



Recent advances, current activities and challenges in Nowcasting: summary of the 2nd European Nowcasting Conference

Kathrin Wapler

Who was participating in the ENC 2017?

- >100 participants ...
 - ... from 24 countries.
 - ... from National Meteorological Services, from universities/research institutes and from private companies.
 - ...from operational, research and forecast user communities.



Conference programme

Wednesday, 3 May 2017

OBSERVATIONS AS BASIS FOR NOWCASTING

Thursday, 4 May 2017

NOWCASTING TECHNICS AND SYSTEMS

APPLICATION, USER ASPECTS AND VERIFICATION

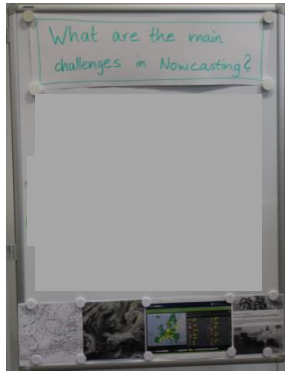
Friday, 5 May 2017

COMBINATION OF NWP AND NOWCASTING

Conference programme

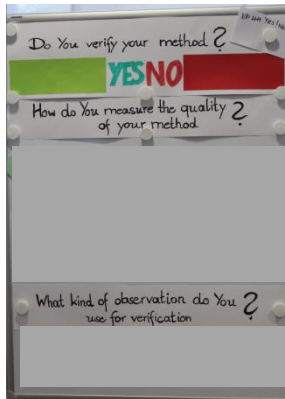
- Conference announcement not focussed on a specific meteorological phenomenon.
 - **Large number of contributions addressed the nowcasting of precipitation, deep convection and associated phenomena.**
 - Some contributions on other meteorological conditions, including winter weather, solar surface irradiance and cloudiness.
- Thunderstorms are still one of the major themes in nowcasting.

challenges



What are the main challenges in Nowcasting?

verification



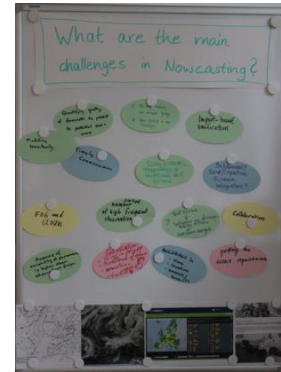
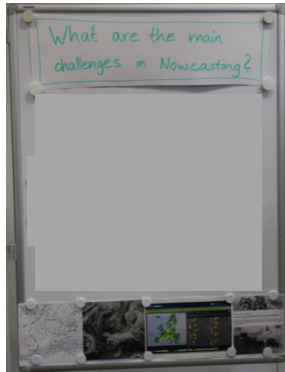
Do you verify your method?

How do you measure the quality of your method?

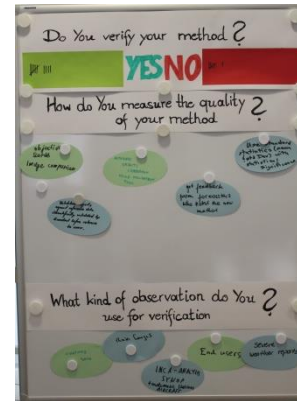
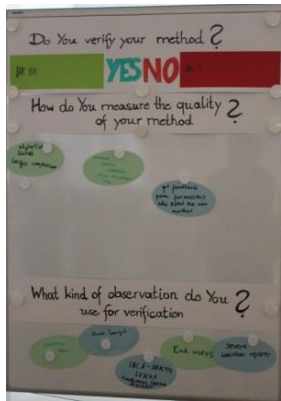
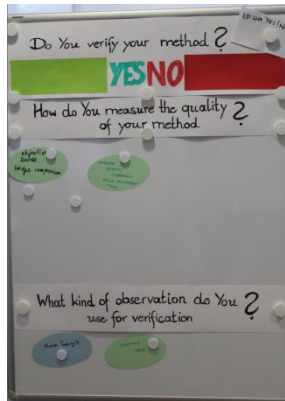
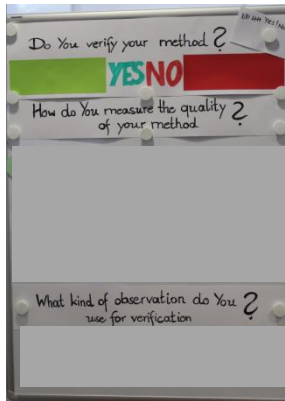
What kind of observation do you use for verification?

