



INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of Unesco)

LIST OF PROPOSED SEA-LEVEL STATIONS TO BE INCLUDED
IN THE GLOBAL SEA-LEVEL OBSERVING SYSTEM

30 ADUT 1985

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1. Introduction

The proposal for the Global Network of Sea-Level Stations, prepared with the assistance of Dr. D. Pugh and Prof. K. Wyrtki was submitted to the first session of the IOC Programme Group on Ocean Processes and Climate (6-8 March 1985) and the Thirteenth Session of the IOC Assembly (12-28 March 1985) as Document IOC-XIII/8 Annex 1.

The IOC Assembly, at its Thirteenth Session, by Resolution XIII-7, adopted the Proposal for the Global Network of Sea-Level Stations, as a basis for an extension, under the auspices of IOC, of the existing sea-level network, and urged Member States to participate in the implementation of the Global Sea-Level Observing System (Resolution XIII-7 is attached hereto).

This list of proposed sea-level stations was prepared on the basis of the Document IOC-XIII/8 Annex 1. It will be further updated on the basis of comments and views of Member States, and of completed questionnaire.

Resolution XIII-7

GLOBAL SEA-LEVEL OBSERVING SYSTEM

The Intergovernmental Oceanographic Commission,

Appreciating the long series of mean sea-level data archived by the ICSU Permanent Service for Mean Sea-Level, and the role played over many years by hydrographic, geodetic and scientific organizations in sea-level measurements and analysis,

Noting the request addressed to the Commission by the Joint SCOR-IOC Committee on Climatic Changes and the Ocean to assist in the development of a Global Sea-Level Observing System in support of the World Climate Research Programme,

Recognizing the success of the IGOSS Sea-Level Pilot Project (ISLPP) in the operational collection of sea-level data and dissemination of derived monthly mean sea-level anomaly products for the Pacific basin,

Having reviewed the Executive Summary and Recommendations of the First Session of the Programme Group on Ocean Processes and Climate (ref: doc. PG-OPC-I/3S),

Adopts the Proposal for the Global Network of Sea-Level Stations, as a basis for an extension under the auspices of IOC of the existing sea-level network (see Annex ... to the Summary Report);

Requests the regional subsidiary bodies of the Commission, as well as other co-operating regional bodies, to give priority to the implementation of sea-level observing networks in their respective ocean regions;

Requests the Joint SCOR-IOC Committee on Climatic Changes and the Ocean to continue its work on formulating scientific requirements for sea-level data and analyses for various ocean regions;

Also requests the Joint IOC-WMO Working Committee for IGOSS to continue the operational exchange of sea-level data and the dissemination of operational sea-level products by the Specialized Oceanographic Centre on Sea-Level Data;

Urges the Member States to participate in the implementation of the Global Sea-Level Observing System by:

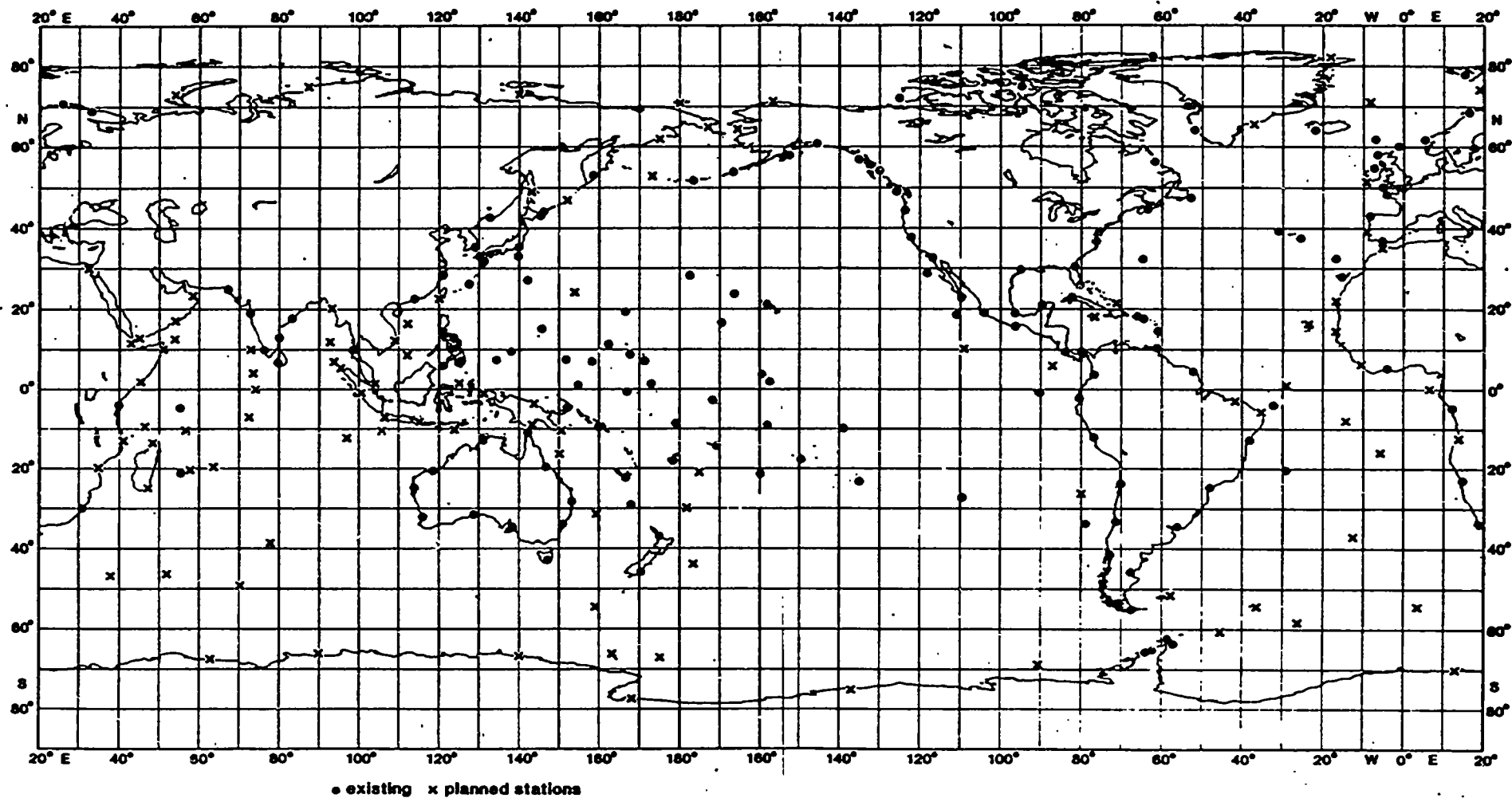
- (i) maintaining, up-grading, re-activating and establishing new sea-level stations;
- (ii) providing assistance and support to developing countries through TFMA activities and/or bilateral and multilateral assistance mechanisms, in the installation, operation, and maintenance of tide gauges, and in the analyses of data derived therefrom; and
- (iii) submitting sea-level data in accordance with the requirements of the Global Sea-Level Observing System.

