INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
Reports of Meetings of Experts and Equivalent Bodies

CENTRAL EDITORIAL BOARD FOR THE GEOLOGICAL/GEOPHYSICAL ATLASES OF THE ATLANTIC AND PACIFIC OCEANS

Third Meeting
Tallinn, USSR, 17-21 May 1983

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CONTENTS

1. OPENING OF THE MEETING

The third meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans was held in Tallinn, USSR, 17-21 May 1983. A list of participants is attached at Annex IV.

Greetings and a welcome to the participants were expressed by:
Dr A.Raukas, from the Estonian Academy of Sciences;
Dr Yu.E.Pogrebitsky, from the Ministry of Geology of the USSR; and
Dr B.S.Volvovsky, from the Academy of Sciences of the USSR.

Mr D.P.D.Scott, representing the Secretariat of the Intergovernmental Oceanographic Commission, expressed grave concern that Professor Eric S.W.Simpson, Deputy Editor GAPA, had been prevented from attending because of difficulties in obtaining a visa. He pointed out that it is the policy of Unesco to cancel meetings in such circumstances. However, in view of the assurances he had received, he did not propose to do so on this occasion. He then presented apologies from Dr Manik Talwani and Dr Lucien Montadert who were unable to attend because of unexpected last minute alterations to their plans.

Dr B.S.Volvovsky apologised for the administrative error in failing to issue Professor Simpson with a visa; this was due to a technical hitch which would not occur again.

Dr Gleb B.Udintsev made a brief review on the history of international co-operation in oceanic research and in the compilation of international geological/geophysical atlases of the oceans. He expressed his confidence that the work of compilation of the two present Geological/Geophysical Atlases will be a model of such co-operation.

2 a) ADOPTION OF THE AGENDA

The agenda (Annex I) was adopted.

2 b) ORGANIZATIONAL MATTERS

The arrangements for the meeting in Tallinn, followed by a short visit to Leningrad for those non-Soviet participants who could spare the time, were discussed and agreed.

3. REPORTS BY CURATORS ON PROGRESS WITH THEIR SECTIONS

3 a) COMMON INTRODUCTORY SECTIONS FOR BOTH ATLASES

Introduction - Photographs, Reproduction of GEBCO sheets, etc.

Dr Udintsev and Mr Scott reported on the preparations with these parts of the two atlases; they should be completed by end-1983.

Introduction - Development of new techniques

It was noted that the sub-section on 'Progress in Navigation' (Commodore A.H.Cooper, IHB, Monaco) will be ready by September 1983. It was decided that Dr Michael Purdy (WHOI) would be asked to prepare the Sub-Section on Deep Seismic Sounding (DSS) techniques.

It was agreed that a selection of bottom photographs to illustrate a spectrum of sea bed features would be included in this section. This new sub-section should also include illustrations of sea bed features shown up by new techniques, e.g. Gloria. Dr Roger Searle would be invited to select some Gloria pictures for inclusion, and he would be asked to work closely with the Centre Océanologique de Bretagne on this.

3 b) ATLANTIC OCEAN

Bathymetry

Dr Galina V.Agapova reported that the following sheets had been completed: Mercator 1:10 million (at 45° lat.)
Author original sheets 1 - 4;
Hatching test sheets 1 and 4; and
Coloured test sheet 1.
Positives printed on a transparent plastic base of sheets 1 and 4 were handed to Mr Scott.

It was noted that when compiling these base maps, a number of additional depth values and geographical names, omitted from the GEBCO sheets, had been taken from other sources. It was decided that a list of these additional names should be passed to the GEBCO Sub-Committee on Geographical Names and Nomenclature of Ocean Bottom Features for checking, and for inclusion if deemed desirable in the forthcoming reprint of the GEBCO (5th Edition).

The Central Editorial Board approved the colour scheme proposed for the bathymetric maps of the atlases and accepted the first coloured test sheet.

It was reported that the 1:30 million maps were nearly ready; these will only show major topographic features.

Scott and Fisher reviewed the geographical names shown and proposed a number of amendments thereto.

It was noted that in certain areas the bathymetry shown on the GEBCO sheets had been revised, e.g. Sierra Leone Rise;
Walvis Ridge - as Simpson;
Romanche Trench.
It was decided to include a diagram showing these areas and the origin of the new data. Sources of such data will be recorded in the bibliography.

It was recommended that Curators should submit bibliographic lists with their maps; a separate general bibliography will be included in each atlas.

Magnetics

Dr Eduard M.Litvinov presented a map of magnetic field anomalies on a scale of 1:10 million. He noted that it needed a small addition of material for the Central Atlantic (Rona atlas; data from Sibuet) and considerable additions for the South Atlantic (material from the Lamont-Doherty Geological Observatory). It would also be advantageous if data from a recent survey in the north-western Atlantic by the United States Naval Oceanographic Office could be obtained. Litvinov reported that he had written to Montadert and Sibuet (Section Curator) but, as yet, he had received no reply. Scott agreed to assist in getting material from LaBrecque and Rabinowitz and also to contact Montadert

Dr Arkady M.Karasik reported that, following the decision of the second session of the Central Editorial Board, he had prepared a map of magnetic lineations; however, insufficient data are available for presentation at a scale of 1:10 million. It was agreed that a 'World' map on a scale of 1:50 million would be compiled. The map was based mainly on western data and Dr Karasik therefore asked for the comments of foreign colleagues on its content.

