

# **PROGRAM**

30<sup>th</sup> NATO/SPS International Technical Meeting  
on Air Pollution Modelling and its Application

18<sup>th</sup>-22th May 2009

San Francisco

United States of America

**Monday, 18<sup>th</sup>**

08:30–09:00 Registration

09:00–09:40 Opening Session

**09:40-10:20**

**COFFEE**

**TOPIC 1: LOCAL AND URBAN SCALE MODELLING**

**Chairperson: B. Fisher**

**Rapporteur: M. Astitha**

10:20-10:40 1.1 Impact of High Resolution Land-Use data in Meteorology and Air Quality Modeling Systems  
*Limei Ran, Jonathan Pleim, Robert Gilliam*

10:40-11:00 1.2 Using pollutant concentrations modeled with a CTM for health impact assessment and human exposure studies  
*Myrto Valari, Laurent Menut, Edouard Chatignoux*

11:00-10:20 1.3 Application of the atmospheric model RAMS to simulate high resolution urban flow validation with the MUST Case  
*T. G. Reisin, S. Trini Castelli*

11:20-11:40 1.4 Simulation of dense and light gas dispersion in presence of obstacles  
*D. Anfossi, G. Tinarelli, M. Nibart, J. Commanay, F. Ganci, .I Trini Castelli, L. Mortarini*

11:40-12:00 1.5 Estimating Toxic Industrial Chemical (TIC) Source Emissions and the Hand-Off to Dispersion Models  
*S. Hanna, R. Britter, J. Weil, O.R. Hansen, R.I. Sykes, J. Leung, P. Drivas, G. Lee*

12:00-12:20 1.6 NOAA EPA Near-roadway Sound Barrier Atmospheric Tracer Study 2008  
*Kirk L. Clawson, Dennis Finn, Roger G. Carter, Jason D. Rich, Richard M. Eckman, Steven G. Perry, Vlad Isakov, David K. Heist, and Thomas Pierce*

12:20-12:40      1.7 Implementation of efficient two-way mesoscale-microscale coupling using interpolating metamodels  
*G. Tsegas, Ph. Bampas, I. Douros, N. Moussiopoulos*

12:40-13:00      1.8 Horizontal dispersion of contaminants by unresolved submeso motions  
*Danijel Belušić , and Larry Mahrt*

**13:00-14:00**

**Lunch**

**TOPIC 1:                      LOCAL AND URBAN SCALE MODELLING  
(continued)**

**Chairperson:              D. Anfossi**

**Rapporteur:                      M. Valari**

14:00-14:40      **Invited Lecture (Key Topic: Interactions between Air Quality and Climate Change)**  
*Hiram Levy*

14:40-15:00      1.9 Influence of chlorine emissions on ozone levels in the troposphere.  
*Golam Sarwar, Ravi Joseph, Rohit Mathur*

15:00-15:20      1.10 The impact of MM5 and WRF meteorology over complex terrain on CHIMERE model calculations.  
*A. de Meij, A. Gzella, C. Cuvelier, P. Thunis, B. Bessagnet, J.F. Vineusa, L. Menut*

15:20- 15:40      1.11 **Real-time air quality assessment and management: cascading models in a web based implementation**  
*Kurt, Yousef, Tai Fedra, Rashidi, Kim*