Instructs the Secretary to call upon a task team of experts, including those assisting the Commission in the development of tide gauge networks in IOC regions, to draft an implementation plan for the Global Sea-Level Observing System, for submission to the next session of the Executive Council for approval, and to invite the co-operation of the Unesco Division of Marine Sciences;

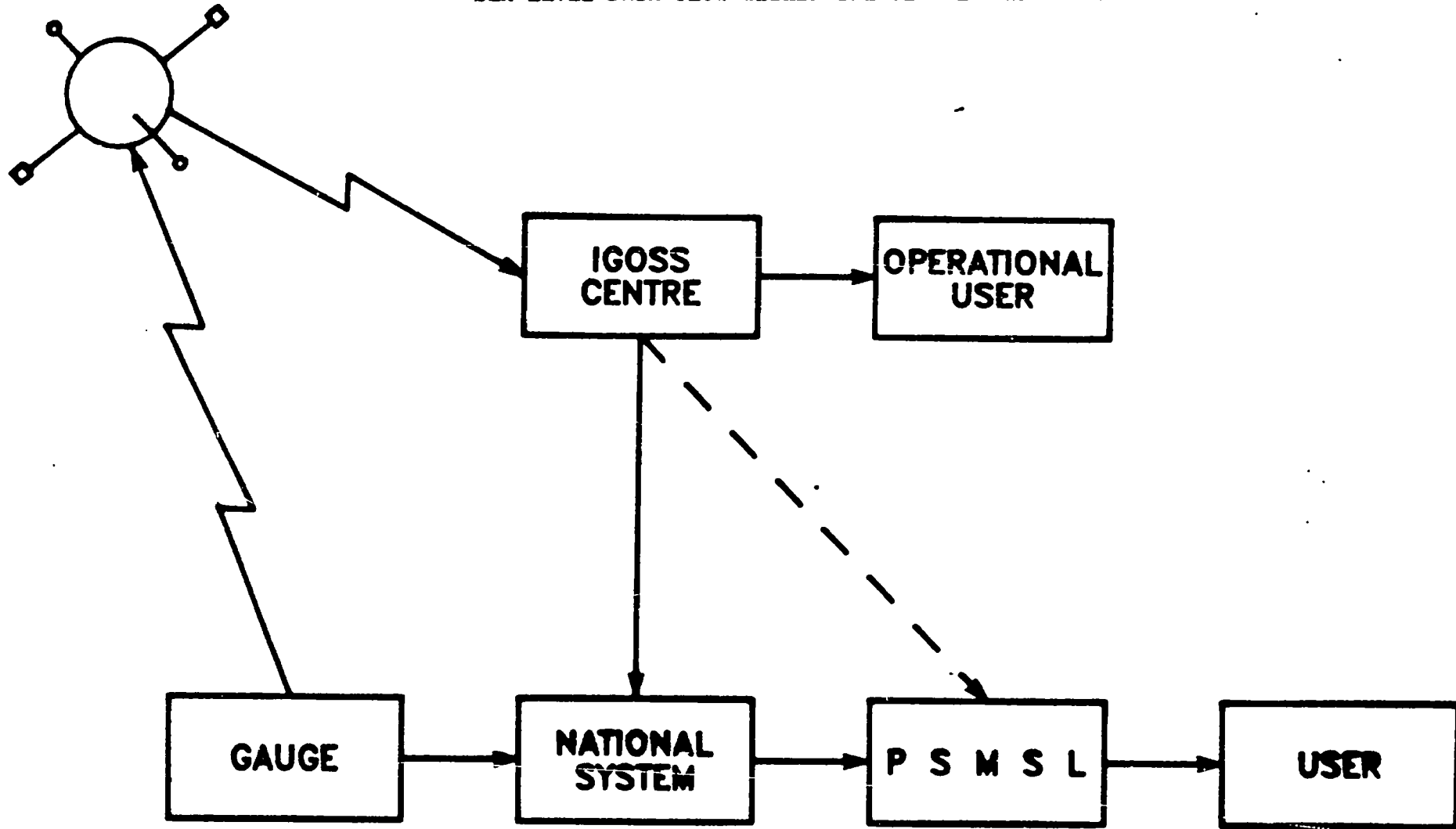
Instructs the Secretary IOC, and invites the Director of the Division of Marine Sciences of Unesco, with the support of Member States and organizations concerned, to develop and promote the required TEMA components in support of the Global Sea-Level Observing System and of its regional networks;

Instructs the Secretary to maintain consultations with the IHO on matters of common interest in the field of sea-level measurements and their analysis.

GLOBAL SEA LEVEL OBSERVING SYSTEM (GLOSS)



SEA LEVEL DATA FLOW WITHIN THE GLOBAL SEA LEVEL OBSERVING SYSTEM



INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

2. Questionnaire on participation (*)
in the Global Sea-Level Observing System

Country

Date

1. GLOSS Sea-Level Station : 1.1 Name of the location
1.2 Geographical Coordinates : Lat
Long

2. Participation in GLOSS : Yes ☐ No ☐

(see p.3) 2.1 A ☐ ☐

2.2 B ☐ ☐

2.3 C ☐ ☐

2.4 D ☐ ☐

3. State of the tide-gauge 3.1 Existing/in operation Yes No

3.2 Need assistance ☐ Yes (**) ☐ No

3.3 Need new technology ☐ Yes ☐ No

4. Type of gauge

5. Period of observation (from) (to)

6. Method of data reduction :

6.1 tabulated from analogous charts

6.2 automatic digitization from
analogous charts

6.3 direct computer entry and editing

7. Data available : 7.1 hourly Yes No

7.2 daily Yes No

7.3 monthly Yes No

7.4 computer compatible Yes No
(i.e. computer punched cards or
magnetic tapes)

8. Means of data transmission (mail, cable, telex, radio etc.)

9. Interest in receiving sea-level data from other countries or PSMSL

9.1 Indicate the oceanic areas of interest

10. National Contact Point and/or National Responsible Agency (name, address)

(*) to be filled for each sea-level station.
(**) please specify in a separate sheet, as shown on page 2.
- please attach a map, showing location of the station.