Dr Winterer informed the Board that a similar map was being prepared by Dr Roger Larson and Dr Walter Pitman III, and that this was the reason why they had declined the invitation to participate in the atlas work. He stated that it will only be possible to provide comments after the publication of the Larson/Pitman map later this year. Winterer agreed to arrange for a copy of the map to be forwarded to Karasik as soon as it is published.

Litvinov noted that further progress with research into the magnetic field in the ocean is dependent on a component survey. He proposed the inclusion in the atlas of maps of magnetic field components of the North Sea, as this is the only region where survey density permits compilation of maps in isolines. The proposal was accepted.

Litvinov also stressed the significance of component survey data from the 'MAGSAT' satellite; he was looking into the possibility of including these data in the atlas. Winterer agreed to discuss this with Handschumacher and Heirtzler

Gravity

Professor Y.D.Boulanger displayed one sheet of his new map for the South Atlantic (scale - 1:8 million) which had been prepared for publication. He noted that it can easily be converted to the scale of the atlas. The gravity map of the World (scale - 1:15 million) in ten sheets, which incorporates the map of the South Atlantic, was also placed on display.

Professor Boulanger pointed out that it was not clear who would compile the map of the North Atlantic - Watts himself ?, or whether he will pass all material to the Soviet Counterpart Curator. If Watts can compile the map himself, adjustment of maps for the North and South Atlantic will take time and it is desirable that they be received not later than the end of 1983, so that the maps can be ready by the middle of 1984. Maps of regions of Special Study should be completed by the same date so that the data can be incorporated in the general maps.

The Editorial Board appointed Dr Mikhail Kogan as Counterpart Curator for this section, under the general direction of Professor Y.D.Boulanger.

The Editorial Board approved a proposal that gravity maps showing isostatic reductions (Bouguer, Free Air and Glennie), compiled on a 1° grid, should be included in the atlases.

Scott reported that Professor Richard Rapp is compiling two separate maps showing: i. Geoid Altimetry; and ii. Gravity inverse from Altimetry. He had been awaiting provision of the base map and algorithms. As soon as he receives these, he will be able to proceed with preparation of the maps.

Boulanger noted that it will be difficult to correlate these data and he therefore proposed that the problem be discussed at an early date. It was agreed that a meeting for this purpose would be held during the forthcoming IUGG Assembly session in Hamburg which Boulanger, Simpson and Rapp plan to attend. If Haxby and Dixon cannot attend, Rapp will be asked to discuss the matter with them before the meeting.

Thickness of Sediments

Scott stated that Dr Brian Tucholke (WHOI) will complete compilation of his map of the North Atlantic by the end of 1983. Rabinowitz and Simpson plan to meet and complete the South Atlantic map in September/October 1983.

Dr Yuri G.Kiselev stated that in the USSR, due to lack of information on the progress of work in the west, maps have been compiled from available data, some of which disagree. It was agreed that these compiled maps would be made available in July during the planned visit of Simpson, Talwani and Scott to Moscow.

It was decided to ask Tucholke and Simpson to discuss with Montadert the possibility of combining maps of sedimentary thickness from Deep Seismic Sounding (DSS) data and from data on sedimentary velocity.

Igneous Rocks

Dr Leonid V.Dmitriev reported that base maps have been obtained and compilation work has been started. He noted that the legend to the map is correlated with that for the Pacific.

Dmitriev drew the attention of the Editorial Board to the fact that as yet no Counterpart Curator had been appointed for this section; he therefore proposed that Dr William G.Melson (Smithsonian Institution, Washington D.C.), with whom he had worked before, should be invited to take up the post. This was agreed.

Geothermal Data

Dr Yacob B.Smirnov presented a map of actual data on a scale of 1:30 million. He confirmed that the material will be available for transmission to Langseth later in 1983.

Smirnov said he held a compilation of data by Chapman and what he would like from Langseth is a copy of all data not included therein.

It was considered that technical problems concerning map compilation should be discussed between Smirnov and Langseth.

Seismicity

Dr Anatoly V.Drumea presented maps of earthquake epicentres for the Atlantic, distinguishing episodes with six different focal depth levels. He noted that earthquakes of magnitude 4.0 and above are the most representative for the Atlantic, but that the level and concentration in the North Atlantic is higher solely because of the number of seismic stations surrounding that region.

Dr Drumea proposed that, due to the concentration of data in certain regions making small scale maps unreadable, all maps showing the Atlantic as a whole should be on a scale of 1:10 million, and that certain seismically active zones, i.e. Mid-Atlantic Ridge; Antilles; and South Sandwich Islands, should be shown on a larger scale, for instance, 1:5 million.

Maps of seismic activity and maximum earthquake activity, as well as schemes of earthquake foci distribution were being prepared for these seismically active zones.

