

**STATEMENT ON THE OCCASION OF NORBERT GERBIER-MUMM
INTERNATIONAL AWARD CEREMONY FOR 2009**

by

**M. Jarraud
Secretary-General
World Meteorological Organization
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**Dr Alexander Bedritsky, President of WMO,
Ms Geneviève Guiard-Gerbier,
His Excellency, Mr Gopinathan Achamkulangare, Ambassador Extraordinary and Plenipotentiary,
Permanent Representative of India to the United Nations Office at Geneva and other International
Organizations in Switzerland,
Mr François Jacq, Permanent Representative of France with WMO,
Drs K. Krishna Kumar and Balaji Rajagopalan,
Excellencies and members of the WMO Executive Council,
Distinguished Guests, Ladies and Gentlemen,**

I wish to welcome you to this ceremony and, in particular, to greet Drs Krishna Kumar and Balaji Rajagopalan. I would like to recall, very briefly, that the thirty-ninth session of the WMO Executive Council instituted in 1987 the Norbert Gerbier-MUMM Award, in memory of the late Mr Norbert Gerbier, who served from 1979 to 1985 as president of the WMO Commission for Agricultural Meteorology (CAgM). In 1991, the forty-third session of the Council changed the title of the award to *Norbert Gerbier-Mumm International Award*.

The purpose of the Norbert Gerbier-MUMM International Award is to encourage and reward an original scientific paper on the influence of meteorology on a particular field of the physical, natural or human sciences, or conversely, on the influence of one of these sciences on meteorology. The Award is therefore intended to stimulate interest in research in these areas, as a contribution to WMO's Programmes and activities. The Award has traditionally consisted of a diploma, a medal bearing the image of Mr Norbert Gerbier, and a cash prize.

Each year, scientists of international renown are requested to appraise the papers being considered for the Award. The Executive Council's Selection Committee then reviews their assessments and, on the basis of

the Committee's recommendations, the Council makes its final selection. Over the period from 1988 to 2008, over 130 scientists from 25 countries have received the Norbert Gerbier-MUMM International Award.

Mr President, Excellencies, Ladies and Gentlemen,

In 2008, the sixtieth session of the Executive Council conferred the Award for 2009 on Dr K. Krishna Kumar from the Indian Institute of Tropical Meteorology, Dr Balaji Rajagopalan from the Department of Civil Engineering and Architectural Engineering of the University of Colorado in the United States, Dr Martin Hoerling from the Cooperative Institute for Research in Environmental Sciences of the University of Colorado, Dr Gary Bates, from the US National Oceanic and Atmospheric Administration's Earth System Research Laboratory in Boulder and Dr Mark Cane from the Lamont-Doherty Research Laboratory of Columbia University in Palisades, New York, for their joint paper entitled "*Unravelling the Mystery of Indian Monsoon Failure During El Niño*", which was published on 6 October 2006 in Volume 314 of Science, No. 5796, pp. 115 - 119.

It has been notoriously difficult to predict failures in the Indian monsoon, on which the agriculture of India greatly depends. Drought years have been specifically linked to a warming of the central and eastern tropical Pacific Ocean associated with El Niño events and conventional wisdom has resulted in using a sea-surface temperature-based index of the strength of El Niño events to forecast monsoons and especially droughts. Although this relationship has been proven robust over the 130-year historical rainfall records, it no longer seems to be unconditionally trustworthy.

Over the past few decades, a range of monsoon rains, from strong to weak, have accompanied different sea temperature warming in the Pacific Ocean. In 1997, last century's strongest El Niño did not significantly affect the Indian monsoon rainfall; however, a more moderate 2002 El Niño resulted in a severe and unexpected drought. The selected paper has addressed these difficulties with the monsoon forecasting system and has achieved significant insight, leading to an improvement in our understanding of El Niño impacts on the Indian monsoon.

The main hypothesis is that El Niño events come in different "versions", in the sense that some events appear to preferably warm up the western/central portion of the Pacific Ocean, whereas other events affect the East. The authors' analysis of recent monsoons has concluded that the western Pacific warming is predominantly responsible for the Indian drought. Had researchers investigated this variable in the past, it might perhaps have been possible to predict such unexpected Indian droughts as those that occurred in 2002 and 2004. The authors have noted that this El Niño "version" is becoming ever more common as human activities increasingly cause the ocean to warm, and that this effect might impact even more negatively as droughts become more frequent.

The authors have further considered that that there might already be a trend towards a lessening of monsoon rains over India, possibly because of this shift in El Niño "flavours". However, the future seems still

uncertain since, as sea temperatures vary, the dominant El Niño patterns and their impacts may also be altered. It is anticipated that these key findings may lead to an improvement in long-lead forecasts of Indian monsoon droughts, as well as in our understanding of El Niño-related tropical or possibly extra-tropical teleconnections.

Mr President,

This year's award-winning paper has been the result of the combined accomplishment of five distinguished scientists, whom I wish to congratulate wholeheartedly for an outstanding achievement in atmospheric and climate research that is indeed worthy of the prestigious Norbert Gerbier-MUMM International Award.

Thank you.
