



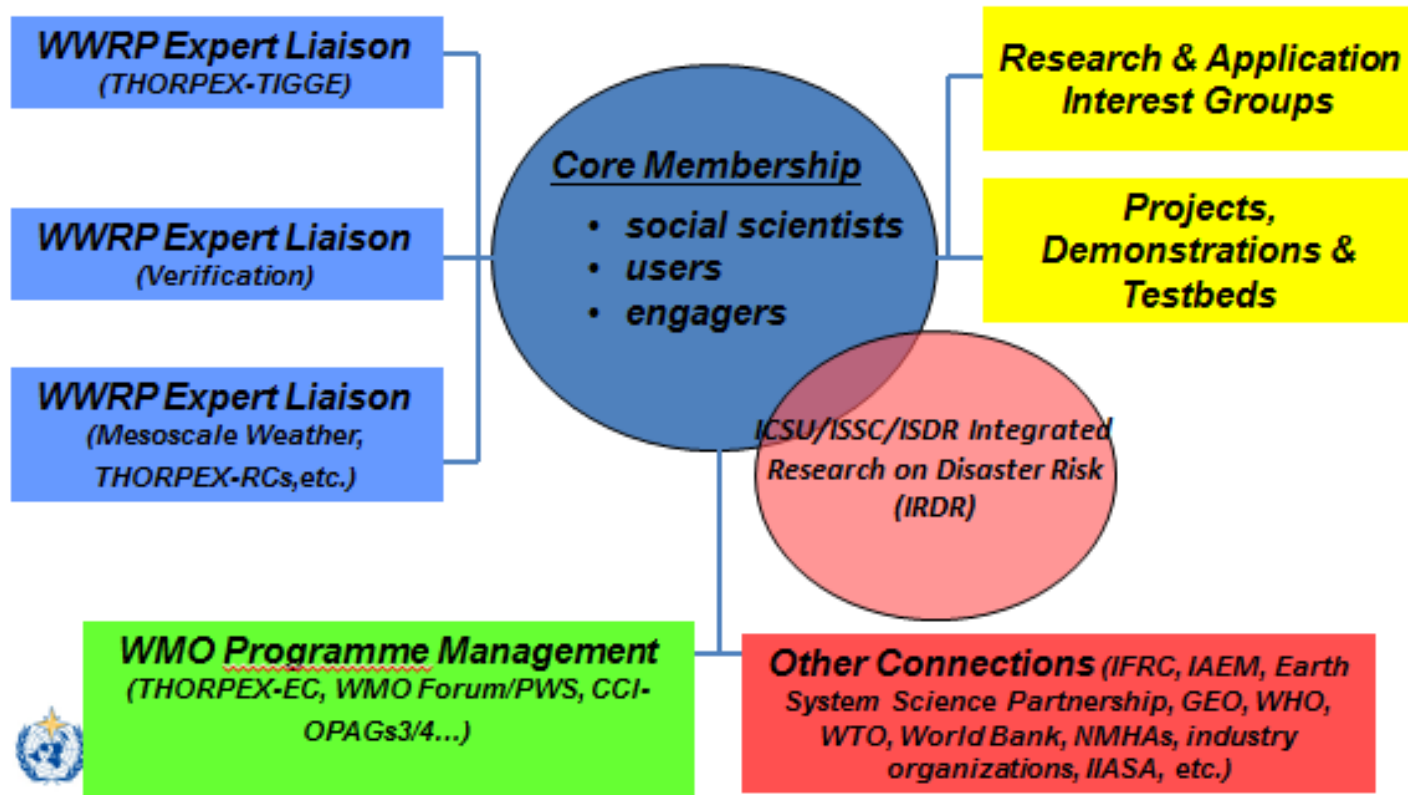
# Societal and Economic Research and Applications Working Group (SERA WG)



**To advance the science of the social and economic application of weather related information and services and review and assist in the development and promotion of societal and economic related demonstration projects.**

[http://www.wmo.int/pages/prog/arep/wwrp/new/weather\\_society.html](http://www.wmo.int/pages/prog/arep/wwrp/new/weather_society.html)

