Preface

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Biographical notes: Ekaterina Batchvarova is currently a Professor in Meteorology at NIMH and Scientific Secretary of BAS in two fields: 'Climate Change, Risks and Natural Disasters' and 'Astronomy, Space Research and Technology'. She holds an MSc in Meteorology from Sofia University, and PhD and DSc degrees for her contributions in Boundary-Layer Meteorology. Her studies are devoted to parametrisations and observations of boundary-layer height, wind profile, exchange between surface and atmosphere, dispersion and meteorology in urban, coastal and marine areas. She is a member of the Committees of the HARMO Conference and President of the European Association for the Science of Air Pollution (EURASAP).

The series of International Conferences on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes (HARMO Conference) has contributed for more than 33 years to the collaboration and dialogue between researchers and policy makers to ensure air quality management for reduced impact on human health and the environment.

During these three decades, the HARMO Conference has shown the way from assessments based on single point meteorological information and the Pasquill-Turner classification to the routine, online run of mesoscale combined meteorological and atmospheric chemistry models with resolution less than 1 km and the use of CFD models for the local scale. Now, all environmental impact studies and safety analysis reports worldwide include modelling. Still, there is way to go in understanding and using modelling systems of the physical and chemical processes in the atmosphere and its interaction with the various types of surface on the Earth in all temporal and space scales. This knowledge is then transferred through models in tools for air quality regulation and forecasts, emergency response, climate change adaptation, and assessment of impact on human health and environment. When used for the right purpose, evaluated against measurements and appropriately presented to policy makers, these models and tools help to meet the new societal challenges.

The need to perform fundamental research in order to develop further and create new models and applications is often not understood even by research funding institutions in many countries. The HARMO Conference contributes to share not only the achievements in the fields of physical parametrisations, numerical methods, model evaluation protocols, and use of observation data of all types, but also the harmonisation in the use of models and tools in Europe and worldwide.

HARMO 16 was hosted by The National Institute of Meteorology and Hydrology at the Bulgarian Academy of Sciences at the Black Sea coast of Bulgaria, close to the city of Varna, 8–11 September 2014. The local organisation was supported by the Ministry of

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Environment and Waters, The Executive Environmental Agency of Bulgaria and the Ministry of Education and Science. HARMO 16 accommodated more than 150 scientists from 30 countries, including 14 scientists from Bulgaria. This gave unique opportunity to young Bulgarian researchers to present their results and establish networks. The European Association for the Science of Air Pollution (EURASAP), which has supported the HARMO Conference for many years gave three awards for excellent poster contributions by young scientists.

On behalf on the local Organising Committee of HARMO 16, I would like to thank the Steering and Scientific Committees for their dedication to the organisation of HARMO 16 by reviewing the abstracts and then the scientific papers submitted to *IJEP*. Dr. Helge Olesen has provided significant help, particularly in relation to his experience of past conferences and workshops. I also would like to thank to Dr. Elena Hristova and Ms. Hristina Kirova, who performed a great part of the work of collecting abstracts and preparing the electronic proceedings with extended abstracts.

In HARMO 16, we received about 190 different contributions that were accommodated in oral and poster sessions. We had papers on all announced topics (http://www.harmo.org), but the biggest interest was shown to the topics 'Model evaluation and quality assurance', 'Parametrisation of physical processes in mesoscale meteorology relevant for air quality modelling' and 'Urban scale and street canyon modelling'. A very successful special session was organised by COST Action ES1006 devoted to 'Evaluation, improvement and guidance for the use of local-scale emergency prediction and response tools for airborne hazards in built environments'.

This special issue presents revised and extended manuscripts from HARMO 16 that were submitted and passed the peer-review process according to *IJEP* standards. The different manuscripts reflect the state-of-the-art on the different topics covered by the conference. The first 15 papers are included in this binding [*IJEP* 2015 Volume 57, Nos. 3/4]. The remaining papers will be published in Volumes 58 and 59.

HARMO Conferences have now long tradition, but also a good future as long as they maintain a high scientific level and emphasise the issue of harmonisation at all steps of the modelling, observation, forecast and assessment processes in air quality and all related areas.