WMO for the New UN Urban Agenda

The 17th World Meteorological Congress (2015)
Resolution 9.8: Establishing WMO Cross-cutting Urban Focus

Welcome to contribute!

Integrated weather, climate, hydrology and related environment services for sustainable cities
Hazards and Risks in the Urban Environment:

- Poor air quality
- Extreme heat/cold and human thermal stress
- Hurricanes, typhoons, extreme local winds
- Wild fires, sand and dust storms
- Urban floods
- Sea-level rise due to climate change
- Energy and water sustainability
- Public health problems caused by the previous
- Climate change: 70% of GHG emission - urban
Through a domino effect, a single extreme event can lead to a broad breakdown of a city’s infrastructure:

**Example of Hazard Domino Effect (Typhoon)**
Solution: Integrated Urban Services

Urban activities are a priority and specific cross-cutting element within the WMO strategy

- Integrated Urban Weather, Water, Environment and Climate Services
- Multi-Hazard Early Warning Systems
- Focus on impact based forecast and risk based warnings
Urban weather service development

1. In big cities, heat-absorbing roofs, blacktop pavement and auto exhaust trap the sun’s rays and warm the air.
2. Late in the day, the accumulated heat starts to be released. The lighter, warmed air begins to rise.
3. In cities near large bodies of water, moist air flows in toward the rising urban air.
4. The moist air and warm city air collide and drive each other higher, hitting the cooler layer of air above and creating clouds and rain.
5. The prevailing wind blows the clouds. Areas downwind of cities get more rain than those upwind.

WWRP High Impact Weather Project
WMO GAW Urban Research Meteorology and Environment Project (GURME)

- Urban Air Quality Forecasting Systems
- Enhanced Urban Observing Systems
- Urban Multi-Hazard Early Warning System in Shanghai
- City Pilot Projects: Dehli, Santiago, Beijing, Mexico, Toronto, Seoul
- Capacity Building and Training Workshops

Observations ➔ Forecast models

- Heat wave and cold spell forecast
- UV forecast
- Ozone forecast
- Haze forecast
- Pollen forecast
- Bacterial Food Poisoning
- Influenza forecast
- Heat index, Sunstoke, and Diarrhea forecast for EXPO 2010

Shanghai MeteoService MHEWS
Coast, Cities, and Climate

- Example: current & future climate risk in New York

**[IPCC AR5 WGII, Table. 8-6]**

<table>
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<th>Climate-related drivers of impacts</th>
<th>Level of risk &amp; potential for adaptation</th>
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<tr>
<td>Warming trend</td>
<td>Potential for additional adaptation to reduce risk</td>
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<td>Extreme temperature</td>
<td>Risk level with current adaptation</td>
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<td>Precipitation</td>
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<td>Extreme precipitation</td>
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<td>Sea level</td>
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<td>Surge</td>
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**GC-Extremes**
- Heavy Precipitation / Draught
- Heatwave / Storm

**GC-Snow & Ice**

**GC-Water Availability**

**GC-Regional Sea Level**

**GC-Regional Extremes**

**Table 8-6 | Current and indicative future climate risks for Dar es Salaam, Durban, London, and New York City**
End-to-end (E2E) Flood Forecasting and Early Warning Initiative

**REAL-TIME DATA COLLECTION**
- Global Hydrometry Service Facility (GHSF)
- Meteorological, Climatological and Hydrological (MCH) Database Management System

**MODELLING & FORECASTING**
- Flash Flood Guidance System (FFGS)
- Coastal Inundation Forecasting Demonstration Project (CIFDP)
- Severe Weather Forecasting Demonstration Project (SWFDP)

**EARLY WARNING DISSEMINATION**

**DECISION SUPPORT**
- Associated Programme on Flood Management (APFM)
- DEWETRA Platform
- Preparing for Extreme And Rare events in coastal regions (PEARL)

**RESPONSE TO WARNING**

In support of the functions of National Hydrological Services
Welcome to WMO Events on HABITAT-III Conference at One UN Pavilion:

• «Meeting with WMO» on 18 Oct 14:30; 19 Oct 17:00; 20 Oct 12:00 (30 min each), “Talk with the United Nations” Room
• Side Event “Climate change and urban disaster resilience” on 20 Oct at 8:30 -11:30, Room B
  • Exhibition & Urban Library
  • E-Game ‘Be an Urban Climate Architect’