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Consultation on Data Processing
Requirements for MAP

Athens, 14-15 March 1985

DRAFT DATA PROCESSING PLAN FOR MAP

MEDITERRANEAN ACTION PLAN

DRAFT DATA PROCESSING PLAN FOR MAP

1. BACKGROUND AND PRESENT POLICY *

1.1. The Mediterranean Action Plan (MAP) is the method selected by the Contracting Parties to the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution for the implementation of cooperative international activities related to the protection of the Mediterranean Sea against pollution and the environmental management and planning of its coastal areas.

1.2. The activities associated with MAP are agreed to at meetings of the Contracting Parties and are defined in documents produced as a result of such meetings; in project documents issued by UNEP pursuant to the wishes of the Contracting Parties; and in agreements between MAP and specific governments. The activities are performed on a cooperative basis by the following:

- (a) The Mediterranean Coordinating Unit (Athens);
- (b) The Regional Activity Centres for MAP:
 - (i) The Blue Plan - Sophia Antipolis (BP/RAC);
 - (ii) The Regional Oil Combatting Centre - Malta (ROCC);
 - (iii) The Priority Actions Programme Regional Activity Centre - Split (PAP/RAC);
 - (iv) The Specially Protected Areas Regional Activity Centre - Tunis (SPA/RAC);
 - (v) The IAEA International Laboratory of Marine Radioactivity (Monaco).
- (c) The U.N. Agencies involved in specific aspects of the programme;
- (d) Governmental and European Community offices designated as focal points for various aspects of the programme.

* This document is a revision of the secretariat paper prepared for the "Consultation on Data Processing Requirements for MAP" (Athens, 14-15 March 1985). It has been modified in the light of discussions at that meeting.

1.3. For the purpose of this plan we will confine discussion mainly to groups (a) and (b) of paragraph 1.2 bearing in mind that there may be implications for the other participants in the cooperative programme. The overall philosophy of operation will be described, followed by a summary of the computer-related tasks at each MAP location and an indication of the way in which the computer needs are designed to be satisfied and of how the various units will interact as regards computer data interchange.

1.4 Although the basic aim of MAP is to create a scientific basis for international cooperation in the environmental management of the Mediterranean Sea, a purely scientific approach is insufficient to assure success in the programme. The work of most of the MAP Centres can best be described in administrative terms as the setting up of coordination mechanisms for cooperation since the holding of meetings at intergovernmental and expert level, the management of finances and the preparation of reports for distribution to the Contracting Parties take up a far greater portion of the time of each unit than does pure science. It is these functions that occupy the greater part of the time of the professionals (including the scientific officers) employed on behalf of the Contracting Parties by MAP, and it is these functions which primarily define the needs for computer assistance. The scientists working within MAP are often performing the functions of scientific administrators, not those of pure or applied science. Their scientific expertise is used in the sense of programme planning; of informed correspondence with participating institutions; of critical analysis of scientific reports submitted to MAP; and in the preparation of consolidated reports based on national submissions for meetings of the Working Group on Scientific and Technical Cooperation (WGSTC) rather than on purely scientific tasks. The reports of WGSTC are used in the preparation by the secretariat of assessments of pollution, of proposed standards, monitoring and research programmes, international agreements and specific technical measures for approval by the Contracting Parties. Computer services within the MAP coordinating network must therefore be oriented towards the provision of facilities which will simplify the work of the responsible administrative and scientific officers, with emphasis on coordination, rather than concentrating on setting up a sophisticated scientific data processing system. One major exception to the above exists, however, in the Blue Plan RAC which is essentially a scientific activity with a much smaller administrative role.

1.5 The collection of data for the Long Term Programme of Monitoring and Research (MEDPOL) and in relation to the Land-based Sources Protocol is, of course, a scientific process. It is regulated in accordance with scientific procedures (the UNEP Regional Seas Reference Methods) and is subject to scientific checking through intercalibration. It is performed as a result of signed agreements with governments specifying the parameters, location, frequency and nature of each monitoring exercise and is geared towards producing consistent results wherever and by whoever the particular measurement is performed. The results are examined by the scientific staff employed within MAP and will be questioned if any scientific inconsistency is suspected. All accepted data are archived and preserved in centrally controlled data files. However, these data are not, and are not intended to be, a scientific data base sufficient for modelling of the environment or for the generation of scientific conclusions about the Mediterranean as a whole.