**15:40-16:00**

**COFFEE**

**TOPIC 1:                      LOCAL AND URBAN SCALE MODELLING  
(continued)**



## Topic 8                      Special Session on California 2000 Field Study

**Chairperson:    R. Fovell**

**Rapporteur:    R. Cohen**

- 10:20-10:40        8.1    Central California Ozone Study: Synthesis of Results  
*Steven Reynolds, Carol Bohnenkamp, Ajith Kaduwela, Bruce Katayama, Evan Shipp, James Sweet, Saffet Tanrikulu, Stephen Ziman*
- 10:40-11:00        8.2    Meteorological Triggers for Ozone Episodes in Central California  
*Ahmet Palazoglu, Angadh Singh, Scott Beaver*
- 11:00-11:20        8.3    Factors Controlling the Formation of Ozone in the San Francisco Bay Area  
*Su-Tzai Soong, Saffet Tanrikulu.*
- 11:20-11:40        8.4    Effects of VOC and NO<sub>x</sub> Emission Changes on Ozone and Precursor Concentrations in Central California from 1990 to 2004  
*Charles Lloyd Blanchard*
- 11:40-12:00        8.5    **Summertime Topographically Forced Flows in Central California Revealed by a Network of 25 Wind-Profiling Radars and MM5 Simulations**  
*James Mihcael Wilczak, Jian-wen Bao, Sara Michelson, Laura Bianco, Irina Djalalova*
- 12:00-12:20        8.6    Evaluation and Sensitivity investigation of the Central California Air-quality Simulations Using Observations from the 2000 Central California Ozone Study (CCOS)  
*J.-W. Bao, S. A. Michelson, E. D. Grell, G. A. Grell.*
- 12:20-12:40        8.7    High-resolution Meteorological Modeling of California Air Quality Episodes: Model Intercomparison and Validation  
*Robert Fovell, Bruce Jackson, Ajith Kaduwela*
- 12:40-13:00        8.8    A Mass Consistency Method for Air Quality Modeling over Complex Terrain  
*Yongtao Hu, Aika Yano, Mehmet Talat Odman*

**13:00-14:00**

**Lunch**

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14:00-14:40

**Invited Lecture: Interactions between Climate and Air Quality**

*A.M. Fiore, Hiram Levy, Y. Ming, Y. Fang, L.W. Horowitz*

**Topic 8**

**Special Session on California 2000 Field Study (continued)**

**Chairperson: J. Wilczak**

**Rapporteur: D. Yin**

14:40-15:00

**8.9 An Investigation of Aloft Model Performance for Two Episodes during the 2000 Central California Ozone Study**

*Neil J. M. Wheeler, Kenneth J. Craig, and Stephen B. Reid*

15:00-15:20

**8.10 Evaluation of Toxic Air Contaminants in the San Francisco Bay Area: Regional Modeling**

*Philip T. Martien, Saffet Tanrikulu, Yiqin Jia, David Fairley, Cuong Tran, Jeff Matsuoka, Henry Hilken, Chris Emery, Ed Tai, and Greg Yarwood*

15:20-15:40

**8.11 Regional Source Apportionment of Airborne Particulate Matter During the California Regional Particulate Air Quality Study**

*Mike Kleeman, Qi Ying, Jin Lu, Paul Livingstone, Paul Allen, Ajith Kaduwel*

**15:40-16:00**

**COFFEE**

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**Topic 8**

**Special Session on California 2000 Field Study (continued)**



**Chairperson: W. Gong**

**Rapporteur: J. Godowitch**

08:00-08:20            2.3 Nonlinear formation of ozone in power plant plumes in Texas  
*Wei Zhou and Daniel S. Cohan*

08:20-08:40            2.4 Intracontinental O<sub>3</sub> transport in North America  
*Maryam Mirzajani, Farid Amid, Matthew Russell, Amir Hakami\**

08:40-09:00            2.5 SEA-SALT AEROSOL FORECASTS OVER THE  
MEDITERRANEAN  
*P. Kishcha , S. Nickovic , A. Luvchik , Z. Janjic , N. Pérez , M.  
Viana , Y. Mamane , O. Yossef , P. Alpert*

09:00-09:20            2.6 Constraining the potential source strength of various soil dust  
sources contributing to atmospheric PM<sub>10</sub> concentrations in Europe  
*Elise Hendriks, H.A.C. Denier van der Gon, Martijn Schaap*

09:20-09:40            2.7 Meso-to-global modeling of atmospheric transport : numerical  
recipies, tests and applications  
*Eugene Genikhovich, Mikhail Galperin, Mikhail Sofiev, Irene Gracheva, Joana Soares*

09:40-10:00            2.8 Development and Application of the CMAQ Ozone and Particle  
Precursor Tagging Methodologies (OPTM and PPTM)  
*Sharon Douglas, Thomas C. Myers, Jay L. Haney, Yihua Wei*

**10:00-10:40**

**Coffee**

**TOPIC 2:                            REGIONAL AND INTERCONTINENTAL  
MODELING (continued)**

**Chairperson: P. Buitjes**

**Rapporteur: B. Timin**

10:40-11:00            2.9 The WRF-CMAQ Integrated On-line Modeling System:  
Development, Testing, and Initial Applications



14:20-14:40      2.15 Modelling the atmospheric base cation concentration over Europe  
*Martijn Schaap, Elise Hendriks, Astrid Manders, Magdalena Jozwicka, Hugo Denier van der Gon*

