

WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC
COMMISSION (OF UNESCO)

JOINT WMO/IOC TECHNICAL COMMISSION FOR
OCEANOGRAPHY AND MARINE METEOROLOGY (JCOMM)
EXPERT TEAM ON MARINE CLIMATOLOGY

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FIRST SESSION

ITEM 4.3

GDYNIA, POLAND, 7 TO 10 JULY 2004

Original: ENGLISH

ARCHIVAL OF WAVE AND STORM SURGE DATA

(Submitted by the Secretariat)

Summary and Purpose of Document

This document contain the information on archival of FM 65 WAVEOB data, global wave metadata, and the catalogue of storm surge data holdings, which are tasks proposed by the eighth session of the Subgroup on Marine Climatology and/or JCOMM-I

ACTION PROPOSED

The Expert Team on Marine Climatology is invited to:

- (a) Note the information provided;
- (b) Comment on and make recommendations as appropriate.

Appendix: Results from the WMO Questionnaire on Wave Spectra Data (FM65-IX WAVEOB)

DISCUSSION

Archival of WAVEOB data

1. The eighth session of the Subgroup on Marine Climatology (SGMC-VIII) (Asheville, April 2000) discussed wave spectra data (FM 65-IX WAVEOB) and agreed that Mr Joe Elms (USA), SGMC chair, would conduct a questionnaire survey. Discussion at SGMC-VIII was as below.

6.2.1 The subgroup noted that there is already a significant amount of observed wave spectral data in circulation on the GTS in the FM 65-IX WAVEOB code and that this amount is likely to increase substantially in the future, not only with moored buoys as the main source but also from remote platforms such as aircraft or satellites. It was further noted that although a number of national agencies maintain archives of such data in a higher resolution format, no internationally agreed procedures and/or centres exist to undertake such archival on a global or regional basis, or to make the data available to users in accepted ways.

6.2.2 In view of the above, the subgroup considered that a pilot project should be undertaken in order to find out in a realistic manner the number of countries reporting such data via the GTS as well as its volume. Based on the results of the project, which should last for approximately one year, the subgroup would then re-examine this question with a view to determine if the users should contact individual providers to obtain the higher resolution information or if the data should be archived in a central place. The group also requested the Secretariat to circulate a questionnaire to all members of JCOMM to enquire whether the need existed for archiving WAVEOB reports extracted from the GTS in a central location.

6.2.3 The subgroup kindly accepted the offer of Mr J. Elms (USA) to undertake the preparation of the questionnaire to be circulated by the Secretariat as soon as it is available, and for the extraction from the GTS of WAVEOB reports headed MMXX, for the period of one year. The subgroup also agreed that if sufficient information was available, a preliminary report should be prepared for consideration by JCOMM-I.

2. The questionnaire was sent to Members/Member States represented on JCOMM on 12 March 2001, requesting to return the completed questionnaire to Mr J. Elms. A summary report prepared by Mr Elms is in the Appendix. This information is being forwarded to the Expert Team on Wind Waves and Storm Surges.

Global wave metadata

3. JCOMM-I recognized that measured wave data were of considerable value to national agencies for many practical applications, but that such data were often not released for such purposes, nor was there much information available on their existence. It therefore:

- (i) Urged Members/Member States to make every effort to identify and obtain the release of wave data measured nationally, for distribution where possible on the GTS and/or inclusion in national archives;
- (ii) Requested the Expert Team on Marine Climatology to investigate the possibility to re-establish global wave metadata archive centre.

4. Upon the request by the ETMC chair, Mr Chris Hall (UK, formerly member of ETMC) contacted Dr Lesley Rickards (British Ocean Data Centre), who was responsible in the past (mid 80's) for the global wave metadata archive, namely the " catalogue of instrumentally measured Wave Data". The information was passed to the Secretariat and Mr Val Swail, the chair of the Expert Team on Wind Waves; and it was agreed that ETWS would take responsibly on this issue.

Storm surge and wave data holdings

5. SGMC-VIII discussed the issue on storm surge and wave data holdings as below.

6.5 Review of the status of the catalogue of storm surge data holdings (agenda item 6.5)

The subgroup recalled that its seventh session (Geneva, April 1996) considered the preliminary results of a survey on this subject prepared by Dr E. Zaharchenko (Latvia). The results of the survey indicated that:

- there were substantial amounts of storm surge data archived in a number of countries;*
- there was some interest in having a global catalogue of data holdings; and*
- there was also interest in the eventual international exchange of these data, at least regionally.*

6.5.2. At the same time the group had agreed to adopt the definition for "storm surge" as it appears in the International Meteorological Vocabulary (WMO No. 182) which has also been adopted by the five WMO regional tropical cyclone bodies and their members. The subgroup then adopted a draft catalogue outline, recognizing that both the structure and details of the catalogue needed to be further developed. It also considered that it would be both logical and practical if the catalogue could be incorporated or associated in some way to the INFOCLIMA catalogue.