# Structure





- ***WG SERA applies Social Science skill and expertise to advance the application of societal and economic research to weather-related information and services.***
  - *Membership is diverse and representative of a range of social science disciplines;*
  - *Meets annually – one face-to-face meeting ; three teleconferenced*
  - *2017 meeting in Cancun with WMO MHEWS Conference and Global Platform DRR*
  - *A high level of turnover in membership since 2013;*
  - *Work plan currently focuses on support for WWRP projects*

# Membership



- 1. Social, economic or decision scientists (i.e., from anthropology, applied health, communications, economics, geography, management sciences, sociology, psychology, or similar disciplines) or other researchers with experience applying social science methods and techniques to weather-related issues***
- 2. Representatives of private, public or non-government sector organization that engages users in the development, application, and beneficial use of weather and related information, products and services***
- 3. Representatives of a user or community of users that benefits directly or indirectly from weather and related information, products and services***



# Membership

- Co-chairs: Linda Anderson-Berry (BOM)

Jane Rovins (DRSS)

- Members:

Adriaan Perrels (FMI), Ben Jou (ATS-APEC)

Joanne Robbins (UKMO), Jan Eichner (Munich Re)

Aida Diongue-Niang (ANACIM), Martin Goeber (DWD), Julia Chasco (CIMA)

- IRDR representative

# Priority outcomes/issues/sectors

- *Mortality, morbidity, and significant loss of property*
- *Critical infrastructure and resources required to support communities and livelihoods (water, energy, food, transportation, housing/shelter)*
- *Disaster preparedness, response and recovery*





## **working together in support of building hazard resilient communities**

Working arrangement to, among other things, jointly support the activities of the Working Group on Societal and Economic Research and Applications.

# Activities

- *Provide general advice on SERA issues to other WMO projects*
- *Development of guidance (process, resources, better practices, etc.) for establishing a SERA element in a WWRP-sanctioned project*
- *Undertake specific research and application projects*
- *Training, workshops, and other forms of SERA capacity-building*





# Activities

## *Weather-related Warning Systems SERA Demonstration Project*

- *Establish an overall research framework*
- *Identify candidate studies to explore aspects of the framework*
- *Compare, contrast, synthesize, and extrapolate results*

# The World Weather Research Programme

*WWRP promotes international and interdisciplinary research for more accurate and reliable forecasts from minutes to seasons, expanding the frontiers of weather science to enhance society's resilience to high-impact weather and the value of weather information for users.*

*WWRP aims at Seamless Prediction by increasing convergence between weather, climate and environmental approaches. WWRP strengthens academic – operational partnerships and interdisciplinary collaborations, and enhances the role of early career scientists.*



**WMO OMM**

World Meteorological Organization  
Organisation météorologique mondiale

# WWRP Structure

## WWRP Working Groups

### Tropical Meteorology

Identify and support research initiatives on tropical cyclones and monsoons

### Predictability, Dynamics and Ensemble Forecasting

Advance the science of dynamical meteorology, predictability ensemble forecasting, promoting the development of ensemble applications

### Weather Modification

Promote scientific practices in weather modification

### Data Assimilation and Observing Systems

Obtain and make use of best possible information on the atmospheric state

### Socio-Economic Research Applications

Advance the social and economic application of weather related information and services

$$\frac{\partial}{\partial t} \left( \frac{\partial p}{\partial \eta} \right) + \nabla \cdot \left( \mathbf{v}_{11} \frac{\partial p}{\partial \eta} \right) + \frac{\partial}{\partial \eta} \left( \frac{\partial p}{\partial \eta} \right) = 0$$

**Super Computer**

**WCRP-JSC / CAS Working Group on Numerical Experimentation**

Foster the development of atmospheric circulation models and resolve shortcomings

### Nowcasting and Mesoscale

Promote prediction on the mesoscale for short time scales considering models and observations

### Verification

Develop and apply new verification techniques to help improving quality of forecast models  
(joint WG with World Climate Research Programme)

