Improved Understanding of Climate variability for Adaptation

by
Amir H. Delju

Climate Prediction and Adaptation Branch
World Meteorological Organization (WMO)
Mexico, March 2008

WMO OMM

1

WMO Strategic Plan

3 Top-level Objectives	5 Strategic Thrusts	11 ER	Deliverables
To produce more accurate, timely and reliable forecasts and warnings of weather, climate, water, and related environmental elements	Science and Technology Development and Implementation	1. Enhanced capabilities of Members to produce better **weather** forecasts and warnings	12
		2. Enhanced capabilities of Members to provide better **climate** predictions and assessments	14
		3. Enhanced capabilities of Members to provide better **hydrological** forecasts and assessments	8
		4. Integration of WMO **observing systems**	13
		5. Development and implementation of the new WMO **Information System**	7
To improve the delivery of weather, climate, water, and related environmental information and services to the public, governments and other users	Service Delivery	6. Enhanced capabilities of Members in multi-hazard **early warning and disaster prevention and preparedness**	24
		7. Enhanced capabilities of Members to provide and use weather, climate, water and environmental applications and **services**	29
To provide scientific and technical expertise and advice in support of policy and decision-making and implementation of the agreed international development goals and multilateral agreements	Partnership	8. Broader use of weather, climate and water outputs for **decision-making** and implementation by Members and **partner** organizations	36
	Capacity-building	9. Enhanced capabilities of NMHSs in **developing countries, particularly least developed countries**, to fulfil their mandates	21
	Efficient Management and good Governance	10. Effective and efficient functioning of constituent bodies	15
		11. Effective and efficient management performance and oversight of the Organization	30

WMO OMM

2

WMO's Strategy for Climate Change

- **Science and monitoring;**
  - *Systematic observation*
  - *Adequate interpretation of climate projections*
  - *Understanding of the role of climate in various human activities*
  - *Climate modelling and prediction*
- **Awareness and capacity building;**
  - *Climate outlook forums*
  - *Technological and know-how packages, including training on data rescue and management*
- **Enhanced partnerships**

WMO OMM

3

WMO in UN Coordination on Climate Change

Activities	Lead	Members
• Science, assessment, monitoring and early warnings	WMO UNESCO	UNEP, IPCC, ITU
Supporting global and national action		
• Negotiations	UNFCCC	
• Country-level coord.	UNDP Resident Coordinators	
Activities	**Lead**	**Members**
• Adaptation		FAO, UNDP, UNEP, WB WMO, ...
• Mitigation		FAO, UNDP, UNEP, WFP, World Bank, ...
• Technology	UNIDO	World Bank
• Finance	World Bank	UNDP, IMF

WMO OMM

4

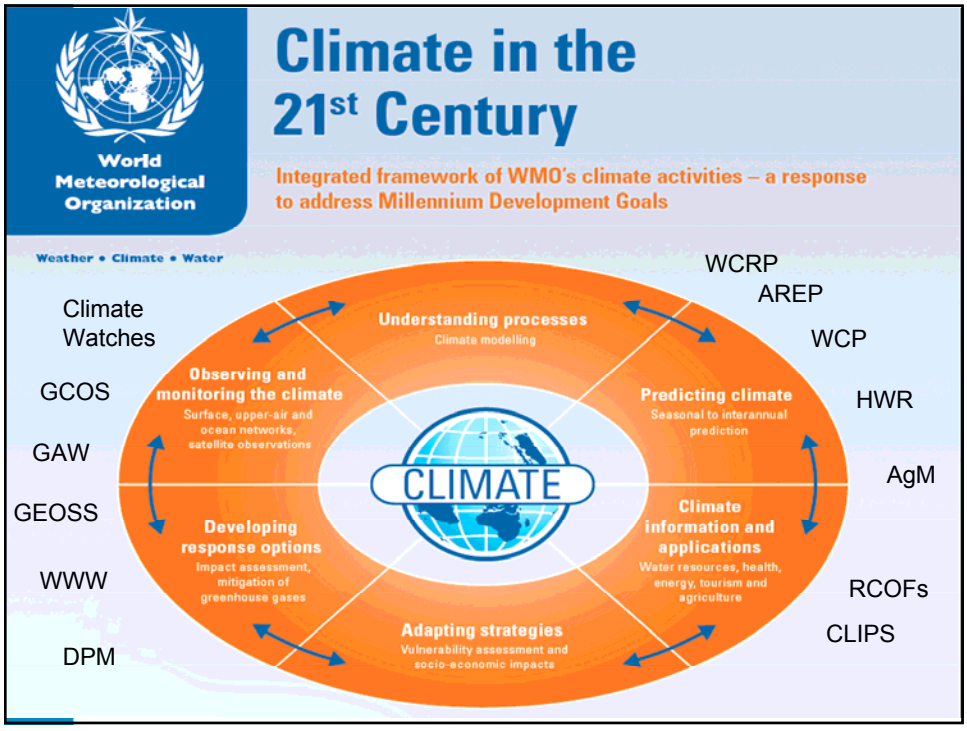
WMO in UN Coordination on Climate Change

