# 10th International Workshop on Air Quality Forecasting Research

**miércoles, 20 de octubre de 2021 - viernes, 22 de octubre de 2021**

# Scientific Program

This year's program consists of the following 6 sessions presented during 3 days
Detail Agenda (pdf)

# Day 1

## Welcome and Opening Remarks

Keynote Presentation (Overview covering the themes of the workshop) **Gregory Carmichael** (Center for Global and Regional Environmental Research, University of Iowa, USA) *Advancing Atmospheric Composition Predictions and Related Services to Meet the Growing Societal Needs*

## 1. Operational Air Quality Forecasting

Progress and challenges in operational air quality forecasting ---------- **Moderator**: Mike Moran (Environment and Climate Change Canada (ECCC), Canada) **Panel presentations** (invited): **Radenko Pavlovic** (Meteorological Service of Canada, ECCC, Canada) *Overview of the ECCC Operational AQ Forecasting Program: Status, Recent Improvements, and Perspectives* **Ivanka Stajner** (NOAA Environmental Modeling Center, College Park, MD, USA) *Development of NOAA's next generation air quality and aerosol predictions* **Vincent-Henri Peuch** (Copernicus Atmosphere Monitoring Service, ECMWF, Reading, UK) *Progress and challenges with Air Quality forecasting in Europe* **Panel Discussion** **Li Zhang**, Georg Grell, Raffaele Montuoro et al. *Development and Evaluation of the Aerosol Forecast Member in NCEP's Global Ensemble Forecast System (GEFS-Aerosols)* **Patrick Campbell**, Ariel Stein, Barry Baker, et al. *Advancement of the National Air Quality Forecast Capability Using the NOAA Global Forecast System: Model Development and Community Applications * **Krisztina Lázár**, Anita Tóth, Zita Ferenczi, Emese Homolya *Effect of the uncertainty in meteorology on air quality model predictions* **Nikolay Balashov**, Amy Huff, Anne Thompson *Interpretation of Probabilistic Surface Ozone Forecasts: A Case Study for Philadelphia* **Sylvain Ménard**, Jack Chen, Konstantinos Melenaou et al. *Environment and Climate Change Canada's FireWork Forecasts During the 2021 Fire Season and Recent System Upgrades* **Daniel Tong**, Alexander Baklanov, Patrick M. Manseau, Radenko Pavlovic *Improving Collective Capability of Vegetation Fire and Smoke Pollution Forecasts over North America* **George Georgiou**, Theodoros Christoudias, Jonilda Kushta et al. *Real-time air quality forecasting over the Eastern Mediterranean with WRF/Chem*

## 2. Emissions and Inventories

Development and evaluation of emissions inventories used in air quality modeling. ---------- **Moderator**: Nicolas Huneeus (Departamento de Geofísica, Universidad de Chile, Santiago, Chile) **Panel presentations** (invited): **Brian McDonald** (NOAA Chemical Sciences Laboratory, Boulder, CO, USA) *Developing Near Real-time Emissions over the US during the COVID-19 Pandemic* **Andriannah Mbandi** (South Eastern Kenya University, Kenya) *The integrated assessment of air pollution, climate change & sustainable development in Africa* **Mauricio Osses** (Departamento Ingeniería Mecánica, Universidad Técnica Federico Santa María, Chile) *Transport emissions in Chile, current situation and looking ahead for a carbon-neutral future?* **Panel Discussions** **Astrid Manders**, Renske Timmermans, Antoon Visschedijk et al. *Improving black carbon modelling: emissions and model evaluation*

# Day 2

## 3. Data Assimilation

Data assimilation using ground and satellite-base observations. ---------- **Moderator**: Rajesh Kumar (National Center for Atmospheric Research, Boulder, CO, USA) **Panel presentations** (invited): **Arthur Mizzi** (NASA Ames/USRA, NCAR/CISL/DAReS and CU Boulder, CO, USA) *Assimilation of Multiple Satellite Retrievals with Emissions Adjustment to Improve High Resolution Air Quality Forecast Skill and Predictability* **Antje Inness** (Copernicus Atmosphere Monitoring Service, ECMWF, Reading, UK) *Assimilation of atmospheric composition observations in the global Copernicus Atmosphere Monitoring Service (CAMS) system* **Fei Jiang** (International Institute for Earth System Science, Nanjing University, China) *Development of a Regional multi-Air Pollutant Assimilation System (RAPASv1.0) and its application to emission inversion* **Panel Discussion** **Youhua Tang**, Catherine Thomas, Cory Martin et al. *Develop and Evaluate the AIRNow Assimilation in JEDI for RRFS-CMAQ: a Case Study for Summer 2019* **Bo Huang**, Mariusz Pagowski, Samuel Trahan et al. *Near-Real-Time Global Aerosol Data Assimilation and Forecasting at NOAA/OAR/GSL* **Mariusz Pagowski**, Arlindo da Silva, Shih-wei wei et al. *Developing Aerosol Reanalysis at NOAA. Version 1.0: Methodology and Results*

