



World Meteorological Organization

Weather • Climate • Water

WMO Climate Statements

Dr Wenjian Zhang

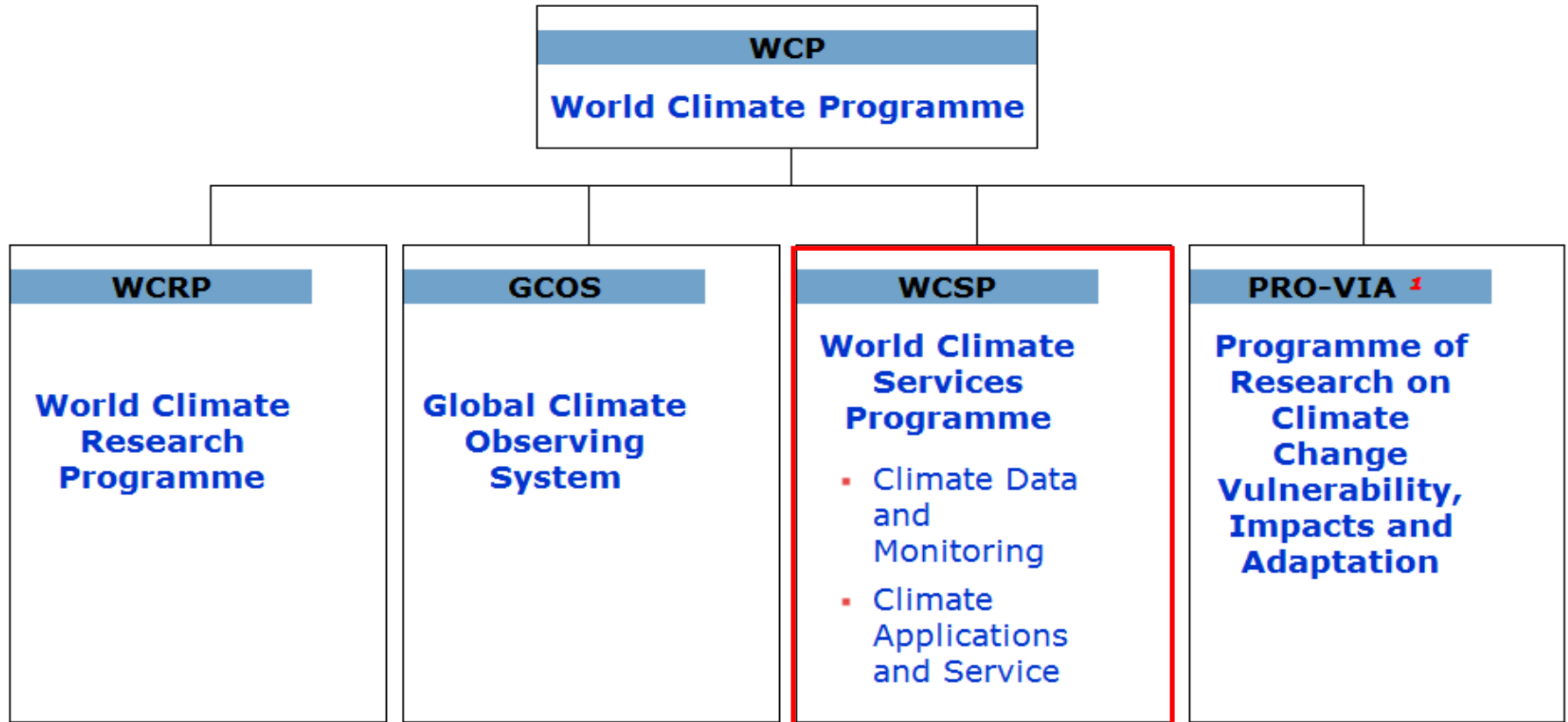
Director

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World Climate Programme new Structure

Congress 16 Resolution 18



¹ PROVIA became the fourth component of the WCP, by Resolution 4.3(2)/1 of EC-65.





World Climate Data and Monitoring Programme

[Programmes](#) > [WCP](#) > [WCDMP](#) > [CA_Statements](#)

WMO Statement on the Status of the Global Climate

WMO, working with UNEP (United Nations Environment Programme), is responsible for the periodic assessments of climate change issued by the Intergovernmental Panel on Climate Change (IPCC). In June 1993, the 45th session of the Executive Council of WMO decided that greater efforts were needed to promote the WMO role as a provider of credible scientific information on climate and its variability and requested that arrangements be made for the regular wide distribution of WMO statements on the status of the global climate. In response to this decision, statements have been provided annually through the WCDMP.



2012

2011

2010

2009

2008

2007

2006

[See the complete series of online available WMO climate statements](#)