## WWRP Core Projects

### Polar Prediction



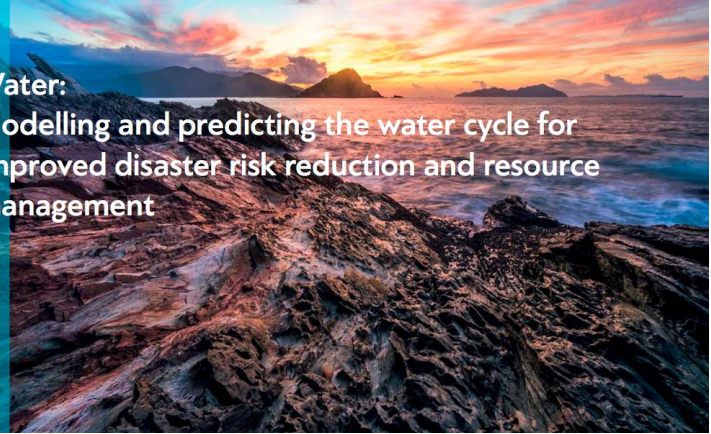
# Societal Challenges defined by CAS-16

**High-impact Weather:**  
Toward impact-based forecasts in a variable and changing climate

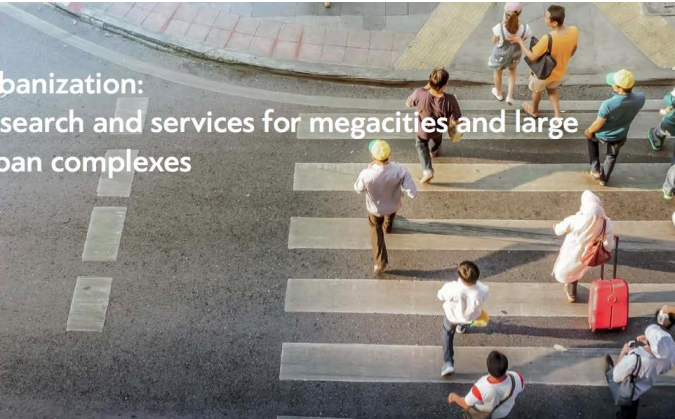


Photo by Joel Blake

**Water:**  
Modelling and predicting the water cycle for improved disaster risk reduction and resource management



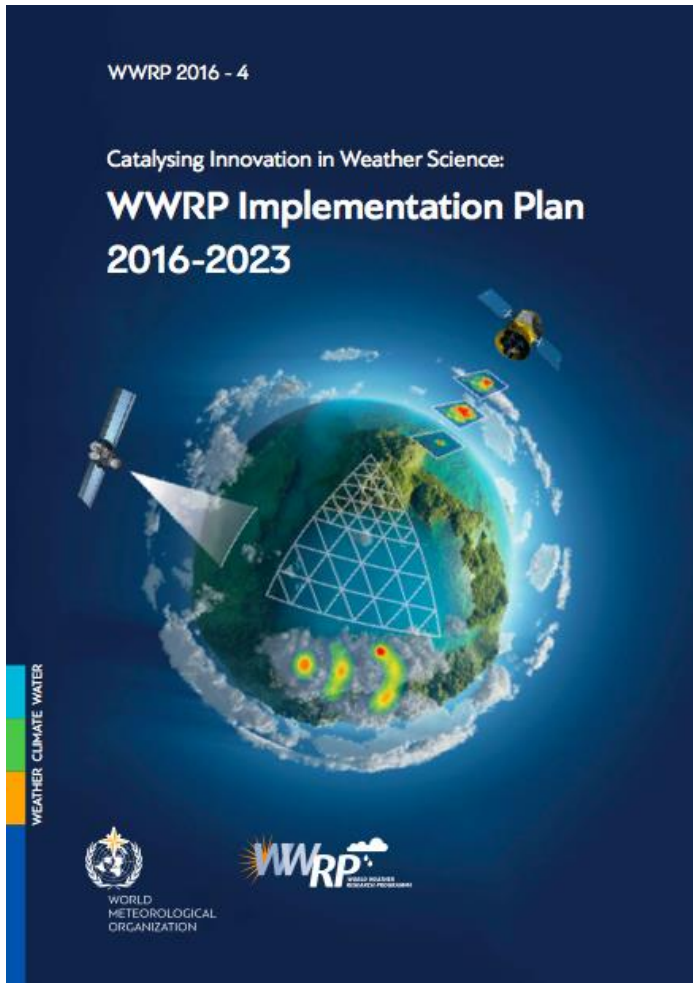
**Urbanization:**  
Research and services for megacities and large urban complexes