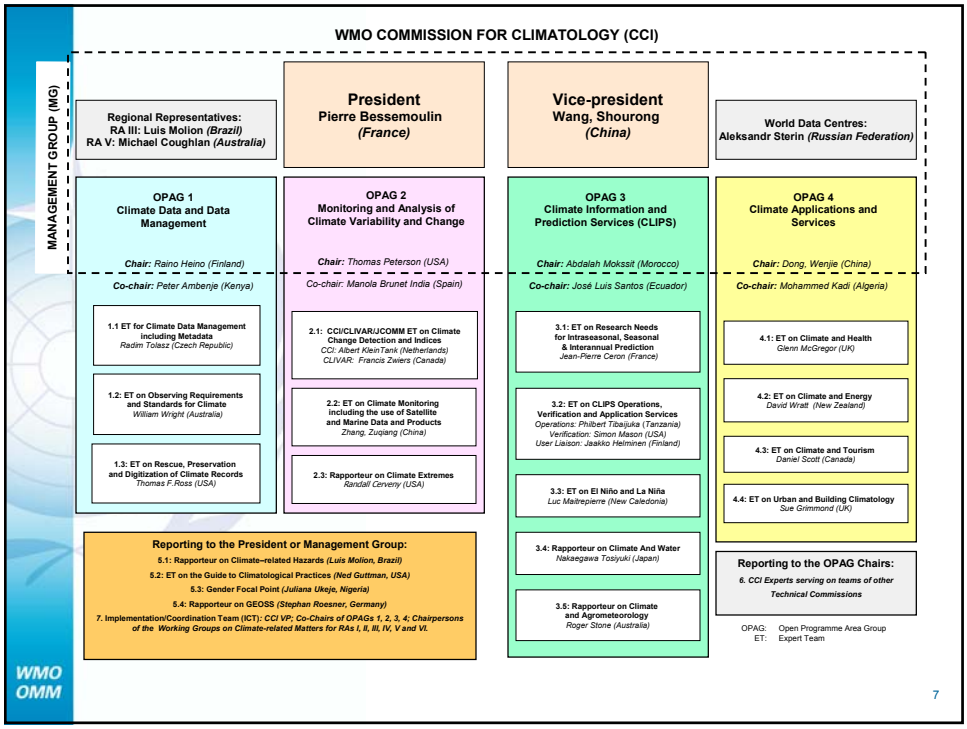
Sector clusters

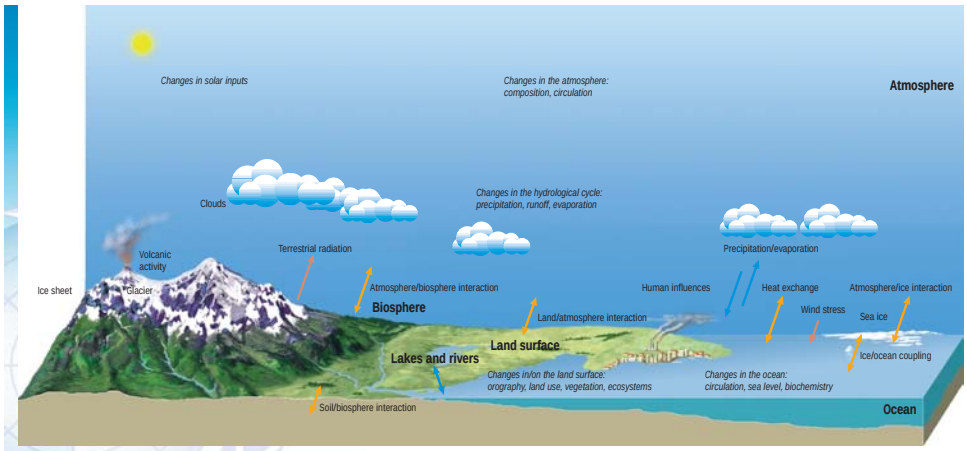
	Activities	Lead	Members
1.	Energy	UN-Energy	UNIDO, UNEP, DESA, WMO
2.	Agriculture	FAO	IFAD, WFP, WMO
3.	Water	UN-Water	FAO, DESA, UNESCO, WMO
4.	[Oceans	UN-Oceans	DESA, UNESCO, WMO]
5.	Forestry and Fisheries	FAO	DESA
6.	Maritime and Air Transport		IMO, ICAO, WMO
7.	Health	WHO	UNICEF, WMO
8.	DisasterRiskReduction	ISDR	WMO, WFP, ITU
9.	Human Settlements	UN-Habitat	
10.	Education	UNESCO	UNICEF
11.	Public Awareness	UN Communications Group/UNEP	
12.	Climate-Neutral UN	Environnemental Management Group/UNEP	