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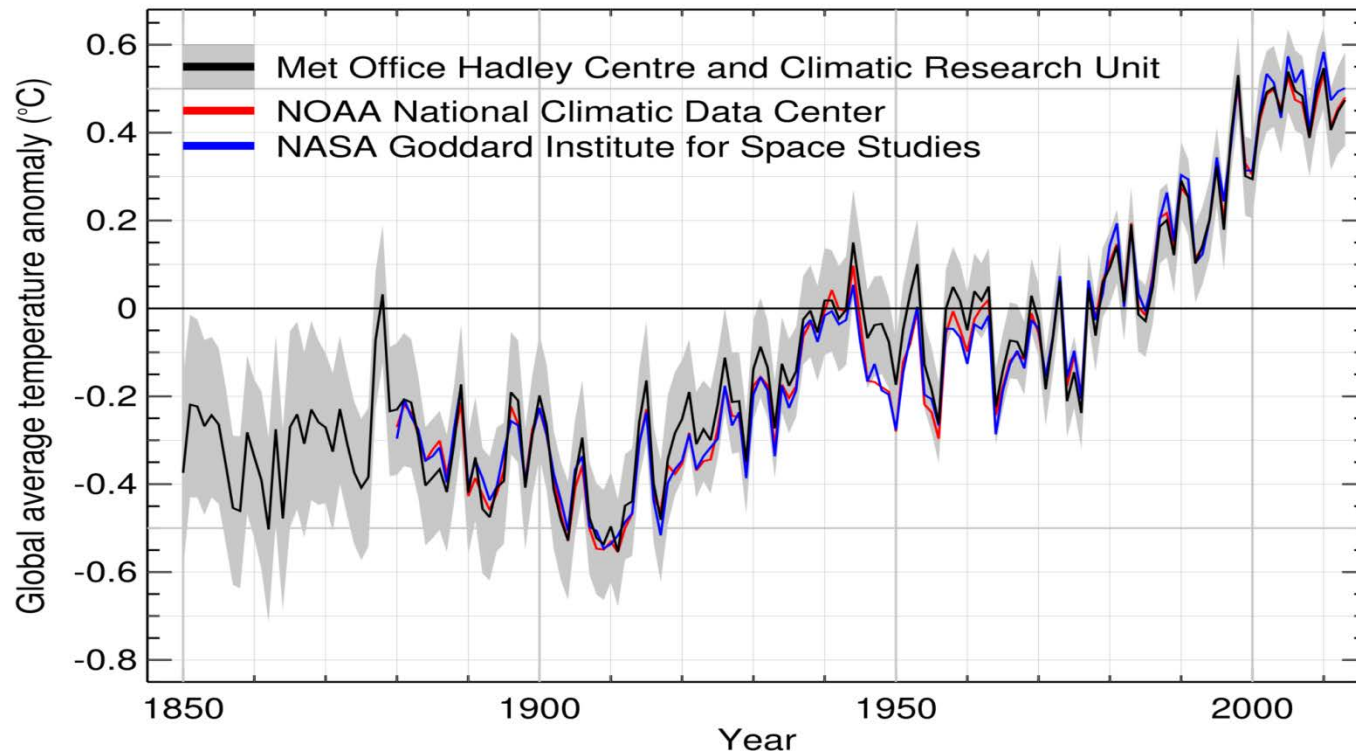
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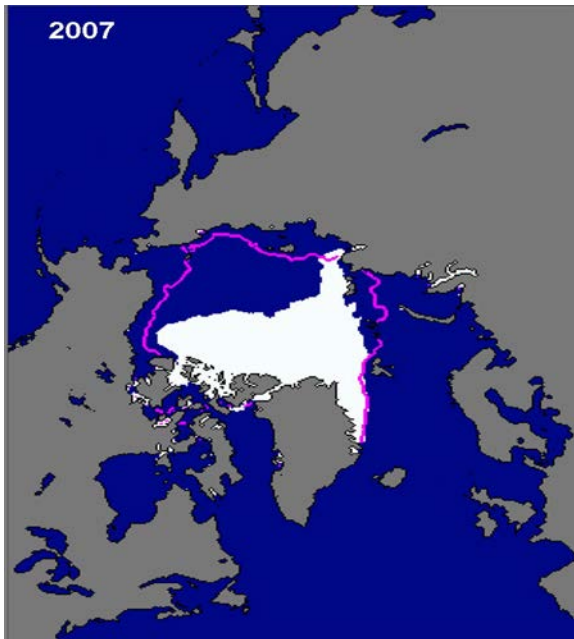
Purpose The WMO Annual Statement on the Status of Global Climate

- Provide an update on yearly basis on global and regional temperature change

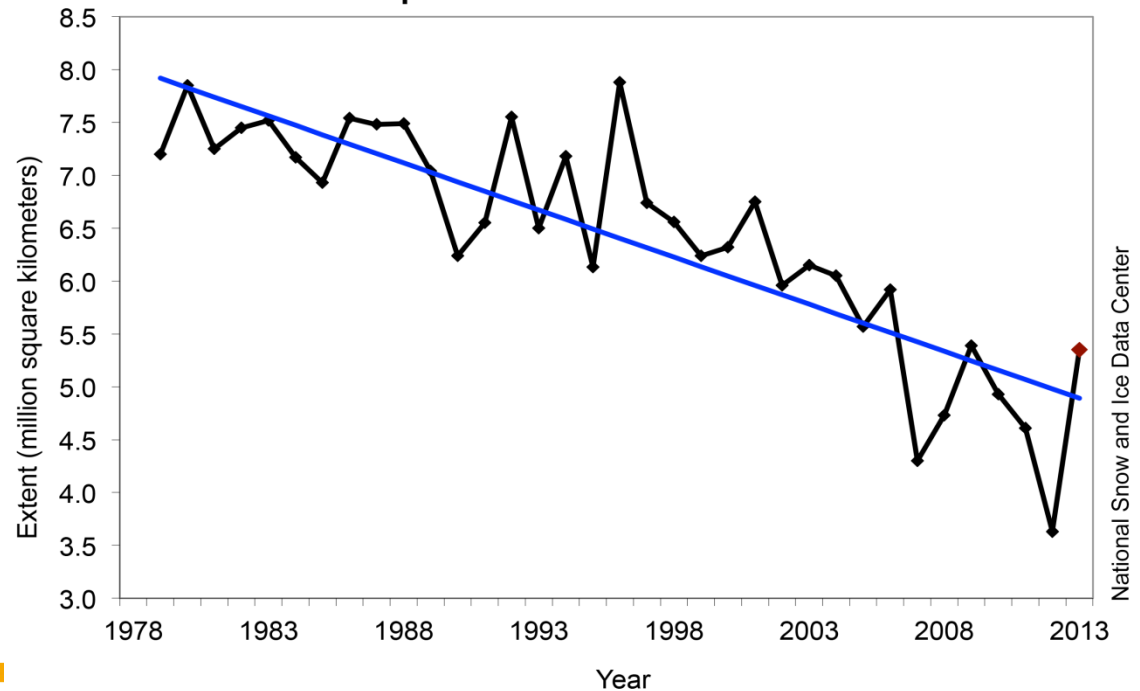
Very useful in tracking climate variability and climate change



- Monitor components of the climate System which are critical such as, sea ice,



Average Monthly Arctic Sea Ice Extent
September 1979 - 2013



National Snow and Ice Data Center



Assessment of other major global climate issues

- Sea Level raise
- GHGs
- Ozone
- Snow cover
- Ice sheets



- Provide an assessment of major climate events and extremes

Heat Waves, Cold Waves, Extreme precipitations, Flooding and flash floods, Drought, Wind storms, Tropical cyclones, others

West Africa 2012
Floods destroyed farmlands, homes, and schools, and caused outbreaks of cholera and other diseases

2012: Drought in USA

North American Drought Monitor

September 30, 2012

Released: Thursday, Oct 11, 2012

<http://www.ncdc.noaa.gov/nadm.html>

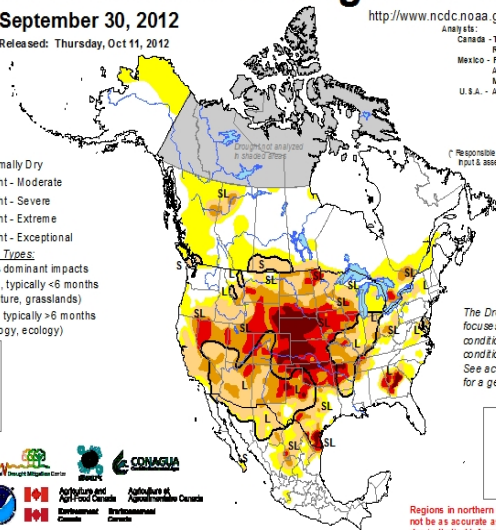
Analysis:
Canada - Trevor Hadwin
Richard Riegel
Mexico - Raynaldo Pascual
Adeem Aladeini
Milner Lopez
U.S.A. - Anthony Artusa