Scott presented a map of epicentres on a scale of 1:10 million, which had been prepared by Dr Roy C.Lilwall (IOS, UK); this incorporated all epicentres filed by the United States Geological Survey for the period 1964-81 inclusive, with the exception that any events recorded by less than 15 stations have been excluded on the grounds of likely poor location.

It was noted that the legends used in these compilations differ and will need to be standardized. Attention was drawn to the fact that for the final maps and diagrams/figures 14-colour printing of a very high technical standard will be available, together with all kinds of ornaments and symbols.

Drumea drew attention to the fact that though for the North Atlantic, with its much greater concentration of seismic stations, the criterion used of the event being recorded by not less than 15 stations is entirely adequate, in the South Atlantic, due to the relative sparsity of recording stations, this criterion gives the false idea that the southern part of the ridge is aseismic. Scott agreed to transmit these remarks to Lilwall who would be asked to correspond with Drumea on the subject.

Dr Eleanora A.Zhibladzie (Geophysical Institute, Tbilisi) presented a map of stress deformations in rocks on a scale of 1:30 million. The Editorial Board whilst appreciating this very interesting piece of research, found it too interpretative for inclusion in the atlas. The Board recommended that it be submitted to a research journal, such as the 'Journal of Geophysical Research', for possible publication.

Volcanoes

Scott reported that Professor Dr H.-U.Schmincke, the Compiler Curator had only recently received copies of the base maps; he had also been supplied with a set of GEBCO sheets of the Atlantic. He was now therefore in a position to start work.

Dr Gennady P.Avdeiko presented a map on a scale of 1:30 million on which he had showed four types of volcanic activities:

i. Island arc volcanoes;
ii. Mid-ocean ridge volcanoes;
iii. Back-arc basins volcanoes; and
iv. Mid-plate volcanoes.

No difficulty had been encountered in compiling this map as all data are published and available.

It was considered desirable to illustrate some areas of detailed studies, e.g. FAMOUS area and the Great Meteor seamount, but this material is not held by Soviet scientists.

It was decided that a set of common legends should be developed by the Curators for both the Atlantic and Pacific maps.

Types of Bottom Sediments

Dr Alexander B.Iljin reported that work had been started only recently but as base maps are already available, it is only necessary to correct these for new material. A set of maps will be presented on a scale of 1:30 million. The legend being used follows the classification developed at the Institute of Oceanology, Moscow.

Iljin proposed that a series of maps on a scale of 1:90 million showing mineral distribution be included in both atlases. This was agreed.

Scott reported that Dr Floyd McCoy had been having difficulty obtaining the funding necessary for him to prepare maps of Types of Bottom Sediments in the Atlantic Ocean, though he was keen to do so. Winterer agreed to look into the matter to see if he could help in any way.

As the legends being used by Iljin and McCoy are not compatible, it was decided that should McCoy manage to produce a map for this atlas, both his and Iljin's maps would be included in the atlas.

Deep Sea Drilling and Rates of Sedimentation

It was suggested that these two sections should be combined, though it was recognised that this might be difficult due to overcrowding.

Winterer and Montadert were invited to discuss the problem of presentation in close collaboration with Soviet scientists and submit proposals to the Editorial Board at its next meeting. It was suggested that Montadert might write to Krasheninnikov.

Deep Seismic Sounding

Dr S.M.Zverev presented two maps on a scale of 1:30 million showing: i. Techniques; and ii. Depth of the Moho. It was suggested that it might be better to combine the two maps using appropriate colours and symbols.

Zverev reported that inset maps showing the thickness of the solid crust from gravity and seismic data will be prepared.

ATLANTIC OCEAN SPECIAL STUDIES

FAMOUS Area

Montadert should be asked to ascertain COB, Brest, proposals and to submit these to the Editorial Board at an early date.

Iceland and Surrounding Areas

Dr Gudmundur Palmason had reported that he was unable to accept the invitation to be Compiler Curator for this study, as he had no facilities or assistance. He is however willing to collaborate and contribute data. It was decided that Talwani should be asked to approach Dr Alan Nunns to ascertain whether he would be willing to take on the task.

Dr A.F.Beresnev displayed a series of profiles taken north-east of Iceland which had been position fixed by SATNAV. These were handed to Scott for transmission to the Compiler Curator when he had been identified. Beresnev reported that a map showing Thickness of Sediments in the Iceland area is in course of preparation.

It was suggested that some indication should be given of the major results of drilling in this area.

Walvis Ridge

Dr Beresnev presented a series of profiles taken over the Walvis Ridge in 1978. These were handed to Scott for onward transmission to Dr Jean-Claude Sibuet, the Compiler Curator. Beresnev stated that some further data, from 1975, would be made available later in the year.

Passive Continental Margin - Biscay

Dr Anatoly A.Avdeev and Dr Nikolai A.Panayev reported that work was in hand on mapping the total thickness of the top part of the upper complex, and also on the plotting of profiles. These would be passed to Montadert at the first opportunity. It was considered that the best scale would be 1:2½ million.

