



CLIMATE SENSE

A Publication for the World Climate Conference-3
Climate Predictions & Information for Decision Making

Geneva, Switzerland, 31 August - 4 September 2009

INTRODUCTION

Climate variability and change influence the well-being of society through interactions with life-supporting systems. Humankind has always observed nature to monitor and predict climate conditions, thereby taking advantage of favourable conditions and managing associated risks.

The demand for climate prediction and information services will be even higher in the context of climate change and the increasing vulnerability of populations, particularly in regions where climate variability is high and which are prone to climate-related extremes. The sustainability of economic development and living conditions will depend on our ability to manage the risks associated with extreme climate events, which are likely to be of greater frequency, intensity and extent.

Advances in the sciences of meteorology and hydrology provide us with better tools to better manage climate-related risks. This has been demonstrated by the outcomes of climate outlook forums of WMO. Climate prediction and information services provide societies, governments and socio-economic sectors with the tools to identify areas and periods of potential risks, take preventive measure and plan disaster response actions.

Climate information provides important input to the design, development and sustainability of a wide range of activities in many socio-economic sectors, including agriculture, urban planning, energy and water resource management, transport, tourism and the operation of infrastructure. Together with predictions, climate information helps us manage the risks associated with climate variability and this enhances our ability to adapt to climate change.

The advances in seasonal climate prediction have not always benefited society to the full. This is largely because of the absence of an integrated approach to the delivery of climate prediction and information services and the lack of appropriate

supporting institutional mechanisms to fully utilise such information and services. National, regional and global institutions, including meteorological services, have continued to improve their products and services without taking into account the needs of the full spectrum of users. Similarly, users have continued with their efforts to improve services for climate-dependent sectors without involving hydro-meteorological services and making use of available climate information.

A joint approach that considers these shared needs is required. Climate predictions and information should be integrated into policies to operate and manage climate-dependent sectors, including those addressing disaster risk reduction and adaptation to climate variability and change as reflected in the Hyogo Framework for Action on Disaster Risk Reduction, the United Nations Framework Convention on Climate Change (UNFCCC) Bali Action Plan and the Nairobi Work Programme in support of the achievement of the United Nations Millennium Development Goals.



“The demand for climate prediction and information services will be even higher in the context of climate change”

CLIMATE SENSE

Tudor Rose and the World Meteorological Organization (WMO) are collaborating to publish a publication about climate prediction and information for decision making. This innovative public-private partnership has been formed to combine the professional publishing and marketing skills of Tudor Rose with the global knowledge, meteorological and hydrological activities, the extensive organisational relationships and international development interests of WMO. It will enable both organisations to advance their shared commitment to secure and sustainable living in the light of the challenges posed by climate change and variability.

Tudor Rose has worked on previous publications for the United Nations, including WMO (Elements for Life & The Full Picture/GEO), UN International Strategy for Disaster Reduction/ISDR (Know Risk, Real Risk & Risk Wise), UN International Decade for Natural Disaster Reduction (Natural Disaster Management), UN International Year of Freshwater (Freshwater Futures), International Telecommunications Union (Digital Reach), and World Health Organization (Know Risk Epidemics). Full details of these publications are included on pages 8 and 9 of this document.

Climate Sense will be a fully illustrated 250-page book with over 100 authors relating their work in weather, climate and water services at international, regional, national, municipal and local levels of activity. Their commentaries will draw upon experiences around the world reflecting how people are using climate information to improve the security and sustainability of their lives.

Climate Sense will reflect the progress and challenges in these fields, highlighting good practices in a wide variety of societies and disciplines. By focusing on the experiences and livelihoods of people especially those in vulnerable human habitats, it will strive to project the benefits of experience into future actions and institutional commitments to better understanding and use of climate information.

In this latter respect, the public-private partnership between Tudor Rose and WMO will amplify and contribute to the international dialogue that will be conducted at the World Climate Conference-3, Geneva/Switzerland, 31 August - 4 September 2009. This innovative endeavour is a striking example of sharing respective resources to engage the many official governmental, international organisations, institutional and professional interests in displaying the extent and variety of their efforts to make the world a safer and better place.

The book is a Tudor Rose publication that will be issued under WMO copyright, and available for sale from August 2009 (recommended retail price US\$125 per copy) in a premium hardback cover.



“Climate Sense will project the benefits of experience into future actions and institutional commitments to a better understanding and use of weather, climate and water services”

Issued under WMO copyright, and available from August 2009

PUBLICATION FRAMEWORK

Themes in Climate Change and Variability: Adaptation, Mitigation and Managing Risks Decision Support, Assessment, Analysis, Detection and Attribution, Prediction and Projection, Models and Synthesis, Observations and Information

PREAMBLE:

Statements and presentations of dignitaries and keynote speakers at WCC-3.

