

**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION**  
(of UNESCO)

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**IODE OceanTeacher**

(Linda Pikula, Murray Brown and Greg Reed)

**1. Introduction**

The OceanTeacher website and CD-ROM publication have proven to be powerful and flexible tools for marine data and information management training. There are two segments of OceanTeacher: marine data management and marine information management. The IODE trainers have created an encyclopedic Resource Kit covering all aspects of the subjects. Through continual updates, the Kit provides the latest versions of popular public-domain software, documentation for global and regional datasets, documentation for major formats, and links to data sources. Other resources in OceanTeacher for data management include annually written Training Manuals, and specially produced regional datasets (currently five volumes are published online). The Information Management Courses cover the breadth of marine information science from establishing an information center, building and documenting a collection, to developing professional connections and working with information technology.

**2. Objectives and Benefits**

The over-arching objective of OceanTeacher (OT) is to provide in a single integrated product all the training resources for marine data management and marine information management needed by IODE trainers in traditional workshop settings. Due to the flexibility of the medium, however, it can be packaged in CD-ROM form for individual education globally. The OT product, as it pertains to marine data, consists of an encyclopedic Resource Kit in three modules (IODE Data Centre System; Data Management Systems; Data Analysis and Products), progressively more complex Training Manuals (currently two are published), and regional data collection volumes. The material in the first two Resource Kit modules provides a comprehensive introduction to our global community of data activities, and to the broad subject of database management technologies that use computers – especially personal computers. Within the Data Analysis and Products module, a set of marine data tutorials is provided which covers in step-by-step fashion the complete development of a national marine data activity for a selected developing coastal State. The entire Kit, the Manuals and the regional data collections are cross-linked and cross-referenced, providing an omnibus resource for all levels of teaching and in the many areas we find ourselves today: quality control, analyses, metadata, product preparation, data publication and communications. The OT product as it pertains to the MIM Training manuals also contains progressively more complex segments. Course One provides an evaluation of existing facilities, a survey form to assess the current state of marine information technology, development of a business plan for the information center, information concepts, basic software

and hardware technology, keys to building, documenting, organizing a collection, and integrated library management system software instruction. Course Two advances this basic knowledge in integrated library management systems as applied to actual cataloguing, instructs in the implementation of research support services with particular emphasis on electronic resources in the marine sciences, and the IOC Ocean Portal. Course Three will develop the integrated library catalogues of participating countries into an IOC/ODINAFRICA- wide catalogue, instruct in management of internal information, archiving, networking, marketing the information centre, working with personal bibliographic software, presentation skills, document production and techniques for continuing professional development.

### 3. Past Activities

During the intersessional period, resources within OT have undergone extensive revisions and additions.

#### 3.1 IODE Steering Group for the OceanTeacher Project

The IODE Committee, during its 16<sup>th</sup> Session decided to establish the 'IODE Steering Group for the OceanTeacher Project' as Recommendation IODE-XVI.7: “

- (ii) the Resource Kit Project be supported by a Steering Group, established as a subsidiary body of IODE, initially composed of a Project Leader and the Chairs of GETADE and GEMIM, and guided by GETADE and GEMIM, and will have the following Terms of Reference:
  - a. the Steering Group will be responsible for the further development and enhancement of the Resource Kit, in response to user feedback and additional requirements;
  - b. the Steering Group will nominate two editors, one for the data management aspects and one for the information management aspects, who will be responsible for the content of the Resource Kit;
  - c. the Steering Group will co-ordinate the preparation of regional data and information sets in response to IODE capacity building programmes;”

The First Session of the Steering Group was held in Miami, FL, USA between 19 and 23 March 2001. Membership of the Group was composed of experts who already provided content to the Resource Kit:

- Mr. Greg Reed (Project Leader & Chair GETADE) [Australia]
- Dr Murari Tapaswi (Chair GEMIM) [India]
- Dr Murray L. Brown [United States]
- Prof. Paul Nieuwenhuysen [Belgium]
- Mrs Pauline Simpson [United Kingdom]
- Mrs Linda Pikula [United States]

