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2015 El Niño is Unique

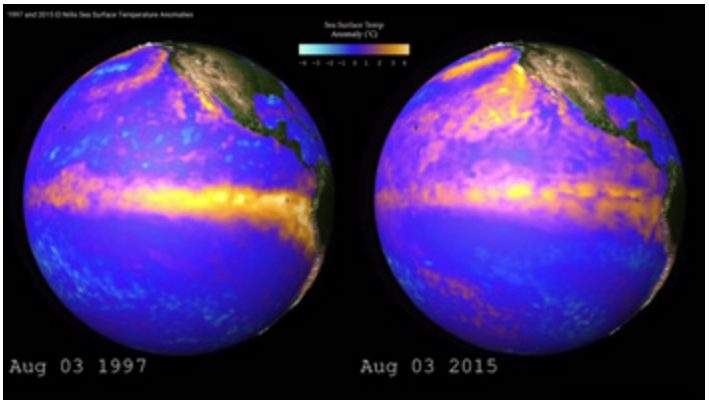
Many governments around the world are implementing contingency plans to limit the impact of the ongoing El Niño, the strongest since 1997-1998 and potentially among the four strongest events since 1950. WMO announced on 1 September that the El Niño is expected to peak sometime during October 2015 to January 2016. It is likely that surface water temperatures in the east-central tropical Pacific Ocean will exceed 2° Celsius above average – well above the El Niño threshold of 1° C. National Meteorological and Hydrological Services in affected countries have been active in providing tailored advice to the general public and all levels of government to cope with related drought, floods and other extremes.

"Compared to the last major El Niño event in 1997/1998, there is much more information available," said Maxx Dilley, Director of the WMO Climate Prediction and Adaptation Division. "We have better models and are much more prepared." Mr. Dilley added that this El Niño "is a test case for the early warning systems and climate information systems of WMO Members. We are hoping that they will be of assistance to affected countries."

Ahead of the full onset of this El Niño, 2014 was nominally the warmest year on record, with record ocean heat and high land-surface temperatures. This trend has continued in the first seven months of 2015, which have witnessed many extreme events ranging from devastating flooding to extreme heat and drought. No two El Niño events are the same, and other climate phenomena also play a role. The inter-play between the El Niño Southern Oscillation (ENSO)* and climate change is the subject of concerted research.

David Carlson, Director of the WMO co-sponsored World Climate Research Programme (WCRP), said that the 2015 El Niño is the first to take place in an environment of rapid melting of Arctic sea ice and snow cover. "The last big El Niño was 1997-1998. The planet has changed a lot in 15 years," said Mr Carlson. "We have had years of record Arctic sea ice minimum. We have lost a massive area of northern hemisphere snow cover, probably by more than 1 million square kilometers in the past 15 years. We are working in a different climate and we do not fully understand the new patterns emerging."

* Cycle of warm and cold temperatures of the tropical central and eastern Pacific Ocean.



A new animation compares the blockbuster 1997-1998 El Nino to the strong El Nino taking shape in 2015.

Carlson explains that the 2015 El Niño is unique because of the unprecedented combination of the Equatorial influence of El Niño, and the Arctic influence of low sea ice and snow cover in place at the same time.

"This is a new planet. Will the two phenomena reinforce each other or cancel each other out? We have no precedent. Climate change is increasingly going to put us in this situation. We have not had a previous event like this," he said. In order to maximize understanding of this El Niño and to boost research into the phenomenon, WMO and the International Research Institute for Climate and Society are organizing a major conference in New York on 17-18 November.

Climate Field Schools in Indonesia

Despite the El Niño-induced drought, farmers in Indonesia have harvested impressive yields of rice as a result of Climate Field Schools organized by the Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG) with support from WMO. The Climate Field Schools, now in their fifth year, embody the goal of the Global Framework for Climate Services (GFCS) to improve the provision and use of tailored climate services to improve food security. So far, 25 provinces have benefitted from the three-month field schools where BMKG staff and extension workers meet with farmers every 10 days to discuss how to apply weather and climate information during the planting and growing season as well as how to use simple tools, such as rain gauges, and temperature and humidity readings.

In order to ensure the long-term sustainability of the project and to spread its benefits as widely as possible, BMKG organized a "Training of Trainers Course" from 25 to 29 August aimed at staff from meteorological and agricultural departments throughout the Asia Pacific region. There were lectures and hands-on exercises on cloud and rain formation processes, meteorological instruments, and the introduction of science-based information to indigenous knowledge-based cropping techniques.