Passive Continental Margin - Baltimore Canyon

Montadert should be asked to ascertain progress by Dr John A. Grow with work on this sub-section.

Active Continental Margin - Caribbean

The Compiler Curator for this sub-section will now be Dr Alain Mascle of the Institut Français du Pétrole.

Work is in hand in the Geophysical Institute (YUSHMORGEOLOGIA), Gelendzhik, and also in the USSR Ministry of Geology. It was suggested that the best scale for the map would be 1:6 million. It was also proposed that Drumea's map of the Caribbean should be included in this sub-section.

Sheared Continental Margin - Falkland-Agulhas Fracture Zone

Simpson has virtually finished work on this sub-section and will submit it by the deadline.

Scotia Sea

Dr P.F.Barker has this section well in hand. It will be completed by the end of the year.

Angola-Brazil Geotraverse

Lic. Félix H.Mouzo reported that Professor H.E.Asmus of Universidade do Rio Grande, Brazil, had taken over as Counterpart Curator for this section.

A reduced copy of the Soviet data will be made available for transmission to Asmus by hand of Simpson who will be meeting him later in the year.

Sierra Leone Rise

It was proposed that a new Special Study be added, with Dr A.F. Beresnev as Compiler Curator. This was agreed.

3 c) PACIFIC OCEAN

Bathymetry

Dr Galina V.Agapova reported that the following sheets had been completed: Mercator 1:10 million (at 45° lat.)
Author original sheets 1 & 2 and 4 - 7;
Hatching test sheets 2 and 7.
Work on the compilation of sheet 3 has been started.
Copies of positives of sheets 2 and 7, printed on transparent stable plastic, were handed to Mr Scott.

It was suggested that sheets 4 and 5 should be combined into one double page spread. Dr Zhiv confirmed that this was possible but pointed out that it will necessitate some changes to the layout of the atlas. She agreed to investigate the matter further.

Scott and Fisher reviewed the geographical names shown and proposed a number of amendments thereto.

Magnetics

The Compiler Curator listed for this section is Dr D.Handschumacher but he has not yet confirmed acceptance. Early confirmation of his willingness (or otherwise) to participate in the project was considered essential. In the meantime, work will be continued by Dr M.L.Krasny and Dr Nobuhiro Isezaki.

Dr Krasny has prepared a map covering the north-west Pacific, to Hawaii in the east and to the equator in the south. This shows magnetic field anomalies in isolines. Additional data are however needed as the U.S. data used only reaches to 1975 and the Japanese data to 1980.

For other parts of the Pacific, data will be shown as profiles along ships' tracks unless Handschumacher (or another western scientist) can produce sufficient additional data for some areas.

The All-Union Research Institute of Ocean Geology (SEVMORGEOLOGIA) will prepare a map covering all the land area round the Pacific, using all data to 1980. This map will be ready in time for the fourth meeting of the Central Editorial Board.

It was decided that a map showing the axes of magnetic anomalies in the World oceans would be included in both atlases.

Gravity

Professor Y.D.Boulanger presented one sheet of his map of the Pacific which forms part of the Gravity Map of the World, on a scale of 1:15 million. Additional data are needed from: i. the

International Gravity Bureau, Toulouse - it is expected that this will be obtained in April 1984; and ii. World Data Center 'A' for Marine Geology and Geophysics, Boulder, Colorado, USA.

Fisher undertook to obtain and send to Boulanger a copy of Carl Bowin's World Gravity Atlas.

Boulanger pointed out that, as with the North Atlantic, it was not yet clear whether Watts will compile the final maps for the atlas or whether he will make his material available to the Soviet Counterpart Curator.

The Editorial Board appointed Dr Mikhail Kogan as Counterpart Curator for this section, under the general direction of Professor Y.D.Boulanger.

See also paragraphs 3.4.5 and 3.4.6 above which are applicable to the Pacific atlas as well as to the Atlantic.

Thickness of Sediments

Dr Yuri G.Kiselev reported that Soviet scientists were now ready to transmit their data and maps to the Compiler Curator, Dr E.L.Winterer. Part will be handed over in July and the remainder in September. Dr Sadanori Murauchi offered data which had previously been published on a smaller scale. Dr Vadim I.Golovinskiy stated that he was ready to present maps showing the results of refraction studies.

Winterer proposed that maps of: i. Thickness of Sediments; ii. Sedimentation Rate; and iii. Deep Sea Drilling, should be combined and presented on a scale of 1:10 million. This was agreed. He also suggested that details from drill sites should not be shown on the maps but on a separate page, in columns.

Igneous Rocks

The Editorial Board accepted Drs S.A.Scheka and Ivan N.Govorov as co-Counterpart Curators for this section. It was noted that Dr Rodey Batiza, the Compiler Curator, and Dr Scheka are well known to each other and that there is an excellent contact between them. Dr Leonid Dmitriev will also provide some data for the eastern equatorial Pacific.

The legend to be used is being agreed with Batiza. All Soviet maps and data are expected to be ready by May 1984 when Batiza plans to visit Nakhodka. All compilation work is expected to be completed by November 1984. However, the Editorial Board asked the Curators to improve on this time scale if at all possible.