## 4. Urban Air Quality Modeling

Advances and challenges in urban air quality modeling. ---------- **Moderator**: Pablo Saide (AOS and IoES, University of California at Los Angeles, CA, USA) **Panel presentations** (invited): **Sachin Ghude** (Indian Institute of Tropical Meteorology, Pune, India) *Integrated air quality forecasting and decision support system for Delhi* **Jian He** (NOAA CSL/CU CIRES Boulder, USA) *Modeling COVID Perturbation on Urban Emissions over the US* **Lya Lugon von Marttens** (Environ. Modelling, Max Planck institute for Meteorology, Hamburg, Germany) *Using multi-scale modelling to calculate primary and secondary pollutant concentrations in urban areas with a street resolution* **Panel Discussion** **Craig Stroud**, Rabab Mashayekhi, Alain Robichaud et al. *Analysis of surface ozone exceedance events in the Detroit/Windsor area during the Michigan-Ontario Ozone Source Experiment (MOOSE)* **Rodrigo Muñoz-Alpizar**, Craig Stroud, Ayodeji Akingunola et al. *Recent developments of a high resolution operational air quality system at ECCC*

## Poster Sesion

Poster Session Moderator: Megan Melamed (NOAA Chemical Science Laboratory, Boulder, CO, USA) **Congwu Huang**, School of Atmospheric Sciences, Nanjing University *A data assimilation method combined with machine learning and its application to anthropogenic emission adjustment in CUACE model* **Miguel Zavala**, MCE2 *Estimation of uncertainties in model-ready emissions inventories for air quality modeling applications* **Prashant Singh**, Bhupesh Adhikary, Pradeep Sarawade *Carbonaceous aerosol from open burning and its impact on regional weather in South Asia* **Cuauhtemoc Turrent**, Alejandro Dominguez, Agustin Garcia, Victor Almanza, CICESE *Dispersion of atmospheric pollution from surface oil burns in the Gulf of Mexico*

# Day 3

## 5. Using Observations for Model Evaluation

Verification and evaluation air quality modeling and forecasting using observations ---------- **Moderator**: James Crawford (NASA Langley Research Center, Virginia, USA) **Panel presentations** (invited): **Tara Jensen** (National Center for Atmospheric Research, Boulder, CO, USA) *The Building Blocks For Informative Model Evaluation Activities* **Henk Eskes** (Royal Netherlands Meteorological Institute, Netherlands) *Validation of the Copernicus Atmosphere Monitoring Service forecasts and reanalyses* **Agustín García** (Instituto de Ciencias de la Atmosfera y Cambio Climático, UNAM, CDMX, Mexico) *Air Quality Evaluation System: Central México Case Study* **Panel Discussion** **Peewara Makkaroon**, Yunyao Li, Daniel Tong et al. *Development and Evaluation of North America Wildfire Ensemble Forecast: Initial Application to

the 2020 Western United States “Gigafire"* **Mike Moran**, Patrick M. Manseau, Si Jun Peng et al.*Routine Multi-model Performance Analysis over North America for Six Operational Air Quality Forecast Systems*

## 6. Application of Air Quality Modeling and Forecasting

Impacts of Air Quality related to Wildfires, Dust and Sand Storms, Climate Change, Health and Policy ---------- **Moderator**: Alexander Baklanov (WMO Research Department and University of Copenhagen, Denmark) **Panel presentations** (invited): **Xiao-ye Zhang** (Chinese Academy of Meteorological Sciences, Beijing, China) *Sand and dust storm forecasts and the extended R&D; and application of CUACE* **Jorge Pachón** (Facultad de Ingenieria, Universidad de la Salle, Bogotá, Colombia) *Assessment of health impacts in Bogota using an air quality modeling platform* **Ravan Ahmanov** (CU Boulder CIRES and NOAA/GSL, USA) *Operational forecasting of smoke, visibility and smoke-weather interactions by the high-resolution RAP/HRRR-Smoke models* **Michaela Hegglin** (Department of Meteorology, University of Reading, UK) *Effect of Climate Change on Air Pollution* **Luis Gerardo Ruíz-Suárez** (Coordinación General de Contaminación y Salud Ambiental, Instituto Nacional Ecología y Cambio Climático, Mexico) *The Challenges of the Application of Air Quality Modeling and Forecasting in Decision-Making in Mexico* **Panel Discussion** **José Pablo Sibaja Brenes**, Rosa Alfaro Solís, María Martínez Cruz *Use of the AERMOD code to estimate SO2 dispersion from emissions of Turrialba Volcano, Costa Rica* Ariel Stein, Barry Baker, **Youngsun Jung** et al. *Operational Air Quality Model Version 6: New Updates and Performance Evaluation* **Xiaoyang Chen**, Yang Zhang, Daniel Tong et al. *Comparative Evaluation of Gas-Phase Chemistry and Aerosol Representations for the U.S. Next-Generation National Air Quality Forecast Capability using GFSv15-CMAQv5.3.1*

## Concluding Remarks

Summarize highlights from the presentations and discussions: **Johannes Flemming** (Copernicus Atmosphere Monitoring Service, ECMWF, Reading, UK) **Guy Brasseur** (Environmental Modelling, Max Planck institute for Meteorology, Hamburg, Germany)