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)



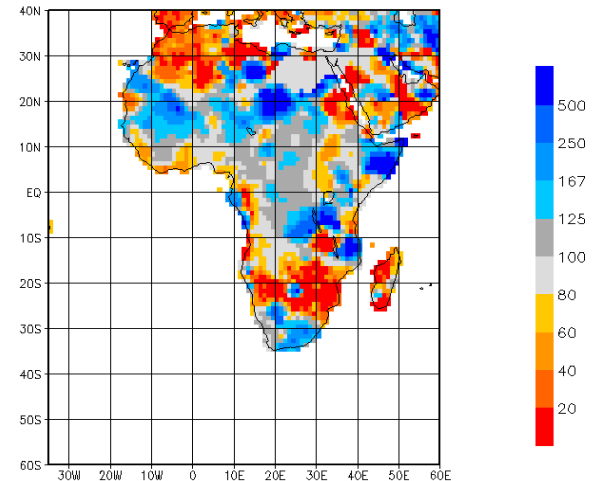
† Responsible for collecting analysts' input & assembling the NA-DM map

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text for a general summary.

Regions in northern Canada may not be as accurate as other regions due to limited information.



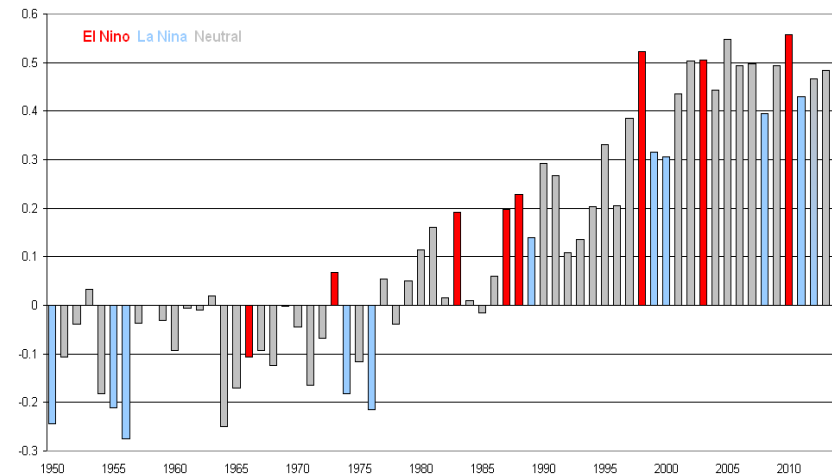
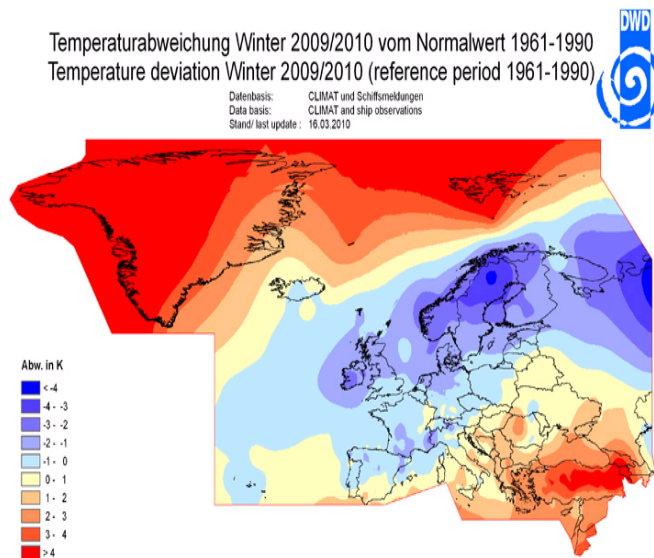
GPCC Monitoring Product Gauge-Based Analysis 1.0 degree precipitation percentage of normals 1951/2000 for Season (Jun,Jul,Aug) 2012 (grid based)



Importance

Science

- Improve Scientific understanding of climate variability by linking with Major Ocean and Atmospheric drivers, ENSO, AO/NAO, and others



Applications

- The continued series of the publication, help focus on climate hot spots and draw attention of policy and decision makers;

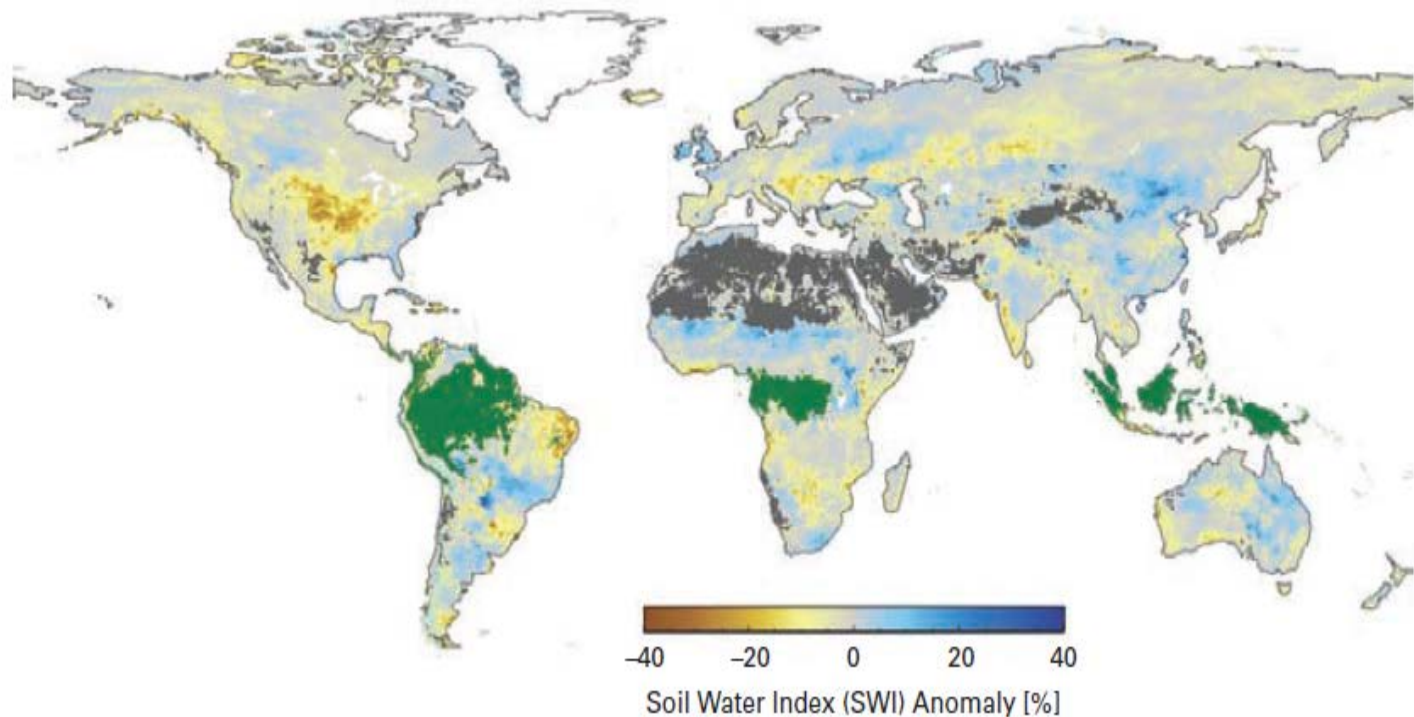
*Climate Adaptations, Risk Management,
Humanitarian efforts, Food Security*