**Evolving Technologies:**  
Their impact on science and their use



# WWRP Implementation Plan



**For each societal challenge the Implementation Plan:**

- **Identifies the key scientific and implementation challenges**
- **Specifies the key needs for international coordination**
- **Articulates the resulting benefits for members**
- **Defines Action Areas**

## Driving Innovation Together: The World Weather Research Programme



WEATHER CLIMATE WATER



WORLD  
METEOROLOGICAL  
ORGANIZATION

WMO-No. 1191



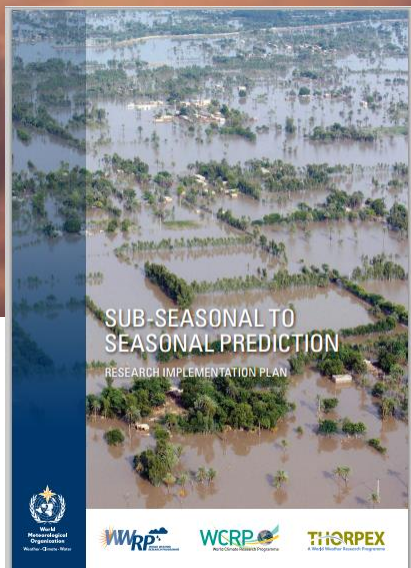
WMO OMM

- Interdisciplinary research across spectrum from process understanding to developing applications
- Effective links to WMO Members/ stakeholders to define priorities and for efficient Research to Operations
- Engagement with policy makers, donors etc

# Sub-seasonal-to-Seasonal prediction project

**Co-chairs: Frédéric Vitart (ECMWF)  
Andrew Robertson (IRI)**

Evaluate potential predictability of sub-seasonal events through a multi-model approach.  
Understand systematic errors and biases in the sub-seasonal to seasonal forecast range  
Focus on specific extreme event case studies increasing resilience and improving adapting capacity.



**Project Office:  
KMA/NIMR**





**S2S will Improve forecast skill and understanding of prediction on S2S time scales including extreme events such as floods, droughts and storm surges**



# High-Impact Weather Project

Increasing resilience to Urban Flood, Wildfire, Urban Heat and Air Pollution in Megacities, Localised extreme wind, Disruptive winter weather through improving forecasts for timescales of minutes to two weeks and enhancing their communication and utility in social, economic and environmental applications

Links to WCRP through quantifying vulnerability and risk assessment, and for response to High Impact Weather in a changing climate.

Co-Chairs: Brian Golding (UKMO)

David Johnston Massey Un

International Coordination Office, CMA, China





Urbanization:  
Research and services for megacities and large  
urban complexes

**“HIWeather will work with GURME to engage with urban stakeholders and conduct user needs analyses for different user sectors and for different types of hazards”**

# Polar Prediction Project

Promote cooperative international research enabling development of improved weather and environmental prediction services for the polar regions, on time scales from hourly to seasonal

Chair: Thomas Jung, AWI

Project Office: Alfred Wegener Institute, Germany

WWRP/PPP No. 2 - 2013

WWRP Polar Prediction Project  
Implementation Plan





**“PPP will facilitate the near real-time gathering of research data for YOPP into WMO’s WIS/GTS and assess the impact of existing and supplementary observations during YOPP”**

# Other Activities

- Begin scoping literature review for “Understanding the societal and economic dimensions of weather-related warning systems” (mid-2018)
- Joint Meeting with WG Tropical Meteorology Research (2018)
- IWTC-9
- WMO/JCOMM – CIFDP

**Cross-cutting activity over the next  
two years**

**Develop a workshop on communicating risk  
and uncertainty with IRDR**

**This will build on WG SERA facilitated  
International Communicating Uncertainty and  
Risk Workshop – Melbourne 2014**

# Thank you



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