6.5.3 The twelfth session of CMM (Havana, March 1997) supported this project and urged Members to contribute whenever possible, and accepted with appreciation the offer made by the Russian Federation for assistance of the World Data Centre-B in that work.

6.5.4 The subgroup now reconfirmed the findings produced by the survey and decided that in order to advance the project, the Chairman would write to Dr Zaharchenko and ask him for an update of the status of the catalogue. The information would also be made available to Dr Somova (Russian Federation) so that an early coordination could be made for the preparation and implementation of the catalogue, particularly if the offer for assistance made by the Russian Federation delegate at CMM-XII, namely to receive the help of the Global Data Centre-B, was to be taken up.

6. The proposed actions were not followed up along the line proposed at SGMC-VIII. On the other hand, a new Expert Team on Wind Waves and Storm Surges (ETWS) was established at JCOMM-I, and catalogues of wave and storm surge data and modeling are being developed under the ETWS. The ETWS is now making questionnaire surveys on related issues i.e. one for catalogue of operational wind wave and storm surge models; and the other for inventory of hindcast wind wave climatologies, and measured wind wave and storm surge data bases.

Action proposed

7. The team is invited to note the information provided. It is also invited to comment on and make recommendations as appropriate.

Results from the WMO Questionnaire on Wave Spectra Data (FM65-IX WAVEOB)

The questionnaire on Wave Spectra Data (Attachment 1) was sent to participating Members of which 41 responded. Attachment 2 provides the summarized responses from Countries to questions 1 through 5 on the questionnaire in the general order they were received.

Of the 41 Country responses, 16 of them either collect, generate or archive wave spectra data from moored buoys or remote platforms of some type. Of these 16 only two transmit the data over the GTS in the FM 65-IX WAVEOB code. However, when asked if they had near term plans for operating any new wave spectra sensors 15 responded that they were either proposing such plans or were planning on adding additional ones.

When asked if they would benefit from having access through a WMO World Data Centre to a historical archive of wave spectra data collected off the GTS, in the FM-IX WAVEOB Code, nearly 75% responded that it would be useful. However, most were only interested in data for their local region.

The last question was seeking to determine if Members would prefer high resolution data which they would have to request from the individual Members operating the sensors or the lower resolution data that could be obtained from the FM65-IX coded data archived at a World Data Centre. From the responses it appeared that nearly a quarter would not be interested in obtaining either. The others were near evenly split between the two options. In reviewing the responses it appeared that those most likely interested in acquiring spectral data would prefer the higher resolution data and would request it from the individual providers. In conclusion it appears that there was not much interest in setting up an official World Data Centre to archive the FM 65-IX coded messages. Again only several countries are currently encoding their data for transmission over the GTS. It also appears that a couple countries are actually archiving the FM 65-IX coded messages. Because not all Members responded to the questionnaire, there may be others that are coding their data for transmission over the GTS.

There were some significant benefits gained from the questionnaire, which will benefit the WMO Expert Team on Marine Climatology in the future. The rapporteur greatly appreciates the efforts of those Members that responded.

ATTACHMENT 1

WORLD METEOROLOGICAL ORGANIZATION

QUESTIONNAIRE ON WAVE SPECTRA DATA (FM 65-IX WAVEOB)

A. Identification section

Member country: _____

Name of contact: _____

Mailing address: _____

Phone, fax, e-mail address:

B. Requirements for Wave Spectra Data

1. Do you collect, generate, or archive any wave spectra data from moored buoys or remote platforms such as aircraft or satellites? Please describe.
2. If you operate any wave spectra sensors do you transmit this data over the GTS in the FM 65-IX WAVEOB Code? Do you archive the data in a higher resolution format than allowed for in the FM 65-IX Code? Please describe.
3. Do you have any near term plans for operating any new wave spectra sensors? Please describe.
4. Would you benefit from having access through a WMO World Data Center to a historical archive of wave spectra data collected off the GTS in the FM 65-IX WAVEOB Code? Please describe.
5. If requiring wave spectra data from other than your own sensors for wider geographical coverage would you prefer to: (1) request higher resolution wave spectra data from the individual Members who operate such sensors or, (2) use the lower resolution data in the FM 65-IX Code from a single source World Data Center responsible for archiving the GTS reports? Please describe. If you also see little chance of ever requiring spectra wave data from either source please also indicate.

