OCEANS AND THE LAW OF THE SEA: REPORT OF THE SECRETARY-GENERAL – PART II (2014)

CONTRIBUTION OF WMO

INTRODUCTION

1. The World Meteorological Organization (WMO)[1] is the United Nations 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. The interaction of the atmosphere with the oceans, which plays a critical role in shaping our climate through phenomenon such as El Niño and La Niña, lies therefore at the heart of the mission of WMO.

2. WMO is active in operational ocean forecasting in collaboration with the Intergovernmental Oceanographic Commission of UNESCO (IOC/UNESCO) through the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM).[2] WMO cooperates with the International Maritime Organization (IMO) and the International Hydrographic Organization (IHO), to provide marine safety services, in particular the World-Wide Metocean Information and Warnings Service.

3. Through its participation in the Global Ocean Observing System (GOOS),[3] the Global Climate Observing System (GCOS),[4] the World Climate Research Programme (WCRP)[5] and the Ocean Observations Panel for Climate (OOPC),[6] WMO is engaged in ocean observations and research for climate. As part of the Joint Group of Experts on Scientific Aspects of Marine Environmental Protection (GESAMP),[7] WMO contributes to marine environmental assessments, including on atmospheric inputs of chemicals to the ocean and impacts of dust transport and deposition on marine productivity.

4. In collaboration with the Food and Agriculture Organization (FAO), WMO supports studies on the impacts of climate change on marine productivity and fisheries. WMO is also a major information source on CO_2 concentrations in the atmosphere in relation to ocean acidification, as oceans absorb about 30 per cent of carbon dioxide produced by humans, buffering the impacts of global warming. WMO is currently working to improve forecasting and warning services for coastal inundation to address the needs of coastal states, especially Small Island Developing States (SIDS), and to develop climate services for marine and coastal communities, including for coastal adaptation and disaster risk reduction. In this regard, the Global Framework for Climate Services (GFCS),[8] a UN partnership led by WMO, guides the development and application of science-based

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1 See http://www.wmo.int/pages/index_en.html.
2 See http://www.jcomm.in 0.115971(a)-0.115971(r)-2vel721

climate information products and services in support of decision-making. The GFCS has four initial

needs to make, the sixteenth OOPC session (Washington D.C., 3-5 September 2013)[11] has developed a work plan for 2013–2018 as a framework to inform engagement with partners and focusing panel activities around priority system evaluations.

10. An evaluation of the Tropical Pacific Observing System (TPOS) has been the priority activity in 2013/14, culminating in a TPOS 2020 workshop at Scripps Institution of Oceanography (San Diego, 27–30 January 2014)

the International Atomic Energy Agency (IAEA) and IMO. The Task Team held its first meeting on 1 August 2013 in Vienna, Austria in conjunction with the Consultants meeting on marine and aquatic modelling for radiological emergencies (29–31 July 2013, Vienna, Austria), focusing on a system that tracks oceanic radioactive plumes using dispersion modelling should leverage the existing framework for tracking atmospheric radioactive hazards in operational Numerical Weather Prediction centres, operated in conjunction with atmospheric dispersion modelling infrastructures and expertise.[14]

15. WMO participates in the ITU-WMO-IOC/UNESCO Joint Task Force to investigate the potential of using submarine telecommunications cables for ocean and climate monitoring and disaster warning. On 19–20 March 2013 the Joint Task Force held in Madrid, Spain a workshop on Propelling a Pilot Project on Green Cables, which focused on the strategic steps for the pilot

26. WMO views the potential ramification of geoengineering experiments as risky, especially considering the current uncertainties, gaps in scientific understanding of cause and effect, and the lack of comprehensive governance mechanisms. At it sixteenth session (Antalya, Turkey, 20–26 November 2013), the WMO Commission for Atmospheric Sciences noted that further research is needed to adequately understand the feasibility, the effectiveness and comprehensive effects of geoengineering.[25] The Commission advised that WMO should facilitate a process towards establishment of an international assessment mechanism for geoengineering research and applications, through the UN system. To address this, WMO and its partners will formulate a geoengineering position based on current scientific understanding and propose research actions to strengthen the science-basis to better inform decisions. In addition WMO is of the opinion that the future will require a UN-wide framework to govern these activities as consequences could be global and irreversible, involving the atmosphere, land and oceans.

Adapting to the impacts of climate change

27. Information products and services based on climate predictions at the regional and sub-regional scales can play an important role in adapting to climate change and supporting climate-sensitive sectors. The need of adapting to climate change and supporting climate-sensitive sectors (e.g. fisheries, tourism) in coastal regions and SIDS will require the development of specific climate products and services.