With the exception of data on concentrations of heavy metal and halogenated hydrocarbon pollutants in migratory fish these data represent mainly local conditions and are not sufficient for assessment of the state of the environment for the entire Mediterranean. The primary use of such data is essentially at the local and national level, not at the level represented by MAP. In particular, the results are not considered adequate for use as a basis for computer "models" of the Mediterranean-wide pollutant exchange mechanisms, and the Contracting Parties, recognizing this, have authorized only very limited experiments in computer modelling through the Action Plan. The use of the consistent methodology prescribed by the Reference Methods produces inter-comparable results which are essential to rational decision making at the national level and allows international comparisons which, together with inter-governmental discussion and agreement on permissible levels, form the ultimate basis for international quality standards and national action based thereupon. Since some pollution data might be confidential the Contracting parties have clearly indicated that data gathered in response to MAP should be submitted to the Coordinating Unit, where they are validated, archived in a consistent manner and reported upon using statistical analysis, graphs and maps rather than becoming part of a "publicly" available data base.

1.6 Large sections of relevant MAP data will, eventually, need to be brought together to form a coherent picture (or, more probably, a series of pictures) involving land-based sources, pollutant levels, dumping from ships and aircraft, oil spills, socio-economic parameters and human and ecological effects. The consultation on data was called to formulate a "data plan" which would enable progress towards such end, keeping in mind the need for economies of staffing and equipment and the continuing priority for the use of these facilities to support programme coordination, including the preparation of large numbers of reports to national and international bodies.

1.7 MAP operates through a dispersed network with substantive offices in five countries (France, Greece, Malta, Tunisia and Yugoslavia) and with a need for strong ties to UNEP offices in Geneva and Nairobi as well as the offices of the participating UN organizations. Data (which we hope will eventually be supplied mainly in computer-readable form) is prepared in seventeen countries. This presents a data interchange and communication problem. It is an axiom of the MAP operation that all data files be transferable to the centralized computer unit in Athens. Draft reports prepared in RAC's on word processing equipment should likewise be transferable to the Coordinating Unit without the need for retyping when changes need to be made. This requires a capability, at least in the four outlying centres, to supply both data and word processing documents in forms which can be read in Athens. For data this means that, regardless of how the data is stored at the originating centre, it should be transferable as sequential files (probably of fixed length records) to the Coordinating Unit on magnetic tape or on Wang compatible diskettes. Since word processing transfer is still not a standardized procedure and transfer is not usually effective between equipment produced by different manufacturers, it is vitally essential that word processing be done on similar equipment (meaning the same manufacturer) at all five centres.

1.8 The United Nations (New York) conducted a survey in 1984 of all makes of word processing equipment capable of being used in a multi-lingual environment. Their conclusion, after extensive testing of equipment put at their disposal by many manufacturers, was that Wang word processors were the only ones which were capable of satisfying the special requirements of the UN. The fact that Wang was selected reaffirms the original decision of MAP to purchase the Wang VS-80 for the Coordinating Unit, and is ample justification for our continuing to use this make of equipment in Athens and to express a strong preference that any word processing equipment purchased for the other four MAP centres should also be Wang compatible. This recommendation is further reinforced by the fact that UNEP (Geneva and Nairobi), WHO (Geneva and Copenhagen) and many other organisations including IUCN) also rely on Wang for word processing. The new series of Wang word processors (represented in our proposal by the OIS-50) is cheaper and more flexible (with CP/M capabilities and "World Language" multilingual software) than the older systems previously in use by the UN. These machines use the new industry standard 5.25 inch diskettes which cannot be read directly on the old machines with their 8 inch diskette readers. The method favoured by the United Nations to overcome this problem is for each word processor system to include at least one Wang Professional Computer (PC) and to exchange diskettes between the PC's. For MAP purposes this has an additional advantage in that the PC is a full microcomputer with facilities for data processing as well as word processing. Thus individual centres equipped with Wang PC's would be able to do such processing as accounts, administration, inventories, mailing lists and the handling of their mostly limited data files all on the same equipment they were using for word processing and diskette exchange with the Coordinating Unit. In many cases they, and the Coordinating Unit, would use many common computer programs thus reducing the investment in programming. Finally, if operations were to be discontinued at any of these centres the files, programs and equipment would be transferred to the Coordinating Unit easily assuring continuity.

1.9 The general data policy of MAP is therefore:

(a) For Word Processing

To use Wang equipment (the VS-80 in Athens and OIS word processors in other centres) in multilingual (English French and Spanish) mode, with one Wang PC as a terminal on each system;

(b) For Data Processing

To use the Coordinating Unit Wang VS-80 for standard (not "database" oriented) processing of MEDPOL and other related data as well as for financial management and administration, with the scientific data undergoing special computer/manual analysis and verification, statistical analysis and the generation of data inventories, statistical charts and maps;

(c) For Graphic Presentation

To use Tektronix graphics equipment connected to the Wang VS-80 computer for statistical output in the form of charts, graphs and Mediterranean and sub-regional maps;

(d) For Data Exchange

To use the magnetic tape facility on the Wang VS-80, together with a Wang PC at each centre to allow the interchange of data and word processing documents between centres and with related government and UN organizations. The VS-80 should also, at small additional cost, be modified to use direct telecommunications with other computer centres and commercial data bases through the international data communications network.

