

# Atmospheric Composition Observation System Simulation Experiments (OSSE) Workshop

ECMWF, Reading, United-Kingdom, 22-24 October 2012

*Supported by: CEOS Atmospheric Composition Constellation, NASA, MACC-II and ECMWF*

*Organizers: J. Al-Saadi (NASA, USA), D. Edwards (NCAR, USA), Y. Kasai (NICT, Japan), V.-H. Peuch (ECMWF, UK) and C. H. Song (GIST, Korea)*

## Draft Programme (8 October, 2012)

### Day 1: Monday, October 22

#### 13:30 Welcome and Introduction

- Welcome (*Prof. E. Källén, Head of Research, ECMWF*)
- Welcome: The MACC-II perspective (*V.-H. Peuch, ECMWF*)
- Welcome: The CEOS perspective (*J. Al-Saadi, NASA*)

#### 14:00 The Theoretical Context

- Review theoretical basis of OSSEs (*A. da Silva, NASA GSFC*)
- What is the experience of the meteorological NWP community (*L. Isaksen, ECMWF*)
- How are chemical and meteorological OSSEs different, and might they be of greater value for composition? (*H. Elbern, University of Köln*)
- What makes a good OSSE? (*W. Lahoz, NILU, presented by J.-L. Attié, University of Toulouse*)

**Four 30 min. blocks (20 min. presentation and 10 min. discussion)**

**16:00 Coffee**

**16:30 Experience in chemical OSSEs: Experiments Performed To-date**

- POGQA/MAGEAQ CO, O3 (*J.-L Attié, University of Toulouse*)
- Korean experience (*C. H. Song, GIST*)
- Japanese experience (*Y. Kasai, NICT*)
- GEO-CAPE CO (*A. Arellano, U. Arizona/NCAR*)

**15 min. presentations**

**17:30 End of Day 1**

**Day 2: Tuesday, October 23**

**9:00 Experience in chemical OSSEs: Experiments Performed To-date (continued)**

- GEO-CAPE O3 (*P. Zoogman, Harvard*)
- GEO-CAPE O3 and precursors (*K. Bowman, JPL*)
- Chinese experience (*Z. Wang, Chinese Academy of Sciences*)
- TNO aerosols (*A. Segers, TNO*)
- ISOTROP (*H. Eskes, KNMI*)

**15 min. presentations**

**10:15 Coffee**

## 10:45 Chemical OSSE Infrastructure (*Break into Parallel Sessions*)

### 1. Developing the Nature and Control Runs

*Chairs: C. Song (GIST) and K. Bowman (JPL)*

- Choice of model(s)/hindcast(s)/analyses
- Validating against field campaigns
- Twins scenarios, independence from Nature Run, and acceptable degree of difference
- Perturbed parameters: initial conditions, meteorology, emissions...
- Timespan: OSSEs for climate monitoring?

### 2. Measurement Simulators

*Chairs: D. Edwards (NCAR) and Y. Kasai (NICT)*

- Forward model development
- Scene-dependent measurement simulations
- Viewing geometry issues
- Including clouds
- links with efforts at space agencies or large space companies to develop realistic instrument models (ESA, NASA, CNES...)

### 3. Assimilation approaches

*Chairs: R. Engelen (ECMWF) and TBD*

- Sequential/ensembles/variational
- Progress toward radiance assimilation

**12:45 Lunch**

**13:30 Chemical OSSE Infrastructure (continued)**

**15:30 Coffee**

**16:00 Chemical OSSE Infrastructure (continued)**

**17:30 End of Day 2**

## Day 3: Wednesday, October 24

### 9:00 Chemical OSSE Infrastructure Reports & Discussion (*Plenary Session*)

- Report back from Infrastructure Groups (*Session chairs*)
- Initial recommendations
- General discussion

### 10:00 Coffee

### 10:30 Chemical OSSE Infrastructure Reports & Discussion (continued)

*Three 30 min. + 30 min. discussion blocks*

### 12:45 Lunch

### 13:30 Experimental Design

Chair: *V.-H. Peuch (ECMWF)*

- Case 1: Compare GEO AQ instruments
- Case 2: Impact of CEOS constellation including LEOs
- Shared resources: Tools and people

### 15:30 Coffee

### 16:00 Wrap-up

- Summarize workshop recommendations (workshop organisers)
- Next Steps, link with CEOS (*J. Al-Saadi, NASA*)

### 17:00 End of the workshop