14:40-15:00      2.16 Predicting the Regional Air Quality Impacts of Prescribed Burns  
*Mehmet Talat Odman, Yongtao Hu, D. Scott McRae, Scott L. Goodrick, Yongqiang Liu, Gary L. Achtemeier, Adam Gray, Luke P. Naeher*

15:00-15:20

**Coffee**

**TOPIC 2:                      REGIONAL AND INTERCONTINENTAL  
MODELING (continued)**

**Chairperson:    E. Batchvarova**

**Rapporteur:     P. Siljamo**

15:20-15:40      2.17 Atmospheric Boundary Layer Modeling for Combined  
Meteorology and Air Quality Systems  
*Johnathan Pleim, Robert Gilliam, Shaocai Yu*

15:40-16:00      2.18 Emulating complex calculations for regulatory decisions  
*Bernard Fisher*

16:00-16:20      2.19 Use of the CAMx Photochemical Grid Model to Assess the Air  
Quality and AQRV Impacts of Proposed Oil and Gas Production Projects in the Western U.S.  
*Susan Kemball-Cook, Ralph Morris, Bonyoung Koo, Uarporn Nopmongcol, Jeremiah Johnson,  
and Tejas Shah*

16:20-16:40      2.20 Modelling the individual contributions of gaseous emissions  
sources to the deposition of sulphur and nitrogen in the UK  
*Anthony J. Dore, Bill Bealey, Maciej Kryza, Massimo Vieno, Mark A. Sutton*

16:40-17:00      2.21 A Perspective on Development of Effective Ozone  
Control Strategies in Urban Regions of South and Central Texas  
*Zuber M Farooqui, Jhumoor Biswas, Kuruvilla John*

17:00-17:20      2.22 Background Ozone in Regional-Scale Modelling over North  
America  
*A. Chtcherbakov, R. Bloxam, N. Reid, Y. Hall*

18:00-22:00      **Poster Session**

**Wednesday, 20<sup>th</sup>**

**TOPIC 2: REGIONAL AND INTERCONTINENTAL MODELING (continued)**

**Chairperson: E. Batchvarova**

**Rapporteur: P. Siljano**

08:00-08:20      2.23 Influence of biogenic emission estimates on ozone and PM10  
*Andreas Kerschbaumer, Peter J.H. Builtjes*

08:20-08:40      2.24 Air quality models sensitivity to on-road traffic speed representation. Effects on air quality of 80 km h<sup>-1</sup> speed limit in the Barcelona Metropolitan Area  
*Jose M Baldasano, Pedro Jimenez-Guerrero, Eugeni Lopez, Maria Gonçalves, Albert Soret.*

**TOPIC 3: DATA ASSIMILATION AND AIR QUALITY FORECASTING**

**Chairperson: G. Kallos**

**Rapporteur: B. Pun**

08:40-09:00      3.1 Implementation of Real-time Bias-adjusted O3 and PM2.5 Air Quality Forecast and their Performance Evaluations during 2008 over the Continental United States  
*Daiwen Kang, Rohit Mathur, S.T. Rao*

09:00-09:20      3.2 Improving Community Multiscale Air Quality (CMAQ) Model Forecasts Using Chemical Data Assimilation  
*Tianfeng Chai, Rohit Mathur, David Wong, Daiwen Kang, Hsin-mu Lin, Daniel Tong*

09:20-09:40      3.3 Assimilation of satellite observations of aerosol optical depth over Europe in a regional chemistry transport model  
*Renske Timmermans, Martijn Schaap, Arjo Segers, Elise Hendriks*



08:00-08:20      3.7 Application of Potential Vorticity in a comprehensive Air Quality Forecast model to specify aloft Ozone  
*Hsin-mu Lin, Rohit Mathur, Daiwen Kang*

08:20-08:40      3.8 Toward Suitable Assimilation Algorithms for Ozone Forecasts: A Comparison Study  
*Lin Wu, Vivien Mallet, Marc Bocquet, Bruno Sportisse*

## TOPIC 4:                      MODEL ASSESSMENT AND VERIFICATION

**Chairperson:    T. Iversen**

**Rapporteur:     R. Jones**

08:40-09:00      4.1 Cluster Analysis and Classification of Wind Fields for Meteorological and Air Quality Model Validation  
*Scott Beaver, Yiqin Jia, Su-Tzai Soong, Cuong Tran, Saffet Tanrikulu, Douw Steyn, Bruce Ainslie, Ahmet Palazoglu, Angadh Singh*