During its First Session the Steering Group reviewed the current status of the Resource Kit, noting that the Data Modules had advanced substantially producing an extensive web site as well as CD-ROM. The Data Modules had been developed and used during the ODINEA project data management courses and would now be used during ODINAFRICA data management courses. The Steering Group then developed a comprehensive table of contents for the Marine Information Management Module, as well as a programme for standard MIM Training Courses. The Steering Group also drafted an assessment table for Integrated Library Management Software

that will be used to identify and recommend a low-cost ILMs package for developing countries. The Summary Report for the meeting is available on the IODE home page at [http://ioc.unesco.org/iode/files.php?action=viewfile&fid=107&fcid\\_id=26](http://ioc.unesco.org/iode/files.php?action=viewfile&fid=107&fcid_id=26).

### 3.2 Resource Kit for Data Management

This resource was extensively updated, with regard to software (all programs are brought to their latest versions several times annually and particularly prior to student workshops), and linkages were added to the latest dataset publications (e.g. World Ocean Database 2001 and eWOCE datasets). All material about international programs, which had been somewhat decentralized, is now better organized into the first module. The former Roadmap Tutorials section of the third module was completely replaced by a 50-unit series of tutorials that is entirely focused on the creation of a data centre for a single coastal state (Namibia), selected on the basis of very interesting oceanography and the fairly simple coastal geography involved. Through the use of over 600 captioned illustrations, the new Tutorials section provides a complete guide to every process involved in data collection development.

Due both to the growing problem of disk space and the need to streamline the materials presented, the Resource Kit has been extensively edited with regard to the software provided (reduced by roughly half), the number of major formats spotlighted for student use (reduced from 17 to 8), and the major data publications described and recommended (completely new sections). These and other revisions have resulted in a somewhat smaller total volume of materials, summarized below:

Total Files:	18,200
Size:	576 MB

### 3.3 Training Manuals

#### 3.3.1 Marine Data Management Training Manual

Manuals were written and used for the Year 1 and Year 2 marine data workshops in the IOCEA Region. Further, because the 2002, Year 2 workshop for IOCEA was also attended by the IOCINCWIO students, they were introduced to this new resource at that time. The Manuals are essentially annotated outlines to the material within the Resource Kit, organized into logical, sequential topics. Each topic is introduced by an outline of important points to be emphasized by instructors, followed by links to specific documents in the Kit. During late 2002 the Manuals were revised to reflect the new Roadmap Tutorials.

**Student Assignments.** In order to re-enforce formal workshop training, the IODE trainers have begun a long-term program of sending out student assignments that require specific data products to be submitted for review and approval. These assignments are directly linked to the Tutorials section of the Resource Kit. This practice has proven quite valuable, as it highlights individual difficulties which we were not seeing in the workshop environment. Communications problems have proven to be a lingering hindrance to progress in some cases. Questions about the availability of the students for such work (e.g. as opposed to normal duties) have also been raised. In general the experience has been quite instructive for the trainers, if not also for the students.

**Marine Data CD-ROMs:** An "IOC Collection of Essential Marine Data CD-ROMs" has been established (approximately 50 disks covering 17 titles), and due to the generosity of the organizations listed below, all titles will be distributed to current IODE data management students in 27 countries:

- British Oceanographic Data Centre (1 title)

- U.S. National Aeronautics & Space Administration/Goddard Space Flight Center (1 title)
- U.S. National Aeronautics & Space Administration/Jet Propulsion Lab (4 titles)
- U.S. National Oceanic and Atmospheric Administration/National Environmental Satellite, Data & Information Service (11 titles)

In addition, the IOC has supported the creation of special regional marine data collections, containing essential data from many sources (including some of the above titles). Titles have already published for the following regions: IOCINCWIO, IOCEA, ODINCARSA, Red Sea, and an African Update (IOCEA and IOCINCWIO).