(e) For Modelling and other Sophisticated Procedures

To select data from MAP files as needed for a particular problem and to transfer these together with data from other sources on magnetic tape to more sophisticated computers (such as the United Nations International Computing Centre or the GEMS/GRID system in Geneva) if and when such procedures become part of the work of the Coordinating Unit. It should be noted that any such work would almost certainly require outside expertise not available within existing staffing.

2. DISCUSSION OF CONSULTANT REPORT

2.1 In preparation for the Consultations on Data Requirements meeting, MAP commissioned a consultant report entitled "Integrated Data System for the Mediterranean Action Plan" which was prepared by Dr Suad Alagic of Yugoslavia.

2.2 The main conclusions of this very comprehensive report are based on the requirements for scientific analysis and modelling of data collected through the Action Plan, with integration of, particularly, the pollutant and Blue Plan data bases. Dr Alagic believed strongly that work on coordination aspects, and especially word processing, should be given lower priority than scientific analysis. He further stated that the use of computer database technology was essential to allow selection and geographic integration of data from various sources. In consequence, he concluded that the Wang VS-80 minicomputer should be replaced by a machine with better scientific processing capability (such as a Digital Equipment Corporation VAX) and that the other MAP centres should have compatible equipment in the form of a VAX for the Blue Plan and micro-computers for ROCC, SPA/RAC and PAP/RAC.

2.3 The Coordinating Unit for MAP greatly appreciated the work done by Dr Alagic and considered that it presented a sound plan for scientific analysis of data relative to MAP. However, it emphasized objectives which were beyond the current programme, such as modelling while, in the opinion of the secretariat relegating the essential coordination functions to an unacceptably low level of priority. Although correctly interpreting the long-term objectives set by the Contracting Parties it assumed that these would all be attempted within the Coordinating Unit rather than outside by national institutes and centres of expertise. The secretariat considers that anything other than simple statistical analysis, data verification and reporting is most likely to be done either by national agencies or as part of major projects which would need to be approved by the Contracting Parties.

2.4 The use of database technology, favoured by Dr Alagic, as opposed to traditional programming using simple (non-relational) files is often the subject of intense controversy. The Secretariat opinion in this case is that the creation and maintenance of a sufficiently flexible structured database would be uneconomic within the constraints expected to apply during the next 3-5 years. Such a database can only be economic if the frequency of its use makes the annual cost of data input, storage and retrieval lower than that achievable by ad hoc or "local utility" processing. The current frequency of access to MED POL data bases for data retrieval is very low (certainly less than one access per month) and this does not justify the use of database methods. The current data files do, however, contain all of the elements necessary for conversion to databases and will be so converted if and when the situation changes. In this connection it should be noted that the Blue Plan, with more clearly defined objectives and uses for its data collection, has operated a database system for several years. This operation is at an entirely different level than that for MED POL and database technology has proved very effective there and will be continued in the future.

2.5 In the same context Dr Alagic's recommendation for a change to a different computer type was not considered to be practicable. The Wang VS-80 was selected as the computer most able to satisfy the (sometimes opposed) requirements for administration, coordination, scientific processing and inter-communication with existing equipment in other organizations cooperating with MAP. It continues to be as satisfactory as any computer within its price range could be, and there is no possibility of an early change.

2.6 In drafting this report the secretariat has drawn considerably on the work of the consultant. We have, however, been required to observe economic and political restraints which have lead us to recommend a much more cautious step-by-step approach to data handling for MAP. Participants at the data consultations agreed with this policy.

3. THE COORDINATING UNIT

3.1 The Coordinating Unit has the primary responsibility for:

- (a) The Coordinative, administrative and financial management functions; continuous supervision and planning of the operation of MAP; and the implementation of policy decisions of the Contracting Parties;
- (b) The Scientific functions involving the management and operation of MED POL, the observance of the Protocol on Dumping, and furtherance of scientific work related to the Land-based Sources Protocol;
- (c) Liaison with Government focal points, UN Agencies working on the programme (FAO and WHO have officers permanently attached to the Coordinating Unit) and with individual scientific institutes;
- (d) Approximately twenty meetings per year with a consequent need for input documents and reports on a continuous basis.