Assistance for proposed GLOSS sea-level stations required: Yes No

can be provided to other countries: Yes No

Country:

Sea-level station:

- a) Assistance in supply of tide gauge (to be specified)
- b) Assistance in providing spare parts for existing tide gauges (to be specified)
- c) Assistance in the installation of new tide gauges
- d) Assistance in the improved levelling of existing tide gauges
- e) Assistance for national experts to participate in training courses in sea-level measurement and data management
- f) Assistance for national experts and/or representatives to attend meetings relevant to sea-level activities
- g) Increased provision of documents, brochures and other written information on sea-level measurements
- h) Provision of consultant(s) to visit your country
- i) Other (please specify)

1. Proposed Sea-Level Station(s):

If, for various reasons, the proposed location is not acceptable, please indicate the nearest station that will meet the requirements of GLOSS.

2. Participation in GLOSS

2.1 A GLOSS sea-level stations with immediate data transmission for calibration of satellite altimetry (in support of WOCE).

2.2 B GLOSS sea-level stations with transmission of daily or monthly sea-level data to specialized sea-level data centres for monitoring monthly mean sea-level anomalies (in support of TOGA and WOCE).

2.3 C GLOSS sea-level stations for the study of long-term climate changes with submission of data to PSMSL within one year of data acquisition.

2.4 D Additional national sea-level stations proposed by the country for inclusion in GLOSS and follow-up submission of data to PSMSL and/or specialized data centre.

3. List of proposed sea-level stations

The attached list and map of proposed locations and names of sea-level stations were prepared on the basis of the Proposal for the Global Network of Sea-Level Stations (Doc. IOC-XIII/8 Annex 1), of comments made by the Joint SCOR-IOC CCCO and its relevant subsidiary bodies, and of information available in IOC and the Permanent Service of Mean Sea-Level (PSMSL) on the existing sea-level stations, particularly IOC Technical Series No. 23.

The categories of sea-level stations by objectives are: (+)

- A - for calibration of satellite altimetry (immediate transmission);
- B - monitoring of monthly sea-level anomalies (transmission of sea-level data to specialized centres on real or near real time basis);
- C - study of long-term climate changes (submitting sea-level data to the Permanent Service of Mean Sea-Level (PSMSL) within 1 year);
- D - national tide gauge networks (used for national practical and research applications) data are also submitted to PSMSL, but time is not so important.

The categories of sea-level stations by participation in the Global Sea-Level Observing System are those that:

- (i) a - require investigation
- (ii) b - require co-ordination
- (iii) c - require assistance
- (iv) d - require new technology

(+) All sea-level data exchange within the Global Sea-Level Observing System are submitted in final analysis to the World Data Centres.

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
INDIAN OCEAN West Indian Ocean	AFRICA Mozambique	1.1	Maputo	+		+	+			+	+		The National Service of Navigation, Hydrography and Buoyage Maputo Mr. Sesaluxo Emilio N. Coweta, Director of the Service
		1.2	Mocimboa-da Praia	+		+	+		+				
		1.3	Beira	+		+	+			+	+		
	Tanzania, United Republic of	1.4	Zanzibar	+		+	+		+		+		Tanzania Harbours Authority Dar-es-Salaam Dr. A.T. Shanmugam Kunduchi Fisheries Institute Marine attn. The Principal P.O.B. 23126 Dar-es-Salaam
	Kenya	1.5	Mombasa (Kilindini Harbour Mombasa)			+	+				+		Kenya Marine and Fisheries Research Institute Mombasa Laboratory P.O. Box 81651 Mombasa Mr. M.O. Odido

INDIAN OCEAN

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
INDIAN OCEAN	AFRICA Somalia	1.6	Mogadiscio			+	+		+		+		Ministry of Fisheries P.O. Box 438 Mogadiscio
		1.7	Mafun (Dante)			+	+		+		+		
		1.8	Djibouti			+	+		+				
The Red Sea	Egypt	1.9	Hurghada (or Qusayr)			+	+		+				Director Institute of Oceanography and Fisheries Kayet-Bey Alexandria
Gulf of Aden	P.D.R. Yemen	1.10	Aden			+	+						Délégué permanent for Unesco
Arabian Sea	Oman	1.11	Salalah (or Mazira)			+	+						Ministry of Agriculture and Fisheries Directorate of Fisheries P.O. Box 467 Muscat
		1.12	Muscat			+	+						Council for Conservation of Envi- ronment and Prevention of Pollution, Department of Meteoro- logy P.O. Box 6553 Ruwi, Muscat

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
INDIAN OCEAN 1. North Indian Ocean	ASIA												National Institute of Oceanography 37-K, Block 6, P.E.C.H.S. Karachi 29 Director Dr. G.S. Quraishiee Mr. Arshad Ali Hydrographer of the Pakistan Navy Hydrographic Dept. Naval Headquarters Islamabad
	Pakistan	1.13	Karachi	+		+	+			+			
	India	1.14	Bombay	+		+	+			+			The Chief Hydrographer to the Government of India Naval Hydrographic Office Post Box No. 75 107 A Rajpur Road Dehra Dun 248.001 Survey of India Geodetic and Research Branch, Survey of India Post Box No. 77 Dehra Dun 248001 U.P. Dr. S.Z. Qasim Secretary, Dept. of Ocean Develop- ment Mahasagar Bharan, Block 12 CGO Complex, Lodi Road New Delhi 110003
		1.15	Cochin	+		+	+			+			
		1.16	Madras										
		1.17	Vishakhapati- nam	+		+	+			+			
		1.18	Port Blair			+	+						

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
INDIAN OCEAN North Indian Ocean	ASIA												Bangladesh Meteorological Department, Agargaon Dhaka-7, Bangladesh Director, Mr. Jasim Uddin Mr. Ali Ahmed Department of Hydrography Biwta Bhaban 141-143 Motijheel Commercial Area Dacca-2
	Bangladesh, People's Rep.	1.19	Chittagong			+	+		+				
	Burma	1.20	Bassein			+	+		+				
	Malaysia	1.21	Kedah Pier Penang or Pengkalan TLDM Lumut	+		+	+			+	+		Dr. Joo Tick Lim Director of Forecasting Services Malaysian Meteorological Service Jalan Sultan, Petaling Jaya Selangur Directorate of National Mapping Direktorat Pemetann Negara, Malaysia, Bangunan Ukur, Jalan Gurney, Kuala Lumpur 15-02

