	Monthly, Daily 3D fields, Deposition
	JRC - ENSEMBLE analysis initiated by Efisio Solazzo; will need contributors from modeling groups to provide feedback on processes Maybe one paper for AQMEII1/2 database to introduce methods. Then analysis for AQMEII3 database and include more diagnostic explanations (maybe split in two parts)	Regional comparison (for EU and NA)	
	HZG (Johannes) - Potential contributions from other groups doing MACC vs. HTAP emission sensitivities Maybe ITU	Comparison of CMAQ simulations with three different emission datasets (i.e., MACC, HTAP, own) Maybe impact of emission uncertainty on air quality uncertainty	

Topic	Potential Contributors	Description	Output Needed
	ITU	Evaluation of ozone and aerosol simulations	Individual model or multi-model. If latter, coordinate with JRC analysis
	ITU	Impacts of local vs. transported ozone on vegetation and crop	Multiple models
	ITU	Impacts of local vs. transported ozone on human health	
O3 Vertical	EMEP Maybe contribution from JRC for AQMEI13 models	Characterization of vertical O3 (e.g., could include satellite data)	O3, NO2 3D values at stations (3D satellite fields)
Aerosol Vertical	TBD	Several options (e.g., satellite, AERONET, coordinate with AEROCOM plans (global))	
	Gabriele Curci	AERONET / Flex AOD	Vertical profiles at AERONET sites
Role of Discrete vs. Diffusive Transport Events in Hemispheric Transport	TBD	Global, alla Mian Chin	
Dust	Mian	Global analysis of dust transport from specific regions	
Tagged Tracers Data Analysis	U.S. EPA	Regional	
World Region Mass Balances		Q: Is it an option to use global results and perturbations to make mass balances?	Q: What would be needed (for NOx, CO, Chemical fluxes)?
Regional-scale Mass Balance, USA	Marina Astitha	USA, EU	O3 sondes
Regional-scale Deposition, Europe	INERIS/CIEMAT et al	Could possibly include 'mass balance' for sulfur and nitrogen components	TSD for precipitation (chemistry)
Chemical Budgets	U.S. EPA Regional Office (Denver); not necessarily AQMEI1		TBD

Topic	Potential Contributors	Description	Output Needed
Boundary Conditions and Impacts on Regional AQ	U.S. EPA	Would bring together/ compare the global models. The U.S. EPA is planning something, but perhaps not comprehensive.	Everything is needed
Role of HTAP in O3 Threshold		alla Reidmiller, can be repeated for U.S. and needs to be done for EU. Q: Scope for other regions?	O3, NO2 Hourly

TBD = to be determined

Scenario, Sensitivity, SR

Topic	Potential Contributors	Description	Output Needed
Ensemble Construction Paper		Ensembles, global, regional, mixed and uncertainty estimation. Q: Should some of this be link to measurement?	AQMEII (whatever is already collected through TSDs)
Comparison of Adjoint and SR	Daven Henze		
Parameterization of SR Towards Scenario Analysis	Oliver Wild	This is (at the moment) for O3, CH4 only	
Parameterization for Impacts	Maybe not a separate paper	Sub-grid parameterizations - Methodology for merging regional and global results for impact analysis	

Impacts

Topic	Potential Contributors	Description	Output Needed
Ozone Vegetation	Lisa, Oliver, Frank	Ozone vegetation (crops) - Towards new impact estimates including carbon feedback	O3 fluxes
Sector Based Analysis of PM Health Impacts	TBD	TBD	TBD
Sector Based Analysis of O3 Health Impacts	TBD	TBD	TBD
Radiative Forcing and More Advanced Climate Metrics	TBD	TBD	TBD
Economic Analysis of Transboundary vs. Local Mitigations (Climate vs. AP Control)	TBD	TBD	TBD

TBD = to be determined

List of Topics/Themes for Publications Resulting from HTAP2 and AQMEII3

(continued)

Past HTAP Papers (from Phase 1)

- A multi-model source-receptor study of the hemispheric transport and deposition of oxidised nitrogen; Sanderson et al., 2007.
- A multi-model assessment of pollution transport to the Arctic; Shindell et al., 2008.
- Multi-model estimates of intercontinental source-receptor relationships for ozone pollution; Fiore et al., 2009.
- The influence of foreign vs. North American emissions on surface ozone in the US; Reidmiller, 2009.
- Intercontinental Impacts of Ozone Pollution on Human Mortality; Anenberg et al., 2009.
- A multi-model analysis of vertical ozone profiles; Jonson et al., 2010.
- Future Changes in Surface Ozone: A Parameterized Approach; Wild et al., 2010.
- The influence of ozone precursor emissions from four world regions on tropospheric composition and radiative climate forcing; Fry et al., 2012.
- Impacts of climate change on surface ozone and intercontinental ozone pollution: A multi-model study; Doherty et al., 2013
- Impacts of intercontinental transport of anthropogenic fine particulate matter on human mortality; Anenberg, 2014.
- A multi-model assessment of the influence of regional anthropogenic emission reductions on aerosol direct radiative forcing and the role of intercontinental transport; Yu et al., 2013.
- Atmospheric transport of ozone between Southern and Eastern Asia, Chakraborty; Beig et al., submitted in 2015.
- Vertical profiles aerosol and radiative forcing: Samset in preparation.

Spin-off Papers (using HTAP results)

- A global assessment of precipitation chemistry and deposition of sulfur, nitrogen, sea salt, base cations, organic acids, acidity and pH, and phosphorus; Vet et al., 2013.
- A science-based use of ensembles of opportunities for assessment and scenario study: a re-analysis of HTAP-1 ensemble; Solazzo and Galmarini, ACPD, 2014.
- List of AQMEII papers (i.e., Phase 1, Phase 2, and Phase 3 papers).