3.2 The Coordinating Unit has installed computer equipment as listed in Annex III.

3.3. The following computer files are currently maintained and used to produce outputs required for the operation of MAP:

- (a) Documents and reports in word processing format (over 1000 files)
- (b) MED POL data from Phase I and II, as sequential files, both in the format submitted and following data validation, plus inventories thereof;
- (c) Data related to the Protocol on Dumping;
- (d) Financial management data for the Mediterranean Trust Fund, the special Host Country Contribution and the Environment Fund of UNEP;
- (e) Administrative and accounts data;
- (f) Project management data for some 10-15 separate projects at any one time;

3.4 The Coordinating Unit has one full-time computer professional who is required to oversee all of the above, to supervise the word processing facility, to program and run most of the data processing functions, and to interact with the computer manufacturers local representatives with regard to computer maintenance and supplies. Some assistance is available for special projects on a temporary basis, and guidance is currently provided by the computer staff associated with Regional Seas (Geneva) with 3-4 visits to Athens per year.

3.5 The word-processing, financial and project management and data file inventory functions have dominated the workload of this section in its first three years. The future expectation is that these "administrative" requirements will grow still further and that, whereas the scientific data processing requirements may grow at a far faster rate, the administrative work will always form a substantial proportion of total effort by the data processing section.

3.6 With regard to future expansion and equipment requirements, the participants at the Consultation agreed on the following proposed enhancements:

- (a) An additional disk unit both to increase disk storage and to ensure continuity of operation if one disk is down;
- (b) "World Mapping" and database software to increase capabilities and allow for experimentation with improved methods of data storage, retrieval and presentation as well as compatability with the Blue Plan;
- (c) Telecommunications access (both into the computer and out) through the international data telecommunications network;
- (d) A Wang Professional Computer for diskette exchange.

3.7 The work of MAP will be closely associated with that of the new UNEP Global Environmental Monitoring System (GEMS) Global Resources Information Database (GRID) to be established in Geneva in May 1985. This system, which integrates satellite remotely sensed data with traditional data and information to model specific environmental situation will have sophisticated software for data analysis. The precise GRID projects of interest to MAP have not yet been defined, but it is expected that the use of this new facility will be of considerable benefit to the Action Plan.

4. THE BLUE PLAN REGIONAL ACTIVITY CENTRE

4.1. The Blue Plan is concerned with the socio-economic infrastructure of the Mediterranean basin. During Phase I (1977-1984) a macro-economic and thematic data base was developed, including time series data covering the main economic and social sections for the eighteen Mediterranean countries with a number of other countries included for comparison. The system was developed on a locally available VAX-780 and includes capabilities for graphics output such as maps showing the location of cities, industry or oil transport and charts for numerical series. In preparation for Phase II a second econometric data basis including time series Gross National Product, industry, trade, exchange rates, balance of payments, etc. has been developed independently by a contractor.

4.2 Phase II work of the Blue Plan (1986-1987) calls for the preparation of a limited number of in-depth prospective scenarios to the year 2000 and beyond, based partially on the data bases and the tools developed during Phase I.

4.3 The Blue Plan is essentially an in-house scientific activity, rather than the coordination of outside activities as for the other MAP centres. As such, it has much less need for administrative processing. Its main outputs are reports produced directly from the linked data bases although, of course, a limited amount of word processing is required. As an activity with the responsibility for providing specific outputs at the end of each phase, the Blue Plan differs from the other centres also in being regarded as a project with a limited life rather than a centre providing continuous (and open-ended) service to the Mediterranean countries. Any decision to extend the Blue Plan beyond 1987 would require a new decision by the Contracting Parties to produce a new set of specific outputs. Since such a decision is by no means certain, we must consider the possibility that the Blue Plan could cease operations at the end of 1987.

4.4 The computer used by the Blue Plan for Phase I is no longer accessible and a replacement must be found. Two decisions of the Contracting Parties must be taken into account in the choice of new equipment. These are:

- (a) That processing of MAP generated data be considered as confidential and performed only on MAP or UN computers;
- (b) That any computer equipment for the Blue Plan should be purchased rather than rented.

4.5 One further factor affects the possible choice. This is that all previous processing has been done on Digital (VAX) equipment. The modification of programs written in Fortran and Pascal to any other computer would, it is estimated, take up to six months of computer programmes time. This would presumably require access to two computers for at least three months in order that normal operations could proceed during the program conversion period, as well as the cost of the programmer who would do the actual conversion.

4.6 The Blue Plan submitted to its Steering Committee (in February 1985) two alternatives, both using VAX computers, for future operations. A copy of the document presented to the Steering Committee is attached as Annex I. Both the Steering Committee and the Consultation on Data Processing accepted that a contract with PRINCIPIA was the only viable alternative for processing during 1985.