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
INDIAN OCEAN 1. Eastern Indian Ocean	ASIA Indonesia				1								1. National Mapping Agency Bakosurtamal - km 46 Jalan Raya Bogor, Cibinoug, Bogor 2. National Institute of Oceanology Kompleks Bina Samudera Jl. Pasir Putih No. 1 Ancol Timur-Jakarta Utara P.O. Box 580, Jakarta 11001
		1.22	Padang			+	+				+		
		1.23	Bengkulu			+	+				+		
		1.24	Kupang			+	+				+		
		1.25	Cilacap			+	+				+		
		1.26	Nicobar			+	+						
Western Indian Ocean	Madagascar	1.27	Fort Dauphin			+	+				+		Malagasy Ministère de l'Enseignement Supérieur et de la Recherche Scientifique Centre National de Recherches Océanographiques (CNRO) de Nosy-Bé B.P. n° 68, Madagascar
		1.28	Nosy-Bé			+	+				+		

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
INDIAN OCEAN 1. Western Indian Ocean	France	1.29	Reunion	+		+	+			+			Service Hydrographique et Océanographique de la Marine Etablissement Principal B.P. 426 29275 Brest Cédex Mlle M.A. Martin-Sane Coordinateur Multilatéral Président du Comité National pour la COI Ministère des Relations Extérieures - DGRCSST 34 rue La Pérouse, 75116 Paris
	Mauritius	1.30	Agalega			+	+				+		Meteorological Services Headquarters Vacoas, Mauritius S. Ragoonaden Mr. Soopramania
		1.31	Mauritius			+	+				+		
	Seychelles	1.32	Port Victoria Mahe	+		+	+				+		Ministry of National Development Department of Lands, Planning and Survey P.O. Box 199, Independence House Republic of Seychelles G.P. Garforth A.G. Chief Surveyor Principal Secretary

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
INDIAN OCEAN 1. Western Indian Ocean Central Indian Ocean	Seychelles (cont'd)	1.33	Aldabra			+	+				+		The Permanent Secretary Ministry of Education & Information P.O. Box 48, La Bastille Victoria
	U.S.A.	1.34	Diego Garcia			+	+		+				Mr. Paul M. Wolff NOAA Assistant Administrator for Ocean Services & Coastal Zone Management United States Dept. of State National Oceanic & Atmosphere Administration OES/OMS Room 5801 Washington D.C.
	Maldives	1.35	Gan			+	+		+				
		1.36	Male			+	+		+				
	India	1.37	Laccadive Minicoy	+		+	+			+			
	Sri Lanka	1.38	Colombo	+		+	+			+			Coastal Conservation Malegawealte Secretariat, Colombo 10 Sri Lanka Director Mr. S.R. Amarasinghe Mr. P.V. Wijararaotha

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
INDIAN OCEAN 1. Eastern Indian Ocean	Australia	Ind.	1.39	Booby Is.	+	+	+			+			The Secretary PCTMSL - National Mapping Council Unit 3 Cameron Offices P.O. Box 31 Belconnen ACT 2616 The Director Dept. of Harbours & Marine Edward Street, Box 2195 Brisbane, Queensland 4001 The Director CSIRO Division of Fisheries & Oceano- graphy P.O. Box 21 Cronulla, NSW 2230 Maritime Services Board of NSW CNR. Newcomen and Scott Streets Newcastle 2300, NSW Mr. Doug E. Keeley Marine Policy Branch Department of Science & Technology P.O. Box 65 Belconnen, ACT 2616
		Ind.	1.40	Darwin	+	+	+			+			
		Ind.	1.41	Fremantle	+		+			+			
		Ind.	1.42	Carnarvon	+	+	+			+			
		Ind.	1.43	Port Hedland	+	+	+			+			
		Ind.	1.44	Broome	+	+	+			+			
		Ind.	1.45	Cocos Is.		+	+		+				
		Ind.	1.46	Christmas Is.			+		+				

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
INDIAN OCEAN 1. Southern Indian Ocean	France Islands												Institut Français de Recherches pour l'Exploitation de la Mer 66 avenue d'Iéna 75116 Paris Le Directeur Etablissement principal de SHOM 13 rue du Chatellier, B.P. 426 29275 Brest Cédex Le Directeur Office de la recherche scienti- fique et technique outre-mer (ORSTOM) 24 rue Bayard 75008 Paris Dr. M. Fleux Laboratoire d'océanographie physique 43 rue Cuvier 75231 Paris Cedex 05
		1.47	Crozet				+		+	-			
		1.48	Kerguelen				+		+				
		1.49	Amsterdam or Saint Paul				+		+				

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2- South Atlantic	AFRICA												
	Angola	2.1	Moçamedes or Luanda or Lobito			+	+		+				Centre des recherches maritimes Ministère des Pêches Luanda Director Mrs. Maria de Fatima Jardin
	Congo	2.2	Pointe-Noire	+		+	+			+			Agence Transcongolaise des Communications Direction du Port de Pointe-Noire B.P. 711, Pointe Noire Directeur Centre ORSTOM Pointe-Noire M. F. Gueredrat Centre de Recherches Océanographi- ques, B.P. 1286 Pointe-Noire
	Equatorial Guinea	2.3	Sao Tome			+	+		+				

ATLANTIC OCEAN

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2. North Atlantic	AFRICA Cameroon	2.4	Douala			+	+		+				Délégation Générale à la Recherche Scientifique et Technique Comité National Permanent de l'Homme et de la Biosphère B.P. 1816, Yaoundé Dr. E. Tutuwan
	Ivory Coast	2.5	Abidjan	+		+	+						Centre de Recherches Océanogra- phiques Office de la Recherche Scientifique et Technique Outre-Mer (ORSTOM) 29 rue des Pêcheurs B.P. V-18 Abidjan
	Ghana	2.6	Takoradi	+		+	+		+				Survey Department P.O. Box 191, Cantonments Accra Director: K.G. Antwi Principal Secretary Ministry of Agriculture P.O. Box M37 Accra

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2. North Atlantic	AFRICA												Fourah Bay College University of Sierra Leone Institute of Marine Biology and Oceanography Freetown Mr. C.V. Mustapha
	Sierra Leone	2.7	Freetown			+	+		+				
	Guinea	2.8	Conakry	+		+	+		+				
	Senegal	2.9	Dakar			+	+		+				Direction de l'Océanographie et des Pêches Maritimes 1 rue Joris Dakar Mr. Tahirou Badian