Observations Products

- Identify how and where observation Systems can be better used and or/improved;

Use of Satellite products, Marine Observations, etc.



Contributors to the WMO Annual Statement in 2013

WMO, in collaboration with Members, began issuing annual statements on the status of the global climate in 1993. This publication was issued in collaboration with the Hadley Centre of the UK Meteorological Office, United Kingdom of Great Britain and Northern Ireland; the Climatic Research Unit (CRU), University of East Anglia, United Kingdom; the Climate Prediction Center (CPC), the National Climatic Data Center (NCDC), the National Environmental Satellite, Data, and Information Service (NESDIS), the National Hurricane Center (NHC) and the National Weather Service (NWS) of the National Oceanic and Atmospheric Administration (NOAA), United States of America; the Goddard Institute for Space Studies (GISS) operated by the National Aeronautics and Space Administration (NASA), United States; the Japan Meteorological Agency (JMA), Japan; the European Centre for Medium-Range Weather Forecasts (ECMWF), United Kingdom; the Global Precipitation Climatology Centre (GPCC), Germany; the Global Snow Laboratory, Rutgers University, United States; the National Snow and Ice Data Center (NSIDC), United States; the Colorado Center for Astrodynamics Research, University of Colorado-Boulder, United States; the Polar Science Center, University of Washington, United States; the Commonwealth Scientific and Industrial Research Organization (CSIRO) Marine and Atmospheric Research, Australia; and the Vienna University of Technology, Austria. Other contributors are the National Meteorological and Hydrological Services or equivalent climate institutions of Argentina, Armenia, Australia, Belarus, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, China, Cyprus, Czech Republic, Denmark, Estonia, Fiji, Finland, France, Germany, Guinea, Hungary, Iceland, India, Iran (Islamic Republic of), Ireland, Israel, Japan, Jordan, Kenya, Latvia, Lithuania, Luxembourg, Malta, Mexico, Montenegro, Morocco, Nigeria, Norway, Pakistan, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Tunisia, Turkey, Ukraine, United Kingdom, United Republic of Tanzania and United States. The WMO Regional Association VI (Europe) Regional Climate Centre on Climate Monitoring, the African Centre of Meteorological Applications for Development (ACMAD, Niamey), the Hong Kong Observatory (HKO), Hong Kong, China, the Australian Research Council (ARC) Centre of Excellence for Climate System Science, University of Melbourne, Australia, and the International Research Centre on El Niño (CIIFEN, Guayaquil, Ecuador) also contributed.



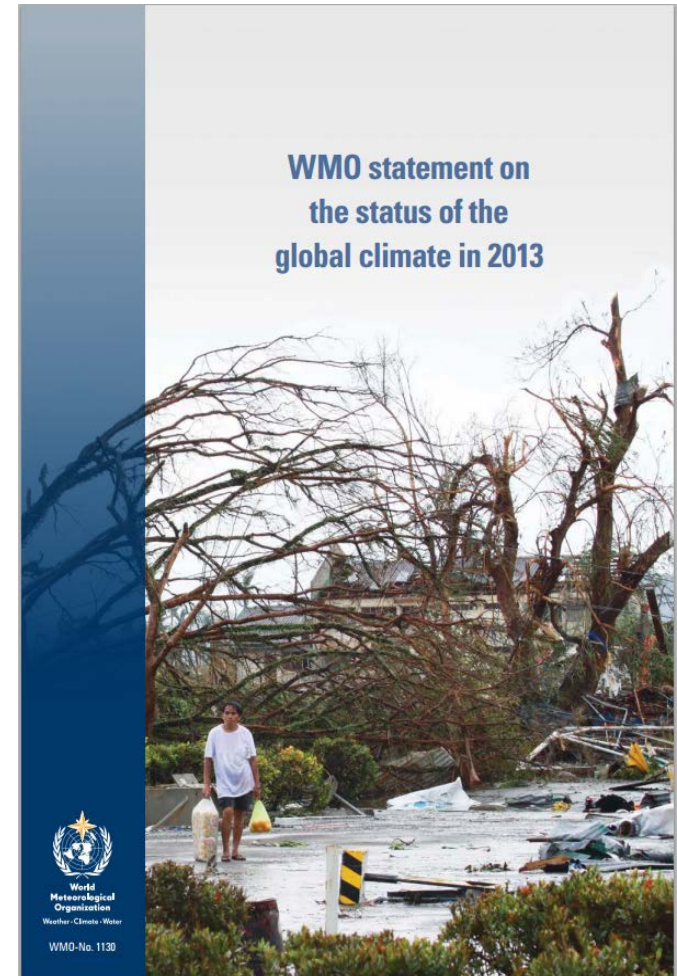
Large Media Coverage

- Before end of the Year WMO issues an advanced release of its annual statement in November or December
- A press conference led by WMO Secretary General at UN headquarter in Geneva with the presence of international journalists and media reporter
- At the same time a simultaneous press conference is given at the venue of the UNFCCC Conference of Parties (COP), led usually by the WMO deputy Secretary General