ATTACHMENT 2

COUNTRY	QUESTION 1
AUSTRIA	NO
BELIZE	NO
SAINT LUCIA	NO
CANADA	YES, ARCHIVED MEDS
CYPRUS	ONE WAVERIDER
MAURITIUS	ONE MOORED BUOY
MALAWI	NO
SEYCHELLES	NO
NEW ZEALAND	YES, 3 NON-DIR; 2-DIR
BAHAMAS	NO
DENMARK	NO
GUYANA	NO
MONACO	NO
CHILE	YES, 17 WAVERIDER BUOYS
SPAIN	YES, USUALLY ARCHIVE ONLY RAW DATA
SYRIA	NO
SLOVENIA	NO
PERU - METEOROLOGICAL & HYDROLOGY	NO
PERU - HYDROGRAPHIC & NAVIGATIONAL	YES
TUNISIA - INSTM	NO
TUNISIA - NATIONAL INSTITUTE OF METEOROLOGY	NO
PAKISTAN	NO
ECUADOR	NO, WAVE HEIGHT & PERIOD ONLY 1992-97
INDONESIA	NO
HONG KONG, CHINA	NO
GREECE	NO
NETHERLANDS	YES, NORTH SEA
URUGUAY	NO
TURKEY	NO
JAPAN	USE ERS-2 DATA RECEIVED OVER GTS
UNITED KINGDOM	ONE EXPERIMENTAL BUOY
THAILAND - GEO-INF & SPACE TECHNOLOGY	WAVE RIDERS REPORT PERIOD & HEIGHT ONLY
THAILAND - SE ASIAN FISHERIES DEV CTR	NO
THAILAND - HARBOUR DEPARTMENT	NO
THAILAND - SE ASIA START REGIONAL CTR	NO
THAILAND - WATER ENGINEERING & MGT PG	YES, 4 LOCATIONS LIMITED SITE TESTING
THAILAND - DPT OF MARINE SC, UNIVERSITY	NO
THAILAND - FISHERIES DEPT. KASETSART U.	NO
QATAR	NO
ICELAND	NO
COLOMBIA	NO
GERMANY	YES, 3-4 BUOYS GER. BIGHT & W BALTIC
OMAN	NO
FRANCE	YES, 2-3 BUOYS W. MED, FRENCH ANTILLES
KENYA	RECEIVE GTS REPORTS BUT DO NOT ARCHIVE
USA	YES, MOORED BUOYS & C-MAN STATIONS
INDIA	YES, 12 MOORED BUOYS
BELGIUM	YES, ONE LOCATION
SWEDEN	YES, 6 LOCATIONS, SOME AS EARLY AS 1978

ATTACHMENT 2 (CONTINUED)

COUNTRY	QUESTION 2
AUSTRIA	NO
BELIZE	NO
SAINT LUCIA	NO
CANADA	NO, TRANSMITTED OVER GOES
CYPRUS	NO
MAURITIUS	NO
MALAWI	NO
SEYCHELLES	NO
NEW ZEALAND	NOT OVER GTS
BAHAMAS	NO
DENMARK	NO
GUYANA	NO
MONACO	NO
CHILE	NO
SPAIN	NO, OVER INMARSAT-C (SEAWATCH)
SYRIA	NO
SLOVENIA	NO
PERU - METEOROLOGICAL & HYDROLOGY	NO
PERU - HYDROGRAPHIC & NAVIGATIONAL	NO
TUNISIA - INSTM	NO
TUNISIA - NATIONAL INSTITUTE OF METEOROLOGY	NO
PAKISTAN	N/A
ECUADOR	NO
INDONESIA	NO REPLY
HONG KONG, CHINA	NO
GREECE	NO REPLY
NETHERLANDS	NO, TRANSMITTED OVER SEANET
URUGUAY	NO REPLY
TURKEY	DO NOT OPERATE ANY SENSORS
JAPAN	NO
UNITED KINGDOM	NO
THAILAND - GEO-INF & SPACE TECHNOLOGY	NO
THAILAND - SE ASIAN FISHERIES DEV CTR	NO REPLY
THAILAND - HARBOUR DEPARTMENT	NO REPLY
THAILAND - SE ASIA START REGIONAL CTR	NO
THAILAND - WATER ENGINEERING & MGT PG	NO
THAILAND - DPT OF MARINE SC, UNIVERSITY	NO REPLY
THAILAND - FISHERIES DEPT. KASETSART U.	NO
QATAR	NA
ICELAND	NO REPLY
COLOMBIA	NO
GERMANY	NO, ARCHIVED AT COMPARABLE RESOL.
OMAN	NO
FRANCE	YES, 2 BUOYS SOON 3
KENYA	NO
USA	YES
INDIA	NO
BELGIUM	NO, SOME DATA AVAILABLE ON WEB
SWEDEN	NONE OVER THE GTS AND NO WAVEOB