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2. North Atlantic	AFRICA Mauritania	2.10	Nouadhibou (Cap Blanc)			+	+		+				Centre National de la Recherche Océanographique des Pêches Nouadhibou
	Morocco	2.11	Casablanca				+		+				Institut Scientifique des Pêches Maritimes rue Tiznit, B.P. 21 Casablanca 1 Institut des Pêches Maritimes Office National des Pêches rue du Chevalier Bayard Casanblanca
South Atlantic	SOUTH AMERICA Argentina	2.12	Mar del Plata	+			+			+			Servicio de Hidrografía Naval. Av. Montes de Oca 2124 1271 Buenos Aires
		2.13	Puerto Madryn	+			+			+			Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) Comite Argentino de Oceanografía
		2.14	Puerto Deseado	+			+			+			Viamonte 1636-3A 1055 Buenos Aires
		2.15	Ushuaia	+			+			+			Prof. Fernando Vila

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2. South Atlantic Tropical Atlantic	SOUTH AMERICA Brazil	2.16	Rio Grande	+			+		+				Captain H. Bernardi Jr. gação Diretoria de Hidrografia e Nave- / Ponta de Armação-Niteroi Rio de Janeiro RJ 24000 Captain L.C. Terreira da Silva (same address as above) Prof. A.R. De Mesquita Instituto Oceanografico da Universidade de São Paulo Cidade Universitaria Butanta 05508 São Paulo S.P. Diretoria de Hidrografia e Navegação Instituição Nacional Designada para Oceanografia Departamento de Geofísica Primeiro Distrito Naval-Ilha Fiscal 20091 Rio de Janeiro RJ
		2.17	Rio de Janeiro or Ubatuba	+		+	+		+	+			
		2.18	Itaparica	+		+	+			+			
		2.19	Natal	+		+	+		+				
		2.20	Itaqui	+		+	+		+				
		2.21	St Peter St Paul Rocks	+		+	+			+			
		2.22	Fernando Noronha island	+		+	+			+			
		2.23	Trinidad island	+		+	+			+			
	France French Guyana	2.24	Cayenne	+		+	+						Le Directeur Office de la Recherche Scienti- fique et Technique Outre-Mer (ORSTOM) 24 rue Bayard 75009 Paris, France

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2. Tropical Atlantic Tropical Atlantic	CENTRAL AMERICA Trinidad and Tobago	2.25	Trinidad	+		+	+						Dr. D. Ramsaroop Data Aquisition Programme Institute of Marine Affairs Carenage Post Office Carenage Trinidad & Tobago, W.I.
	Martinique France	2.26	Le Robert	+		+	+			+			Le Directeur Etablissement principal de S.H.O.M. 13 rue du Chatellier, B.P. 426 29275 Brest Cédex, France
	Puerto Rico U.S.A.	2.27	San Juan	+		+	+			+			Office of Marine Surveys & Maps U.S. Dept. of Commerce NOAA National Ocean Survey Rockville, Maryland 20852, U.S.A. Mr. Paul M. Wolff NOAA Assistant Administrator for Ocean Services & Coastal Zone Management United States Dept. of State National Oceanic and Atmospheric Administration OES/OMS Room 5801 Washington D.C.

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2. Tropical Atlantic	CENTRAL AMERICA												Monsieur Emmanuel Brog Secrétaire d'Etat des Finances & des Affaires économiques Palais des Finances Port-au-Prince
	Haiti	2.28	Les Cayes			+	+		+				
													Director Aquatic Resources Division Ministry of Science & Technology Dept. Natural Resources Conser- vation 531/2 Mclynes Road Kingston 10 Harbourg Master's Dept. P.O. Box 116 Newport East, Kingston
	Jamaica	2.29	Montego Bay			+	+		+				
	Cuba	2.30	Cabo San Antonio	+		+	+		+				
		2.31	Siboney	+		+	+		+				Lic. Guillermo Garcia Montero Director, Instituto de Oceanología Calle Ira No. 18406 e/. 184 y 186 Rpto. Flores, Playa, Ciudad de La Habana Lic. Alfredo Ramos Rivas Instituto Cubano de Hidrografía Calle 4 esq. 3ra Miramar, Playa, Ciudad de La Habana
		2.32	Gibara	+		+	+		+				

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN Tropical Atlantic	CENTRAL AMERICA												Instituto Geográfico Nacional Tommy Guardia Ministerio de Obras Públicas Apartado 5267 Panamá 5
	Panama	2.33	Coco Solo	+		+	+			+			Dr. Alfredo Soler Profesor de la Facultad de Ciencias Naturales y Farmacia Universidad de Panamá Estafeta Universitaria Panamá
	Mexico	2.34	Progreso	+		+	+			+			Sr. Manuel Almazan Soria Jefe del Departamento de Investi- gaciones de la Dirección General de Estudios del Territorio Nacional Secretaría de Programación y Presu- puesto San Antonio Abad 124 P.B. Col. Tránsito 06820 México D.F.
		2.35	Veracruz	+		+	+			+			Dr. Agustin Ayala-Castañares Director, Instituto de Ciencias del Mar y Limnología Universidad Nacional Autónoma de México Apartado Postal 70-157 México 20 D.F.
	Bahamas	2.36							+				Permanent Secretary Ministry of Agriculture Fisheries & Local Government P.O. Box N-3028 Nassau

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2. Tropical Atlantic North Atlantic	NORTH AMERICA U.S.A.	2.37	Key West	+		+	+			+			Office of Marine Surveys & Maps U.S. Dept. of Commerce NOAA National Ocean Survey Rockville Maryland 20852 Mr. Paul M. Wolff NOAA Assistant Administrator of Ocean Services & Coastal Zone Management United States Department of State National Oceanic & Atmospheric Administration OES/OMS Room 5801 Washington D.C.
		2.38	Galveston	+		+	+			+			
		2.39	Mayport	+		+	+			+			
		2.40	Cape Hatteras	+			+			+			
		2.41	Portsmouth	+			+			+			
		2.42	Bermuda	+		+	+			+			
	Canada	2.43	Halifax	+			+			+			Canadian Hydrographic Service 615 Booth Street Ottawa K1A 0E6 Ontario Dr. N.J. Campbell Director-General Marine Sciences & Information Directorate 200 Kent Street (12th Floor, Centennial Towers) Ottawa K1A 0E6 Ontario
		2.44	St John's Nfld.	+			+			+			
		2.45	Nain	+			+			+			

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2. North Atlantic	Denmark	2.46	Godthab				+		+				Det Danske Meteorologiske Institut Lyngbyvej 100 2100 Kobenhavn O The Royal Danish Administration of Navigation and Hydrography Nautical Division Esplanaden 19 1263 Copenhagen k Dr. O. Bedsted Andersen Geodaetisk Institut Geodaetisk Afdeling 1 Gamelehave Alle 22 2920 Charlottenlund
	Greenland	2.47	Angmagssalik				+		+				
	Faeroes Isl.	2.48	Faeros				+		+				
		2.49	Thoschavn				+		+				
	Iceland	2.50	Reykjavik	+			+			+			Iceland Hydrographic Service ROSTHOLF 7094, 127 Reykjavik G. Bergsteinsson