**Data Management HELP Desk.** In parallel with the development of the Resource Kit and student assignments based on the Roadmap Tutorials, the IOC has supported an open HELP Desk for questions about OceanTeacher from current IODE students and all interested persons globally. The Desk currently handles about 600 incoming questions and inquiries annually (including follow-up questions and fact-finding dialogues). Matters handled by the Desk range from simple “How do I...” questions to the request for the special Red Sea CD-ROM from an outside student in Egypt.

### 3.3.2 Marine Information Management Training Manual and Supplemental Activities And Products

The OceanTeacher suite of resources has been augmented by a completely new set of materials for Marine Information Management. The new materials now consist of a 3-year curriculum available online and for use in workshop presentations as outlined in Section 2 of this report, with a Course 3 currently in development. Courses are supplemented with extensive bibliographies and links to appropriate online resources in the topics presented are available through the MIM Modules section. Lists of Software available in Information Management are provided. Students are assigned intersessional projects to apply knowledge. As a supplement to Workshop participation co-operative conference and training opportunities are extended to developing country participants through affiliation with the International Association of Aquatic and Marine Science Libraries and Information Centres. Membership in the IAMSLIC was extended to the 20 ODINAFRICA participants. Assistance in obtaining travel Grants was provided by IOC, IAMSLIC, EURASLIC and other NGO's.

Library management software upgrade was accomplished for Workshop participants in ODINAFRICA. INMAGIC software was purchased, along with computers. In-depth instruction in populating this database was given during the Course 1 and 2 Workshops. Student Assignments included cataloguing data from their libraries. Online help was provided through Instructors and Master Students.

## 4. Proposed Activities

### 4.1 Resource Kit Updates.

Because the Resource Kit is so large and because it contains so many “dated” links to Internet resources, constant updating of the links and of the materials downloaded from active websites is required. This work will continue. Additionally, as new software is made available or as existing programs become significantly upgraded, then decisions must be made about their incorporation into the Kit, the possible need to update or entirely change their usage in the Roadmap Tutorials, and their overall role in the integration of data and format resources. The recent re-focusing of training on practical matters (such as the delivery of specific data products)

has necessitated some streamlining of the Kit, as well as the extensive editing of existing pages. This work will continue through the upcoming Year 3 ODINAFRICA workshop.

#### 4.2 New Manuals

Manuals for Year 1 and 2 instruction are constantly being edited to keep pace with Resource Kit updates and edits. This work is most important for the Year 2 volume, in view of the upcoming second workshop for the ODINCARSA region in mid-2003. The Manual for Year 3 is currently being scoped, and must be written, tested and published on the OT website by early 2003.

#### 4.3 Student Assignments (Marine Data Management)

Student assignments have continued through the creation of a National Data Collection, standard procedures for creating data subsets and for analysing them with a variety of software. This training method will continue, focusing on the production of data analyses in formats that are compatible with Geographic Information Systems in order to move on to the creation of nation data atlases. It is currently felt that training methods that remain “theoretical” simply do not work well; methods that lead to specific, tangible databases and their products do work, and the IODE trainers will continue to develop these lessons and to work with the students more closely during period between workshops using these methods.

#### 4.4 Assessment Methods

During the 2002 joint IOCEA-IOCINCWIO training workshop in Tunis, an examination covering fundamental skills in ocean station data management and analysis was written and given to the students. Prior to the examination all the questions were made available to the students (minus the specific location of the dataset to be used). The 18 students who took the examination achieved the following results:

*6 students scored perfect (or near-perfect) scores, qualifying them as “experts.” These students have been named Docents for the other students, and because their language skills cover all native languages within the student group they have been asked to serve also with language issues. 3 students scored very high scores, qualifying them as “fully proficient.” 4 students scored at medium levels, qualifying them as “acceptable.” 4 students fell below the acceptable level.*

It should be noted that the expert group is equally divided between IOCEA and IOCINCWIO students, disproving any differences based on the total length of training time (which is three years longer for the IOCINCWIO students). In addition, one of the fully proficient students had only taken the Year 1 course one month previously (as individual instruction). Finally, one of the expert students did not speak English, and apparently learned all the material visually! For these reasons, the IODE trainers are comfortable with the current technical content of the courses and the teaching methods being used. This overall high level of achievement indicates that we are on the right track.

