Annex VII

Report of NOWPAP Working Group 4 (Remote Sensing) for the 2004-2005 biennium

Report of NOWPAP Working Group 4 (Remote Sensing) for the 2004-2005 biennium

1. Work Plan for 2004-2005

On the First NOWPAP WG4 meeting held on December 2003 at Vladivostok, representatives from Korea, Russia, and Japan (with China absent), and approximately 15 experts from related international organizations participated in and discussed the agenda listed below. The work plan for 2004-2005 discussed in the meeting was reported and finalized at the Second CEARAC FPM on March 2004.

#1. Objective and long-term strategy
#2. Applications supported by remote sensing
#3. Definition of user's needs and gaps
#4. Towards the operational monitoring
#5. Development of remote sensing information network system
#6. Public outreach
#7. Capacity building of NOWPAP Members
#8. Cooperation with other regions and organizations
#9. Capability of CEARAC
#10. Review of the integrated national reports, which will be prepared by CEARAC with the view of standardizing and establishing a system to update national reports.
#11. Long-term plan
#12. Proposed work plan for 2004-2005

In NOWPAP WG4, by reviewing the status of research development and government needs in NOWPAP countries and international organizations, feasibility and usefulness of satellite remote sensing which are to solve present and potential marine environment problems in the NOWPAP Region are evaluated, based on the strategy shown in Figure 1.1. Then, it is agreed to establish a monitoring system that would protect marine environment in the NOWPAP Region and to promote and coordinate cooperation among the NOWPAP Members. Under this agreement, the following items were decided as actions to be taken with priorities. Table 1.1 shows the overview of the work plan for 2004-2005, which was finalized at the Second CEARAC FPM.

- Collection & Review of remote sensing information for eutrophication/oil spill monitoring
  - Preparing National Report
    Preparing National Reports, which summarize status in each NOWPAP country
  - Preparing Integrated Report
    Preparing a report integrating information on status in each NOWPAP country based on National Reports
- Development of remote sensing information network system
  - Establishment of Portal Site
    Developing a Portal Site as an experiment to share related information
  - Establishment of Website on Oil Spill Monitoring

Developing a Website to introduce Oil Spill Monitoring

- Public outreach

  Introducing NOWPAP WG4 activities to the public and widely disseminate the usefulness of satellite remote sensing for marine environment monitoring and the importance of efforts towards its practical use.

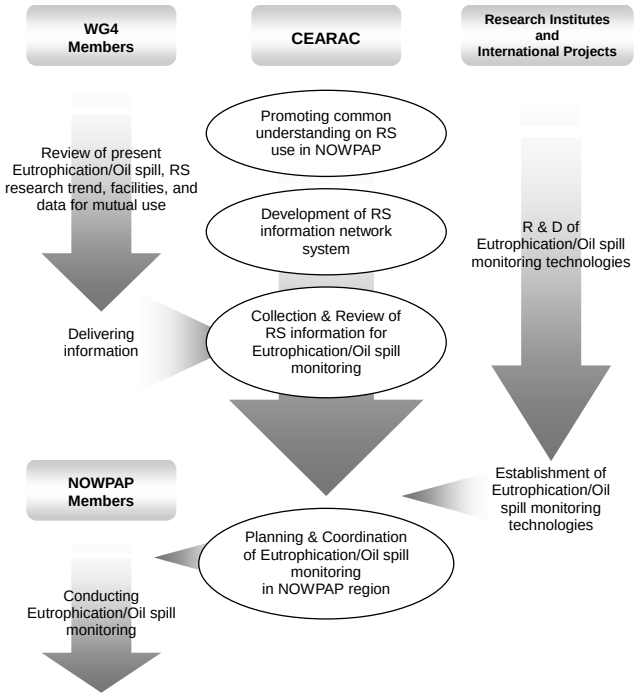

Figure 1.1 Diagram of Long-term Strategy

Table 1.1 Work Plan for 2004-2005

		2004		2005	
		FPM[2nd]	WG4[2nd]	FPM[3rd]	WG4[3rd]
Collection & Review of remote sensing information for eutrophication/oil spill monitoring	Preparing National Report			○	
	Preparing Integrated Report				○
Development of remote sensing information network system	Establishment of Portal Site			○	
	Establishment of Website on Oil Spill Monitoring	○			
Public Outreach			○ Newsletter No.1		○ Newsletter No.2

2. Intersessional Activity

In the Second NOWPAP WG4 meeting held in October 2004, status of activities described in Section 1 was reported. Output for 2004-2005 is described in the following sections.

