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Mark Cunningham/NOAA



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NEWS IN BRIEF

Earthquake damages GAW observatory in American Samoa

On 29 September, a major undersea earthquake and its resulting tsunami waves struck the islands of Samoa and American Samoa, location of an Earth System Research Laboratory (ESRL) run by the United States National Oceanic and Atmospheric Administration (NOAA) since 1975 and a global observatory for the WMO Global Atmosphere Watch (GAW). The following is an account of the day's event as experienced by the manager of the global atmospheric research station.

Mark Cunningham, Station Chief of NOAA's baseline atmospheric observatory in American Samoa, has reported that he, his family and the observatory's groundskeeper are fine following a major undersea earthquake in the region, which triggered deadly tsunami waves. Cunningham works for NOAA's ESRL, which runs a network of five baseline atmospheric observatories

that are the backbone of several comprehensive monitoring networks that continuously monitor the composition of the atmosphere and solar radiation. The American Samoa Observatory sits on the northeastern tip of Tutuila Island, on a ridge about 42 metres above the South Pacific Ocean.

Jim Butler, Director of ESRL's Global Monitoring Division, spoke with Cunningham by mobile phone regularly following the earthquake and tsunami. Cunningham updated his boss on the status of the NOAA observatory, and told him about ferrying people from devastated, low-lying areas to the higher observatory site and providing shelter. The NOAA observatory became the second-largest designated shelter area in American Samoa due to its elevated location and substantial self-supporting infrastructure, including electrical generation capacity.

Cunningham reported that he was driving to work the morning of 29 September when his wife

called to tell him there had been an undersea earthquake. He asked her to get herself and their child to high ground immediately, and proceeded toward the observatory. Near the village of Fongaitua, Cunningham saw the sea quickly recede, and then an initial wave washed over the road. He quickly drove about to a higher, sheltered spot.

"The second wave came in and flooded the village. The third wave battered down walls and carried away buildings. From the cab of my vehicle I watched the fourth wave crest over the hood of my truck", Cunningham wrote in an e-mail update. "It floated the front of the truck up and spun me around in a number of 360-degree turns, finally depositing me up against the concrete terrace that I sheltered against".

Driving eight kilometres further to the atmospheric observatory took Cunningham several hours. He stopped many times to help people who needed assistance, wading through water to help clear trees,

boulders, vehicles, and dead animals out of the road. When he reached the observatory, Cunningham shut it down temporarily, turning off leaking gas lines and other equipment that might have problems. He then headed back down the hill in his truck and started shuttling people up to the elevated observatory site from the devastated Tula village closer to sea level.

The night of the earthquake, about 100 people camped in the covered carport of the observatory and within the air-conditioned observatory itself, Cunningham reported. He made an inspection of the observatory equipment, detailing problems, as well as equipment that survived with little or no impact. Most of the damage done was due to the earthquake, according to Cunningham's initial assessment—electrical and gas lines pulled out of sockets when buildings shook, for example. He quickly began repairs, after consultation with colleagues in ESRL. Most of the observatory's instruments—which

gather data on greenhouse gases, ozone-depleting chemicals, air pollutants, solar radiation and other factors—were offline temporarily, pending repairs.

“Driving through Pago Pago was surreal”, Cunningham wrote after he drove home through the island’s main town the evening after the tsunamis. “It was like a bomb went off. Big fishing boats washed ashore, drainage canals full of vehicles, businesses collapsed”.

The NOAA observatory groundskeeper and his family were temporarily living at the site following the event, along with two other families whose homes were also washed away. The observatory has electricity and air conditioning provide by an auxiliary generator. The observatory’s generator powers a cell phone tower and Internet node that provided a key link in rescue communications for an appreciable portion of the north-eastern part of the island.

“Once again, Mark is a hero when heroes are called for”, Butler said. “We owe him a lot”. Cunningham received a Bronze Medal from NOAA’s Workforce Management Office in 2005, following the Category 5 Cyclone *Heta* in January 2004. The award praised Cunningham’s service in restoring operations to the Samoa Baseline Atmospheric Observatory, which had been pounded by 27-metre-high waves.

NOAA requests that any communication for Cunningham or the American Samoa observatory be sent to Jim Butler, Director of Global Monitoring, NOAA ESRL (+1 303 497 6898; james.h.butler@noaa.gov).