09:00-09:20      4.2 Measurement of water-soluble organic acids in gaseous and particulate phases at roadside and suburban sites  
*Linfa Bao, Kazuhiko Sakamoto*

09:20-09:40      4.3 On the Use of a Dynamic Evaluation Approach to Assess Multi-year Change in Modeled and Observed Urban Nitrogen Oxide Concentrations  
*J.M. Godowitch, G.A. Pouliot, S. T. Rao*

09:40-10:00      4.4 Evaluation of the air quality forecasting system using satellite and in-situ data  
*Marje Prank, Milla Lanne, Joana Soares, Mikhail Sofiev*

10:00-10:20      4.5 Est modus in rebus, Thoughts on multi-model ensemble modeling  
*S. Galmarini, S. Potemski*

10:20-11:00

**COFFEE**

## TOPIC 4:                      MODEL ASSESSMENT AND VERIFICATION (continued)

**Chairperson: S.-E. Gryning**

**Rapporteur: P. Makar**

11:00-11:20 4.6 Clustering Analysis of Air Quality Model Performance  
*Christopher Fung, Paul Yau, Connie Lam, Philip Yu, Linda Yu*

11:20-11:40 4.7 Source Term Estimation using a Hybrid GA with Synthetic and  
FFT07 Data  
*Luna Marie Rodriguez, Kerrie J Long, Andrew Joesph Annunzio, Sue Ellen Haupt, George  
Spencer Young*

11:40-12:00 4.8 AN APPLICATION OF A LAGRANGIAN PARTICLE MODEL WITH  
CHEMICAL REACTIONS TO POWER PLANT POLLUTION DISPERSION IN COMPLEX  
TERRAIN  
*Stefano Alessandrini , Enrico Ferrero*

12:00-12:40 **Invited Lecture:** Regional air quality modelling: a few  
examples of recent progresses and remaining questions  
*Robert Vautard*

12:40-13:40

**LUNCH**

**TOPIC 4: MODEL ASSESSMENT AND  
VERIFICATION (continued)**

**Chairperson: S. Trini-Castelli**

**Rapporteur: E. Ferrero**

13:40-14:00 4.9 Tropospheric ozone in regional climate-air quality simulations over  
Europe: Future climate and sensitivity analysis  
*E. Katragkou, P. Zanis, I. Tegoulas, D. Melas*

14:00-14:20 4.10 A Methodology for Determining the Impact of Climate Change on  
Ozone Levels in an Urban Area  
*Martin Cope, Sunhee Lee, Bill Physick, Debbie Abbs, Kim E Nguyen, John McGregor*

14:20-14:40      4.11 Integrated Application of Source Apportionment Tools to Support Development and Implementation of Air Quality Regulations to Protect Public Health  
*D. Hammond, T. Watkins, G. Norris*

14:40-15:00      4.12 AN INVESTIGATION OF HIGH SUMMERTIME OZONE LEVELS IN ISTANBUL  
*Selhattin Incecik, Ulas Im, Tayfun Kındap, Orhan Yenigün, Mehmet Talat Odman, Sema Topçu, Mete Tayanç*

15:00-15:20      4.13 The ability of mesoscale meteorological models - driving chemical transport models - to predict the vertical profiles of meteorological parameters COST728 evaluation study  
*Ekaterina Batchvarova*

15:20-15:40      4.14 AQMEII: A NEW INTERNATIONAL INITIATIVE ON AIR QUALITY MODEL EVALUATION  
*S.T. Rao, K.L. Schere, S. Galmarini, D.G. Steyn*

## **Excursion**

**Friday, 22<sup>nd</sup>**

**TOPIC 5:                      AEROSOLS IN THE ATMOSPHERE**

**Chairperson:    A. I. Miranda**

**Rapporteur:     S. Douglas**

08:00-08:20      5.1 Validation of coupled regional climate chemistry simulation in CECILIA EC 6FP Project  
*Tomas Halenka, Peter Huszar, Michal Belda*



11:00-11:20      6.2 Assessing impacts of aerosol processes on equilibrium climate sensitivity  
*Trond Iversen, Alf Kirkevåg, Øyvind Seland, Jens Debernard, Jon Egill Kristjansson, Corinna Hoose*

