AvH8-31
8th Alexander von Humboldt International Conference
Cusco, Peru, 12 – 16 November 2012

2001-2010: A decade of climate extremes

K. Eichler
World Meteorological Organization (WMO), Geneva, Switzerland (keichler@wmo.int)

Much of our knowledge on climate comes from global scientific and technical programmes coordinated by WMO. The Organization's mandate is to coordinate and facilitate world-wide cooperation in making and exchanging standardized and quality-controlled meteorological, hydrological and geophysical observations as well as their analysis, understanding and interpretation.

The goal of WMO Climate System Monitoring is to deliver timely authoritative information on the status of the Atmosphere, Ocean, Cryosphere and Biosphere; at sub-monthly, monthly, annual, decadal, to multi-decadal time scales. WMO Members have been collaborating over decades to achieve improved understanding of climate variability and climate change and related extreme weather and climate events. Nowadays, with modern communication technology, they issue timely and regular monitoring reports which have become crucial inputs in the various decision making processes of the user communities and allow a quick analysis of the monthly and seasonal climate drivers.

In addition to the WMO annual statements on the status of the global climate which have been produced regularly since their initiation in 1993, WMO produced in 2003 a Climate Review covering the period 1996-2001 with more comprehensive data and information. In 2005, the Commission for Climatology recommended discontinuing the multi-year Climate Review; instead it agreed to publish a five years climate summary to complement the annual statements. As a cost-effective alternative, WMO decided to produce a decadal climate summary covering the period 2001-2010 titled "Decadal Global Climate Summary (DGCS)". The publication aims to provide a decadal perspective of climate variability and change and assesses the current climate knowledge at global, regional and national levels.

Preliminary assessment shows that the decade 2001-2010 was characterized by its record in global temperature increase since global surface temperature measurement began. For global land-surface air temperatures as well as for ocean-surface temperatures it was the warmest decade on record. The rate of temperature increase was particularly high in the northern hemisphere. On extreme events flooding was reported by a great majority of countries as the most frequent extreme event followed by droughts, heat waves, heavy rainfalls and severe storms. The dramatic and continuing sea ice decline in the Arctic is one of the most prominent features of the changing state of the climate with the five lowest minimum sea ice extents all recorded in the second half of the decade with the record set in 2007. CO_2 concentration continued to increase, reaching 389 parts per million of average concentration in the atmosphere in 2010; the highest value ever recorded, with an increase of 39%, since the industrial era started in 1750. The presentation will be a summary of the detailed decadal climate report which is due in October 2012.