It is planned to prepare inset maps on scales of 1:60 million or 1:90 million showing the content of different metals, basalts and rare earths; in addition they will show metamorphic rocks in the form of outcrops and solid rocks of the ocean floor. The Editorial Board decided not to include tectonic maps in either of the atlases because of their controversial nature.

Geothermal Data

Dr Yacob B.Smirnov displayed a map on a scale of 1:30 million which he had prepared with Dr Seiya Uyeda, showing the distribution and nature of heat flow in the Pacific. It is intended to compile three sheets on a scale of 1:10 million and larger scale maps of the Gulf of California, the Galapagos area, the Hawaiian islands, the Sea of Okhotsk and the New Guinea region - the latter two using Soviet data.

Seismicity

Dr Anatoly V.Drumea drew attention to the fact that as yet there was no agreed Compiler Curator for this section. In discussion, it was decided that an approach would be made to Dr Arthur Tarr, United States Geological Survey, and failing him, to Dr T.Seno of the Institute of Seismology and Earthquake Engineering, Tsukuba, or Dr M.Ishida of the National Research Center for Disaster Prevention, Tsukuba.

Soviet scientists had however already started work and Dr Roman Z.Tarakanov (Sakhalin Complex Scientific Research Institute) was proposed as a co-Counterpart Curator. This was agreed.

Dr Tarakanov presented a map of strong earthquakes on a scale of 1:30 million. He pointed out however that in order to prepare a map of epicentres on a scale of 1:10 million, it will be necessary to have a regional catalogue of earthquakes and he solicited the help of the Editorial Board to help him obtain one.

Tarakanov reported that little work had as yet been carried out but it was planned to plot all earthquakes of magnitude 6.0 and above (not 4.0 as for the Atlantic) to a 600 km. depth of focal plane. All maps would be completed by mid-1984.

Uyeda pointed out that the Pacific has special problems compared with the Atlantic. Magnitude > 8 loses its meaning. Although the number of earthquakes with magnitude > 8 are small in number, they provide more than 90% of all seismic energy. He proposed the use of a special moment based magnitude introduced by H.Kanamori in 1978 for events with magnitude > 8.

It is planned to include in this section a Tsunami Travel Time map prepared by Dr S.L.Soloviev (Sakhalin).

Volcanoes

Dr Gennady P.Avdeiko presented a map of volcanoes on a scale of 1:30 million for the whole ocean and also a set of maps for areas of detailed study: Emerald seamounts, Kerguelen area, Kurile Chain.

Winterer reported that Dr David A.Clague, the Compiler Curator had started work now he had received the base sheets. He

suggested that in addition to active volcanoes, a few examples of well surveyed extinct volcanoes, e.g. from the Emperor chain, should be shown.

Winterer reported that Clague had suggested that the following information should be presented:

Age
Morphology: Ridge, Guyot, etc.
Sedimentary Cover - Type, Thickness
Hydrogenous Deposits
Origin (in a non-controversial way): Linear Chain
Isolated
Off or on ridge

General rock type - overlap with section on Igneous Rocks. This proposal was agreed in principle provided the information was indicated by colours and symbols. Fisher pointed out that the purpose of an atlas is to allow people to see relationships easily and this is not possible if data are tabulated.

The Board asked Avdeiko to develop a legend for his maps for discussion with other Curators, and to transmit his data for the general map to Clague at an early date.

Types of Bottom Sediments

It was understood that McCoy's map prepared for the Circum-Pacific Map Project had been completed in 1982, but that it was on a different projection to that planned for the atlases. Winterer was asked to arrange for a copy of the map to be forwarded to the Chief Editor as soon as possible so that Soviet cartographers could start transformation of the map projection.

Deep Sea Drilling

Winterer is now compiling a map on a scale of 1:10 million which will show Thickness of Sediments and Sedimentation Rate as well as Deep Sea Drilling holes (see para. 3.25.2 above). The work will be completed by the end of the year.

Dr Valery A.Basov (SEVMORGEOLOGIA) agreed to present additional data on the thickness and age of sediments later in the year.

Deep Seismic Sounding

Dr Irina P.Kosminskaya presented maps of DSS data (with an indication of techniques) and M boundary depth, on a scale of 1:30 million. She pointed out that the main emphasis had to be on the depth below sea level of the Moho and that this was impossible using isolines. The best method of presentation was to show intermediate layers in selected positions, and also by the use of tables. Techniques would be indicated by the use of different symbols.

Inset maps were also presented showing regions of detailed study: the Hawaiian islands; the Philippine Sea; Juan de Fuca; and the Gulf of California. Also regions of study of anisotrophy, isodepths, geotraverses and crustal thickness (from DSS and gravity data), on a scale of 1:60 million or 1:90 million.

Uyeda suggested that the map of crustal thickness should be presented on a scale of 1:30 million. Murauchi offered to assist Kosminskaya and provide her with additional data.