CHAPTER 1: ECONOMIC AND SOCIAL IMPLICATIONS OF CLIMATE CHANGE AND VARIABILITY

- Food security
- Water resources
- Energy and transport
- Health and environment
- Population and Demography
- Ecosystem Services

CHAPTER 2: GOVERNANCE AND POLICY

- Environment
- Commerce
- Transport
- Health
- Food and Fiber
- Energy

CHAPTER 3: SCIENTIFIC FOUNDATION

- Our place in the solar system
- Earth system evolution and change
- Earth system Science
- Role of Humans

CHAPTER 4: PREDICTING AND PROJECTING FUTURE CLIMATE CONDITIONS

- Atmospheric circulation models
- Atmospheric chemistry models
- Global climate models
- Regional climate models
- Weather forecast models
- Water cycle models

- Energy cycle models
- Ocean circulation models
- Ocean biology models
- Cryospheric models
- Scioeconomic models
- Biodiversity and species distribution
- Earth system models
- Seamless prediction of weather and climate

CHAPTER 5: OBSERVATIONS AND INFORMATION SYSTEMS

- Global Observing Networks
- Information Management Systems
- Federation Network
- Long-term Climate and Observation Records
- Data Assimilation
- Re-Analysis

CHAPTER 6: RISK GOVERNANCE AND MANAGEMENT

- Detection and attribution
- Extreme Events

CHAPTER 7: MITIGATION STRATEGIES

- International Frameworks
- National Initiatives
- Role of NGOs
- Role of Private Sector
- Challenges and Opportunities

CHAPTER 8: ADAPTATION APPROACHES

- International Initiatives
- National Initiatives
- NGOs Contributions
- Private Sector Contributions
- Foundations and Philanthropic
- Challenges and Opportunities

CHAPTER 9: CHALLENGES AND OPPORTUNITIES IN MANAGING RISKS AND ADAPTING TO CLIMATE CHANGE AND VARIABILITY

CHAPTER 10: FUTURE PROSPECTS AND GLOBAL PROSPERITY



Publication framework

- Introduction, Forewords & preface
- Supporting Statements
- 1 Economic and Social Implications of Climate Change and Variability
- 2 Governance and Policy
- 3 Scientific Foundation
- 4 Predicting and Projecting Future Climate Conditions
- 5 Observations and Information Systems
- 6 Risk Governance and Management
- 7 Mitigation Strategies
- 8 Adaptation Approaches
- 9 Challenges and Opportunities in Managing Risks and Adapting to Climate Change and Variability
- 10 Future Prospects and Global Prosperity



WORLD CLIMATE CONFERENCE-3 CLIMATE PREDICTION & INFORMATION FOR DECISION-MAKING

Geneva/Switzerland, 31 August - 4 September 2009.

World Climate Conference-3 (WCC-3) will establish an international framework to guide the development of climate services, which will link science-based climate prediction and information with climate risk management throughout the world for adaptation to climate variability and change.

BACKGROUND

The World Meteorological Organization (WMO) organized the First World Climate Conference (FWCC) in 1979 and the Second World Climate Conference (SWCC) in 1990, in cooperation with UN system partners. These Conferences were instrumental in bringing to the attention of policy makers the issue of climate variability and change.

The FWCC recommended the establishment of three international scientific and policy activities:

- The Intergovernmental Panel on Climate Change, which was awarded the Nobel Peace Prize in 2007
- The World Climate Programme
- The World Climate Research Programme

The SWCC called for the establishment of an observing system and a climate convention:

- The Global Climate Observing System

- The UN Framework Convention on Climate Change in 1992, adding momentum to international efforts leading on climate change.

Coping with the challenge of climate variability and change requires that societies are empowered with new information enabling the management of a wide variety of climate risks. Scientific advances in seasonal-to inter-annual and possibly decadal climate projections offer a great opportunity for the development of new climate services to a wide user community.

THE CONFERENCE

WCC-3 will be held from 31 August to 4 September 2009 in Geneva, Switzerland, under the auspices of WMO in cooperation with other UN agencies, national governments and the private sector. It is organized as a contribution in support of the United Nations leading role in climate variability and change, and to support the work of countries in adapting their societies to the immediate challenges arising from climate variability and change in the future.

The theme of WCC-3 will be climate prediction for decision-making. Its key areas of focus will be the application of climate information and predictions to societal problems, and how to enable adaptation to climate variability and change in areas such as agriculture, water, health, and sustainable development in general.



