Strategic Lecture at the Opening of the

Sixth Annual Meeting of the European Meteorological Society
and
Sixth European Conference on Applied Climatology

Climate Information and Services: Leveraging Opportunities and Risk Management

M. Jarraud
Secretary-General

(Ljubljana, 4 September 2006)

Organisation météorologique mondiale

World Meteorological Organization

Temps Climat Eau

Weather Climate Water

WMO
OMM

STRATEGIC LECTURE AT THE OPENING OF THE
SIXTH ANNUAL MEETING OF THE EUROPEAN METEOROLOGICAL SOCIETY
AND
SIXTH EUROPEAN CONFERENCE ON APPLIED CLIMATOLOGY

CLIMATE INFORMATION AND SERVICES: LEVERAGING OPPORTUNITIES AND RISK MANAGEMENT

by

M. Jarraud
Secretary-General
World Meteorological Organization
(Ljubljana, Slovenia, 4 September 2006)

Dr David Burridge, President of the European Meteorological Society (EMS),
Dr Silvo Žlebir, Director General of the Environment Agency of the Republic of Slovenia (ARSO),
Mr Jožef Roškar, Director of the Meteorology Office and Permanent Representative of Slovenia with WMO,
Distinguished members of the EMS and participants in the Sixth European Conference on Applied Climatology (ECAC),
Dear Colleagues, Ladies and Gentlemen,

On behalf of the World Meteorological Organization and my own, it is a pleasure for me to address the opening session of the Sixth Annual Meeting of the European Meteorological Society (EMS) and the Sixth European Conference on Applied Climatology (ECAC), and to make a presentation on the theme *"Climate Information and Services: Leveraging Opportunities and Risk Management"*.

I first wish to express WMO's appreciation to the EMS for its kind invitation, through its President, Dr David Burridge, and to thank the Government of the Republic of Slovenia for hosting the two meetings in Ljubljana, a city whose name might have evolved, according to some historians, from the Latin term for a flooding river, *alluviana*. Indeed, WMO is grateful to have enjoyed the hospitality of the people of Slovenia on several previous occasions and, in this context, I would like to mention that Ljubljana hosted the last session of the WMO Technical Commission for Agricultural Meteorology, in October 2002.

I also wish to recall that in September 1999, Meteorological Societies from all over Europe met in Norrköping, Sweden, during the 4th European Conference on Applications of Meteorology (ECAM). This was the background for the foundation of the European Meteorological Society and, two years later, the first EMS Annual Meeting took place in Budapest, in September 2001, in conjunction with the 5th ECAM. I am therefore very pleased to stress the notable growth of the EMS over the short period since its creation, having earned for itself a unique position in the international meteorological arena. I am confident that the EMS will further strengthen the relevant role in global climate research that the European groups have achieved over the years, and further contribute to optimizing societal responses to climate issues. WMO has been pleased to collaborate with the EMS during this period, as the EMS Annual Meetings have made important contributions to a partnership approach that has indeed become vital in addressing the highly complex global and regional interactions of the climate system.

Mr President, Dear Colleagues, Ladies and Gentlemen,

Weather, climate and water have traditionally dominated the evolution of human societies. Indeed, history shows us that climate has played a major role in the rise and fall of many civilizations. In the past, societies have often adapted their practices to their knowledge of climate. This has provided them with a framework from which to derive maximal benefits from the opportunities offered by a given climatic situation and for coping with climate hazards. With the rapid industrialization, urbanization, globalization and population growth of modern times, our dependence on climate and our vulnerability to its extremes have only increased and become more complex. We are now reviewing and refocusing our regional and global efforts to understand climate variability and change, which will demand renewed partnerships among WMO, the European meteorological community and the other stakeholders. I therefore commend the EMS and the European Climate Support Network (ECSN) for having selected the theme of applied climatology as the central focus for a series of European Conferences over the past decade.

I am also pleased to note the comprehensive array of topics for your sessions, dealing with climate science, information and services. Given the notable expertise and scientific excellence represented at this meeting, I am certain that a close convergence of your ideas is already ensured from the start. In terms of empowering society to live with climate variability and change, the efforts to be made should strike a balance between the optimal utilization of climate as a resource and the effective management of the risks associated with climate extremes.