Slovenia and Tajikistan, the Vice-Presidents of Comoros and the United Republic of Tanzania, the Premier of Niue, the Prime Ministers of Bangladesh and Cook Islands, the Vice Premier of China, more than 80 Ministers and other senior government officials. The 1 500 scientists and sector experts who participated in the WCC-3 expert segment supported the development of the Global Framework, helping to identify essential components for its implementation. Total attendance at the Conference topped 2 500 people.

Under the Declaration adopted by the High-level Segment, a task force, consisting of high-level independent advisors, will recommend the proposed elements of the Global Framework. Within 12 months of the task force being set up, it will, in consultation with government, partner organizations and relevant stakeholders prepare a report with its recommendations, which will be circulated for WMO Members to consider at the WMO Congress in 2011. An Intergovernmental Meeting for the High-level Taskforce on the Global Framework for Climate Services will take place at the International Conference Centre Geneva from 11 to 12 January.

Training workshop on multi-hazard early warning systems

WMO hosted its first training on “Multi-Hazard Early Warning Systems with focus on Institutional Coordination and Cooperation” (MH-EWS Training

COMING EVENTS



- 7-18 December:** Fifteenth session of the UN Framework Convention on Climate Change and Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol - 31st session of the Subsidiary Bodies (Copenhagen, Denmark)
- 14-18 December:** Roving Seminars on Weather, Climate and Farmers (Colombo, Sri Lanka)
- 11-12 January:** Intergovernmental Meeting for the High-level Taskforce on the Global Framework for Climate Services (Geneva, Switzerland)
- 25-27 January:** Sixty-third session of the WMO Bureau and WMO/IOC Officers Consultation Meeting (Paris, France)
- 3-10 February:** Commission for Aeronautical Meteorology - Fourteenth Session (Hong Kong, China)
- 19-24 February:** Commission for Climatology - Fifteenth Session (Antalya, Turkey)

Workshop) in Pula, Croatia, from 1 to 3 October 2009. The first of its kind, this training workshop brought together directors and high-level officials from National Meteorological and Hydrological Services (NMHSs) and disaster risk management agencies from 10 south-eastern European countries, experts in early warning systems from five countries, as well as representatives from international and regional agencies.

The MH-EWS Training Workshop was held as part of the WMO project on “Regional Cooperation in south-eastern Europe for meteorological, hydrological and

climate data management and exchange to support Disaster Risk Reduction”.

The MH-EWS Workshop, along with two earlier multi-hazard warning system symposium convened by WMO, have enabled the WMO Disaster Risk Reduction (DRR) Programme to develop a systematic process for identifying and documenting good practices in early warning systems. The DRR Programme has been working with its partners to link know-how, derived from good practices in early warning systems, to national and regional development projects focused on strengthening institutional capacities and cooperation of the NMHSs and disaster risk management agencies. To date, through a national multi-agency approach, engaging NMHSs and their partners in disaster risk reduction, four good practices have been documented in detail, including: an early warning system for tropical cyclones in the Republic of Cuba; the French “Vigilance System”; a multi-hazard early warning system in Bangladesh with emphasis on the Cyclone Preparedness Programme; and the Shanghai MHEWS Report on “The Role of NMHS in Multi-Hazard Early Warning Systems, with Focus on Institutional Coordination and Cooperation”.

WCC-3 decides to establish a Global Framework for Climate Services

At World Climate Conference-3 (WCC-3), held from 31 August to 4 September 2009 in Geneva, high-level policy-makers from 160 countries agreed to establish a Global Framework for Climate Services to “strengthen production, availability, delivery and application of science-based climate prediction and services”.

The policy-makers included the Heads of State/Government of Ethiopia, Monaco, Mozambique,



On 3 September 2009, United Nations Secretary-General Ban Ki-moon spoke during the opening of the WCC-3 High-level Segment, which was attended by high-level policy-makers from 160 countries.



The MH-EWS Training Workshop in Pula, Croatia, from 1 to 3 October 2009, brought together a diverse group of experts from NMHSs, disaster risk management agencies and international and regional agencies.

These reports, together with additional guidelines, were used in the training programme and will be published in early 2010, for distribution to all WMO Members and will be used in upcoming training workshops.

The recent project for south-eastern Europe emerged from the South East Europe Disaster Risk Mitigation and Adaptation Programme, which was initiated in 2007 by the World Bank, WMO and the United Nations Strategy for Disaster Risk Reduction, to assist countries in reducing risks associated with natural hazards. The MH-EWS Training Workshop was sponsored by WMO, the United Nations Development Programme and the Meteorological and Hydrological Service of Croatia.