“Climate prediction & information for decision-making”

WORLD CLIMATE CONFERENCE-3

...CONTINUED

VISION

To guide the development of climate services that will link (provide) science-based climate predictions and information with (for) climate risk management and adaptation to climate variability and change throughout the world to support poverty alleviation and sustainable development.

OBJECTIVES

Enhancing understanding and responding to the risks to socio-economic development posed by climate variability and change:

- Improving climate information for the development of natural resources, protection of lives, livelihoods and property;
- Providing user-defined climate products and information timely and making them easily available;
- Empowering vulnerable communities by strengthening their adaptive capacity, by enabling use of climate information for adaptation to climate of today and to better prepare for the climate of tomorrow;
- Mainstreaming (promoting the confidence and frequent use of) climate information and climate predictions for economic efficiency, social well-being.

KEY OUTCOMES

- Strengthened observing networks and climate monitoring,
- Increased scientific and technical capability for climate and applied climate and
- Increased capability in development, provision and use of climate prediction and services, all with the aim that high-quality information is delivered to users who are then more capable of effective decisions for climate risk management and adaptation to climate variability and change.

PARTICIPATION

The Conference will comprise:

- Broad participation by governments, international organizations, the private sector and end users at local level;
- A climate segment of 3 days and a high-level policy segment of 1 days; and
- A Ministerial Declaration with specific policy outcomes.

The final outcomes of the Conference will strengthen the regional and national response systems to climate, especially in the developing nations and Least Developed Countries that are frequently affected by natural disasters caused by climate extremes; extend available climate products to include annual prognostic analyses regionally; enhance the use of existing products by decision-makers; and optimize the use of climate predictions by institutional mechanisms in support of decision-making.

For further updated details of the Conference, please visit www.wmo.int/pages/world_climate_conference/index_en.html



“The final outcomes of the Conference will strengthen the regional and national response systems to climate”



WMO IN BRIEF

The World Meteorological Organization (WMO) is a specialized Agency of the United Nations. It is the UN system’s authoritative voice on the state and behaviour of the earth’s atmosphere, its interaction with the oceans the earth surface and ecosystems, the climate it produces and the resulting distribution of water resources.

The World Meteorological Organization is an intergovernmental organization with a membership of 187 Member States and Territories. It originated from the International Meteorological Organization (IMO), which was founded in 1873. Established in 1950, WMO became the Specialized Agency of the United Nations in 1951 for meteorology (weather and climate), operational hydrology and related geophysical sciences.

As weather, climate and water cycle knows no national boundaries, international cooperation at a global scale is essential for the development of meteorology and operational hydrology as well as to reap the benefits from their applications. WMO provides the framework for such international cooperation.

Since its establishment, WMO has played a unique and powerful role in contributing to the safety and welfare of humanity. Under WMO’s leadership and within the framework of WMO programmes, National Meteorological and Hydrological Services contribute substantially to the protection of life and property against natural disasters, to safeguarding the environment and to enhancing the economic and social well-being of all sectors of society in areas such as food security, water resources, energy and transport.

WMO facilitates the free and unrestricted exchange of data and information, products and services in real- or near-real time on matters relating to safety and security of society, economic welfare and the protection of the environment. It contributes to policy formulation in these areas at national and international levels.

WMO plays a leading role in international efforts to monitor and protect the environment through its Programmes. For instance, in collaboration with UN agencies and the National Meteorological and Hydrological Services (NMHSs) of its Members, WMO supports the implementation of relevant conventions such as the UN Framework Convention on Climate Change, the International Convention to Combat Desertification, and the Vienna Convention on the Protection of Ozone Layer and its Protocols and Amendments. WMO is instrumental in providing advice and assessments to governments on matters relating to the above Conventions. These activities contribute towards ensuring the sustainable development and well being of nations.

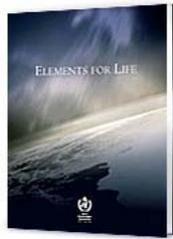
In the specific case of weather-, climate- and water-related hazards which account for nearly 90 per cent of all natural disasters, WMO’s programmes provide vital information for the advance warnings that save lives and reduce damage to property and the environment. WMO also contributes to reducing the impacts of human-induced disasters, such as those associated with chemical and nuclear accidents, forest fire and volcanic ash. Studies have shown that, apart from the incalculable benefit to human well being, every dollar invested in meteorological and hydrological services produces an economic return many times greater, often ten times or more.



“the UN system’s authoritative voice on the state and behaviour of the Earth’s atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources”

TUDOR ROSE PUBLICATIONS

The United Nations, Tudor Rose, and a range of institutional and commercial organisations have collaborated to produce a series of books on key public sector issues.