As an integral part of the climate system, climate variability over time and space can lead to some windows of opportunity but also to some risks. As a major natural resource, climate needs to be constantly explored for opportunities that can help in meeting the growing demands of societies within the context of sustainable development. Different climatic regimes lend themselves to different trends in hydrometeorological extremes, some of which may pose considerable risks to life, infrastructure,

socio-economic development and the environment. On the other hand, favourable climatic conditions can be seized in advance to enhance socio-economic development. Thus, climate anomalies need to be predicted and monitored, in order to devise effective risk management strategies.

Dear Colleagues, Ladies and Gentlemen,

Let me consider a few specific sectors, so as to better highlight some of the issues involved. To meet the needs of an ever-growing population, in recent years agriculture has expanded to the marginal and semi-arid areas. In these areas, the application of climate information is crucial to optimally utilize the limited water resources and to avert or minimize climate-induced crop failure. Moreover, tourism is currently one of the largest and fastest growing industries and the annual international tourism expenditure is expected to reach 2 trillion Euros by the 2020s. Climate has the capacity to significantly affect global patterns of tourism, due to the fact that its consideration represents a major component in the decision-making process on holiday destinations. In addition, energy is another sector where climate plays a major role, both on the supply and on the demand sides. Accordingly, climate products and services leverage people and organizations to benefit from the opportunities and to implement the risk management strategies.

The social value of climate information and services can be based on:

- The nature of the dependence of socio-economic activities on climatic factors;
- The reliability of climate products, including awareness on the associated uncertainties and their implications to decision-making;
- Accessibility of credible and useful climate information for decision making;
- Liaison between users and climate information providers; and
- The ability of users to act on the basis of climate information.

In this context, climate products and services derived from climatic data and predictions should include the appropriate content, based on an understanding of the targeted users' needs, to ensure that this information will be more readily applicable to their planning and risk management strategies and processes. From the perspective of the various users, the utility of the products is of prime importance in defining climate services. This can be a relevant factor for many issues, including climate, as it affects users' decision making. Recognizing this fact, WMO's World Climate Programme (WCP) has systematically addressed a number of issues related to climate applications and services over the past years, with the ultimate objective of enhancing the capacities of the National Meteorological and Hydrological Services (NMHSs) in providing user-driven climate services that may indeed be applicable to the national and regional interests.

In particular, the WMO Regional Climate Outlook Forums provide an effective mechanism through which WMO, the NMHSs and their partners can build up capacity building and end-user relationships at the regional level, particularly for the developing countries. In different parts of the world, the Forums have successfully demonstrated to be effective vehicles in developing and promoting the use of climate information.

However, while it is normal to expect that climate prediction will indeed become a crucial element of climate information, we should not lose sight of the importance of using historical climate data in the development of climate information products. Past climate data can be very useful, for example, for a variety of planning purposes such as the development of codes to be used for the design of buildings, power and water systems, as well as for the prevention of extreme weather and climate events. The existing historical climate databases can be better exploited by developing innovative climate information products, tailored to the users' needs. This, of course, demands an in-depth understanding of the climate-sensitive aspects of the relevant socio-economic sectors and of the associated decision-making processes. WMO has in fact implemented several programmes to better assist its Members in terms of effective climate data management and dissemination.

A major challenge in the application of climate information is the development of tools and communication strategies to assist users in the interpretation of probabilistic forecasts. Another challenge will be to further increase the skill of seasonal climate prediction, in the tropics and at higher latitudes. It must be noted that, in many sectors, the users are already making decisions involving risks, although not necessarily based on climate considerations. Climate science has the potential to help these users in making better-informed decisions, while substantially reducing the risks.