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					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2.	Norway	2.51	Honningsvag	+			+			+			Norges Sjøkartverk Klubbgat 1 Postboks 60 4001 Stavanger Norsk Oseanografisk Komite Munthesgate 29 Oslo 2
		2.52	Harstad	+			+			+			
		2.53	Maloy	+			+			+			
North Atlantic	United Kingdom	2.54	Lerwick	+			+			+			Dr. D.E. Cartwright IOS Bidston Bidston Observatory Birkenhead, Merseyside L43 7RA
		2.55	Newlyn	+			+			+			
		2.56	Stornoway	+			+			+			
	islands	2.57	South Georgia Is.				+		+			+	Tidal Branch Hydrographic Unit M.O.D. Tauton, Somerset TA1 2DN
	islands	2.58	South Sandwich Is.										
	islands	2.59	Falkland Is. (Malvinas)				+		+				
	islands	2.60	South Orkney Is.				+		+			+	Dr. Roger C. Padgham Natural Environment Research Council Polaris House, North Star Avenue Swindon, Wilts. SN2 1EU
South Atlantic	islands	2.61	Tristan da Cunha				+		+			+	

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					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN 2. Tropical Atlantic	United Kingdom (continued) islands islands												
		2.62	Saint Helena			+	+		+			+	
		2.63	Ascension			+	+		+			+	
		2.64	Gibraltar			+	+		+				
North Atlantic	Ireland												Ordnance Survey Office Phoenix Park Dublin Dublin Port & Docks Board Engineer's Office Port Centre Alexandra Road Dublin 1 Mr. P. Corish Hydrometric Section Office of Public Works 17/19 Lower Hatch St. Dublin 2
		2.65	Malin Head										
		2.66	Castletownsend				+		+				

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					A	B	C	D	a	b	c	d	
ATLANTIC OCEAN North Atlantic	France	2.67	Brest	+			+			+			Le Directeur Etablissement principal de S.H.O.M. 13 rue du Chatellier, B.P. 426 29275 Brest Cédex IFREMER 66 avenue d'Iéna 75116 Paris
	Spain	2.68	La Coruna	+			+			+			Director Instituto Hidrográfico de la Marina Tolosa Latour N° 1 Cádiz Director del Centro Español de Datos Oceanográficos Instituto Español de Oceanografía Alcalá 27 Madrid 14
		2.69	Algeciras	+		+	+			+			
	islands	2.70	Canary Is. Palmas	+			+			+			
	Spanish N.Africa	2.71	Ceuta	+		+	+			+			
	Portugal	2.72	Cascais	+			+			+			Mr. Jose Luis Bessa Pacheco Instituto Hidrografico Rua des Trinas 49 Lisboa
	islands	2.73	Madeira Funchal	+			+			+			
	islands	2.74	Azores Ponta Delgada				+						
	islands	2.75	Azores Santa Cruz				+						
	Cape Verde	2.76	Porto Grande (S. Vicente)			+	+		+				Missão Hidrografica de Arquipelago de Cabo Verde

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					A	B	C	D	a	b	c	d	
ARCTIC OCEAN	3. The Soviet Union	3.1	Murmansk	+			+			+			USSR State Committee for Hydro- meteorology & Natural Environment Control 12 P. Morozov Street MOSCOW 123376 Oceanographic Committee of the Soviet Union 11 Gorky Street MOSCOW 103009
		3.2	Novaya Zemlja				+		+				
		3.3	Spitsbergen Barentsburg				+		+				
		3.4	Tiksi				+		+				
		3.5	Ouelen				+		+				
	Canada	3.6	Alert	+			+						Canadian Hydrographic Service 615 Booth Street Ottawa K1A 0E6, Ontario Dr. N.J. Campbell, Director-General Marine Sciences & Information Directorate 200 Kent Street (12th Floor, Centennial Towers) Ottawa K1A 0E6, Ontario
		3.7	Resolute	+			+			+			
		3.8	Sachs Harbour	+			+			+			
	Norway	3.9	Bear Is.				+		+			+	Norges Sjøkartverk Klubbgt 1, Postboks 60 4001 Stavanger Norsk Oseanografisk Komite Munthesgate 29 Oslo 2
		3.10	Jan Mayen				+		+			+	
		3.11	Spitsbergen				+		+				
		3.12	Bouvetoya									+	

ARCTIC OCEAN

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
PACIFIC OCEAN 4. North Pacific	ASIA The Soviet Union	4.1	Petropavlovsk	+			+			+			
		4.2	Nagaeva bay	+			+			+			
		4.3	Youzuo-Kurilsk	+			+			+			
		4.4	Kavacha				+		+				
North Pacific	Japan	4.5	Makodate	+			+			+			Director, Marine Department Japan Meteorological Agency 1-3-4 Ote-Machi, Chiyoda-ku Tokyo 100 Director, Japan Oceanographic Data Centre, Hydrographic Dept. Maritime Safety Agency 3-1, Tsukiji 5-chome, Chuo-ku TOKYO 104
		4.6	Hanasaki	+			+			+			
		4.7	Mera	+			+			+			
		4.8	Aburatsu	+			+			+			
		4.9	Oura	+			+			+			
		4.10	Naha	+			+			+			
		4.11	Chichijima	+			+			+			
		4.12	Miamitori Shima				+		+				

PACIFIC OCEAN

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
PACIFIC OCEAN 4. Tropical Pacific	ASIA												Director-General National Bureau of Oceanography (NBO) Beijing People's Republic of China Institute of Marine Scientific and Technological Information P.O. Box 75 118 Qiwei Road, Hedong District Tianjin Mr. Zhao Xucai
	China	4.13	Amoy	+		+	+			+			
		4.14	Shanghai	+		+	+			+			
		4.15	Paracel						+				
	Singapore	4.16	Singapore			+	+		+				
	Viet-Nam	4.17	Qui-Nhon			+	+		+				Centre National de Recherches Scientifiques du Viet-Nam Ho Chi Minh City Socialist Republic of Viet-Nam Mr. Dang Ngoc Thanh Département général de la Météo- rologie Tổng cục Khí tượng Thủy văn HANOI
	United Kingdom												Chief Engineer Post Works, Engineering Development Depart- ment Civil Engineering Office 8/F Empire Centre, 68 Mady Road Kowloon, Hong Kong
	Hong Kong	4.18	North Point	+		+	+			+			