ELEMENTS FOR LIFE

Elements for Life is a fully illustrated 350-page book with over 100 authors relating their work in weather, climate and water services at international, regional, national, municipal and local levels of activity.

Their commentaries draw upon experiences around the world reflecting how people are using weather, climate and water services to improve the security and sustainability of their lives. *Elements for Life* reflects the progress in this field, highlighting good practices in a wide variety of societies and disciplines.

By focusing on the experiences and livelihoods of people in vulnerable human habitats, it strives to project the benefits of experience into future actions and institutional commitments to better understanding and use of weather, climate and water services.

Available to order from Tudor Rose or by e-mailing subscribe@tudor-rose.co.uk.

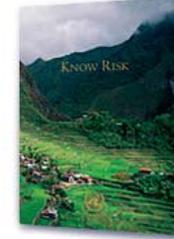


THE FULL PICTURE

The Group on Earth Observations (GEO) was launched in 2002, in response to calls for international collaboration in exploiting the growing potential of Earth observations to support decision-making. GEO is responsible for coordinating international efforts to build a Global Earth Observation System of Systems (GEOSS) that will enable the sharing of information between countries and communities.

In 2007, Tudor Rose worked with GEO to produce *The Full Picture*, a publication detailing early achievements in these collaborative efforts. This fully illustrated, 280-page book brings together the views and experiences of experts from across the world, who are working towards a framework for sharing Earth observation data for the benefit of all. It provides a full picture of progress in the field to date, highlighting good practices from the perspective of a wide variety of societies and disciplines, and suggesting future actions to ensure the success of GEOSS.

The Full Picture is a Tudor Rose publication, issued under GEO copyright. It is available for sale in a soft-cover edition.



KNOW RISK

Tudor Rose worked with the United Nations International Strategy for Disaster Reduction (UN/ISDR) forming a unique public-private partnership in 2004 to produce a volume addressing the reduction of disaster risk.

This fully illustrated, 376-page hardback book was published in January 2005, with commentaries from over 160 authors describing their work in disaster reduction at international, regional, national, municipal and local levels.

Launched at the World Conference on Disaster Reduction in Kobe, Hyogo, Japan, on 19 January 2005, *Know Risk* shows how people around the world are living with natural and related environmental and technological risks, detailing how they are making their own efforts to reduce their exposure to disasters and reflecting progress in this field over the past decade.

Available to order from Tudor Rose or by e-mailing subscribe@tudor-rose.co.uk.

TUDOR ROSE PUBLICATIONS

...CONTINUED



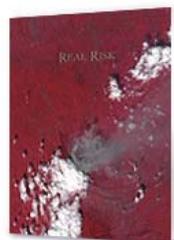
RISK WISE

Published in August 2008 for launch at the International and Risk Conference (IDRC Davos 2008), *Risk Wise* is the latest in a series of volumes addressing natural disasters, and how their impact can be reduced by effective capacity building and prevention strategies.

A fully illustrated, 200-page book, *Risk Wise* offers perspectives, case studies and analysis on disaster risk reduction and mitigation in light of the increasing threat of natural disasters. It brings together the knowledge and experiences of public and private organisations working toward disaster preparedness and mitigation at local, national and international levels.

The book received full support from over 60 public institutions including four separate UN Agencies (UNISDR, UNESCO, UNEP and UNOSAT), and was granted the status of partner publication to IDRC 2008.

Available to order from Tudor Rose or by emailing subscribe@tudor-rose.co.uk



REAL RISK

Published in August 2006 for launch at the International Disaster Reduction Conference, Davos 2006, *Real Risk* is the latest in a series of volumes addressing the risks faced by communities across the world.

A fully illustrated, 160-page hardback book, *Real Risk* offers perspectives, case studies and analysis on disaster risk reduction and mitigation in the light of major natural disasters that have occurred since the publication of *Know Risk* in early 2005.

It brings together the knowledge and experiences of public and private organisations working toward disaster preparedness and mitigation at local, national and international levels.

Available to order from Tudor Rose or by e-mailing subscribe@tudor-rose.co.uk



FRESHWATER FUTURE

Published in July 2003, *Freshwater Future* formed an integral part of the International Year of Freshwater in 2003.

The book provides a comprehensive view of water projects and initiatives supported by the United Nations which gave all agencies and organisations dedicated to protecting global water resources a chance to commit publicly to improving the world's water supplies.

Freshwater Future creates a forum of discussion from a wide range of disciplines, including United Nations agencies, development banks, aid agencies, government water bodies, NGOs and commercial solution providers.

Available to order from Tudor Rose or by emailing subscribe@tudor-rose.co.uk