To better respond to the rapidly evolving perceptions of climate services and user expectations, WMO has engaged in a number of coordinated activities and programmes, which have been highlighted through international conferences focusing on certain aspects of climate applications. Thus, in November 2005, WMO organized in Beijing the *Technical Conference on Climate as a Resource*, which resulted in proactive recommendations for the enhancement of climate services in support of sustainable development. In July 2006, WMO co-sponsored in Espoo, Finland, along with the International Research Institute for Climate and Society (IRI) and the Finnish Meteorological Institute (FMI), the *International Conference on Living with Climate Variability and Change: Understanding the uncertainties and managing the risks*, which provided a platform for users across various sectors to articulate their needs for climate information in decision making. In March 2007, WMO will be organizing in Madrid a major *International Conference on Secure and Sustainable Living: Social and Economic Benefits of Weather, Climate and Water Services*, to further deliberate on the role of climate information in decision-making for risk reduction and to better refine the strategies needed to improve the process.

Dear Colleagues, Ladies and Gentlemen,

Some very exciting scientific developments are currently taking place in Europe, and they hold great promises to improve our skills in climate prediction, not only in Europe but also across the world. This year, for example, the DEMETER team of European scientists has obtained the WMO Norbert Gerbier-Mumm International Award, for its progress in the field of climate prediction and in the quantification of the uncertainties involved in climate evolution. The DEMETER Project has showcased the ensemble forecasting approach, which enables the determination of probabilistic skills in climate prediction and its optimal application to critical sectors like health, agriculture and water. Other major European projects, such as ENSEMBLES and AMMA, are currently engaged in cutting-edge research to better understand and to model the climate processes and, thereby, to improve our climate prediction skills. Since the European heat wave of 2003 and that of this year are still fresh in our minds, I am pleased to note the concerted efforts to establish Heat-Health Warning Systems (HHWS) in Europe, particularly through the development of decision supporting tools based on climate information in the framework of the EuroHEAT project. WMO is developing Guidelines on HHWS with the active participation of European experts and I am certain that this will facilitate similar initiatives in other heat wave-prone parts of the world.

As you are aware, the developing and the Least-Developed Countries are those that suffer the most in terms of natural disasters, including the disasters associated with climate anomalies and extremes. For these societies, reducing the vulnerability to weather-, climate- and water-related extreme events may well be the most critical challenge to development and poverty reduction. Most of the emerging economies owe their strength to favourable climates and can face considerable difficulties whenever they lack the protection against unanticipated weather adversities. For a broad range of economic sectors, such as energy, insurance, banking, agriculture, tourism and water supplying, among others, weather risk markets are amongst the newest and most dynamic ones for financial risk transfers, and there are increasing opportunities for innovative risk transfer strategies based on climate information. For example, weather insurance based on the possibility of occurrence of a given weather event is considered to be a more verifiable and easier implemented protection mechanism against climate-related risks than one based on actual losses, such as crop failure. Weather derivatives and financial instruments providing coverage against seasonal climate-sensitive fluctuations in revenue or costs, are receiving greater attention and opening up new avenues for climate information packaging by the NMHSs.

Mr President, Dear Colleagues, Ladies and Gentlemen,

Over the past two decades, we have witnessed the climate agenda taking up the centre of the stage and cutting across all disciplines. The world is now looking to the scientific community for reliable climate information and services, and so it has become imperative to better address our research

needs, to improve our prediction skills and to further understand the climate impacts on various sectors. In addition, it is also necessary to work with the users in developing more effective decision support tools and communication strategies. I am aware that there will be an impressive list of presentations at ECAC covering all these aspects. In addition, while the scientific prospects are indeed promising, it is vital to maintain very rigorous credibility levels for the climate information being provided, as well as to better understand the users' expectations. A user-driven approach, combined with deep insight into the climate processes, will be truly fundamental for the success of this common endeavour.

Along these five years, WMO has fully recognized the important role played by the European Meteorological Society and collaborated widely with the EMS in its mission of consolidating partnerships within the region, in the true spirit of the Geneva Declaration of the Thirteenth World Meteorological Congress (May 1999), since weather and climate systems do not recognize political borders and are continuously interacting. Hence, no one country can be fully self-reliant in meeting all of its needs in terms of meteorological and climatological services, and all countries need to work together in a spirit of mutual assistance and cooperation.

In closing, I again wish to express my appreciation to the European Meteorological Society and to the Government of the Republic of Slovenia. I look forward to the outcomes of both sessions and I wish you a very successful annual meeting and a very fruitful conference on applied climatology.

Thank you.

_____