4.7 One further possibility was suggested during the data consultation, that of a link to Geneva with processing on the computers of the International Computing Centre. This would eliminate any problems with confidentiality, and would also allow telecommunications access to the Blue Plan files from Athens and elsewhere even if the Blue Plan project were to be terminated. The main problem with this solution is the need for program conversion from VAX to IBM.

4.8 Regardless of the method selected the Blue Plan RAC should be equipped with one Wang PC and local printer at a cost of \$ 4,500 for word processing compatibility with other centres.

5. ROCC, PAP/RAC AND SPA/RAC

5.1 The Regional Oil Combatting Centre (Malta), the Priority Actions Programme Regional Activity Centre (Split) and the Specially Protected Areas Regional Activity Centre (Tunis) have similar computer requirements and will be considered together. They are also all in developing countries thus presenting difficulties in terms of availability of compatible equipment and particularly for equipment maintenance. The functional needs of these centres for computer assistance involve word processing for the compilation of reports plus such items as inventory control and mailing list management, all of which can be performed reliably by micro-computers. The other major requirement is for each of these three centres to have a system which is fully compatible with that established at the Coordinating Unit in Athens. None of these centres has, as yet, any computer equipment.

5.2 The Regional Oil Combatting Centre is located on Manoel Island, near Valetta, Malta and is operated by IMO. Its functions comprise those associated with being an information resource and action control centre in the event of a major oil spill. It is required to have knowledge of available facilities and equipment, and to communicate this information, together with early warning messages very quickly whenever necessary. Its functions therefore include a requirement for fast telex access as well as the standard RAC requirements of inventory control (very important in this case) and multilingual word processing for document production or circular letters. For this reason the secretariat recommends consideration of a word processor.telex interface for ROCC requiring the allocation of an additional \$8,500 in the equipment budget

5.3 The Priority Actions Programme (PAP/RAC) is located in Split, Yugoslavia with support from the Town Planning Institute of Dalmatia. Its current programme involves ten specific projects within the six priority fields of human settlements, water resources, soil protection, energy, tourism and aquaculture. Each such project includes the aspects of problem identification, collection and synthesis of nationally provided information on the topic, in-depth studies and seminars and meetings to finalize and review findings. Up to 100 documents per year are produced during this process and these include a considerable volume of quantitative data which, it is felt, should be entered into a computer, kept updated, and made available to MAP and national users.

PAP/RAC has, therefore, a need for a bilingual word processing facility, some project management functions and the opportunity to develop a database of fairly disparate data types. The consultation meeting recommended that PAP/RAC receive word processing facilities as soon as possible and that it should obtain comparative estimates for data processing via telecommunications access at the two institutes with IBM main-frame computers in Split. The cost of the computer equipment for such a connection is of the order of \$ 6,000. The cost of data storage and processing at the host computer has yet to be determined but will be investigated prior to the joint meeting of PAP and Blue Plan focal points.

5.4 The Specially Protected Areas Regional Activity Centre is located in Tunis and operates under the guidance of the International Union for the Conservation of Nature and Natural Resources (IUCN). The functions of the RAC are concerned with species conservation, national parks and other protected areas, and marine ecosystems. The joint programme is due to commence shortly and involves the development of a micro-computer database compatible with that at the IUCN Conservation Monitoring Centre; the publication of a directory of existing and potential Mediterranean protected areas and sources of local expertise; the preparation of guidelines for the selection, establishment and management of Mediterranean marine and coastal protected area; the application of these guidelines to an initial example; and the holding of one or more workshops on the subject. Again the emphasis will be on inventories and word processing. Funds for computer equipment at this this RAC are available (budgeted in 1984).

5.5 In order to maintain maximum compatibility with the Coordinating Unit in Athens, the data consultation meeting approved the secretariat proposal that each of these three RAC's be equipped with Wang (OIS-50) word processors with one multilingual work station and one Wang multilingual professional computer (PC) with an attached, locally maintainable printer to act either as a word processing terminal or independently. This will enable each unit to do word processing plus such micro-computer functions as list processing (inventory control) and spread sheet financial analysis as well as communication with Athens (by mailed diskettes) assuming that the Coordinating Unit also has a PC. The proposed general configuration is given in Annex III.

5.6 Maintenance of these units will be a problem since very few micro- or mini-computer manufacturers other than Apple and Commodore have maintenance facilities in these countries. The major companies such as IBM sell and maintain only a limited range of mainframe computers. It is therefore proposed that:

- (a) Maintenance by the manufacturer be controlled from Geneva;
- (b) The Regional Seas scientific equipment maintenance engineer (Mr. Barisic of IAEA) be trained in Wang OIS-50 and PC maintenance techniques at a cost of up to \$ 2,000 to enable him to perform much of the work on site;
- (c) All equipment be purchased and owned by the United Nations so as to enable it to be purchased at special UN discounts and moved in and out of the countries concerned without excessive customs formalities.