11:20-11:40      6.4 Modelling the impact of climate change on PM levels in Poland  
*Katarzyna Juda-Rezler, Wojciech Trapp, Magdalena Reizer*

11:40-12:00      6.5 Novel mesh-adaptive LES simulations for multiscale atmospheric flows: application to the urban environment  
*Dimitros Pavlidis, Elsa Aristodemou, G. J. Gorman, J. L. M. A. Gomes, Christopher C. Pain and Helen ApSimon*

12:00-12:40

**LUNCH**

## **TOPIC 7:                      AIR QUALITY AND HUMAN HEALTH**

**Chairperson:      J. Baldasano**

**Rapporteur:      P. Lee**

12:40-13:00      7.1 Model evaluation of Regional Chemistry Transport Models  
*Peter Builtjes*

13:00-13:20      7.2 Estimates of personal exposure to NO<sub>2</sub> using ambient concentrations and activity data  
*Bill Physick, Jennifer Powell, Martin Cope, Kate Boast, Sunhee Lee*

13:20-13:40      7.3 Examining the Impact of Regional-Scale Air Quality Regulations on Human Health Outcomes  
*V.C. Garcia, E.Gego, R.R. Jones, S. Lin, C.I. Pantea, S.T. Rao and Adrienne Wootten*

14:00-14:20      7.4 Impact of the NO<sub>x</sub> SIP Call on Respiratory Hospitalizations in New York State  
*Shao Lin, Rena Jones, Cristian Pantea, Valerie C. Garcia, S.T. Rao, Syni-An Hwang, and Nancy Kim*

14:20-14:40      7.5 Spatial mapping of air quality trends in Europe  
*Bruce Denby, Ingrid Sundvor, Massimo Cassiani*

14:40-15:00      7.6 A high resolution study of Atmospheric dispersion over a coastal urban area with complex terrain

## END OF CONFERENCE

### Posters

#### TOPIC 1: LOCAL AND URBAN SCALE MODELLING

**P 1.1** Comparing Models/Methods for Estimating Multi-pollutant Fine-scale Air Quality Concentrations  
*Karen Wesson, Kirk Baker, Uarporn Nopmongcol, Greg Yarwood, Tanarit Sakulyanontvittaya, Madeleine Strum, James Thurman, Louise Camalier, Darrell Ensley, Brian Timin, Sharon Phillips and Tyler Fox*

**P 1.2** PM10 dispersion in a vicinity of motorways running through areas with different configuration of buildings  
*Jiri Pospisil*

**P 1.3** Exhaust Dispersion Modeling, Wind Tunnel vs CFD a Hybrid Approach  
*Alexy Kolesnikov*

**P 1.4** MM5CALPUFF: Direct Coupling of the PSU/NCAR MM5 Model to the CALPUFF Modeling System  
*Bret Anderson, Roger Brode*

**P 1.5** Air pollution modelling at urban scale: the application of SIRANE to Turin area  
*Valeria Garbero, Luigi Di Cosmo, Pietro Stefano Salizzoni, Lionel Soulhac*

**P 1.6** Radon: a natural tracer for boundary layer studies  
*Stefano Galmarini, Jean Francois Vinuesa*

**P 1.7** Towards an improved characterization of dispersion near major roadways  
*Thomas Pierce, David Heist, Vlad Isakov, Steven Perry, Kirk Clawson, Richard Eckman*

**P 1.8** Evaluation of RAMS boundary-layer simulation over Sofia (Bulgaria)  
*Ekaterina Batchvarova, Enrico Pisoni, Giovanna Finzi*

**P 1.9** Estimation of emission sources for PM2.5 and PM10 by major chemical components in Gangwha of Korea  
*Minin Ahn, Kweon Jung, Min-young Kim, Soomi Eo*

**P 1.10**                    **Dispersion of Emissions from Aircraft in Takeoff: Modelling**  
*Angus Graham, Michael Bennett, Simon Christie*

**P 1.11**                    An updated method for estimating of surface-layer scaling parameters from routine ground-based meteorological data  
*Marko Kaasi, Eva-Stina Kerner*

**P 1.12**                    **Nitrogen Oxides in Polluted Cities: Our Enemy or Friend of Convenience?**  
*Daniel Q. Tong, Nicholas Z Muller, Yongtao Hu, Robert O Mendelsohn*