PACIFIC OCEAN SPECIAL STUDIES

Island Arcs and Back-arc Basins

Winterer recalled that at its second meeting, the Editorial Board had decided not to include all the basins but to make a selection of some which have interesting features and are well documented. He also wished it to be remembered that the atlases are not review publications; they should only contain material which has already been subjected to a review procedure in international journals.

Marianas and Philippines - It was noted that Dr Dennis Hayes and his co-workers have a large compilation of geological and geophysical data for this area, covering:

the Mariana arc - Mariana Basin on east and Chinese mainland on west;
the Philippine Sea, into the South China Sea; and
the north part of the Indonesian complex to southern Japan.

Hayes is the author of a published memoir of the American Geophysical Union and, as Curator for this section, he should be invited to propose a selected body of material for inclusion in the atlas.

Sea of Okhotsk - Dr Andrei A.Andreev presented maps showing coverage from studies of geomorphology, magnetic anomalies, thickness of sediments and DSS profiles, on a scale of 1:5 million. He reported that a geological map of the area is in preparation. The material was accepted for inclusion in the atlas.

Sea of Japan - Dr Boris Y.Karp presented maps showing coverage of geology, magnetics and thickness of sediments. Boulanger suggested the preparation of a gravity map showing free air anomalies. Uyeda suggested that the limits of the area be extended to cover the region south to the Philippine basin, and also the addition of Japanese data. Dr Sadanori Murauchi was appointed Compiler Curator for Geophysics and Dr Tsunemasa Shiki for Geology.

Kuril-Kamchatka - Udintsev reported that Krasny and his colleagues were preparing a geophysical atlas of the Kuril-Kamchatka Island Arc and the most important maps from this atlas would be incorporated in the Pacific Ocean atlas.

New Caledonia - Dr J.Dubois (Université Paris-Sud) had accepted responsibility for this sub-section but no information had been received on progress made. It was noted that a CCOP-SOPAC team was working on an atlas of this area; Dubois should contact this team if he has not already done so.

Comparative Anatomy of Pacific Trenches

Dr Roland von Huene has a large collection of multi-channel seismic data and has been asked to contribute a section on the comparative anatomy of systems from these records, supplemented by DSDP data.

Hydrothermal Activity on the East Pacific Rise

The Board considered that a section in the atlas on this phenomenon was highly desirable if a suitable Compiler Curator could be found. The names of Dr J.Francheteau (COB, Brest), Dr Alexander A.Malahoff (NOAA) and Dr Peter F.Lonsdale (SIO) were suggested. Winterer agreed to approach these persons.

Polymetallic Nodules

Some maps have already been provided by Dr Vincent E.McKelvey. Dr David Z.Piper is compiling an up-to-date map using all available data; he is awaiting receipt of Soviet data which is being prepared by Egiazarov.

Hess Rise

It was noted that all necessary information on Hess Rise is already in the literature. Winterer agreed to approach Dr Loren W.Kroenke (University of Hawaii) to see if he would be willing to put together material for the atlas.

4. PLANNED CONTENT OF THE TWO ATLASES

The planned content of the two atlases, together with a revised list of Compiler and Counterpart Curators, was prepared (see Annex II); It should be noted that a few of the names appearing thereon are subject to acceptance of the tasks listed by the persons concerned - those sections for which approaches still have to be made are noted in section 3 above.

A paper entitles 'Technical Information' was prepared for wide distribution to all Compiler Curators (see Annex III). This paper covers chiefly: i. Base Sheets; ii. Base Sheets with Bathymetry; iii. the Introductory Articles; iv. Explanatory texts for Sections; and v. Source References/Bibliography.

5. DATE AND PLACE OF THE NEXT MEETING OF THE CENTRAL EDITORIAL BOARD

It was agreed that the next meeting of the Editorial Board would be held in the U.S.S.R. (place to be decided) in April-May 1984.

6. CLOSURE OF THE MEETING

The Chairman closed the third meeting of the Central Editorial Board at 14.00 on Saturday 21 May 1983.

ANNEX I

A G E N D A

1. Opening of the meeting

2 a) Adoption of the agenda
   b) Organizational matters

3. Reports by Curators on Progress with their Sections
   a) Common Introductory Sections for both Atlases
   b) Atlantic Ocean
   c) Pacific Ocean