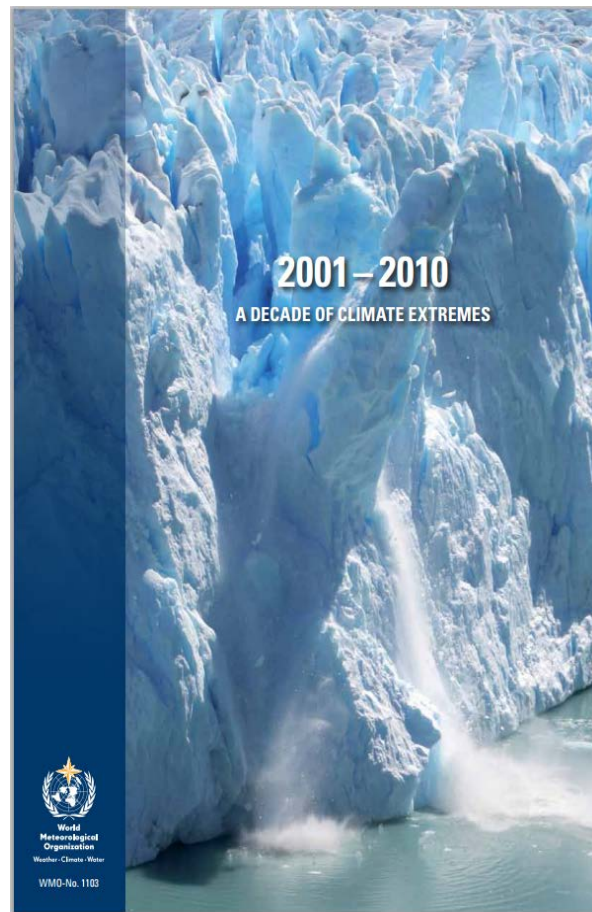
WMO media coverage of 2013 (Media Office report)

- We received excellent media coverage of the press release on 2013 temperatures. BBC and CNN also ran the report on their news programmes. AFP story was very widely picked up, as was EFE throughout South America. In addition several interviews were given by international media agencies, Radio and TV channels.
- We reached about 200,000 people through WMO Tweets but this figure does not reflect the very many tweets from other organizations about the press release. (For example Christiana Figueres (UNFCCC Executive Secretary tweeted about it in both English and Spanish today). Météo-France and AEMET - relatively recent on Twitter - both sent out tweets as did some of our other Members.

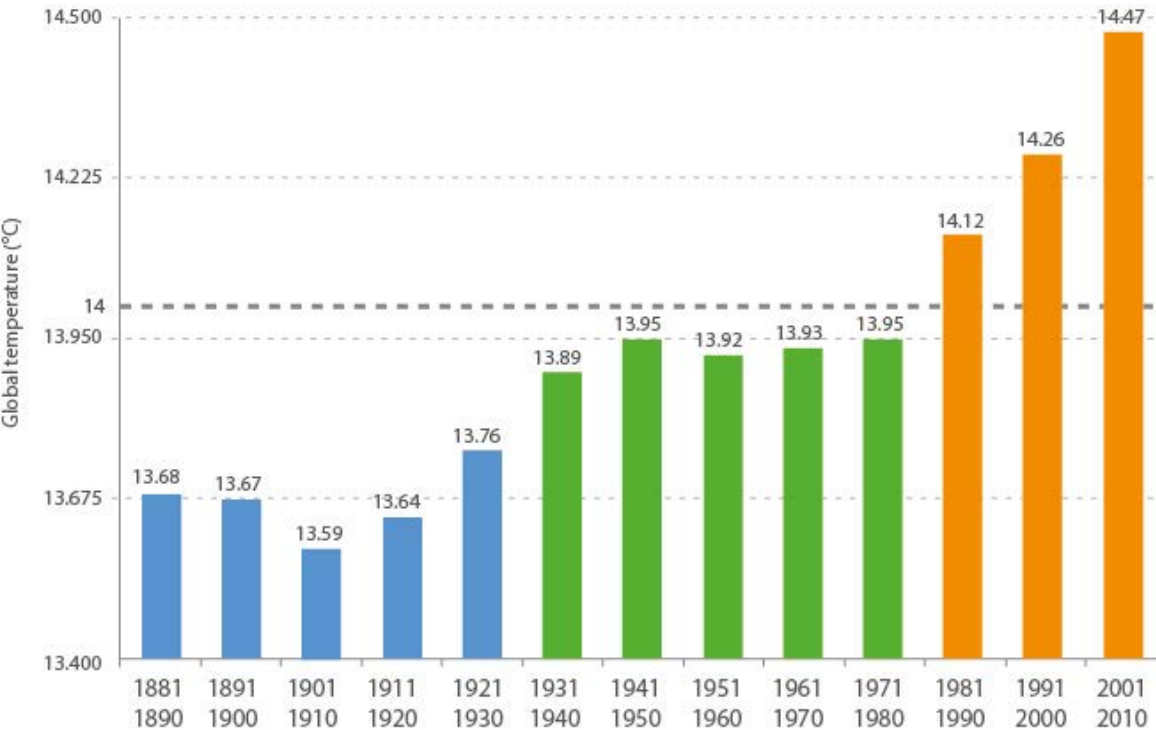


WMO Report : **THE GLOBAL CLIMATE 2001-2010**

- **Published in July 2013** at the occasion of the first session of the GFCS-Intergovernmental Board of Climate Services (IBCS) in July 2013
- Provides a decadal (10 years) global review of the State of the Climate
- Assesses the current climate knowledge on extremes at regional and national levels with the assessment of *physical, socio-economic and impact data*
- Well received internationally and had significant media coverage , quoted by many science reports and science blogs
- **139 countries** participated in the WMO survey and more **30 experts** and professionals from UN agencies and international climate institutions , development organizations and universities and research centers were involved in providing input and reviewing the publication