Life-cycle of interactive posters during the ENC 2017

challenges



verification



Wednesday morning

Thursday morning

Friday morning

End of the ENC 2017

time →



Main challenges as seen by the participants (gathered at the interactive poster boards):

- For aviation: icing; turbulence of clear sky; mountains waves; visibility
- Fog and clouds



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- An only forecasting+nowcasting system integrating all available data/observations between 0 and +3day would make things much easier
- too many methods not enough synergy
- Collaboration



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- user trust in our warnings
- Quantifying quality of forecasts to present to potential end-users
- Socio-economic translation of traditional skill scores
- Skill score → influence on decision making process → cost/lives savings ?



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- Skill score → influence on decision making process → cost/lives savings ?
- Timely communication



Verification (gathered at the interactive poster boards)

- Data commonly used for verification include:
 - lightning localisation networks,
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- Crowdsourcing data could also be often involved in verification of nowcast in the future.



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- Validation methods include:
 - various objective scores
 - image comparison and
 - feedback from forecasters / end-users



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- Research efforts also include the combination of observation-based nowcasting and numerical weather prediction models with the aim of providing seamless predictions of all relevant parameters, especially high impact weather events.
- Additionally, more and more systems will provide automated guidance to the forecasters to support decision making in active warning operations.
- A good knowledge of the requirements from different end-user groups is crucial for improving nowcasting and forecasting systems to support the mitigation of the impact of severe weather situations. This also requires a timely and effective forecast communication.



Conference Report 2nd European Nowcasting Conference

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(Manuscript received July 12, 2017; in revised form September 13, 2017; accepted October 6, 2017)

Abstract

The 2nd European Nowcasting Conference took place in Offenbach, Germany, on 3–5 May 2017. The conference was structured into four thematic sessions i) observations as basis for nowcasting, ii) nowcasting techniques and systems, iii) application, user aspects and verification, and iv) combination of numerical weather prediction and nowcasting. This report summarises the scientific contributions presented and the open scientific questions discussed at the conference.

Keywords: nowcasting, observations, ensemble, severe weather, weather warnings, user aspects

1 Introduction

Nowcasting applications are developed to provide the best possible forecasts for the coming minutes up to the next few hours. These are typically based on spatially and temporally highly resolved observations, with a rapid update cycle. Nowcasting applications are particularly valuable for small-scale features and in convectively unstable situations that are often associated with severe weather hazards that pose a significant threat to life, property and economy. Therefore the provision of accurate and timely nowcast information, i.e. warnings provided by the national meteorological services, is essential for the general public as well as special users. Very short-term forecasts from a few minutes to a few hours are needed for a variety of applications, including aviation weather forecasts, water and power management, construction industry and leisure industry. Thus, accurate nowcasting might contribute to a reduction of fatalities and injuries, a reduction of private, public, and industrial, property damage, and to improved efficiency and savings for industry, transportation and agriculture (WMO, 2017; presentation by DE CONING).

The second European Nowcasting Conference was organised in the framework of EUMETNET (European Meteorological Network) which includes the project ASIST (Application oriented analysis and very short range forecast environment) dedicated to nowcasting (presentations by MEIROLD-MAUTNER et al., SIMON et al.; further information also available

at: <http://eumetnet.eu/activities/forecasting-programme/current-activities-fc/asist/>).

The goal of the conference was to promote recent advances in the theory and practice of nowcasting in Europe and other parts of the world. The conference welcomed participants from operational, research and forecast user communities to discuss methods for improving the quality of nowcasting in Europe. The conference was attended by about 100 participants from 21 countries, representing national meteorological services, universities/research institutes and the commercial sector. The scientific program featured 52 contributed presentations and offered room for discussions. The conference was organized into the following four topical sessions:

- Observations as basis for nowcasting
- Nowcasting techniques and systems
- Application, user aspects and verification
- Combination of numerical weather prediction and nowcasting

A large number of contributions addressed the nowcasting of precipitation, deep convection and associated phenomena. Some contributions were concerned with other meteorological conditions, including winter weather (presentations by KALTENBOECK et al., KANN et al.), solar surface irradiance (presentation by MUELLER et al.), and cloudiness (presentations by GARCÍA PERADA, RÍPODAS and CALBERT). The detailed program of the conference, all abstracts and PDFs of most of the presentations are available online at the following webpage: <http://eumetnet.eu/enc-2017/>.

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