6. THE INTERNATIONAL LABORATORY OF MARINE RADIOACTIVITY (IAEA)

6.1 The IAEA laboratory in Monaco performs three main functions on behalf of Regional Seas and MAP :

- (1) The control of Regional Seas Reference Methods
- (2) Intercalibration of monitoring results
- (3) Support for maintenance of scientific equipment

The laboratory, which is located in Monaco, uses Wang data processing equipment. The main area of cooperation with MAP data processing is likely to be in the better integration of intercalibration results with the MED POL files. All institutes are required to partake in the intercalibration exercise and their results are only used in summary reports prepared by MAP if the intercalibration results are satisfactory. Data for the intercalibration exercise is processed on a Wang PC and no difficulty is expected in transfer of this data to the Coordinating Unit.

7. GENERAL POINTS RAISED DURING THE DATA CONSULTATION

7.1 The representative of the Intergovernmental Oceanographic Commission Working Committee on International Oceanographic Data Exchange (IOC/IODE) made a statement offering assistance through the IOC Group of Experts on Responsible National Oceanographic Data Centres (RNODC's) with regard to formats and data supply to interface with MAP generated data. The text of his statement is attached (Annex IV).

7.2 The participants at the consultation felt that there was a problem within the MAP community of lack of awareness of published technical reports. They recommended that whenever such reports were commissioned by MAP the contract should specify a mandatory 1-2 page summary as part of the reporting procedure. Executive summaries of long-term studies or programmes should also be prepared by the relevant MAP units. All such summaries should be given wide distribution through bulletins etc.

7.3 Wherever possible all scientific results of MAP research and monitoring programmes should be supplied by the institutes concerned on computer-readable media (magnetic tapes or diskettes). Arrangements for this should be made at the time of drafting or renewing monitoring and research agreements. In addition, every effort should be made to obtain the written reports of such activities on word processing diskettes or tapes compatible with the equipment at the MAP Coordinating Unit. These two improvements to reporting procedures would speed up the analysis of data and reports and the dissemination to interested parties.

Annex I

Blue Plan Computer Requirements

The following is an abridged translation of working document number 6 presented to the Third Session of the Blue Plan Steering Committee, Sophia Antipolis, 22-23 February 1985.

A computer is an essential tool for Blue Plan operations (statistics, modelling and forecasting) as well as for the production of charts and maps for reports.

The Blue Plan must therefore, as soon as possible, resume the data processing for which it has need.

For the remainder of 1985 only one solution appears reasonable, a contract between the organization PRINCIPIA and the Blue Plan for use of their VAX 11/730 together with a number of peripheral devices.

For 1986/1987 there is a choice between two alternatives :

- continuation of the contract with PRINCIPIA
- Purchase of a computer for the Blue Plan.

The present Blue Plan computer equipment consists of :

- a DEC VT-125 Terminal
- a Vega Terminal (VT-100 compatible)
- a DEC LA-100 graphics printer

The initial solution of a contract with PRINCIPIA has the following advantages :

- minimum delay in commencing operations (by 1 April 1985)
- it will not be necessary to employ a senior programmer
- minimum requirement for office space
- no problems of computer maintenance.

The only problem is some limitations on the type of computer service offered (for example, only four peripherals can be connected) but, according to the needs of the Blue Plan, PRINCIPIA is prepared to modify its contract including possibly the purchase of additional memory or change of computer model.

For 1986/1987 the continuation of a contract with PRINCIPIA also appears to be a good solution. Only a substantial increase in the Blue Plan scientific staff, requiring major increases in computing capacity, would justify the acquisition of a computer by the Blue Plan RAC.

The principal advantages of a computer within the Blue Plan would be :

- independant processing
- increased processing capability

On the other hand it would be necessary to hire a senior programmer for systems installation and maintenance. In addition these would need to be extra space allocated made ready for the computer.

The costs of a contract with PRINCIPIA and of the computer purchase alternative are shown in Appendix 1 and 2. The purchase would involve delivery delays and could not be completed for 1985 operations but is feasible for 1986. The average cost of the two solutions is of the order of \$62,000 per year on average over the three year period for each of the proposed solutions. However, the purchase does involve problems of personnel and office space which necessitate considerable discussion before implementation. If, on the other hand, the Blue Plan programme were to be extended beyond 1987 the equipment cost of the purchase solution would become much more economic. A decision must be made quickly to avoid a break in continuity.