2.1 National Reports on Ocean Remote Sensing in the NOWPAP Region

It was confirmed in the Second POMRAC FPM (May 2004) that the preparation of National Report was to be conducted with the highest priority for the time being. The content and the level of details to be put into National Report were discussed in the Second NOWPAP WG4 meeting, based on the draft National Reports prepared by each country according to preparation guidelines.

National Reports were then revised based on the comments made in the Second NOWPAP WG4 meeting, and submitted to CEARAC by July 2005 after detail check by FPs and related organizations (Figure 2.1).

2.2 Integrated Report on Ocean Remote Sensing for the NOWPAP Region

The contents of Integrated Report submitted to the Second CEARAC FPM were not sufficiently consistent, as what were written in the National Reports, as National Reports were the basic reference for Integrated Report, and were not well aligned among each country. Given the situation, new sets of draft National Reports were prepared according to guidelines developed in the Second NOWPAP WG4 meeting, and the content of Integrated Report was then discussed based on the re-submitted National Reports.

National Reports were finalized in April 2005. Draft Integrated Report, written based on finalized National Reports, was distributed to NOWPAP WG4 members in July 2005. Revised Integrated Report was prepared and published in December 2005, reflecting the comments made in the Third CEARAC FPM (Figure 2.2).

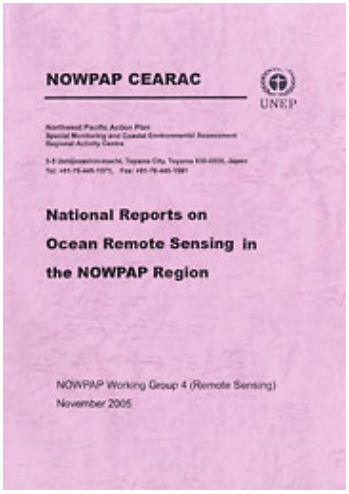

Figure 2.1 National Reports

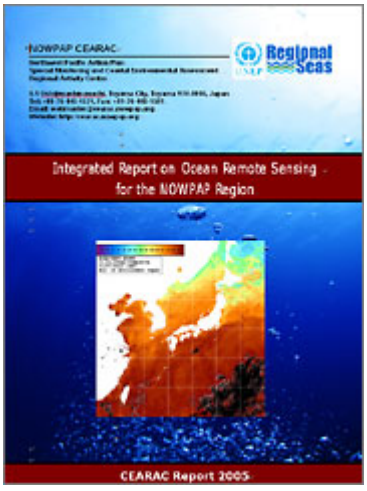

Figure 2.2 Integrated Report

2.3 Development of Remote Sensing Information Network System

2.3.1 Establishment of Ocean Remote Sensing Portal Site

As information/data on marine environmental monitoring exist in a number of disparate organizations, information sharing on the status of studies/researches in the NOWPAP Region has not been easy. As a first step to improve the situation, a portal site has been developed in April 2005 to introduce the links to related websites.

To promote the use of the information network and to disseminate the knowledge on marine environmental monitoring by remote sensing, upgrading of the portal site functions, namely the addition of the links to the related websites and also the search function for reference literatures, was approved at the Third CEARAC FPM.

The function to locate papers/literatures that have high degree of technical usability was added to the portal site as ‘Reference’ search, as an aim to provide the information on the latest findings to the users. This ‘Reference’ search function has been available since June 2006 (Figure 2.3). The list of collected reference information is shown in Appendix A.

2.3.2 Establishment of Website on Oil Spill Monitoring

Following the discussions in the First NOWPAP WG4 and memorandum between CEARAC and POI FEB RAS, establishment of website on oil spill monitoring was adopted as one of the activities taken up by NOWPAP WG4, mainly by POI FEB RAS.

With reflection of proposals made by CEARAC and MERRAC, the content and function of the website were presented at the Second NOWPAP WG4 meeting. During the meeting, maintenance and future plans for the website were also discussed. The website has been open to public since March 2005 (Figure 2.4).

2.4 Public Outreach

CEARAC Website was established (Figure 2.5), and the first newsletter was published.
Reference materials used at CEARAC FPM and NOWPAP WG4, National Reports, and Integrated Report were parts of contents in the website.