Training the trainers session, with meteorological equipment and expertise at Darmaga Bogor climate station, Indonesia. (Photo: BMKG)

Participants from Indonesia, Myanmar, the Philippines, Thailand, Vanuatu and Viet Nam attended the course at the Regional Training Centre in Bogor Citeko and visited a Climate Field School in the Banten province. "We need to exploit climate information for the benefit of society, especially in developing countries which most need it. Farmers need to know how to cope with climate variability and climate change which could significantly hamper their production, reduce their crops and cut their earnings," said Dr Andi Eka Sakya, Director-General of BMKG. He added that "agriculture is one of the most highly sensitive sectors to the drought we are experiencing in this El Niño year."

Rice harvest at BMKG climate field school in Banten province, Indonesia, 7 September.

The trainers who participated in the August session will be part of the Climate Field Schools, which won an Innovation Award last year. The Climate Field Schools provide intensive hands-on training and learning for agricultural extension workers and farmers.

"One of the main challenges is communicating climate science to the end user," said Robert Stefanski, Chief of the WMO Agricultural Meteorology Division. "We have to translate our language about what is happening in the atmosphere into basic information like 'will there be rain in 2 days?' or 'can we do field work in 3 days?'"

Results have been encouraging, with increases in maize and rice yields of up to 30% in the selected pilot project fields in the past four years. For example, in Sindang Jaya, in Banten province, farmers for the first time this year planted rice during the secondary June-September cultivation season on plots of land normally used for less productive vegetables. "Before, we couldn't even get anything from the field during the dry season. In the past we tried to plant paddy rice but we failed. Thanks to BMKG Climate Field School, this year we had a good harvest," said Yamah, one of the farmers in Sindang Jaya after the harvest day on 7 September.

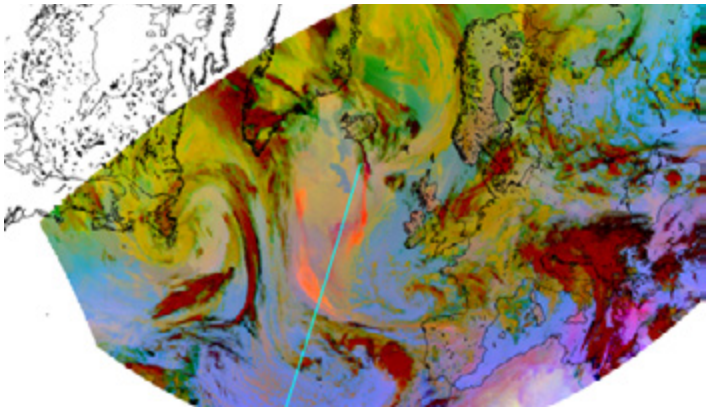
Satellite-based Volcanic Ash Cloud Detection Intercomparison

A workshop at the University of Wisconsin-Madison (USA) from 29 June to 2 July considered 22 algorithms using passive satellite imagery as part of a WMO Satellite-based Volcanic Ash Cloud Detection Intercomparison. This activity aims at improving knowledge in this area mainly in support of aeronautical meteorological services. Consistent ash prediction and information products for aviation are required to inform the services provided by the Volcanic Ash Advisory Centres (VAAC) and international regulations established by International Civil Aviation Organization (ICAO) (Annex 3 of the ICAO Convention, and the International Airways Volcano Watch Roadmap) and WMO.

Eruption at Eyjafjallajökull April 17, 2010 (Photo: Árni Friðriksson)

Currently, satellite-derived ash products are not consistent because the quantification of volcanic ash parameters is difficult, no internationally-agreed validation protocol exists for such products, the strengths and weaknesses of available products are not known or comparable, many are produced on an ad-hoc basis and not sustained or operationally available, and there is no WMO-endorsed standard for volcanic cloud geophysical parameters. Thus, the objectives of the WMO intercomparison included establishing a basic validation protocol for satellite-based volcanic ash products; quantifying and understanding the differences in the products for six selected volcanic eruptions in order to extract best practices; and standardizing volcanic cloud geophysical parameters in the context of WMO and ICAO. The performance of algorithms is also to be studied in view of the sensors available on the next generation of meteorological satellites in the 2015-2020 timeframe.