Appendix 1

A. Costs of contract with PRINCIPIA
(Prices converted to dollars at the rate of \$1 = FF 10)

Item (Note)	Monthly Cost	1985 (9 months)	1986	1987
Contract	2,850	25,650	34,200	34,200
Plotter Lease (1)	600	5,400	7,200	7,200
Digitiser Lease	150	1,350	1,800	1,800
Maintenance (2)		1,200	2,000	2,000
Expendables		1,500	1,000	1,000
Software Purchase (3)		13,000	-	-
Purchase Disk Unit (4)		-	30,000	-
Purchase terminals (5)		1,900	10,000	-
Purchase Microcomputer (6)		4,000	-	-
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Totals		52,500	86,200	46,200

Notes :

1. The hire of the plotter could be replaced by using that owned by PRINCIPIA, but difficulty of access would necessitate the purchase of a small plotter at approximately \$1,500.
2. The maintenance cost given is that for Blue Plan equipment and software only.
3. Software to be purchased for exclusive Blue Plan use includes PASCAL and DATATRIEVE (database).
4. An additional disk unit (120Mb) could be purchased at any time (best in 1986). The cost given above is the Blue Plan portion of the total.
5. One terminal (UT-100) at the special price of \$1,900 was originally due to be purchased in 1984.

In 1986 a high resolution graphics terminal is proposed to improve the quality of presentation of Blue Plan reports.

6. The microcomputer would be a stand alone workstation for purchase in 1985.

B. Costs of Purchase of VAX 11/730 for 1986-87

Item	Monthly cost	1986	1987
Purchase of VAX 11/730		90,000	-
Site preparation		4,000	-
Lease of Plotter	600	7,200	7,200
Lease of digitiser	150	1,800	1,800
Maintenance		4,000	4,000
Expendable Equipment		1,500	1,500
Graphics Terminal		10,000	-
		-----	-----
Total		118,500	14,500

Note :

Under this scheme the 1985 costs would remain as shown for the PRINCIPIA case.

C. Costs of Connection to ICC (Geneva)

Item	Monthly cost	1986	1987
Rental of leased line plus two modems	2,720	32,640	32,640
Purchase of Control Unit	-	4,720	-
Lease of Plotter	600	7,200	7,200
Lease of digitiser	150	1,800	1,800
Lease of terminals	-	-	-
Maintenance	250	3,000	3,000
Expendable Equipment	-	1,500	1,500
Graphics Terminals	-	10,000	-
		-----	-----
Total		56,860	45,340

Notes :

1. Data Terminals would be available from Geneva on the departure of RS/PAC. These terminals are the property of UNEP.
2. 1985 costs would be the same as shown for the PRINCIPIA case.
3. Processing costs at ICC would be of the order of \$ 10,000 - \$ 20,000 per year.

Annex II

Extract of Project Budgets for Computer Equipment/Usage 1984/1985

A. Coordinating Unit

Mediterranean Trust Fund 1984/1985		\$92,500
Expenditures and commitments to date		\$83,200
Remaining budget for 1985		\$ 9,300
Proposed purchase (1985)	Coastal data mapping software	\$ 2,000
	Wang PC (for data interchange)	\$ 3,250
	Daisy printer (Spare for RAC's)	\$ 3,300
Total for 1985		\$ 8,550
Proposed purchase (1986)	Additional disk unit	\$20,000

B. Blue Plan RAC

Mediterranean Trust Fund (1984)		\$38,148
Mediterranean Trust Fund (1985)		\$50,000
Total funds available		<u>\$88,148</u>
Expenditure and commitments to date (1984)		\$38,148
Remaining budget for 1985		<u>\$50,000</u>
Proposed expenditure 1985 (see Annex I, lease option)		\$52,500
	1986	\$86,200
	1987	\$46,200

C. ROCC

No 1984/1985 allocation for computer usage

Proposed expenditure (1985)	Word processor	\$20,000
Proposed expenditure (1986)	Telex interface	<u>\$ 8,500</u>
Total		\$28,500

D. PAP/RAC

Budgetted in 1984 (not yet ordered)	Word processor	\$20,000
Proposed expenditure (1985)	Word processor	\$20,000
Proposed expenditure (1986)	IBM interface	<u>\$ 6,000</u>
Total proposed for 1984/1985		\$28,500

E. SPA/RAC

Minicomputer (word processor - not yet ordered)		\$23,000
Proposed expenditure (1985)	Word processor	\$20,000