ATTACHMENT 2 (CONTINUED)

COUNTRY	QUESTION 3
AUSTRIA	NO
BELIZE	NO
SAINT LUCIA	NO
CANADA	NOT FROM MEDS
CYPRUS	NO
MAURITIUS	NO
MALAWI	NO
SEYCHELLES	YES, PROPOSAL
NEW ZEALAND	NOT ON PERMANENT BASIS
BAHAMAS	INSTALL FEW WAVE RECORDERS BY 2003
DENMARK	NO
GUYANA	NO
MONACO	NO
CHILE	YES, SEVERAL PRESSURE SENSORS NEAR COASTAL
SPAIN	TESTING SEVERAL & IMPROVING OPERATIONAL RADAR
SYRIA	YES, TRYING TO GET STARTED
SLOVENIA	PLANS TO ESTABLISH ONE NEAR PIRAN
PERU - METEOROLOGICAL & HYDROLOGY	NO
PERU - HYDROGRAPHIC & NAVIGATIONAL	NO
TUNISIA - INSTM	NO
TUNISIA - NATIONAL INSTITUTE OF METEOROLOGY	NO
PAKISTAN	POSSIBLY IN THE FUTURE
ECUADOR	NO
INDONESIA	NO REPLY
HONG KONG, CHINA	NO
GREECE	NO
NETHERLANDS	NO
URUGUAY	NO
TURKEY	YES, NEAR FUTURE
JAPAN	NO
UNITED KINGDOM	DEPENDING ON FIELD TRIALS
THAILAND - GEO-INF & SPACE TECHNOLOGY	NO
THAILAND - SE ASIAN FISHERIES DEV CTR	YES, FROM ADCP SENSORS
THAILAND - HARBOUR DEPARTMENT	NO
THAILAND - SE ASIA START REGIONAL CTR	NO
THAILAND - WATER ENGINEERING & MGT PG	NO
THAILAND - DPT OF MARINE SC, UNIVERSITY	NO REPLY
THAILAND - FISHERIES DEPT. KASETSART U.	NO
QATAR	YES, PLANS TO INSTALL TIDE GAUGE & WAVE RECORDER
ICELAND	NO
COLOMBIA	NO
GERMANY	NO
OMAN	NO
FRANCE	YES, ALONG THE FRENCH COAST
KENYA	NO
USA	YES, DEVELOPING NEW DIR. ANGULAR RATE SENSORS
INDIA	YES, PLANS TO DOUBLE THE NUMBER OVER 2 YEARS
BELGIUM	NO
SWEDEN	RECENTLY DEPLOYED TWO BUOYS WITH WAVE SENSORS

ATTACHMENT 2 (CONTINUED)

COUNTRY	QUESTION 4
AUSTRIA	NO
BELIZE	NO
SAINT LUCIA	YES
CANADA	YES
CYPRUS	MAYBE
MAURITIUS	YES
MALAWI	YES, INLAND LAKE
SEYCHELLES	YES, LOCAL AREA
NEW ZEALAND	NO
BAHAMAS	YES
DENMARK	YES
GUYANA	YES, EQUATORIAL ATLANTIC
MONACO	NO
CHILE	YES
SPAIN	YES, VALUABLE TO VALIDATE WAVE MODELS
SYRIA	YES
SLOVENIA	YES, ADRIATIC SEA
PERU - METEOROLOGICAL & HYDROLOGY	YES, COASTAL REGION
PERU - HYDROGRAPHIC & NAVIGATIONAL	YES
TUNISIA - INSTM	YES, IN THE MEDITERRANEAN
TUNISIA - NATIONAL INSTITUTE OF METEOROLOGY	NO
PAKISTAN	MIGHT BE BENEFICIAL FOR LOCAL AREA
ECUADOR	MAYBE IN THE FUTURE
INDONESIA	YES
HONG KONG, CHINA	NO PLANS
GREECE	NO
NETHERLANDS	MIGHT BE USEFUL FOR RESEARCH
URUGUAY	YES
TURKEY	YES
JAPAN	NO PLANS
UNITED KINGDOM	YES, IMPORTANT FOR VALIDATING WAVE MODELS
THAILAND - GEO-INF & SPACE TECHNOLOGY	WOULD BENEFIT
THAILAND - SE ASIAN FISHERIES DEV CTR	BENEFIT IN THE FUTURE
THAILAND - HARBOUR DEPARTMENT	YES, LOCAL STUDIES
THAILAND - SE ASIA START REGIONAL CTR	YES, TO CALIBRATE WAVE MODEL E.G. WAM
THAILAND - WATER ENGINEERING & MGT PG	YES, RELIABLE SOURCE FOR DATA
THAILAND - DPT OF MARINE SC, UNIVERSITY	YES, BENEFIT WAVE FORECASTING SYSTEM
THAILAND - FISHERIES DEPT. KASETSART U.	YES, USEFUL SIMULATION MODEL
QATAR	YES, INFORMATION REQUESTED
ICELAND	YES
COLOMBIA	YES, IN THE FUTURE
GERMANY	UNLIKELY
OMAN	NO
FRANCE	YES, VALIDATE DATA AND MODEL OUTPUT
KENYA	YES, BENEFIT FOR RESEARCH
USA	YES, ACCESS TO NON USA DATA BENEFICIAL
INDIA	YES, DATA FOR ANALYTICAL STUDIES
BELGIUM	NO
SWEDEN	FOR THE MOMENT NO