WMO OMM

5







1.02 graphic_01.eps

The Earth's Climate System

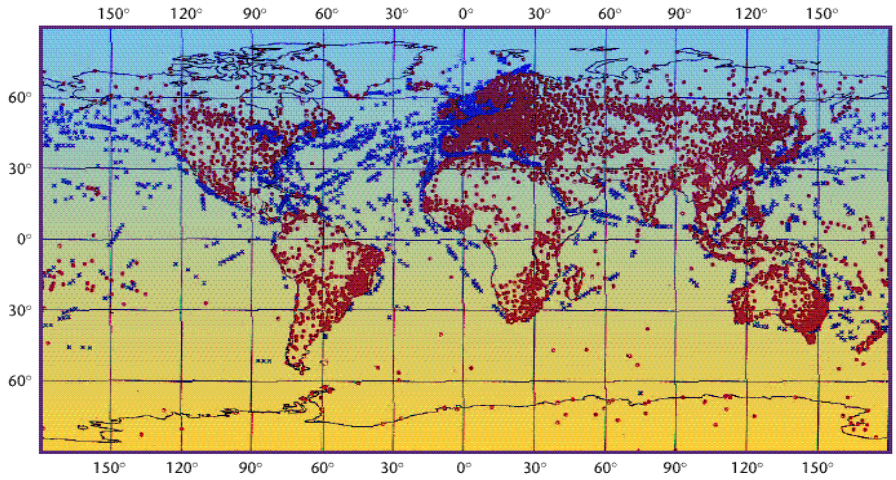
The sum total of the processes and interactions of the Earth's atmosphere, oceans, land surfaces, ice sheets and its flora and fauna that are driven by the incoming radiation from the Sun, which in turn is balanced by heat radiated back to space.

WMO OMM

8

Observational data coverage

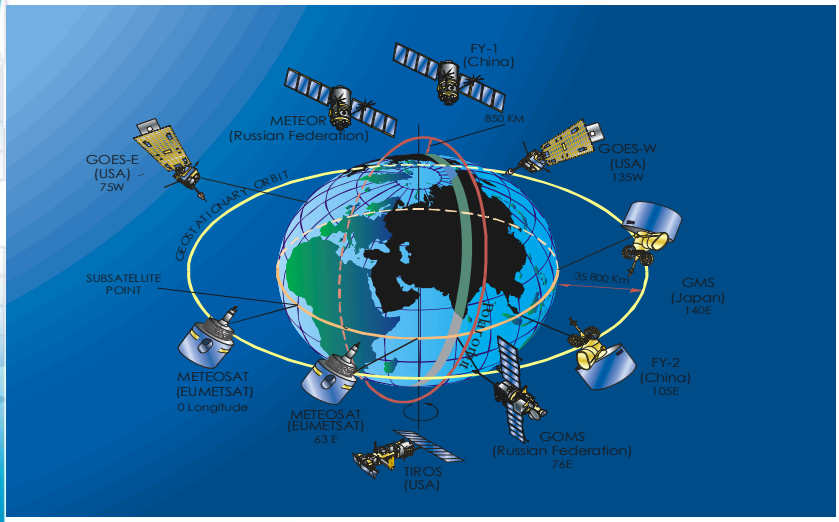
Typical daily observational coverage
10,000 stations on land, 1,000 upper air stations, about 6,000 ships and 1000 buoys
130,000 reports are received from aircraft per day