2.5 Other related activities

2.5.1 Website upgrade of Marine Environmental Watch Project

The Ministry of the Environment of Japan has contracted with Northwest Pacific Region Environmental Cooperation Center (NPEC) since 2000 to prepare the Marine Environmental Watch Project to promote NOWPAP WG4. The purpose is to provide useful basic information for marine environmental conservation, utilizing satellite remotes sensing data. NPEC began operation of its receiving ground station in March 2002 and the system has been providing data, which are retrieved from NOAA AVHRR, Feng Yun-1 (FY-1) Multi-channel Visible and Infrared Scan Radiometer (MVISR) and TERRA/Aqua MODIS satellite instruments.

The website of the Marine Environmental Watch Project was upgraded in March 2005 for better promotion of utilization of satellite data. Some new functions were added to existing website such as explanation of method for data processing and analysis. The website also provides daily image of Sea Surface Temperature and Chlorophyll a concentration of the NOWPAP Region (Figure 2.6).

Popularity of this website is high and the number of authorized users is around 70. As shown in Figure 2.7, the number of general public to become authorized users has been increasing after the website update done in June 2005.

Figure 2.8 indicates that most of the authorized users belong to universities. In order to disseminate the use of remote sensing data, the website needs to be further developed to promote potential use in governments and private companies. Intended use is high for monitoring of water quality, that accounts one-fifth of entire authorized users, and use for understanding meteorological phenomena and as environment education tool follow the next.

2.5.2 Toyama Bay Project

NPEC has been working on a project called the 'Toyama Bay Project' since 2002, in order to evaluate the usefulness of remote sensing data for coastal zone eutrophication monitoring, recognizing that the distribution of *chlorophyll-a* is a good indicator of eutrophication.

Taking into account the results and lesson learned from the Toyama Bay Project, a Guideline for Eutrophication Monitoring by Remote Sensing was prepared by the NPEC (NPEC RS Guideline) and its draft was submitted to the 4th CEARAC Focal Point Meeting (FPM) took place in Toyama 8-9 March 2006, which intended to be a basis for establishing common methods for evaluation and use of satellite data for cooperative environmental monitoring in the NOWPAP Region.

2.5.3 International workshop on remote sensing of the marine environment in the NOWPAP Region

NPEC has been organizing international workshops on remote sensing of the marine environment in the NOWPAP Region since 1999. The aim of these workshops is to contribute to the development of marine environmental monitoring technologies derived from remote sensing. It's the Third workshop was held in October 2004 in Beijing, and experts of relevant countries (Japan, China, Korea, and Russia) including NOWPAP WG4 members, attended to make presentations on remote sensing application, examples of marine environmental monitoring, research and development trends, and so on, and to exchange information.

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3. Suggestions made for the future activities

At the last section of the Integrated Report (Section 2.2), the following were proposed as WG4 activities for the coming two years.

1) Refinement of the guidelines being prepared by NPEC for local governments of each country.
2) Training of young researchers, students, and officers of local governments, including a possible dedicated cruise.
3) Further development of a portal site, a web site on oil spill monitoring by remote sensing and an environmental watch system, including a reference database and digital library.
4) Joint activities with the IOC/WESTPAC ocean color project.
5) Search for other possible uses of satellite remote sensing for environmental monitoring in the NOWPAP Region.

Meanwhile, the following conclusions were derived at the Third International workshops on remote sensing of the marine environment in the NOWPAP Region (Section 2.5.1). It was also agreed that on-going workshops need to be held to share information, and continuous efforts need to be made for the establishment of joint monitoring system in the NOWPAP Region. The followings are the summary of this workshop.

1) Satellite & sensor plans, ocean color algorithms, and remote sensing application methods, etc. should be shared and utilized.

2) Launch of HY-1D & HY-2(China), SGLI(Japan), GOCI(Korea), Sich-1M, Meteor-3M#2(Russia) is being planned, were acknowledged.

3) Algorithm for Case 2 waters, chlorophyll fluorescence, atmospheric correction, ocean color algorithm such as CAL/VAL should be jointly developed.

4) Some of the areas where application of remote sensing technology may be useful are: understanding of interannual variability and climate change, monitoring of red tide/HAB and water quality, integration with simulation models, monitoring of primary productivity.

5) Other areas that remote sensing technology can be applied are coastal wind measurement, oil spill detection, vessel identification, monitoring of lakes and continental areas, and integration with GIS.