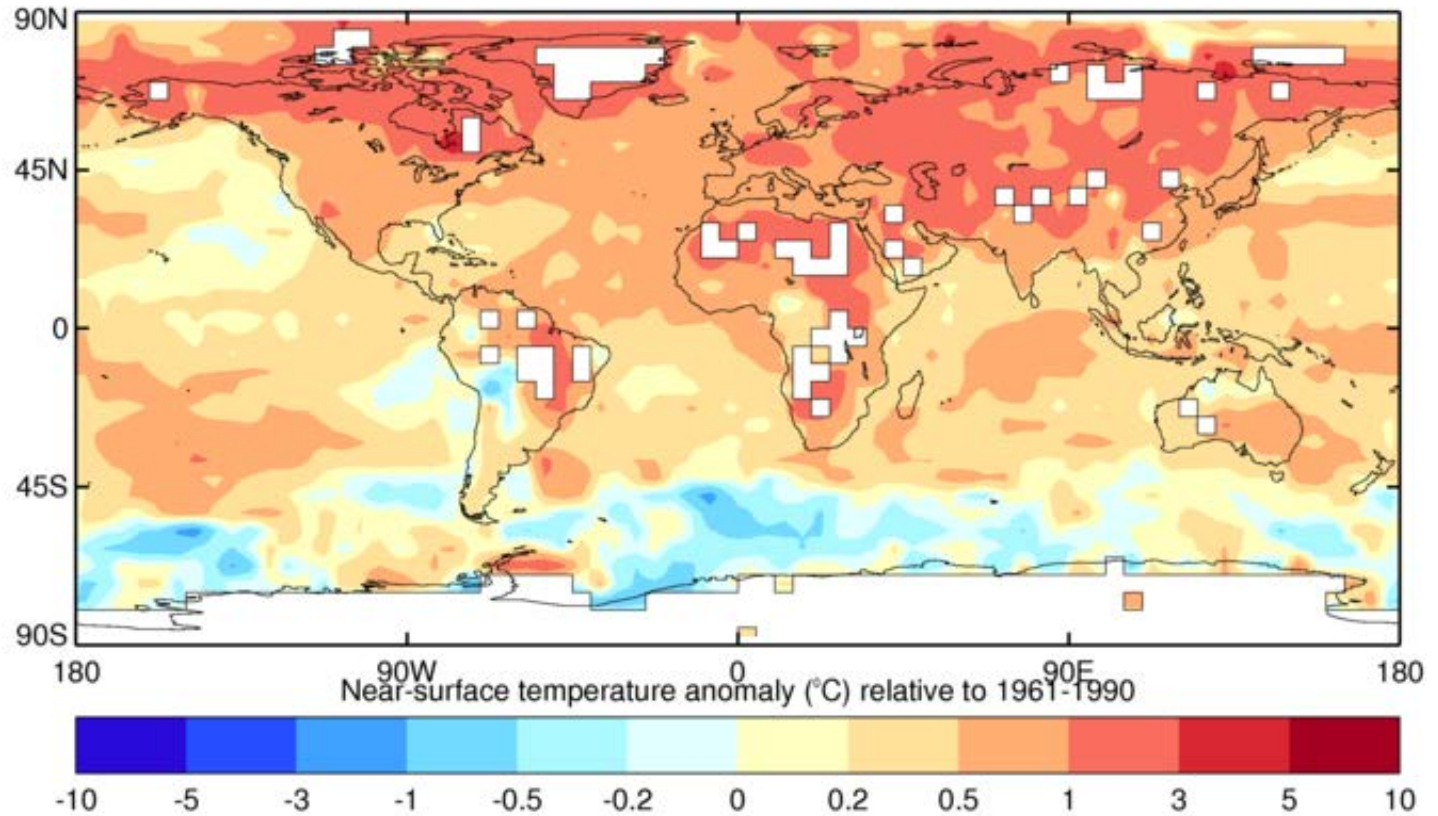
Features of the decade - Temperature



- Decade was characterized by a record in global temperature increase since sufficiently comprehensive global surface temperature measurement began
- Warmest decade on record for global land-surface air temperatures and ocean-surface temperatures
- Trend confirmed at national level (96% of the countries had warmest decade in 2000-2010, 4% in 1991-2000)



Features of the decade - Temperature



The rate of temperature increase was particularly high in the northern hemisphere

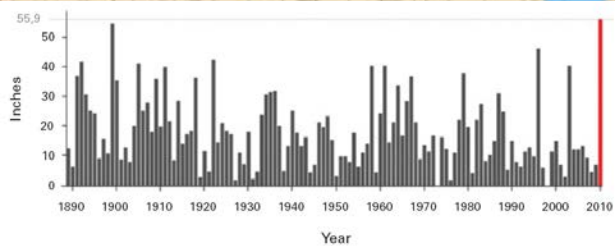
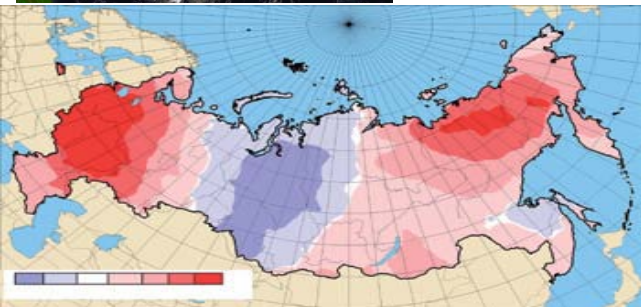


Features of the decade – GHG and sea ice decline

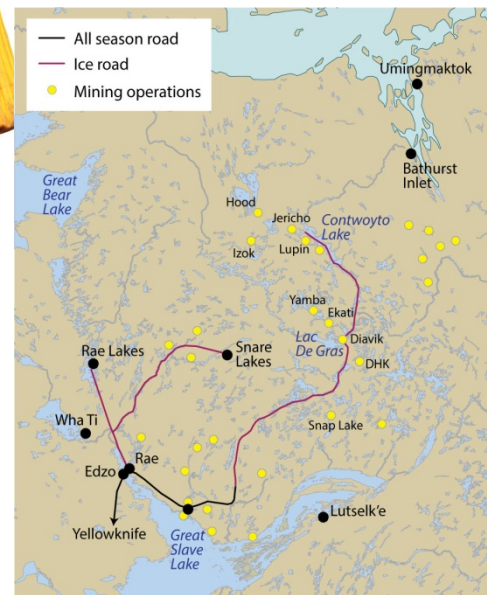
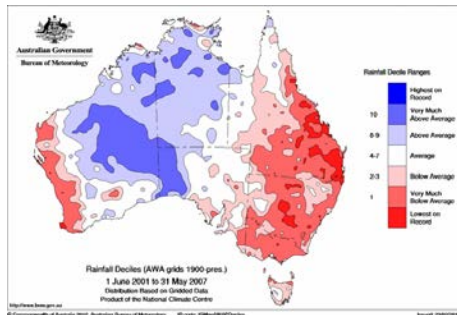
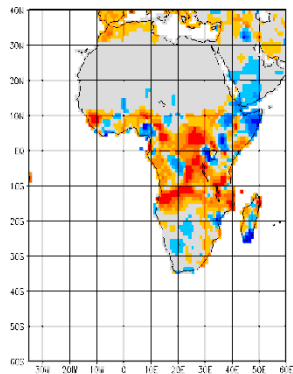
- CO2 mixing ratio continued to increase reaching **389 ppm** by the end of the decade, which is the highest value recorded for at least 10 000 years and it is 39% higher than the mixing ratio at the beginning of the industrial era (1750)
- The dramatic and continuing sea ice decline in the Arctic is one of the most prominent features of the changing state of the climate during the decade
- The five **lowest minimum sea ice extents** at the end of the melting season all recorded in the second half of the decade with the record set in 2007