WMO OMM

9

Observing systems: basis for climate knowledge



WMO OMM

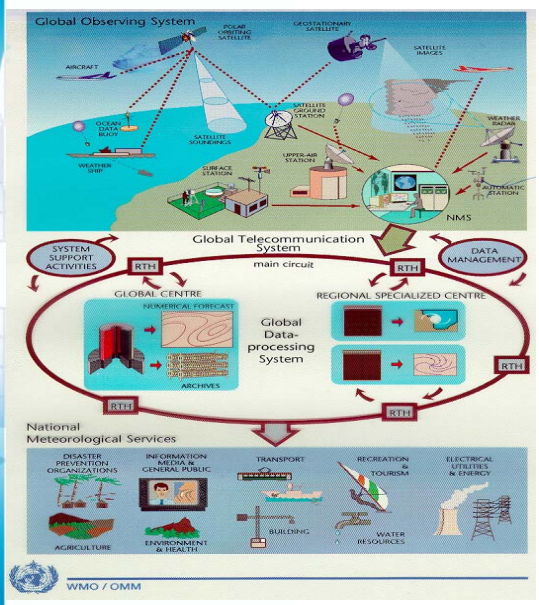
10

The GAW Global Observatories

WMO OMM

11

WMO's Global Operational Network



NMHSs of 188 countries contribute to GOS every day

3 World Meteorological Data Centres

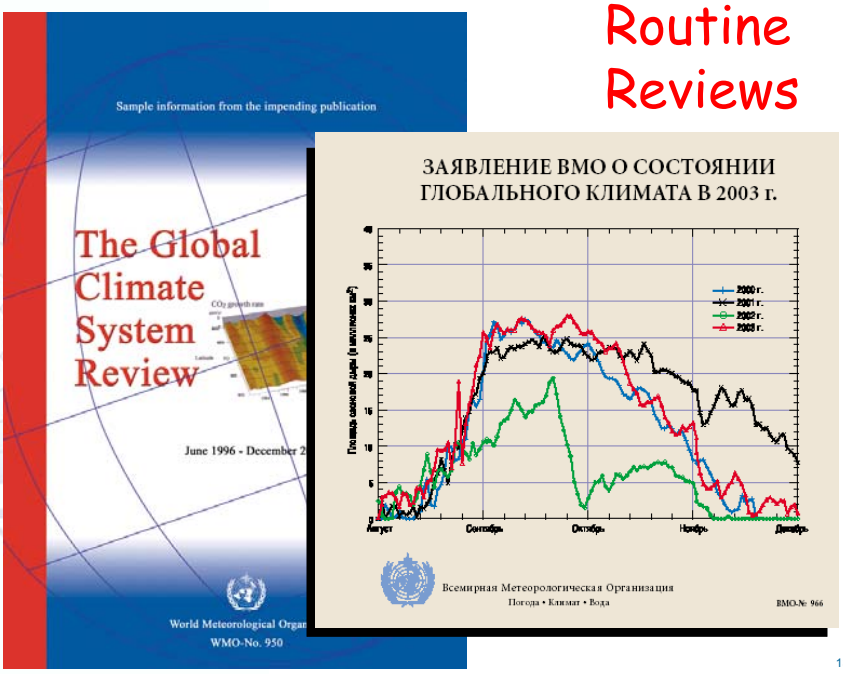
40 Regional Specialized Centers

NMHSs deliver products and services

WMO OMM

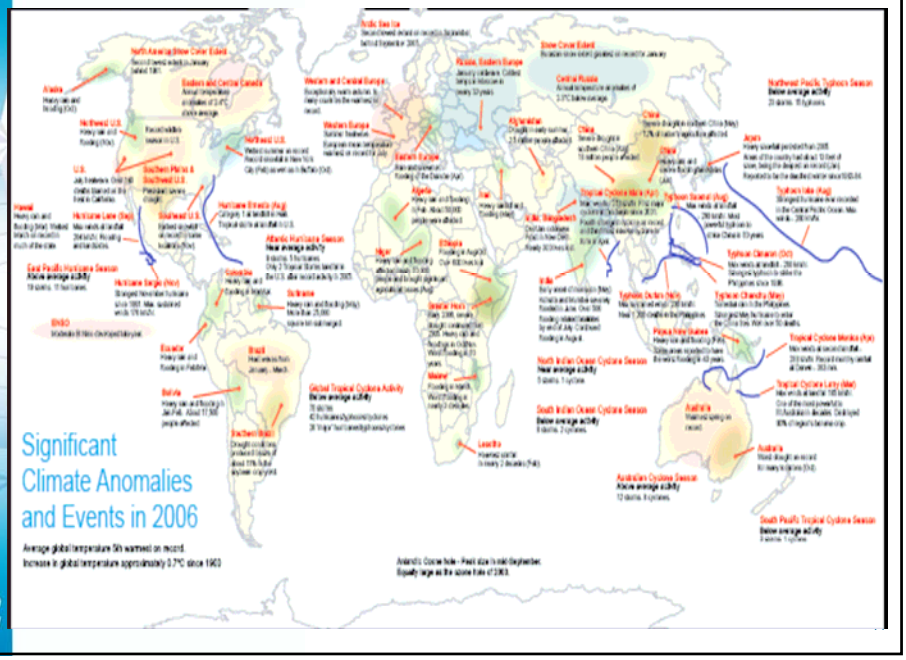
12

Routine Reviews

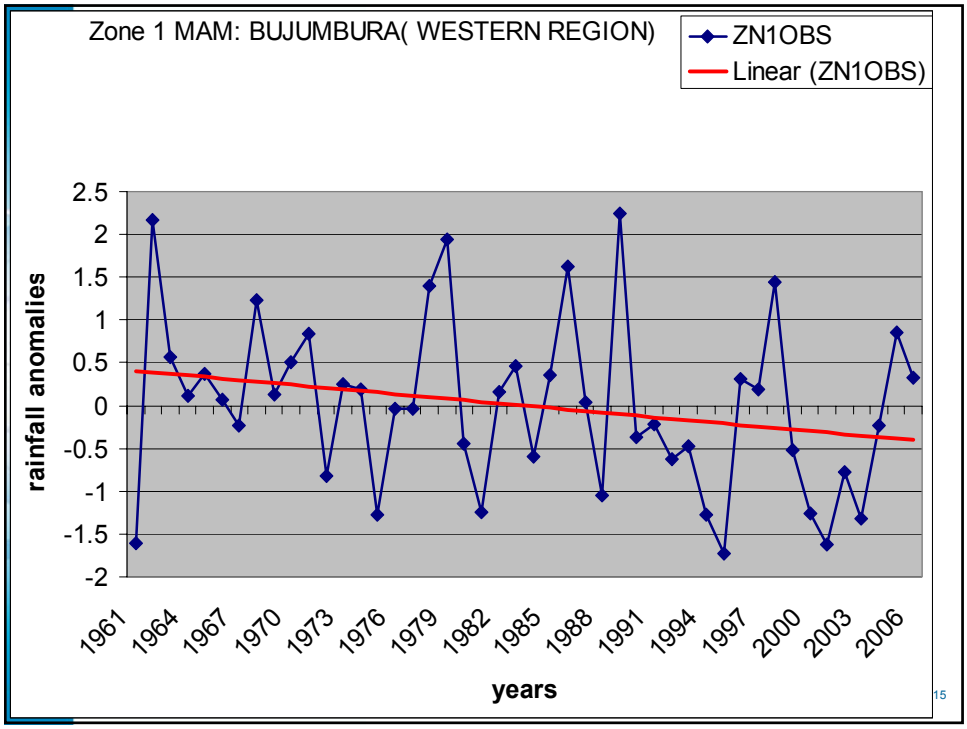