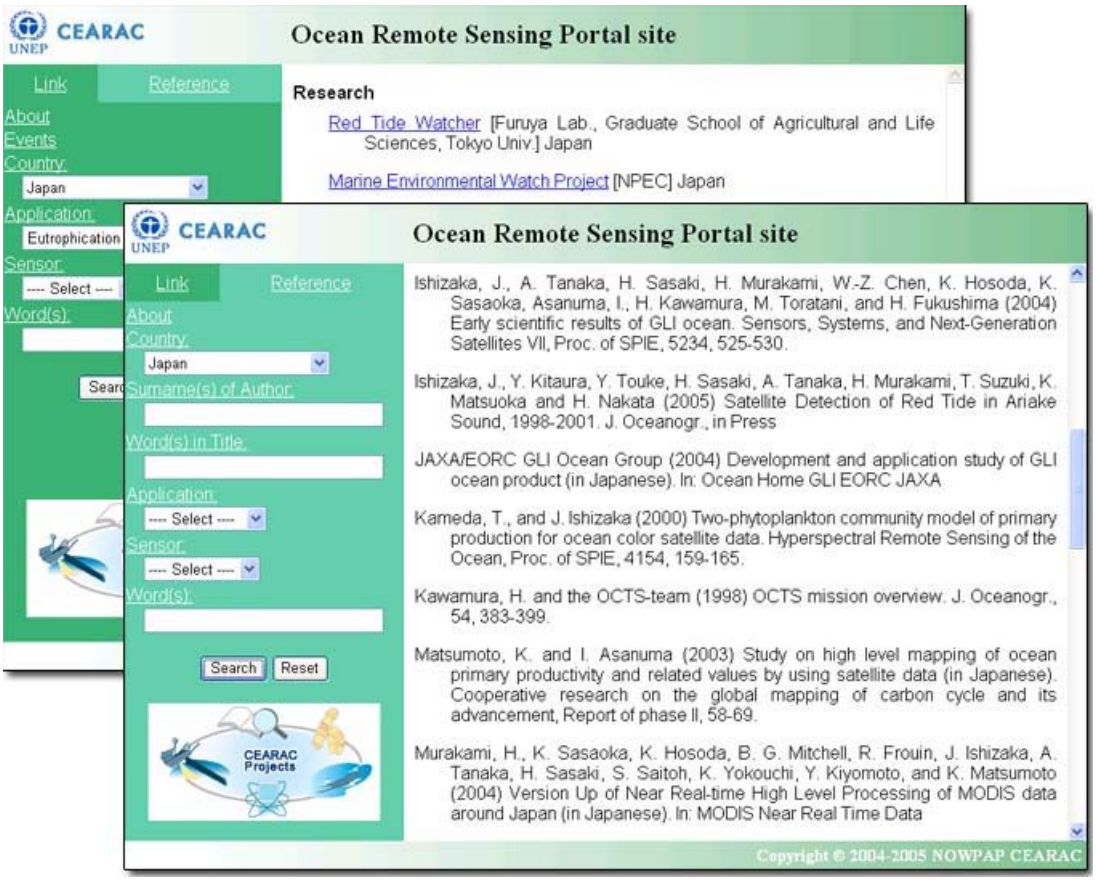

Figure 2.3 Ocean Remote Sensing Portal site
http://www.cearac-project.org/wg4/portalsite/

Link search and Reference search functions are expressed as equally accessible features on this page and laid out in tab design to make the function switch easy.