4. Planned Content of the two Atlases

5. Date and Place of the next meeting of the Central Editorial Board

6. Closure of the meeting

ANNEX II

REVISED LIST OF COMPILER AND COUNTERPART CURATORS

Introduction

Common	Photographs of Ships, etc. Historical - before 1943 i.e. Since 'Challenger' and possibly earlier if appropriate	Ships which have made significant scientific observations in the past	Simpson Udintsev
Appropriate Ocean	1943 - present i.e. Since the first scientific use of the deep echo-sounder	Ships which have contributed to these atlases in some significant way	
Appropriate Ocean	Reproduction of a specific area from different editions of GEBCO to show the improvement in knowledge of the morphology of the sea-floor during the twentieth century Other historical bathymetric maps		Scott Zhiv
Common	Selection of bottom photographs to illustrate a spectrum of sea bed features, including pictures of such features shown up by new techniques, e.g. Gloria		COB, Brest Searle (IOS)
Common	Development of platforms and instrumentation		(?)
Common	Development of New Techniques		
	i. Sea Beam; Gloria; Deep Tow; Sea Mark; etc.		COB, Brest
	ii. Multi-channel Seismics (to include multi-ship extended spread type of work)		Montadert (IFP, France)
	iii. Submersibles		Renard (COB)
	iv. Heat Flow		Langseth (L-DGO)
	v. Gravity		Boulanger (Soviet Geophysical Ctee)
	vi. Satellite Altimetry		Rapp (Ohio)
	vii. Magnetics		Karasik (Leningrad)
	viii. Seismicity		Lilwall (IOS)
	ix. Deep Seismic Sounding by refraction methods		Purdy (WHOI)
	x. Progress in Navigation		Cooper (IHB)

ATLANTIC OCEAN

(Names underlined indicate assignment accepted)

Section	Compiler Curator	Counterpart Curator
1. Bathymetry	G.V.Agapova (Moscow)	D.Monahan (Ottawa)
2. Magnetics	E.M.Litvinov (Leningrad)	J.-C.Sibuet (Brest)
3. a) Gravity	A.B.Watts (L-DGO)	M.G.Kogan, under the overall direction of Y.D.Boulanger (Moscow)
b) Altimetry Geoid and Gravity Inverse from altimetry	R.Rapp (Ohio)	None
4. Thickness of Sediments		
a) North Atlantic	B.Tucholke (WHOI)	Yu.G.Kiselev (Leningrad)
b) South Atlantic	P.D.Rabinowitz (Texas A&M) and E.S.W.Simpson (UCT)	Yu.G.Kiselev (Leningrad)
5. Igneous Rocks	L.V.Dmitriev (Moscow)	W.G.Melson (Washington DC)
6. Geothermal Data	M.Langseth (L-DGO)	Ya.B.Smirnov (Moscow)
7. Seismicity	R.C.Lilwall (IOS)	A.V.Drumea (Kishinev)
8. Volcanoes	H.-U.Schmincke (Bochum)	G.P.Avdeiko (Kamchatka)
9. Types of Bottom Sediment	F.McCoy (L-DGO) A.V.Iljin (Moscow)	
10. Morphological Provinces	To be decided later	
11. Deep Sea Drilling) 12. Rates of) Sedimentation)	L.Montadert (IFP)	V.A.Basov (Leningrad) and V.Krasheninnikov (Moscow)
13. Palaeogeography	(P.P.Timofeev) To be decided later	
14. Deep Seismic Sounding	S.M.Zverev (Moscow)	G.M.Purdy (WHOI)

Special Studies

1. FAMOUS Area	C.O.B. Staff (Brest)	None
2. Iceland and Surrounding Areas	A Nunns (Gulf Oil) with G.Palmason (Reykjavik)	S.M.Zverev (Moscow)
3. Walvis Ridge	J.-C.Sibuet (Brest) and H.D.Needham (Brest)	A.F.Beresnev (Moscow)

4 a)	Passive Continental Margins		
	Biscay	L.Montadert (IFP, France)	A.A.Avdeev (Sevastopol) & V.P.Panaev (Gelendzhik)
	Baltimore Canyon	J.Grow (USGS/WHOI)	None
b)	Active Continental Margin		
	Caribbean	L.Montadert (IFP)	O.D.Korsakov (Gelendzhik)
c)	Sheared Continental Margin		
	Falkland-Agulhas Fracture Zone	E.S.W.Simpson (UCT)	None
5.	Scotia Sea	P.F.Barker (Birmingham, UK)	A.M.Karasik (Leningrad)
6.	Angola-Brazil Geotraverse	I.S.Gramberg (Leningrad)	H.E.Asmus (Rio Grande, Brazil)
7.	Sierra Leone Rise	A.F.Beresnev (Moscow)	None

PACIFIC OCEAN

(Names underlined indicate assignment accepted)

Section	Compiler Curator	Counterpart Curator
1. Bathymetry	G.V.Agapova (Moscow)	D.Monahan (Ottawa)
2. Magnetics	D.Handschumacher (Bay St Louis)	M.L.Krasny (Sakhalin) & N.Isezaki (Kobe)
3. a) Gravity	A.B.Watts (L-DGO)	M.G.Kogan, under the overall direction of Y.D.Boulanger (Moscow)
b) Altimetry Geoid and Gravity Inverse from altimetry	R.Rapp (Ohio)	None
4. Thickness of Sediments	E.L.Winterer (SIO)	Yu.G.Kiselev (Leningrad)
5. Igneous Rocks	R.Batiza (St Louis)	S.A.Scheka (Vladivostock) & I.N.Govorov (Vladivostock)
6. Geothermal Data	Ya.B.Smirnov (Moscow)	S.Uyeda (Tokyo)
7. Seismicity	A.Tarr (USGS, Denver)	A.V.Drumea (Kishinev) & R.Z.Tarakanov (Sakhalin)
8. Volcanoes	D.Clague (USGS, Menlo Park)	G.P.Avdeiko (Kamchatka)
9. Types of Bottom Sediments	F.McCoy (L-DGO) B.Kh.Egiazarov (Leningrad)	
10. Morphological Provinces	To be decided later	
11. Deep Sea Drilling 12. Rates of Sedimentation	E.L.Winterer (SIO)	V.Krasheninnikov (Moscow)
13. Palaeogeography	(P.F.Timofeev) To be decided later	
14. Deep Seismic Sounding	I.P.Kosminskaya (Moscow)	S.Murauchi (Chiba)