28. Launched at the Third World Climate Conference (WCC-3) (Geneva, 31 August – 4 September 2009),[26] the Global Framework for Climate Services (GFCS) is a global partnership of governments and organizations that produce and use climate information and services. At the extraordinary session of the World Meteorological Congress (Geneva, 29–31 October 2012),[27] the Intergovernmental Board on Climate Services (IBCS) was established and the GFCS implementation plan was adopted. The IBCS held its first session in Geneva on 1–7 July 2013 (IBCS-1).[28]

29. The GFCS aims to enable society to manage better the risk and opportunities arising from climate variability and change especially for those who are the most vulnerable to climate related hazards by developing and incorporating science-based climate information into planning, policy and practice. The agriculture and food security and water areas of GFCS deal directly with ocean and seas matters. The GFCS is already supporting various countries around the world. For example, Belize, with the support of GFCS, is in the process of establishing a climate services framework at national level to produce and use climate information and services including for the energy, tourism, citrus and sugar sectors.[29]

30. Climate services can help managing the freshwater-ocean interface, including storm-surges and waves and coastal inundation forecasting. The WMO Associated Programme on Flood Management,[30] which contributes to GFCS, focuses on the major water-related challenges in

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[25] See document CAS-16/Doc. 9 REV 1 (https://docs.google.com/a/wmo.int/file/d/0B-qM81H4lhk-b1pnek90WUhMQkk/edit), section 9.6.

[26] See http://www.wmo.int/wcc3/page_en.php. At WCC-3 13 heads of state/heads of government, 81 ministers and 2500 scientists unanimously agreed to develop the GFCS. A High Level Task Force (HLT) was then formed to propose elements for the GFCS. The HLT produced the report "Climate Knowledge for Action: A Global Framework for Climate Services" (http://www.wmo.int/hlt-gfcs/downloads/HLT_book_full.pdf) as the basis for GFCS. The Task Team, set up by the Sixty-third session of WMO Executive Council (Geneva, 6–8 June 2011) (ftp://ftp.wmo.int/Documents/PublicWeb/mainweb/meetings/cbodies/governance/executive_council_reports/english/pdf/63_session_1078_part1_en.pdf), developed the draft implementation plan and suggested the governance structure of the GFCS. During the same year, the GFCS office was set up within the WMO Secretariat.

[27] See http://library.wmo.int/pmb_ged/wmo_1102_en-p1.pdf.

[28] See http://ibcs-1.wmo.int/.

[29] See http://gfcs.wmo.int/content/national-consultation-belize.

[30] See http://www.apfm.info/.

relation to water management including in the coastal zone. A better understanding of climate and its impacts on coastal and oceanic fisheries is critical to the future management of these valuable resources for subsistence and market-based economies, and cultures. Developing countries and

management; contributing to saving lives; reducing loss of livelihood and property; and enhancing resilience and sustainability in coastal communities.

36. The focus is to improve capabilities for operational monitoring and forecasts/warnings on coastal inundation from combined extreme events, such as extreme sea level rise (e.g. large waves, storm surges, high tide), fluvial flooding and tropical cyclones, and furthermore, for decision support system for emergency management Benefits of CIFDP implementation to countries are not only to enhance capacity of NMHSs for coastal risk warning, but also to improve interaction with users of the NMHSs' information services – primarily national disaster managers and decision makers. The CIFDP is implemented at national level by operational forecasting agencies, under the WMO framework and with technical guidance provided by WMO Groups of Experts. As of

ACRONYMS

CAgM	WMO Commission for Agricultural Meteorology
CEOS	Committee on Earth Observation Satellites
CIFDP	Coastal Inundation Forecasting Demonstration Project
CMIP	Coupled Model Intercomparison Experiment Project
ECV	Essential Climate Variables
EU	European Union
FAO	Food and Agriculture Organization
GAW	Global Atmospheric Watch
GCOS	Global Climate Observing System
GESAMP	Joint Group of Experts on Scientific Aspects of Marine Environmental Protection
GFCS	Global Framework for Climate Services
GHG	Greenhouse gas
GMDSS	Global Maritime Distress and Safety System
GOOS	Global Ocean Observing System
GTS	Global Telecommunication System
IAEA	International Atomic Energy Agency
ICSU	International Council for Science
IFM	Integrated Flood Management
IGIS	Integrated Greenhouse gas Information System
IHO	International Hydrographic Organization
IMO	International Maritime Organization
IMSO	International Mobile Satellite Organization
IOC/UNESCO	Intergovernmental Oceanographic Commission of UNESCO
IPCC	Intergovernmental Panel on Climate Change
ITU	International Telecommunications Union
IWA	International Water Association
JCOMM	Joint WMO-IOC Technical Commission for Oceanograph on eaTrne99( )11.5278(T)20.1265(e)11.46

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