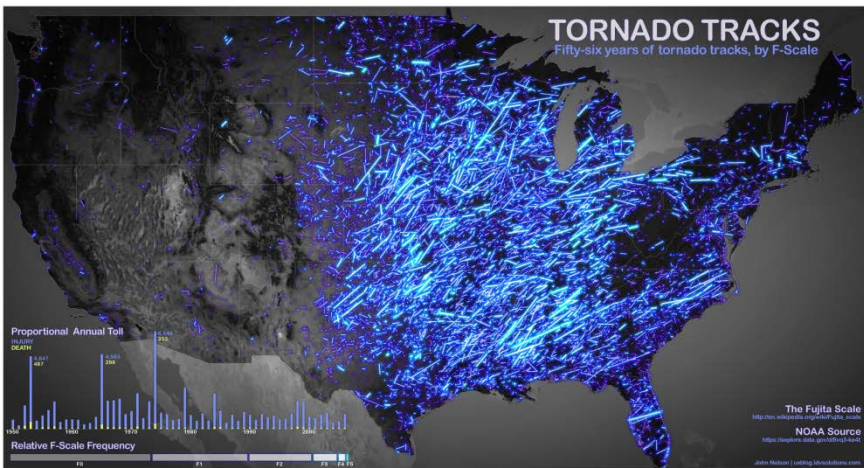
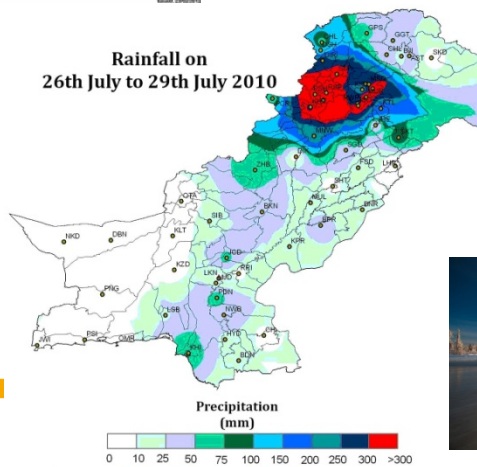
Extreme events



GPCP Monitoring Product Gauge-Based Analysis 1.0 degree precipitation anomaly for Season (Mar-Apr-May) 2005 in mm/month (deviation from normals 1951/2000) (grid based)

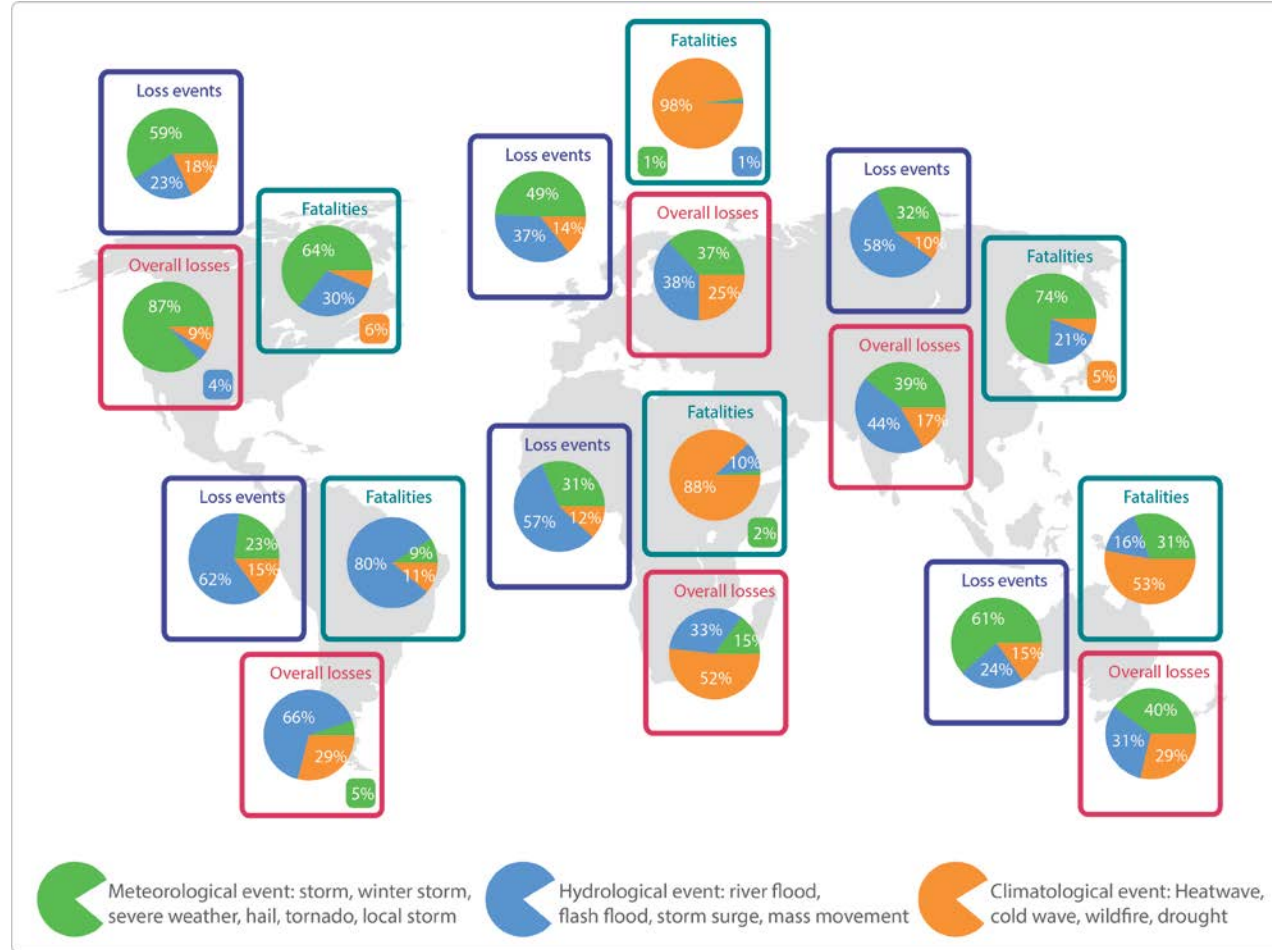


Rainfall on 26th July to 29th July 2010

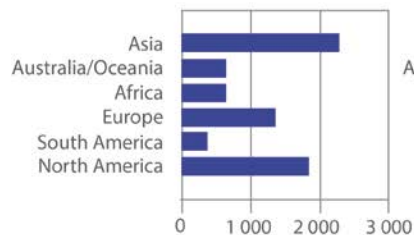


Source: Pakistan Meteorological Department

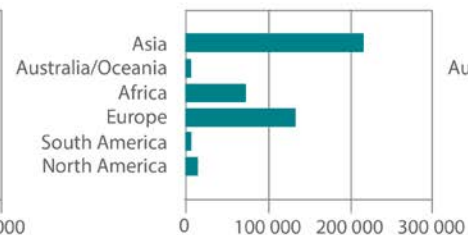
Socio-economic data - Decadal statistics



