



HIWeather

28th July 2015

As you will see, I have changed the format of this newsletter somewhat to reflect the fact that an increasing number of HIWeather or HIWeather-related activities are happening around the world. Indeed, it is very encouraging to see how many programmes are adopting aims that match those of HIWeather, whether consciously or not. It is always helpful if the link is explicitly stated and I would encourage any of you involved in relevant programmes to let me have the details for future inclusion.

I am delighted to inform you that, with the appointment of Prof. David Johnston of New Zealand, the project now has two co-chairs. David has extensive experience in disaster management research, and is currently Chair of the Integrated Research on Disaster Risk (IRDR) Scientific Committee. He is based at Massey University in Wellington, New Zealand, where he is Director of the Joint Centre for Disaster Research in the School of Psychology.

The steering group had a useful teleconference in April, some of the outcomes of which are included in the report below. There will be a further teleconference in early August to begin planning the Exeter workshop, scheduled for April 25-29, 2016, when I hope to see many of you.

I was fortunate to be able to attend the IUGG General Assembly in Prague a few weeks ago which included a symposium on "Understanding and Predicting High-impact Weather and Climate Extremes". Presentations illustrated the breadth of the work being undertaken in this area, and I was able to provide an outline of the plans for HIWeather and to encourage research groups to become involved.

Some highlights of other recent HIWeather achievements include the launch of the new W2W (Waves to Weather) Collaborative Research Centre in Germany; progress in funding the LVB-HyNEWS project in East Africa; and the launch of a competition for user-oriented verification scores by the JWGFVR. More details are given in the relevant sections below.

Wishing you all every success in your HIWeather activities

Best Wishes,

A handwritten signature in black ink, appearing to read 'Brian Golding', with a long horizontal line extending from the end of the signature.

Brian Golding

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Project News

Steering Group

Co chairs: Brian Golding, Met Office and David Johnston, Massey University

Theme 1, Processes & Predictability - George Craig, DLR

Theme 2, Multi-Scale Coupled Forecasting - Jenny Sun, NCAR

Theme 3, Impacts, Vulnerability & Risk - Brian Mills, Waterloo University

Theme 4, Communication - currently vacant

Theme 5, Evaluation - Beth Ebert, Bureau of Meteorology

Vacant Positions.

Following David Johnston's appointment as co-chair, we are considering who might lead the Communication theme.

The JPO post, which will provide the project secretariat in Geneva, did not attract any applicants when first advertised. A revised advertisement is being put out for this important post.

Funding. The project desperately needs some additional countries to contribute to the Trust Fund if the planned programme of meetings and workshops is to go ahead.

Multi-Scale Forecasting Theme

Jenny Sun has identified a the main topics from the theme and is gathering a task team of scientists who will lead each topic.

Impacts, Vulnerability and Risk theme

Brian Mills is considering who might contribute to the task team for this theme, drawing on links from SERA, IRDR, and academia, with the aim of creating a network of contacts undertaking relevant work and feeding back and coordinating results. One suggested activity for this theme was to broadcast webinars to raise awareness of the work that is going on in this field. The Exeter workshop next April will be an important opportunity to discuss specific activities. Looking further ahead, 2017 marks the 10th anniversary of the Madrid conference on Disaster Reduction, which is likely to be marked. HIWeather should aim to play a major role in that.

Evaluation Theme

Beth Ebert has formed a task team of ten members for the evaluation theme.

The JWGFVR (Joint Working Group for Forecast Verification Research) is launching MESOVIX, an intercomparison of spatial verification methods applied to ensemble forecasts in complex terrain, taking account of observation error.

The ability of stakeholders to use forecasts of weather and its impacts effectively can be greatly enhanced when the quality of the forecasts is measured in relevant terms. User-oriented verification is important to national meteorological and hydrological services and is a key component of HIWeather. An example, developed by the UK Met Office in consultation with the aviation industry, is Flight Time Error, a measure that is meaningful to airlines and related to specific cost penalties. To encourage the development of such approaches, the JWGFVR has launched a *challenge to develop and demonstrate new user-oriented forecast verification metrics*. The winning entry will be awarded an invited keynote talk at the 7th International Verification Methods Workshop in 2017.