The University of Wisconsin-Madison also used reference data from the CALIPSO CALIOP space-borne lidar instrument, the United Kingdom FAA aircraft, and the EARLINET ground-based lidar data. The six volcanic eruption cases considered in the intercomparison were Eyjafallajökull (2010), Grimsvötn (2011), Sarychev Peak (2009), Kelut (2014), Puyehue-Cordón Caulle (2011) and Kirishimayama (2011).



Eyjafjallajökull eruption (8 May 2010): MSG SEVIRI imager-based RGB composite, showing ash clouds (in bright orange) and CALIPSO CALIOP space-borne lidar ground track (used for comparison).

Results of the intercomparison are currently being synthesized. The guidance derived from these results will be beneficial not only to aviation but also to other meteorological applications such as nowcasting and air quality forecasting. The activity has been established as part of WMO Sustained, Co-Ordinated Processing of Environmental Satellite Data for Nowcasting (SCOPE-Nowcasting, reporting to the WMO Commission for Basic Systems), and is contributing to the WMO/IUGG Volcanic Ash Scientific Advisory Group (VASAG, reporting to the Commission for Aeronautical Meteorology and ICAO), the ICAO MET Panel and its Working Group on Meteorological Information and Service Development (with sub-group on volcanic ash), and the WMO Global Atmosphere Watch (GAW) and World Weather Research Programmes (WWRP).

GCOS Conference: The Road to the Future

The Global Climate Observing System (GCOS) is developing an Implementation Plan to guide the development of the global climate observing system in the future. The Global Climate Observation: the Road to the Future conference, to be held from 2 to 6 March 2016 in Amsterdam, Netherlands, will offer climate observation experts and other key stakeholders the opportunity to contribute to the Plan. This conference will discuss current monitoring of Essential Climate Variables (ECVs) and highlight possible new ECVs.

Climate observations are essential for understanding the complexities of the global climate system. Virtually all breakthroughs in understanding climate have come from observations. The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR5) noted that there are gaps in the current global climate observing system. Thus, further progress towards achieving a fully implemented, sustainable, global observing system for climate is crucial. GCOS is responsible for ensuring a sustained, long term and reliable system for monitoring the global climate to the United Nations Framework Convention on Climate Change (UNFCCC). An important aspect of this is the definition of ECVs, which are critical to our understanding of the climate and that support the work of the UNFCCC, the IPCC and many other international organizations and programmes. The next GCOS status report on the state of the global climate observing system, to be published before the end of the year, will help to critically assess the current system and provide a basis for the next Implementation Plan.

Conference Goals

As development of the new GCOS Implementation Plan is starting and due for completion in 2016, the conference will:

- Review of the outcomes of the previous GCOS work plan and the GCOS status report on the state of the global climate observing system;
- Consider the adequacy of the existing set of ECVs;
- Focus on the demands that adaption and mitigation of climate change put on local and regional observing systems and whether these should be compatible with global observations;
- Consider how well the carbon cycle, hydrological cycle and energy flows are monitored and understood.

The new Implementation Plan will take into account requirements for observations with regard to climate services from various initiatives. New developments and frameworks in climate observing systems will also be considered.

The main outcome should be a list of priorities and additional actions that can be reasonably included in a new GCOS Implementation Plan considering feasibility, practicality and cost-performance. Guidance on how GCOS should align its work plan with other related activities and work programmes is also expected. These outcomes will then be elaborated in the new GCOS Implementation Plan and, if accepted by the GCOS Steering Committee, presented to the UNFCCC at the end of 2016.

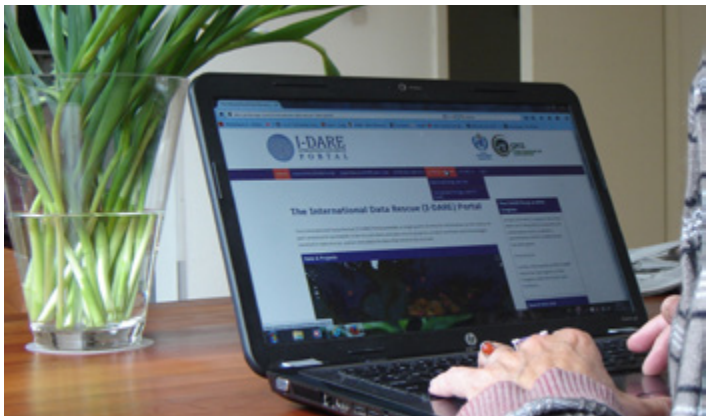
For more information on the conference, visit: www.copernicus.eu/events/global-climate-observation-road-future