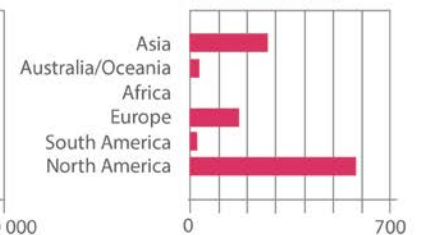
No. of events: 7 100



Fatilities: 440 000



Overall losses: US\$ 1 070 billion (in 2012 values)



Source: MunichRe



Socio-economic data - Other aspects

- Climate-related disasters were the trigger for the displacement of 56 % of the total number of people displaced in 2008, 88 % in 2009 and 93 % in 2010
- Floods and storms formed the vast majority of events, causing the displacement of more than 15 million people in 2009 and more than 38 million in 2010
- Floods in China and Pakistan in 2010 caused the displacement of at least 15 million and 11 million people, respectively.


Source: OCHA in partnership with the Internal Displacement Monitoring Centre



Enhanced Climate Data infrastructure

■ Data Management Framework for Climate

Develop an integrated infrastructure for climate data management based on existing best practices that can be elevated as WMO standard procedures

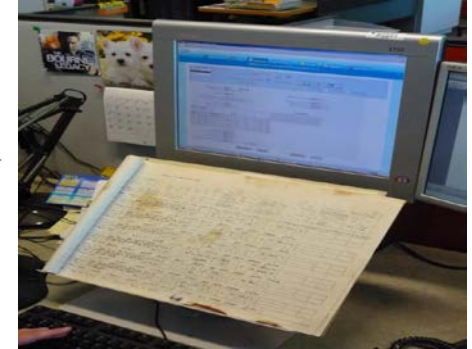
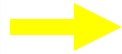
- National level
 - Regional level
 - Global level
- 

- Enhanced access, and timeliness of climate data
- Consistent procedures in dealing with some computational aspects
- Use WIS for the discovery and access of archived climate data in this three levels
- Data Traceability

Provide modern Data platform for GFCS/CSIS



Data Rescue for improving climate science, Applications and Services



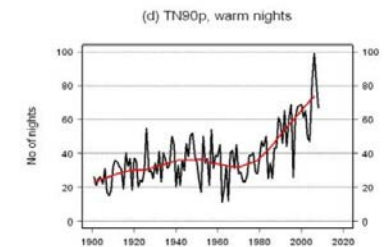
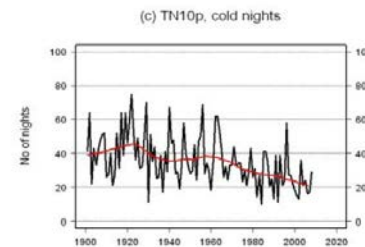
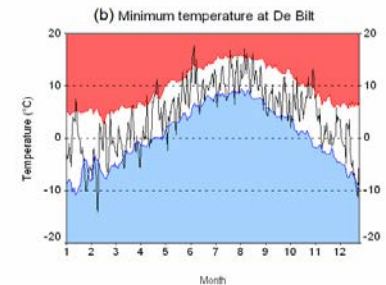
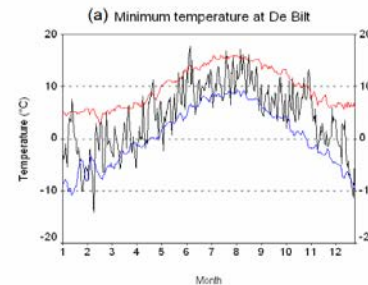
Data Rescue (DARE) is an integral part of the World Climate Services Program with a long term goal of rescuing and digitizing climate records. A focus is made on those records at risk of loss. DARE enables climate science and climate services by making readily available long and high quality climate datasets needed for:

Progressing science

- Climate variability and climate change assessment,
- Modeling,
- Validation of Satellite data

Sector Applications and Risk Management

- Agriculture, Water Resources, Energy, Insurance
- Disaster Risk Reduction
- Climate Early Warning



Upcoming event

- The WMO Commission for Climatology will hold its 16 Sessions, Heidelberg, Germany 3-8 July 2014, back to back to a technical conference on climate services 30 June -2 July 2014).
 - The Session will review its achievements and adjust priority for the next 4 years period
 - It is expected that an Open Panel on Climate Monitoring and Assessment will be strengthened with the establishment of an Expert group dealing with the use of Satellite data and products



**WMO Technical Conference
on Climate Services –
Building on CLIPS Legacy**

in conjunction with the
Sixteenth Session of the Commission for Climatology and
the thirty-fifth Meeting of the Joint Scientific Committee of
the World Climate Research Programme

30 June – 2 July 2014, Heidelberg, Germany

www.wmo.int/clipsconf-2014

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 WCRP
World Climate Research Programme

 DWD



Concluding remarks

- WMO Annual Statement and related climate reports have become important science publications. They contribute to raise awareness globally on climate trends and extremes
- WMO will further enhance its climate assessments using
 - long term homogenized data sets on tropical cyclones,
 - satellite based data to contribute to global temperature and precipitation anomalies and trends,
 - Estimated arctic sea ice volume,
 - monthly northern hemisphere snow cover and anomalies.
- WMO Members are working to issue operational climate monitoring services to alert against regional climate extremes, **heat waves, cold waves, extreme wet spells and dry spells, bush and forest fires**, etc.

A demonstration phase is ongoing for Africa (ACMAD) and Europe (RA-VI RCC)



Proposed action and recommendation

- ACTION: CGMS Members who are willing to contribute satellite-based products to the annual WMO climate assessment shall nominate a point of contact to liaise with the future CCI Task Team on the Use of Satellite Data for Climate Monitoring
- RECOMMENDATION: CGMS Members are encouraged to support regional climate watch demonstration projects





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Thank You