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					A	B	C	D	a	b	c	d	
PACIFIC OCEAN 4. Tropical Pacific	ASIA Philippines	4.19	Manila	+		+	+			+			Bureau of Coast and Geodetic Survey 421 Barraca St. San Nicolas, Manila Republic of Philippines Mr. Conrado M. Santos Ms. Nena R. Okan
		4.20	Legaspi	+		+	+			+			
		4.21	Davao	+		+	+			+			
		4.22	Jolo	+		+	+			+			
	Indonesia	4.23	Manado			+	+		+				Dr. Aprilani Soegiarto Directeur Lembaga Oceanologi Nasional of the Indonesian Institute of Sciences P.O.B. 580/DAK Jakarta Utara Indonesia
		4.24	Sorong			+	+		+				
		4.25	Jayapura			+	+		+				
	Papua New Guinea	4.26	Ralaul			+	+		+				Dept. of Transport and Civil Aviation Hydrographic Section Marine Division P.O. Box 457 Konedobu Papua New Guinea
		4.27	Vanimo			+	+		+				
		4.28	Daru			+	+		+				
		4.29	Lae			+	+		+				
South Pacific	New Zealand islands islands	4.30	Auckland	+			+			+			The Director New Zealand Oceanographic Institut P.O. Box 12-346 Wellington North New Zealand The Hydrographer Royal New Zealand Navy, Hydrogra- phic Office P.O. Box 33-341 Takapuna Auckland 9
		4.31	Bluff	+			+			+			
		4.32	Chatham				+		+				
		4.33	Kermadec (Raoul)				+		+				

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					A	B	C	D	a	b	c	d	
PACIFIC OCEAN North Pacific Tropical Pacific	NORTH AMERICA U.S.A. Alaska Aleutian Is. Aleutian Is. Alaska Alaska Alaska Mariana Islands (USA) Caroline Islands (USA)	4.34	Kodiak	+			+			+			Office of Marine Surveys & Maps U.S. Dept. of Commerce NOAA National Ocean Survey Rockville, Maryland 20852 U.S.A. Mr. Paul M. Wolff NOAA Assistant Administrator for Ocean Services & Coastal Zone Management U.S. Dept. of State National Oceanic & Atmospheric Administration OES/OMS Room 5801 Washington D.C. Prof. K. Wyrski University of Hawaii at Manoa Dept. of Oceanography 2525 Corea Road Honolulu Hawaii 96822 U.S.A.
		4.35	Point Barrow	+			+			+			
		4.36	Cape, Prince of Wales	+			+			+			
		4.37	Adak	+			+			+			
		4.38	Unalaska	+			+			+			
		4.39	Attu Is.	+			+			+			
		4.40	Sitka	+			+			+			
		4.41	Cordova	+			+			+			
		4.42	South Beach	+			+			+			
		4.43	San Francisco	+			+			+			
		4.44	San Diego	+			+			+			
		4.45	Apra Harbor, Guam	+		+	+			+			
		4.46	Saipan	+		+	+			+			
		4.47	Kapingamarangi	+		+	+			+			
		4.48	Ponage	+		+	+			+			
		4.49	Malakal	+		+	+			+			
		4.50	Truk, Moen Island	+		+	+			+			
		4.51	Jap	+		+	+			+			

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					A	B	C	D	a	b	c	d	
PACIFIC OCEAN Tropical Pacific	U.S.A. (cont'd)												Prof. K. Wyrski University of Hawaii at Manoa Dept. of Oceanography 2525 Corea Road Honolulu Hawaii 96822 U.S.A.
	Marchall Islands	4.52	Majuro	+		+	+			+			
		4.53	Kwajalein	+		+	+			+			
		4.54	Eniwetok	+		+	+			+			
		4.55	Wake Island	+		+	+			+			
	Gilbert Is. (Kiribati)	4.56	Nauru	+		+	+			+			Mr. F. Bugotu Permanent Secretary Ministry of Foreign Affairs and International Trade P.O. Box G. 10 Honiara Solomon Islands
		4.57	Tarawa	+		+	+			+			
	Ellice Is. (Tuvalu)	4.58	Funafuti	+		+	+			+			
	Solomon Islands	4.59	Honiara	+		+	+			+			
	New Caledonia (France)	4.60	Noumea	+		+	+			+			Mr. J. Kotobalavu Secretary for Foreign Affairs Department of Foreign Affairs Prime Minister's Office Suva, Fiji
	Fiji.	4.61	Suva	+		+	+			+			
	Western Samoa	4.62	Apia Harbour	+		+	+			+			Ministry of Transport Marine & Shipping Division P.O. Box 1607, Apia Western Samoa
	American Samoa	4.63	Pago Pago	+		+	+			+			

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					A	B	C	D	a	b	c	d	
PACIFIC OCEAN Tropical Pacific	4. Phoenix Island	4.64	Canton island	+		+	+			+			Prof. K. Wyrtki University of Hawaii at Manoa Dept. of Oceanography 2525 Corea Road Honolulu Hawaii 96822 U.S.A.
		4.65	Johnston is.	+		+	+			+			
	Hawaiian Islands (USA)	4.66	Midway is.	+		+	+			+			
		4.67	French Frigate	+		+	+			+			
		4.68	Honolulu	+		+	+			+			
		4.69	Nawiliwili	+		+	+			+			
		4.70	Kahului Harbor	+		+	+			+			
		4.71	Hilo, Hawaii is.	+		+	+			+			
	Line Islands	4.72	Christmas is.	+		+	+			+			
		4.73	Fanning is.	+		+	+			+			
		4.74	Palmyra is.	+		+	+			+			
	Cook Islands	4.75	Parotonga	+		+	+			+			
		4.76	Penrhyn	+		+	+			+			
	Iles de la Société (France)	4.77	Papeete	+		+	+			+			
	Marquesas Is. (France)	4.78	Hiva oa	+		+	+			+			
		4.79	Nuku Hiva	+		+	+			+			