At the workshop, leading national experts from disaster risk management agencies and NMHSs of Cuba, France, Italy and the United States of America led the training sessions on their national early warning systems; other early warning system examples from Croatia, Germany and Hungary were also discussed in detail. The workshop fostered a productive discussion among the participants from south-eastern European countries. These discussions highlighted their challenges, gaps, needs and priorities in disaster risk reduction including early warning systems.

All the materials of the workshop can be downloaded on the Website at: http://www.wmo.int/pages/prog/drr/events/Pula/index_en.html

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Experts meet on greenhouses gases and measurement techniques

WMO's Global Atmosphere Watch (GAW) programme coordinates observation activities to better understand the global carbon cycle for carbon tracking and budgeting. As part of this programme, WMO meets biennially with the International Atomic Energy Agency (IAEA) to review scientific understanding of greenhouse gas sources and sinks, and to examine data quality objectives and measurement techniques.

WMO has provided the umbrella for all carbon dioxide experts meetings since 1975. Because of the increased use of carbon isotopes in studying the carbon cycle, IAEA in Vienna joined WMO as a co-organizer in 1997.

The 15th WMO/IAEA Meeting of Experts on Carbon Dioxide, other Greenhouse Gases and Related Tracer Measurement Techniques took place from 7 to 10 September 2009 at the Max-Planck-Institute for Biogeochemistry in Jena, Germany. The meeting reviewed current WMO data quality objectives, covering such topics as carbon dioxide, stable isotopes, radiocarbon in greenhouse gas measurements, calibration, quality control, data management and archiving. The experts also discussed new and

emerging technologies, including measurements of greenhouse gases with high-precision spectroscopic methods, measurements from satellites and flux tower studies.

The group made several recommendations on the WMO data quality objectives, as well as on the development of the GAW programme infrastructure. In particular, it assigned a new Central Calibration Laboratory for Hydrogen at the Max Planck Institute for Biogeochemistry and made recommendations on preparation of the standard calibration gases within NOAA.

More information about the meeting is available online at: http://www.bgc.mpg.de/service/iso_gas_lab/IAEA-WMO2009/index.shtml

National ice services advise of navigation hazards

The International Ice Charting Working Group (IICWG) celebrated from 12 to 16 October its tenth meeting at WMO, with a focus on Arctic shipping. At the meeting, participants highlighted several items from 2009.

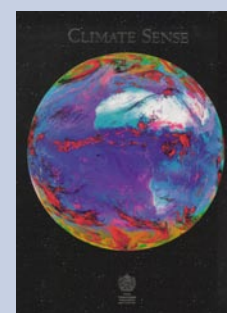
First, more than 1,200 icebergs drifted into the trans-Atlantic shipping lanes, making the iceberg season in the North Atlantic the eleventh most severe since the tragic loss of the *RMS Titanic* in 1912.

Additionally, the sea ice pack in the Arctic Ocean shrank to its third-lowest extent since the beginning of quantitative satellite observations about 30 years ago. Although greater than the record lows in 2007 and 2008, the minimum ice extent was still well below normal.

Ice conditions in the Northwest Passage were more difficult for shipping than in each of the three previous years, but a record number of leisure craft transited the Passage. Lastly, the participants noted that marine transportation of natural resources is increasing from Russian Arctic ports to the West.

IICWG formed in 1999 to promote cooperation between the world's ice services on all matters concerning sea ice and icebergs. It brings together the operational ice services of Canada,

RECENTLY ISSUED



Climate sense (WMO-No. 1043)
2009; 288 pp.
Prix: CHF 125
[E]



Technical Regulations Basic Documents No. 2, Volume II (WMO-No. 49)
2007; Updated in 2009
CD-Rom.
Prix: CHF 70
[A] [C] [E] [F] [R] [S]



The World Climate Research Programme Achievements (WMO/TD-No. 1499)
2009; 60 pp.
Prix: CHF 30
[E]
In pdf at http://wcrp.wmo.int/PG_Reports.html

Denmark (Greenland), Finland, Iceland, Germany, Norway, the Russian Federation, Sweden, the United States of America and the International Ice Patrol. These services are charged with monitoring sea ice and icebergs for marine safety.

Volunteers lend a hand to WMO kiosk at MOCA-09

From 19 to 29 July, the International Association of Meteorology and Atmospheric Sciences, the International Association for the Physical Sciences of the Oceans and the International Association of Cryospheric Sciences invited the international community to participate in their Joint Assembly, MOCA-09, in Montreal, Canada. Approximately 1 350 delegates from more than 50 countries attended this conference, on the theme "Our Warming Planet".

