

**The Fifth WMO Workshop on the Impact of
Various Observing Systems on NWP
Sedona, AZ, United States
22 to 25 May 2012**

1st Announcement

The WMO and THORPEX co-sponsored fifth Workshop on the Impact of Various Observing Systems on Numerical Weather Prediction will be organised by the Expert Team on the Evolution of the Global Observing System in Sedona, Arizona, United States, from 22 to 25 May 2012. Participants are expected to come from all the major NWP centres which are active in the area of impact studies. The workshop will be conducted in English. As for the first four workshops it is planned to produce a workshop report to be published as a WMO Technical Report that will include the papers submitted by the participants.

The previous four workshops in this series took place in Geneva (April 1997), Toulouse (March 2000), Alpbach (March 2004) and Geneva (May 2008). Results from Observing System Experiments (OSEs), both with global and regional aspects were presented and conclusions were drawn concerning the contributions of the various components of the observing system to the large scale forecast skill at short and medium range (Workshop Proceedings were published as WMO World Weather Watch Technical Reports TD No. 868, 1034, 1228 and 1450).

Since then, some significant changes and developments have affected the global observing system and more efforts have been devoted to meso-scale observing and assimilation systems. There has also been a trend toward using techniques other than OSEs to document data impact, such as adjoint-based sensitivity to observations or ensemble-based sensitivity. Field experiments have been carried out, in particular through the THORPEX project, and the use of targeted data has been assessed.

You may wish to contribute to the workshop on any of these general topics, or address one or several of the specific studies and science questions listed in the attachment. Those who are interested in contributing to this workshop are asked to submit a short abstract and request an invitation from the organisers by e-mail as detailed below.

At the Fifth workshop, the results will be reviewed in plenary discussion sessions and a consensus view will be formed. Conclusions to help guide the design of an optimised Global Observing System for NWP will be drawn.

The workshop will be organised in the following sessions:

- Session 1: Global forecast impact studies
- Session 2: Regional forecast impact studies
- Session 3: Specific scientific areas (including network design)
- Session 4: Workshop discussions and conclusions.

To receive an invitation to participate, please submit abstract and title to the organising committee via email to Karen.Clarke@ecmwf.int, by 15 November 2011. The full papers for the workshop report will be required at the time of the meeting and should be sent in electronic form. There will be the possibility of financial support for a limited number of participants.

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The Organizing Committee, chaired by Erik Andersson (ECMWF), comprises Carla Cardinali (ECMWF), John Eyre (Met Office, UK), Ron Gelaro (NOAA/GMAO, the US), Miroslav Ondráš (WMO), Florence Rabier (Meteo-France), Lars Peter Riishøjgaard (NOAA/JCSDA, the US) and Yoshiaki Sato (JMA, Japan).

The local organizing committee is chaired by Lars Peter Riishøjgaard (NOAA/JCSDA, the US). Information on local arrangements (the venue, access, local transportation, accommodation, climate, etc.) will be posted on: <http://www.wmo.int/pages/prog/www/BAS/CBS-meetings.html> in due time. The local organisers will coordinate hotel arrangements for the attendees.

Proposed topics for NWP impact studies relevant to the evolution of global observing systems

Short name: Full name	Science question
Surface-based	
S1MarinePs: Surface pressure over ocean	What density of surface pressure observations over ocean is needed to complement high-density surface wind observations from satellites? Suggestions: (a) network density reduction OSE in N.Atlantic, (b) southern oceans OSSE.
S2Strat: In situ observations of the stratosphere	What network of in situ observations is needed in the stratosphere to complement current satellite observations (including radio occultation)? What about the tropics?
S3AMDAR: Coverage of AMDAR	What is the impact of current AMDAR observations? What are the priorities for expansion of the network?
S4ASAP: Coverage of ASAP	What is the impact of current coverage of profiles from the Automated Shipboard Aerological Programme (ASAP)? How might coverage be optimised for a given level of resources?
S5Radar: Radar observations	What are the impacts of current radar observations, including radial winds and reflectivities?
Space-based	
S6RO: Radio occultation saturation	At what level, in terms of profiles per day, does the impact of radio occultation observations start to saturate?
S7SatLand: Satellite radiances over land	What is the impact of new developments in the assimilation of radiance data over land?
S8Sounders: Impact of multiple satellite sounders	What benefits are found when data from more than one passive sounder are available from satellite in complementary orbits, e.g. multiple AMSU-As, AIRS + IASI ?
S9AMVs: AMVs	What impacts are currently found from AMVs?
General	
S10Thinning: Data density and data thinning	What impacts/benefits are found from data density/thinning strategies from various observation types?
S11PBL: Observations of the PBL for regional / high-resolution NWP	What should be the focus of improvements for observations of the PBL in support of regional/high-resolution NWP? Which variables and what space-time resolution?
S12UA: EUCOS-like upper air OSEs	Can EUCOS-like upper air studies be performed for other regions?
S13AdjEns: Regional application and adjoint and ensemble methods	What insights can be gained from more tailored use of adjoint- and ensemble-based measures of observation impact, for example, in the tropics or at the meso-scale where metrics other than global energy may be appropriate?
S14ExtRange: Impact of observations on extended range forecasts	Which observations are particularly important for the 7-14 day forecast range?
S15Targeting: Targeted observations	What do experiments on targeted observations tell us about observing system design?
S16aAMMA, S16bIPY: AMMA and IPY legacy	What impacts/benefits could be expected by sustained components of the AMMA and IPY special observing systems?