## **TOPIC 2:                    REGIONAL AND INTERCONTINENTAL MODELING**

**P 2.1**                    Utilizing backward sensitivity analysis for evaluation and improvement of cap-and-trade programs  
*Seyyed Morteza Mesbah, Amir Hakami\*, Stephen Schott*

**P 2.2**                    Annual dynamics and statistical evaluation of an air quality forecasting system (Caliope) with high resolution for Europe  
*Matthias Piot , María Teresa Pay , Oriol Jorba , Pedro Jiminez-Guerrero, Eugeni Lopez, Santiago Gasso, Jose M Baldasano*

**P 2.3**                    **Impact of vegetation along a highway on local air quality: a CFD simulation approach**  
*Stijn Janssen, Bart De Maerschalck, Jean Vankerkom, Clemens Mensink, Aad van den Burg, Paul Fortuin*

**P 2.4**                    Evaluation of Toxic Air Contaminants in the San Francisco Bay Area: Regional Emissions and Ambient Observations  
*Philip T. Martien, David Fairley, Cuong Tran, Amir Fanai, Minh Nguyen, Eric Stevenson, Tirlochan Mangat, Saffet Tanrikulu, Gary Kendall, Henry Hilken, Stephen B. Reid, Dana C. Sullivan, Bryan M. Penfold and Eric Fujita*

**P 2.5**                    Improvement of CMAQ for Agricultural Air Quality Applications: Fine Scale Simulation, Evaluation, and Policy Implications  
*Yang Zhang, Kristen M. Olsen, Xiao-Huan Liu*

**P 2.6**                    **Closing the Peroxy Acetyl (PA) Radical Budget: Observations of Acyl Peroxy Nitrates (PAN, PPN, and MPAN) During BEARPEX 2007**  
*Brian Willard LaFranchi*

**P 2.7**                    Modeling Chemically Reactive Air Toxics with CAMx  
*Chris Emery, Greg Yarwood*

**P 2.8** Dispersion of radioactive debris from nuclear explosions in Novaya Zemlya in 1958. Results of the model simulations  
*Jerzy Bartrnicki, Jørgen Saltbones, Hilde Haakenstad, Bjørn Røsting*

**P 2.9** Experimental determination of the partition coefficient for bifunctional carbonyls in the atmosphere and in smog chamber  
*Ricardo Ortiz Ramirez, Kenji Enya, Kazuhiko Sakamoto*

**P 2.10** Chemical weather forecasting: acidification, ozone and aerosols  
*J. Soares, M. Sofiev, M. Prank, J. Kukkonen*

**P 2.11** Regional high ozone concentrations linked to atmospheric circulations and extreme local emissions  
*Maria Rosa Soler, Raúl Arasa, Maite Merino, Miriam Olid*

**P 2.12** Regional background fine particulate matter  
*Sergey L. Napelenok, Jeffery Arnold, Kristen M. Foley, Daven K. Henze*

### **TOPIC 3: DATA ASSIMILATION AND AIR QUALITY FORECASTING**

**P 3.1** NO<sub>x</sub> emission inversion using OMI observations  
*Farid Amid, Matthew Russell, Amir Hakami, Youngtao Hu, Armistead Russell, Randall Martin, Paul MAkar and Jeff Brook.*

**P 3.2** Daily Air Quality Predictions from the BlueSky Gateway  
*Neil Wheeler, Sean Raffuse, Dana Sullivan, Kenneth Craig, Stephen Reid, Robert Solomon, Tara Strand, Sim Larkin*

**P 3.3** On integrated modelling of air quality using information about anthropogenic, natural and biogenic sources  
*M. Sofiev, P.Siljamo, M.Prank, J.Vira, J.Soares, R. Vankevich, M. Lotjonen, J. Koskinen J. Kukkonen*

**P 3.4** 4D-Var Data Assimilation for Multiscale Air Quality Forecasting over North America  
*Mehmet Talat Odman, Yongtao Hu, Armistead G. Russell, Farid Amid, Amir Hakami*

**P 3.5** Optimal design of air quality and accidental dispersion monitoring networks over France  
*Marc Bocquet, Lin Wu, Rachid Abida, Olivier Saunier*