WMO was invited to sponsor a kiosk in the exhibit session (20-22 July) to inform the MOCA-09 delegates of its many activities. Volunteers had to be recruited to work at the WMO kiosk, so the MOCA-09 organizing committee sent out an e-mail to all members of the local centre of the Canadian Meteorological and Oceanographic Society to find local volunteers with knowledge of WMO.

The recruitment process was a success. Three recent Environment Canada retirees with significant WMO experience stepped forward: Louis Lefavre, former RA IV Global Data Processing and Forecasting System (GDPFS) rapporteur and former working group member; Jean-Guy Cantin, former WMO training consultant; and Rick Jones, former International Civil Aviation Organization (ICAO) working group member, delegate to a joint ICAO/CAEM session and GDPFS consultant. Both Lefavre and Cantin were also on the local organizing committee.

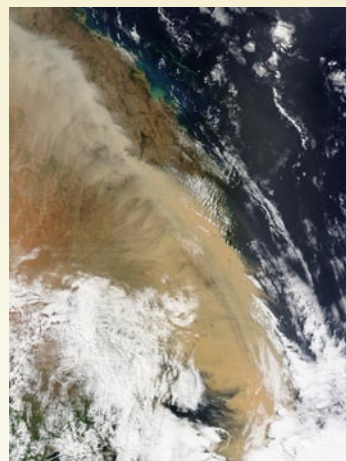
It was a win-win-win situation, for WMO, MOCA-09 and the volunteers. It made good

economic sense for WMO to have local volunteers represent the organization at the booth. The MOCA-09 conference delegates received information about WMO's many activities from experienced experts. And the volunteers had the opportunity to attend parts of the conference and meet with colleagues.

The kiosk was stocked with many WMO publications. Very popular were the *WMO At a Glance* and a booklet about the World Climate Research Program. One WMO publication that was a surprise hit was *We care for our climate*, a comic book for children. The response was universal: the comic book was not for the conference attendees themselves, but rather for their children or schools with whom they were associated back home.

Call for response to sand and dust storms

In September, WMO joined the United Nations Convention to Combat Desertification (UNCCD) to call for an immediate global response to the increasing number of sand and dust storms. Talks during the ninth session of the Conference of Parties (COP 9) of the UNCCD in Buenos Aires, Argentina, from 22 to 24 September 2009, took account of the Fourth Assessment



NASA

A wall of dust stretched from northern Queensland to the southern tip of eastern Australia on the morning of 23 September 2009.

Report of the Intergovernmental Panel on Climate Change (IPCC) warning that there will be an increased frequency of drought, especially in the dryland regions of the world.

At the same time as the UNCCD's COP 9, a vast red sand and dust storm originating from interior Australia hit the east coast of Australia. According to the Australian Bureau of Meteorology, a cold front in New South Wales caused severe thunderstorms and gale-force winds, whipping up the dust from a drought stricken part of Australia. The storm brought air traffic to a halt, disrupted

ferry and automobile transport, and obscured the famous Sydney opera house from view. The storm also caused a large increase in incidences of asthma and other respiratory problems and stripped soil from agricultural areas inland and deposited it in the coastal ocean.

WMO is establishing a Sand and Dust Storm Warning Advisory and Assessment System to help countries receive early warnings on devastating sand and dust storms around the world. Currently, 12 operational or research sand and dust forecasting centres exist around the world.



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WEATHER PRESENTERS HIGHLIGHT CLIMATE COMMUNICATIONS

During WCC-3, more than 60 weather broadcasters from around the world participated in the World Climate Broadcasts Forum on 2 September. Their discussions, along with the round table on communicating climate information, also held on 2 September and widely attended by media and scientists alike, provided critical insight into the challenges and needs for the communications community to address climate variability and change.

Among the group's recommendations, it stated that communicators must regularly interact with climate researchers to share the most up-to-date scientific information in a timely manner. The participants stressed that broadcast meteorologists need to become more fully integrated into the news cycle, working with a range of journalists and communicators. Additionally, all weather broadcasters should have access to training and tools in best practices in communicating climate, and weather broadcasters should take a lead in reaching out to various communities to educate about climate issues. The group's recommendations were input for the WCC-3 Expert Segment and discussions for the Global Framework for Climate Services.

More than 200 journalists attended WCC-3 and many more covered the Conference from abroad.