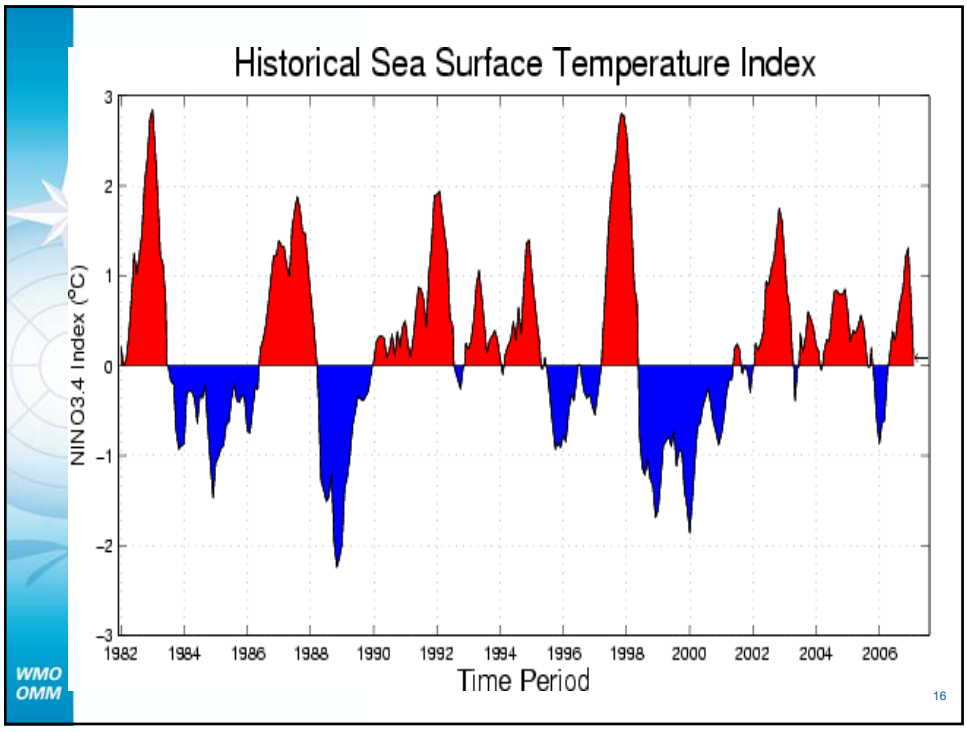
WMO OMM

13

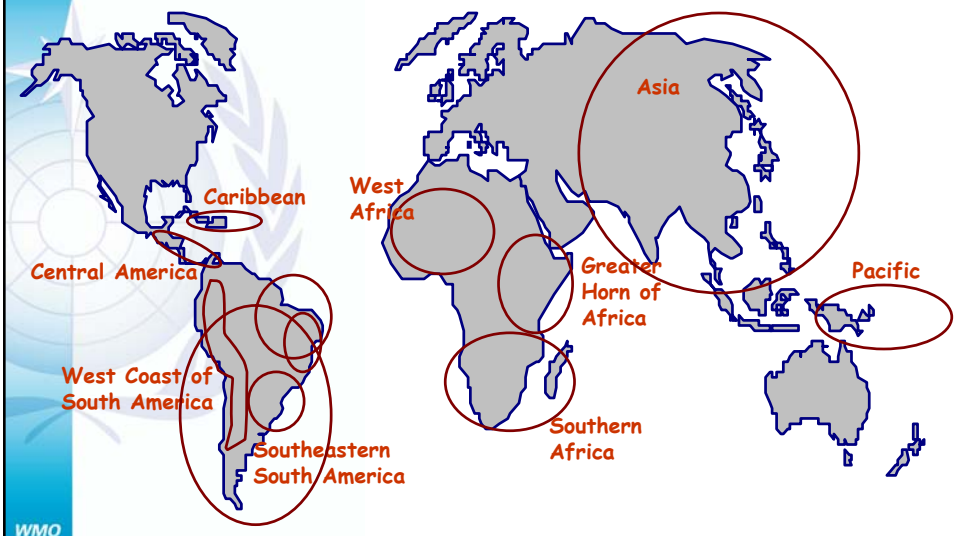


WMO OMM


Zone 1 MAM: BUJUMBURA(WESTERN REGION)
ZN1OBS
Linear (ZN1OBS)
rainfall anomalies
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
1961
1964
1967
1970
1973
1976
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006
years
15


Historical Sea Surface Temperature Index
NINO3.4 Index (°C)
3
2
1
0
-1
-2
-3
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Time Period
WMO
OMM
16

Existing RCOFs Worldwide



WMO OMM

17

Information demands for adaptation

- Past climate a baseline for projected climate changes
- Thresholds and extremes are key to plan for adaptation
- Adaptation needs local expertise, regional climate information, and open exchange of knowledge and data
- NMHSs an integral part of informed knowledge based decision making

WMO OMM

18

Thank you
Merci
Спасибо
Gracias
شكرا
谢 谢

www.wmo.int

adelju@wmo.int

WMO
OMM

19