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PACIFIC OCEAN Tropical Pacific South Pacific	Gambier Islands	4.80	Rikitea	+		+	+			+			
	Easter Island	4.81	Easter Island	+		+	+			+			
	Australia	4.82	Norfolk island	+			+			+			The Secretary, PCTMSL-National Mapping Council Unit 3 Cameron Offices Belconnen, ACT 2616 Australia The Director, CSIRO Division of Fisheries & Oceano- graphy P.O. Box 21 Cronulla, NSW 2230 Mr. Doug E. Keeley Marine Policy Branch Department of Science & Techno- logy, P.O. Box 65 Belconnen, ACT 2616
		4.83	Townsville	+		+	+			+			
		4.84	Snapper Rocks	+			+			+			
		4.85	Sydney, Fort	+			+			+			
		4.86	Hobart	+			+			+			
		4.87	Port Adelaide	+			+			+			
		4.88	Eucla	+			+			+			
		4.89	Macquaries Is.				+		+				
		4.90	Lord Howe Is.				+		+				
		4.91	Norfolk Is.			+	+		+				
	New Zealand	4.92	Dunedin	+			+			+			The Hydrographer Royal New Zealand Navy Hydrographic Office P.O. Box 33-341 Takapuna Auckland 9, New Zealand

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					A	B	C	D	a	b	c	d	
PACIFIC OCEAN 4. North Pacific	Canada	4.93	Prince Rupert	+			+			+			Canadian Hydrographic Service 615 Booth Street Ottawa K1A 0E6, Ontario, Canada
		4.94	Torfinno	+			+			+			
	Mexico	4.95	Isla Guadalupe	+			+			+			Sr. Manuel Almazan Soria Jefe del Departamento de Investigaciones de la Dirección General de Estudios del Territorio Nacional, Secretaría de Programación y Presupuesto San Antonio Abad 124 P.B. Col. Tránsito 06820 México D.F. Dr. Agustín Ayala-Castañares Director, Centro de Ciencias del Mar y Limnología Universidad Nacional Autónoma de México, Apartado Postal 70-157 México 20, D.F.
		4.96	Cabo San Lucas	+						+			
		4.97	Manzanillo	+		+	+			+			
		4.98	Puerto Angel	+		+	+			+			
	Costa Rica	4.99	Quepos	+		+	+			+			Instituto Geográfico Nacional Apartado 2272 San José, Costa Rica C.A.
		4.100	Isla del Coco			+	+		+				
	Salvador	4.101	Acajutla	+		+	+			+			Instituto Geográfico Nacional Ingeniero Pablo Arnoldo Guzmán Apartado Postal No. 06-247 San Salvador, El Salvador C.A.
Tropical Pacific	Panama	4.102	Balboa	+		+	+			+			Instituto Geográfico Nacional Ministerio de Obras Públicas Apartado 5267 Panamá 5

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
PACIFIC OCEAN 4. Tropical Pacific	France	1.102	Clipperton Is.	+		+	+			+			Le Directeur Office de la Recherche Scientifique et technique Outre-Mer (ORSTOM) 24 rue Bayard 75008 Paris, France
	Colombia	1.104	Buenaventura	+		+	+			+			Dr. Sergio Camargo Moros Jefe División Geodesia Instituto Geográfico "Agostin Codazzi" Carrera 30 No. 48-51 Bogotá, Colombia Sr. Fabio Bermudez Gomez Director HIMAT Carrera 10 No. 20-19 Bogotá, Colombia
	Ecuador	1.105	Salinas	+		+	+			+			Sr. Raul Toledo Echeverría, Capitán de Navío, Director Instituto Oceanográfico de la Armada Casilla 5940 Av. 25 de Julio Via Pto Marítimo Base Naval Sur Guayaquil, Ecuador
	Islas Galápagos	1.106	Baltra	+		+	+			+			
	Islas Galápagos	1.107	Santa Cruz Is.	+		+	+			+			
	Peru	1.108	Callao	+		+	+			+			Contralmirante Jorge del Aquila Sanchez, Director Dirección de Hidrografía y Navegación de la Marina Camarra 500 Chucuito Casilla Postal 80 Callao, Peru

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					A	B	C	D	a	b	c	d	
PACIFIC OCEAN 4. South Pacific	Chile	4.109	Antofagasta	+		+	+			+	+		Capitán de Navío Humberto Garcia Director, Instituto Hidrografico de la Armada Casilla 324, Valparaiso, Chile Centro Nacional de Datos Oceanográficos de Chile Instituto Hidrográfico de la Armada Casilla 324, Valparaiso, Chile
		4.110	Valparaiso	+			+			+			
	Island	4.111	Juan Fernandez	+			+			+			
		4.112	Puerto Montt	+			+			+			
		4.113	Punta Arenas	+			+			+			
		4.114	Puerto Williams	+			+			+			
	Island	4.115	San Felix				+		+				
	Island	4.116	Isla de Pascua	+			+			+			

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
SOUTHERN OCEAN 5.	ANTARCTICA												Division of Polar Programs National Science Foundation Room 620, 1800 G. Street N.W. Washington D.C., U.S.A. Arctic and Antarctic Research Institute Fontanka 34 Leningrad U.S.S.R. Servicio de Hidrografia Naval Avenida Montes de Oca Z 124 Buenos Aires, Argentina Chef de Mission de Recherches des Terres Australes et Antarctique Françaises 34 rue des Renaudes 75017 Paris, France
	U.S.A.	5.1	McMurdo				+		+			+	
	U.S.S.R.	5.2	Mirny				+		+			+	
		5.3	Bellingshausen				+		+			+	
		5.4	Moludejnaia				+		+			+	
	Argentina	5.5	Almirante Brown				+		+			+	
		5.6	Orcadas				+		+			+	
		5.7	Argentina Is.										
		5.8	Bahia Esperanza				+		+			+	
		5.9	General Belgrano II										
	France	5.10	Dumont d'Urville				+		+			+	

SOUTHERN OCEAN

Ocean	Country	N N	Proposed tide-gauge location for GLOSS	Existing t.g.	Objectives				Participation in GLOSS				National contact point
					A	B	C	D	a	b	c	d	
SOUTHERN OCEAN 5.	ANTARCTICA												
	Australia	5.11	Mawson	+			+		+			+	Department of Science & Technology, Antarctic Division Channel Highway Kingston, Tasmania 7150 Australia
		5.12	Davis	+			+		+			+	
		5.13	Casey				+		+			+	
	United Kingdom	5.14	Signy				+		+			+	Institute of Oceanographic Sciences, NERC Brook Road Wormley, Godalming Surrey GU8 5UB, U.K.
		5.15	Rothera				+		+			+	
		5.16	Halley				+		+			+	
	Japan	5.17	Syowa				+		+			+	Director of Marine Department Japan Meteorological Agency 1-3-4 Ote-Machi, Chiyoda-ku Tokyo 100, Japan
	New Zealand	5.18	Scott Is.				+		+			+	New Zealand Oceanographic Institute P.O. Box 12-346 Wellington North
	Chile	5.19	Base O'Higgins				+		+			+	Instituto Hidrográfico de la Armada Casilla 324 Valparaíso Chile