**P 3.6** Smog forecasting in the Netherlands using assimilation of ground-based and satellite observations  
*Astrid Manders, Suzanne Calabretta-Jongen, Henk Eskes, Martijn Schaap, Renske Timmermans, Arjo Segers, Ferd Sauter, Daan Swart*

**P 3.7** Stochastic models and multivariate geospatial algorithms to forecast daily mean PM10 concentrations  
*Vikas Singh, Claudio Carnevale, Giovanna Finzi, Enrico pisoni, Maria Luisa Volta Mail*

**P 3.8** A new operational modelling approach for atmospheric dispersion in industrial complex area  
*Florian Vendel, Lionel Soulhac, Ludovic Donnat, Olivier Duclaux, Cécile Puel*

**P 3.9** Expanding NOAA-EPA's National Air Quality Forecast Capability Beyond Ozone: Recent Progress  
*Paula M Davidson, Jeff McQueen, Shobha Kondragunta, Rohit Mathur, Roland Draxler, Richard Wayland, Ivanka Stajne*

**P 3.10** Analysis of NO2 concentration distributions over East Asia with a modeling system RAMS-CMAQ  
*Meigen Zhang*

## **TOPIC 4: MODEL ASSESSMENT AND VERIFICATION**

**P 4.1** Improving low-level wind field forecast over coastal regions with a mesoscale boundary layer model forced with local observations and regional operative forecasts, examples of lagrangian trajectories  
*Guillermo Jorge Berri*

**P 4.2** Multi-model versus EPS-based ensemble of atmospheric dispersion predictions: a quantitative assessment  
*S. Galmarini, S. Potempski, F. Bonnardot, A. Jones, L. Robertson*

**P 4.3** Meteorological modelling in various environments with the use of perturbational downscaling  
*Guy Schayes, Eugene Genikhovich*

**P 4.4** Open-source tools for analysing air pollution measurement and model output data  
*David Carlin Carslaw*

**P 4.5** Uncertainty propagation and sensitivity analysis for CFD simulations of dispersion of an accidental release on a nuclear power plant  
*Emmanuel Demael, Bertrand C Carissimo*

**P 4.6** Assessment of CALPUFF for modelling winter-time PM10 in Christchurch NZ  
*Vicky Lucas*

**P 4.7** Weighing model contributions in ensemble dispersion modeling  
*Stefano Galmarini, Slawomir Potempski, Angelo Riccio, Giulio Giunta*

P 4.8 Radioactive pollutant dispersion in the atmosphere from the Angra I nuclear power plant  
*Daniela Buske, Davidson Martins Moreira, Marco Tullio Vilhena, Pedro M. M. Soares*

P 4.9 Satellite based investigations of day-of-week variation in NO<sub>x</sub> emissions  
*Ashley Ray Russell, Lukas Valin, Simon Schmutz, Pascal Tay, Ron Cohen*

P 4.10 Model Performance Analysis of Annual Meteorology for Air Quality Modeling using Mesoscale Model 5 (MM5)  
*Kemal Gurer, Dazhong Yin, Bruce Jackson, Ajith Kaduwela*

P 4.11 EVALUATION OF WRF/CHEM FOR TWO EPISODES WITH HIGH AND MEDIUM PHOTOCHEMICAL ACTIVITY IN NORTHWESTERN CONTINENTAL EUROPE  
*Saskia Buchholz, Klaus Gørgen, Thomas Udelhoven, Günther Heinemann, Laurent Pfister Mail*

P 4.12 Modelling of heavy metals over the United Kingdom  
*Stephen Hallsworth, Tony Dore, David Fowler, Mark Sutton, Eiko Nemitz, Alan McDonald*

P 4.13 Application of spectrum analysis and wavelet filters in an evaluation of photochemical model performance  
*Steven Porter, Kristen Foley, Edith L Gègo, Gilliland Alice, Christian Hogrefe, S. T. Rao*

P 4.14 Influence of Concentration-Response Temporal Metrics on Control Strategy Optimization  
*Daniel S Cohan, Antara Digar, Michelle Bell*

## TOPIC 5: AEROSOLS IN THE ATMOSPHERE

P 5.1 Impact of Saharan dust on precipitation chemistry in Croatia  
*Kornelija Špoler Čanić, Iva Kavčič and Zvezdana Bencetić Klaić*

P 5.2 A multiphase chemistry model to study biophysicochemical processes in clouds  
*Laurent Deguillaume*

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