Special Studies

1. Island Arcs and Back-arc Basins		
a) Marianas & Philippines	D.E.Hayes (L-DGO)	None
b) Sea of Okhotsk Geophysics Geology	M.L.Krasny (Sakhalin) B.I.Vasiliev (Vladivostock)	None
c) Sea of Japan Geophysics Geology	S.Murauchi (Chiba) T.Shiki (Kyoto)	B.Y.Karp (Vladivostock) I.I.Berseney (Vladivostock)
d) East China Sea/Japan Gravity	P.A.Stroev (Moscow)	
e) Kuril-Kamchatka	M.L.Krasny (Sakhalin) & K.F.Sergeev (Sakhalin)	None
f) New Caledonia	J.Dubois (Paris)	M.E.Artemjev (Moscow)

2.	Comparative Anatomy of Pacific Trenches	R. von Huene (USGS, Menlo Park)	A.G.Rodnikov (Moscow)
3.	Hydrothermal Activity	J.Francheteau (COB) or A.A.Malahoff (Rockville) or P.Lonsdale (SIO)	A.K.Popova (Moscow)
4.	Polymetallic Nodules	V.McKelvey (Florida) & D.Z.Piper (USGS, Menlo Park)	B.Kh.Egiazarov (Leningrad)
5.	Hess Rise	L.Kroenke (Hawaii)	None
6.	Obruchev Rise Junction Kuril-Kamchatka and Aleutian Trenches	To be decided later	

ANNEX III

TECHNICAL INFORMATION

Base Sheets

All maps in the main sections of both atlases will be compiled on either:

i. Mercator 1:10 million (at 45° lat.) - see attached Assembly Diagrams;
or

ii. 1:30 million Atlantic - Transverse (Pseudoazimuthal) Projection Tsniigaik (with oval isokolos)
Pacific - Urmaev Pseudocylindrical Sinusoidal Projection (with small area deformations)

All the 1:10 million Atlantic sheets, and sheets 1, 3 and 6 of the Pacific are double page spread sheets with inside border dimensions 58 x 86 cms. Pacific sheets 2, 4, 5 and 7 are single page sheets with inside border dimensions 58 x 40 cms.

Note: Pacific sheets 4 and 5 have been separated for technical reasons. The possibility of combining them into one double page spread is being investigated.

Reductions of the 1:30 million sheets to scales of 1:60 million and 1:90 million will be used as insets. Data should be plotted on 1:30 million base sheets for reduction later.

Algorithms for base sheets on both 1:10 million and 1:30 million are also available on request.

For areas of Special Studies, larger scale maps will be used, but an attempt will be made to reduce maps to a standard scale to allow comparison, where appropriate.

Bathymetry

Mercator 1:10 million (at 45° lat.) - contour interval 500 metres, with 200 metre contour on the shelf.
All sheets have now been completed, with the exception of Pacific sheet 3 which is expected to become available in July 1983.

1:30 million - contour interval (in general) 1000 metres (in some basins the 500 metre contour has been shown).
The Atlantic sheet will become available in July 1983 and the Pacific sheet later in the year.

Introductory Articles on the 'Development of New Techniques'

Allowance has been made for one page (58 x 40 cms) for each article. It is however fully recognised that these contributions will not all be of the same length. Authors are invited to inform the Editors how much space they consider they will need in order to explain their subject adequately but not in unnecessary detail.

It may be found useful to refer to the Geological/Geophysical Atlas of the Indian Ocean in deciding on the length of the text (i.e. space available).

The following should be taken into account:

i. The page size of the atlases (58 x 40 cms) is slightly larger than that of the Indian Ocean Atlas;

ii. Diagrams and figures (black and white line drawings, or in colour) may be interspersed with the texts - the sizes of these figures should be taken into account when estimating the space needed for each article.

iii. The texts of these articles will appear in both Russian and English (allow 25% more space for the Russian language).

Explanatory texts for Sections

Curators may include explanatory texts with their sections but these should be kept to a minimum. It should be noted however that these texts will be brought together into an introductory part of each atlas; they will not appear in individual sections.

However, maps, diagrams and figures should bear explanatory captions.

Source References

Each atlas will contain a Reference List to all sources used in the preparation of the maps. Curators are responsible for obtaining and supplying a list of these references with their maps - the format of the Geological Society of America should be used.

In addition, sources of maps and data illustrations of all kinds are to be clearly indicated on the face of each map/illustration, i.e. who did the work, not just who did the compilation, with a cross reference to the detailed reference in the Reference List.

ANNEX IV

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