ATTACHMENT 2 (CONTINUED)

COUNTRY	QUESTION 5
AUSTRIA	NO RESPONSE
BELIZE	NO
SAINT LUCIA	NOT SURE
CANADA	BOTH
CYPRUS	NO RESPONSE
MAURITIUS	HIGH RESOLUTION, LOCAL AREA
MALAWI	LOW RESOLUTION, SINGLE SOURCE
SEYCHELLES	LOW RESOLUTION, SINGLE SOURCE
NEW ZEALAND	NO HIGH RESOLUTION REQUIREMENT
BAHAMAS	OPTION 2, DATA MORE CONSISTENT
DENMARK	OPTION 1
GUYANA	OPTION 2
MONACO	OPTION 1, LOCAL AREA
CHILE	OPTION 1 S. PACIFIC, OPTION 2 N. PACIFIC
SPAIN	LIKELY OPTION 1, DEPENDS ON CONDITIONS
SYRIA	OPTION 2, PREFER PRINTED DATA
SLOVENIA	OPTION 2
PERU - METEOROLOGICAL & HYDROLOGY	BOTH OPTIONS, DIFFERENT PURPOSES
PERU - HYDROGRAPHIC & NAVIGATIONAL	OPTION 1 NEAR COASTAL, OPTION 2 PACIFIC
TUNISIA - INSTM	OPTION 2, MEDITERRANEAN
TUNISIA - NATIONAL INSTITUTE OF METEOROLOGY	OPTION2, MEDITERRANEAN SEA AREA
PAKISTAN	OPTION 1
ECUADOR	OPTION 2
INDONESIA	OPTION 1
HONG KONG, CHINA	NO PLANS THEREFORE NO PREFERENCE
GREECE	OPTION 2
NETHERLANDS	OPTION 2 MIGHT BE MORE APPROPRIATE
URUGUAY	OPTION 2
TURKEY	OPTION 2, OPTION 1 COULD BE REQUESTED
JAPAN	OPTION 2 FROM OPERATIONAL VIEWPOINT
UNITED KINGDOM	BOTH OPTIONS, DIFFERENT PURPOSES
THAILAND - GEO-INF & SPACE TECHNOLOGY	OPTION 1, GULF OF THAILAND & ANDAMAN SEA
THAILAND - SE ASIAN FISHERIES DEV CTR	OPTION 1
THAILAND - HARBOUR DEPARTMENT	OPTION 1, NEAR COASTAL WATERS, OPTION 2 OTHERS
THAILAND - SE ASIA START REGIONAL CTR	OPTION 2, LARGE GEOGRAPHICAL AREA
THAILAND - WATER ENGINEERING & MGT PG	OPTION 2
THAILAND - DPT OF MARINE SC, UNIVERSITY	OPTION 2, EARLY STAGE
THAILAND - FISHERIES DEPT. KASETSART U.	NO RESPONSE
QATAR	OPTION 1 ARABIAN GULF, OPTION 2 OTHER AREAS
ICELAND	NO REPLY
COLOMBIA	INTERESTED IN BOTH OPTIONS
GERMANY	OPTION 2
OMAN	NO
FRANCE	OPTION 2, MF ARCHIVES GTS FM65-IX REPORTS
KENYA	BOTH OPTIONS
USA	BOTH OPTIONS
INDIA	INITIALLY OPTION 2, MAY REQUIRE OPTION 1 LATER
BELGIUM	NO REPLY
SWEDEN	AT PRESENT TIME INDIVIDUAL MEMBERS