Socio-economic metrics are being studied by the CBS Task Team on Socio-Economic Benefits (TT-SEB). Brian Mills is on the team and will provide the link between their work and our evaluation theme. <http://www.wmo.int/pages/prog/amp/pwsp/SocioEconomicMainPage.htm>

HIWeather Research

LVB-HyNEWS (Lake Victoria Basin-Hydro-climate to Nowcasting Early Warning Systems)

The project has received good news recently. The United Kingdom's Dept for International Development (DfID) has approval for a 4-year project, Weather and Climate Information Services for Africa (WISER), with the following components: (i) Modernise National Met Services and Strengthen Service Delivery, (ii) Strengthen African Regional Strategies, (iii) Support improved generation and use of climate services and (iv) Build Collaboration between Global, Regional and National Met Service Providers. Activities proposed under LVB-HyNEWS and the Severe Weather Forecast Demonstration Project (SWFDP) feature prominently in the work plans. Separately, HyCRISTAL, is a UK DfID/NERC Future Climate For Africa project (<http://gtr.rcuk.ac.uk/project/790CE447-3CC2-43C4-A010-26100F4E101B>) which addresses East African climate for decision making on 5-40 year time-scale and includes surface flux and lake observations. A WMO meeting will be held in Mwanza, Tanzania (17-20 Aug 2015) to begin development of a sustainable nowcasting system. It is expected this will lead to a demonstration project, including a field phase, to understand the nature of severe weather producing hazardous winds, to enhance the nowcasting system, to validate the nowcasting concepts, forecast processes and services and to quantify the benefits.

NAWDEX

A proposal has been submitted for a UK component of NAWDEX in the eastern Atlantic, to explore the structure of diabatically-generated PV structures in mature and decaying wave disturbances.

RELAMPAGO / ALERT.AR

Planning for the field phase in Spring 2017 is progressing. For Spanish readers, more detail is in the report at <http://nexciencia.exactas.uba.ar/proyecto-relampago-tormentas-steve-nesbitt-paola-salio-meteorologia-pronostico-cordoba>

US post-THORPEX Committee

In the United States, a new inter-agency committee and science steering committee are being formed to coordinate future weather research initiatives. A primary goal is to work seamlessly with HIWeather and other WMO/WWRP projects. In the coming year, a US community-driven science plan and project plans focused on selected hazards and/or regions will be drafted. The community is being engaged through town hall meetings at conferences, and regular communications and annual workshops are being proposed to focus the planning.

W2W (Waves to Weather) is a Collaborative Research Center conceived to meet the challenge of delivering the underpinning science needed to identify the limits of predictability in different weather situations so as to pave the way towards a new generation of weather forecasting systems. W2W brings together expertise from institutions at three sites:

- in Munich, the Ludwig-Maximilians-Universität (LMU), the Technische Universität München (TUM) and Deutsches Zentrum für Luft- und Raumfahrt (DLR)
- in Mainz, the Johannes Gutenberg-Universität (JGU)
- in Karlsruhe, the Karlsruhe Institute of Technology (KIT). <http://w2w.meteo.physik.uni-muenchen.de/>

Urban RDP in China

The Institute of Urban Meteorology in Beijing is carrying out the SURF field experiment: on heavy rain in summer 2015 and Air Quality in winter 2016. With the help of Jenny Sun, they are preparing a proposal for SURF to be a RDP, with a special emphasis on urban model intercomparison. The third planning workshop will be held in October. <http://www.iuim.cn/en/doccol/productInfo.aspx>

PC-2018 (The Pyeongchang Winter Olympic Games in Korea) is the venue for a RDP in 2018 (<http://www.pc2018.com/>). Jenny Sun is currently discussing opportunities for participation with the Korean Meteorological Administration, KMA.