Annex III

Current and Proposed MAP Computer Equipment

A. Coordinating Unit

1	Wang VS-8B Central Processor with 256 Kb memory and virtual storage	
4	Wang 2246C Combined WP/DP workstations	
1	Wang 4205-VS DP workstation	
2	Wang 6581-W 35 char/sec daisy wheel printers	
1	Wang 5574 600 line/min band printer	
1	Wang 2280V-3 Disk unit (75Mb fixed, 15Mb removable)	
1	Wang 2209V-2 1600/6250 bpi dual density tape drive	
2	Wang RS-232 telecommunications connections for telex/graphics	
1	Tektronix 4170 graphics microprocessor with 10Mb disk	
1	Tektronix 4107 colour graphics terminal	
1	Tektronix 4695 colour hard copy unit	
1	Tektronix 4662 8-pen digital plotter (on order)	
1	Distel 1000 telex interface (on order)	
	Software - COBOL, FORTRAN, BASIC, Word Processing, Plot-10	

Proposed Additions

1985	Coastline mapping software	\$2,000
	1 Wang PC with 10Mb disk plus 5.25" diskette	\$3,250
	1 Wang daisy wheel printer (spare for RAC's)	\$3,300
1986	1 Wang disk drive	\$20,000

B. Blue Plan RAC

2	DEC display terminals	
2	DEC word processing terminals	

Proposed Additions

See Annex I - Total cost 1985/87	\$184,900
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C. ROCC, PAP/RAC and SPA/RAC

No equipment currently installed

Proposed Equipment

1	Wang OIS-50 Word processor CPU with 256Kb memory and 10Mb disk	
1	Wang OIS internal word processing workstation	
1	Wang PC with 10Mb disk, 5.25" diskette and monochrome monitor	
1	Wang local communications option	
1	Wang 55 cps daisy wheel printer	
1	Locally available PC printer	

Estimated cost for each RAC word processing installation	\$18,600
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Total for 3 installations	\$55,800
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Special Equipment

PAP/RAC IBM 3270 Telecommunications interface	\$6,000
ROCC Telex interface (maximum)	\$8,500

Total estimated cost for 3 RAC installations	\$69,500
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Annex IV

Statement by observer representing
Intergovernmental Oceanographic Commission

I thank UNEP/MAP for inviting IOC to send an observer to this meeting.

IOC and its subsidiary bodies have passed a number of resolutions stressing the importance of co-operation with UNEP, and delegates and observers from both organisations have participated in each other's meetings.

At the 5th meeting of the IOC Group of Experts on Responsible National Oceanographic Data Centres (RNODC's) at which an observer from UNEP was present, it was agreed that the NODCs of the International Oceanographic Data Exchange system (IODE) would co-operate on a regional basis with the UNEP Regional Seas Programme, in order to maximise the benefits obtained from oceanographic data. This procedure would also avoid duplication.

In the Mediterranean basin there are 9 countries with National Oceanographic Data Centres (Egypt, France, Israel, Italy, Lebanon, Malta, Morocco, Spain and Turkey). These member countries of IOC have committed their oceanographic data centre to the development and use of the common magnetic tape format for oceanographic data exchange, known as GF-3. This is a general tape format with a number of defined sub-sets for different data types, such as current velocity measurements, wave statistics, conductivity-temperature-depth (CTD) data, marine geophysical data, etc.

Each NODC collects, quality controls, and archives oceanographic data from its own national sources, and exchanges data on request between centres free of charge. Copies of data holdings are transmitted mandatorily to the WDCs A and B in USA and USSR.

The availability of physical, chemical, and geophysical oceanographic data within the Mediterranean basin ensures that it will be possible to support the development of physical environmental models on a basin and a smaller scale. The report of the present meeting states that MAP does not generally include the objective of developing numerical environmental models from its own resources. However, the solution of the problems addressed by MAP includes the option to use the output from such models, wherever they have been developed in the most effective way. The activities and capabilities of the NODCs are therefore a useful component in supporting the objectives of the MAP.

In order to assist the WDCs in their work, some NODCs are appointed as being responsible for specialist data sets at a supra-national level. For example, France has responsibility for the data from the First Operational Year of the First Global Atmospheric Research Programme Global Experiment (FOY of FGGE), and UK is the RNODC for instrumentally measured wave data, and the sea level data of the MEDALPEX experiment. In January 1985 IOC issued a letter of invitation requesting NODCs to propose centres to become regional RNODCs for the IOC Marine Pollution Monitoring Programme (MARPOLMON).

IOC established a Task Team on Marine Pollution Data Exchange in August 1981. This Task Team is concerned with the tape formats, quality control, and oceanographic problems of pollution data exchange and data archiving: it is not directed at the application of such data. The methods developed by the Task Team may be of use to UNEP/MAP, and IOC invites UNEP to nominate a representative member of the Working Committee for Oceanographic Data Exchange Task Team on Marine Pollution Data Exchange.

N.C. Fleming, 15.3.1985