Assessment methods for Information Management Students include class and intersessional assignments including Information Needs Assessments and Surveys, the Development of a Business Plan and a Collection Development Policy, Cataloguing with the Integrated Library Software, and Document production. Usage statistics in various online databases can also be used to determine the success of various knowledge management instructional modules.

An Information Management Help-Desk is planned for the ongoing use of students. An ODINAFRICA online Union Catalogue is planned in the future to facilitate resource sharing.

The Marine Information Management Courses are in a continual state of evaluation by our Steering Group to keep current in software and database recommendations, online Best Practices, and instructional content for developing capacity building programs such as ODINCARSA.

#### 4.5 Work Plan, Timing & Budget

##### 4.5.1 Data Management Training Support:

**Training Manuals:** Continued revision and updating of Year 1 and 2 Manuals; write and publish Year 3 Manual. Timing: First and second quarters of 2003.

**Resource Kit:** Continued revision and updating of software materials; addition of new Roadmap Tutorials covering advanced products from data analyses; consolidation and revision of Science Plans, Technical Manuals and other “major ocean program” materials in Module 1. Timing: Second and third quarters of 2003.

**Training Workshops:** Year 2 workshop for ODINCARSA; Panama City, Panama. Second quarter of 2003. Year 3 workshop for IOCEA/IOCINCWIO; Brussels, Belgium. Timing: Second or third quarter of 2003.

**Remedial Workshops:** Three (possibly 4) special workshops for multiple students demonstrating special needs for remedial training, based on Year 3 testing in Brussels. Timing: Second and third quarters of 2003.

**Real-time data integration:** OT will expand to include methods and tools to integrate real-time data collected from GOOS observing systems.

**Regional Data CD-ROMs:** One (possibly 2) new CD-ROM (or update(s) of existing titles), based on availability of new data and/or major software. Timing: Second or third quarter of 2003.

##### 4.5.2 Marine Information Management Training and Support

**Training Courses and Workshops:** Continued revision and updating of Course 1 and 2. Publish Course 3. Steering Group meeting and Teach Workshop Course 3 ODINAFRICA 1. Timing: late Spring, 2003. ODINCARSA funds permitting, hold Workshop 2 Late Fall, 2003.

##### 4.5.3 MIM Modules continued updating

Funds to support Personal Bibliographic Software, e-journals minimal funding needed at levels for developing countries. Funding for centralized scanning/digitisation of African grey literature for resource sharing.

## 5. Budgetary Requirements

OceanTeacher have proven to be powerful and flexible tools for marine data and information management training for the IODE community. To date, the focus of capacity building in data and information management has been developing countries wanting to set up data and information centres. The data management focus has been on delayed-mode data extracted from global archives. With closer cooperation between IODE and JCOMM / GOOS, the focus will change from delayed-mode data to real-time data and from the deep ocean data to coastal data. OceanTeacher must expand to embrace this new direction. New tools for integrating

and synthesising these real-time data are being developed and OT must include these new capabilities. Funding will be required to both maintain the content in OT and to provide new tools and procedures required for real-time data and products. A meeting of the Steering Group for the OceanTeacher Project is also planned for 2003.

Funding required for biennium 2003-2004: \$20,000

## **6. Source of Funding**

Funds will come from IODE extra budgetary funds.

## **7. Requested Actions from the Committee**

The Committee is requested to:

- Adopt the summary report of the First Session of the IODE Steering Group for the Resource Kit, and
- Approve funding for the concerned actions: US\$20,000 for the biennium 2003-2004

Member states are also invited to participate in the project by submitting relevant material for inclusion in OceanTeacher.

[end]