UN Secretary-General Ban Ki-moon Visits Climate Research Base

United Nations Secretary-General, Ban Ki-moon, visited the GCOS Reference Upper-Air Network (GRUAN) site in Ny-Ålesund, Norway on 8 July 2015. During his stay, the UN Secretary-General and the Norwegian Minister of Foreign Affairs, Børge Brende, also visited the Alfred Wegener Institute for Polar and Marine Research and the French Polar Institute Paul Emile Victor (AWIPEV) base located in the Arctic, Svalbard, Kongsfjorden. The base was founded in 2003 and is known as the "largest laboratory for modern Arctic research", bringing together researchers from across the globe, and from different polar research facilities. During their visit, they were informed about climate research and the work at the base.

Ban Ki-moon and Børge Brende launching a weather balloon at the AWIPEV base. (Photo: Shadé Barka Martins)

The International Data Rescue (I-DARE) Portal



Many past weather observations that only exist in paper form are at risk of being lost and are not available for analysis of climate trends and natural variability. To stimulate and coordinate data rescue activities – the imaging and digitizing of data – the International Data Rescue (I-DARE) Portal has recently been launched: http://www.idare-portal.org. The Portal provides a worldwide single point of entry for information on the status of past and present rescued data and data rescue projects, and on best methods and technologies involved in data rescue.

The Portal is supervised by the WMO Commission for Climate (CCl) Expert Team on Data Rescue, under the auspices of the GFCS, and is operated by the Royal Netherlands Meteorological Institute (KNMI). In the coming months, WMO Members will be encouraged to populate the Portal with information on data that needs to be rescued. For more information on the Portal, please contact Peter Siegmund (peter.siegmund@knmi.nl).

Metagri, Final Workshop

The National Meteorological Service of Côte d´Ivoire will organize the Metagri Operational Project final technical workshop in Abidjan from 23 to 27 November. The Metagri Project covers 17 Western Africa Countries and, so far, has organized over 370 roving seminars, training around 15 000 farmers, fishermen, agricultural extension agents. Preview workshops have improved technical skills in crop modelling and the use of remote sensing products at the national meteorological and hydrological services of participating countries as well as improved their relations with the media for a more efficient and broader dissemination of weather and climate warnings and agricultural advices.

The final technical workshop will include a project evaluation and the definition of a new project.

Newly Issued

MEETING REPORTS

Intergovernmental Board on Climate Services, Second session: Abridged final report with resolutions, WMO No. 1149, ISBN 978-92-63-11149-4. Available in English, French, Spanish, Russian, Arabic and Chinese.

WMO Guidelines on Multi-hazard Impact-based Forecast and Warning Services, WMO No. 1150, ISBN 978-92-63-11150-0. Available in English, French, Spanish, Russian, Arabic and Chinese.

Regional Association I (Africa) - Sixteenth session: abridged final report with resolutions, WMO No. 1151, ISBN 978-92-63-11151-7. Available in English, Arabic and French.

Seamless prediction of the Earth system: from minutes to months, WMO No. 1156, ISBN 978-92-63-11156-2. Available in English.

Seventeenth World Meteorological Congress: Abridged final report with resolutions, WMO No. 1157, ISBN 978-92-63-11157-9. Available in English, French, Spanish, Russian, Arabic and Chinese.

Executive Council - Sixty-seventh session: Abridged final report with resolutions, WMO No. 1158, ISBN 978-92-63-11158-0. Available in English, French, Spanish, Russian, Arabic and Chinese.

TECHNICAL DOCUMENTS

Manual on the Global Telecommunication System. Volume I - Global aspects: Annex III to the WMO Technical Regulations, WMO No. 386, ISBN 978-92-63-10386-4. Available in English, French, Spanish and Russian.

Manual on the Global Data-processing and Forecasting System: Volume I - Global Aspects, WMO No. 485, ISBN 978-92-63-10485-4. Available in English, French, Spanish, Russian, Arabic and Chinese.

Guide to Meteorological Observing and Information Distribution Systems for Aviation Weather Services, WMO No. 488, ISBN 978-92-63-10485-4. Available in English, French, Spanish and Russian.

Resolutions of Congress and the Executive Council, WMO No. 508, ISBN 978-92-63-10508-0. Available in English.

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