Related Activities

Calwater: During Jan-Mar 2015 a field campaign focused on two phenomena that play key roles in the variability of the water supply and the incidence of extreme precipitation events along the West Coast of the United States:

1. Atmospheric Rivers (ARs) deliver much of the water vapor associated with major storms along the U.S. West Coast
2. Aerosols from local sources as well as those transported from remote continents modulate western U.S. precipitation.

<http://www.esrl.noaa.gov/psd/news/2015/011615.html>

PECAN (Plains Elevated Convection at Night) During June and July 2015 a multi-agency field campaign studied summer thunderstorms in the US Great Plains to find out why they often form after the Sun goes down instead of during the heat of the day. Participants from 8 research laboratories and 14 universities were involved in collecting the data. NASA and NOAA aircraft were joined by the University of Wyoming King Air plane, ground-based instruments, weather balloons and mobile radars. http://www.nsf.gov/news/news_summ.jsp?cntn_id=135046

WEXICOM (Weather warnings: from EXtreme event Information to COMunication and action) WEXICOM is an interdisciplinary research project contributing to optimal use of weather forecasts, with a focus on severe weather and warnings. Funded within the Hans Ertel Centre for Weather Research, the project is a collaboration between meteorology (Freie Universität Berlin), social sciences (Disaster Research Unit, Research Forum on Public Safety and Security, German Committee for Disaster Reduction), and psychology (Max Planck Institute for Human Development). The ultimate goal of this inter- and transdisciplinary approach is to facilitate a transparent and effective communication of risks and uncertainties for individual user groups. <http://www.geo.fu-berlin.de/en/met/wexicom/index.html>

PURE (Probability, Uncertainty & Risk in the Environment) is a UK research programme, which supports an active network <https://connect.innovateuk.org/web/pure>. It recently launched a new portal for model codes used in hazard prediction, <http://pureportal.org/>, which may provide a useful resource for those working in HIWeather.

Improving early warning systems in the developing world: The Met Office, NOAA, NASA & Google have agreed to work together to improve access to weather forecasts and climate information in poor countries, so as to help farmers boost food production and plan ahead for weather related disasters such as droughts, floods and storms. Google are providing cloud storage for the satellite observations, climate and weather data.

Heat-Health Warning Systems: The World Meteorological Organization (WMO) and the World Health Organization (WHO) have issued new joint guidance on the health risks posed by heatwaves. Both India and Pakistan have recently been hit by deadly heatwaves, killing hundreds of people. Heat-related health risks can be reduced through systematic development of heatwave early warning systems based on weather forecasts. This information is used to alert decision-makers, health services and the public to trigger timely action to reduce the effects of hot-weather extremes on health. The WMO-WHO publication *Heatwaves and Health: Guidance on Warning-System Development* is intended to promote their more widespread implementation. <https://drive.google.com/a/wmo.int/file/d/0BwdvoC9AeWjUb2NHVYVnyQU5QaW8/view?pli=1>

Meetings

HIWeather workshop and steering group meeting, 25-29 April 2016 in Exeter, UK. It is hoped that several of the task teams and WWRP working groups will be able to hold their meetings at the same time. The primary aims of the workshop will be to build linkages between the physical, social, behavioural and economic science components of HIWeather and to define the programme of work in the human impacts and communication themes.

International Association of Wildland 5th Fire Behaviour and Fuels Conference in Melbourne, Australia and Portland, Oregon, USA, 11-15 April 2016. An opportunity to discuss weather→wildfire applications that are in development. <http://www.bnhcrc.com.au/events/2016-fireandfuels>

10th International Conference on Air Quality – Science and Application, Milan, 14-18 March 2016. <http://www.airqualityconference.org/>

Royal Meteorological Society and UK National Centres for Atmospheric Science joint 2016 Conference, “High Impact Weather and Climate”, 6 – 8 July 2016, University of Manchester, UK. The conference is organised under three themes: observation, forecasting and responding and each theme will be introduced by three keynote presentations followed by workshops and poster sessions. Many of the workshops address themes central to HIWeather.
<http://www.rmets.org/conference2016>