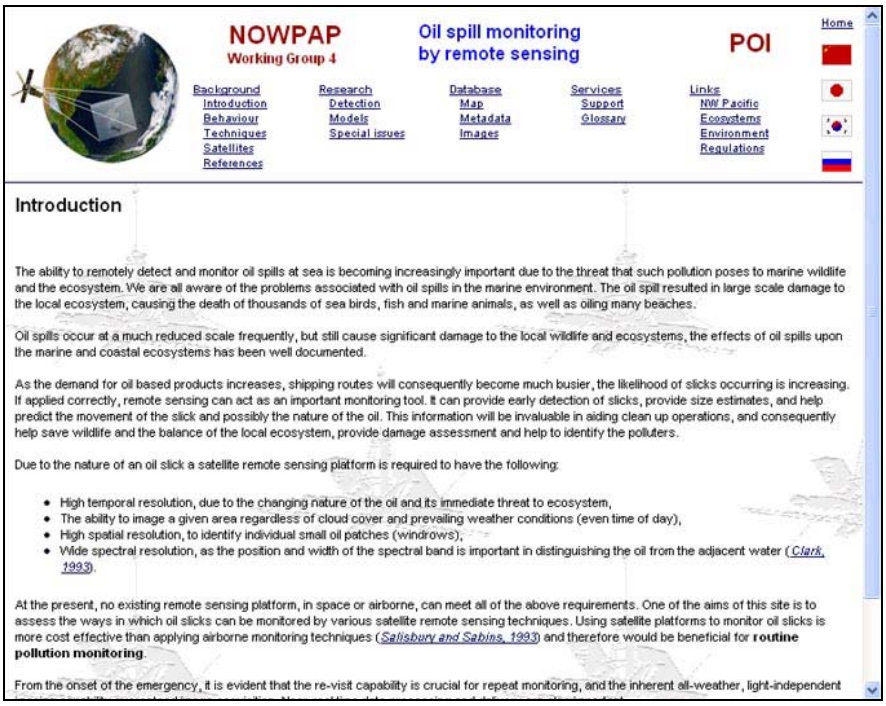

Figure 2.4 Oil Spill Monitoring by Remote Sensing
http://cearac.poi.dvo.ru/en/main/about/

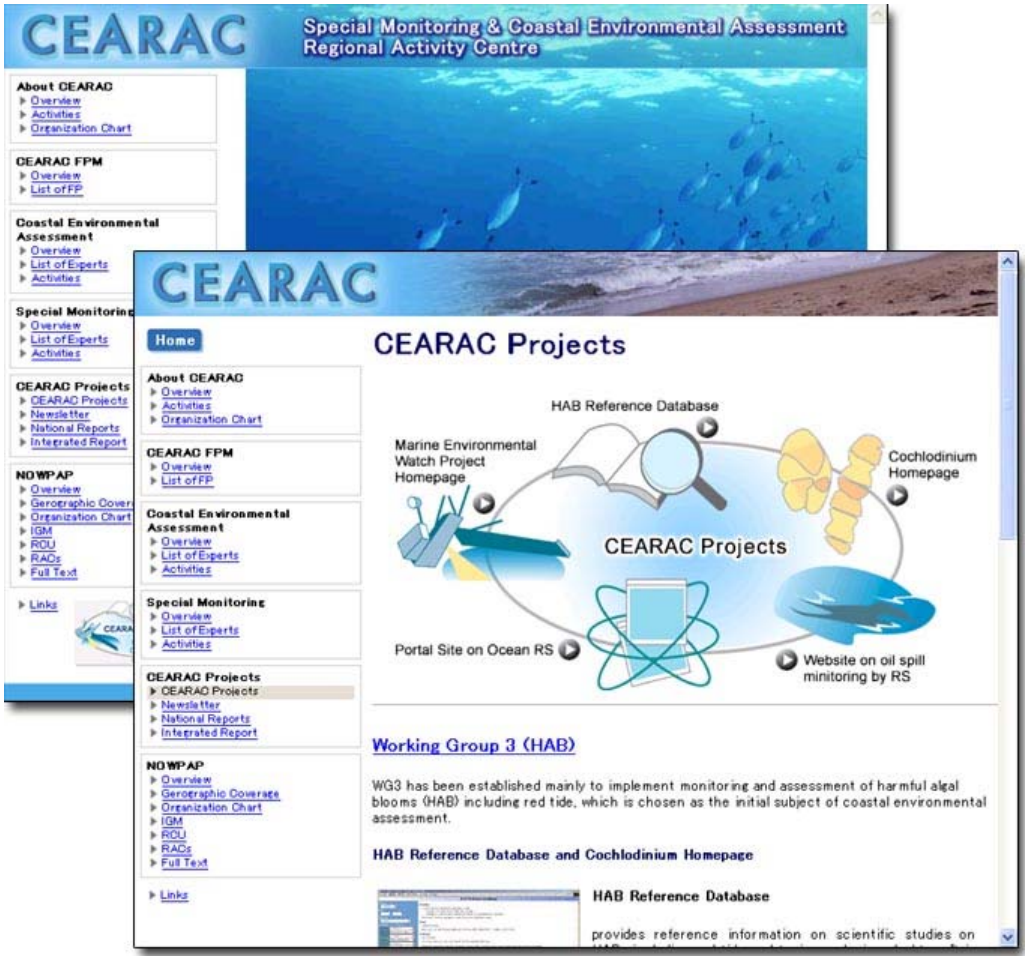

Figure 2.5 CEARAC Website
http://cearac.nowpap.org/

Figure 2.6 Marine Calendar of the NOWPAP Region
http://www.nowpap3.go.jp/jsw/eng/

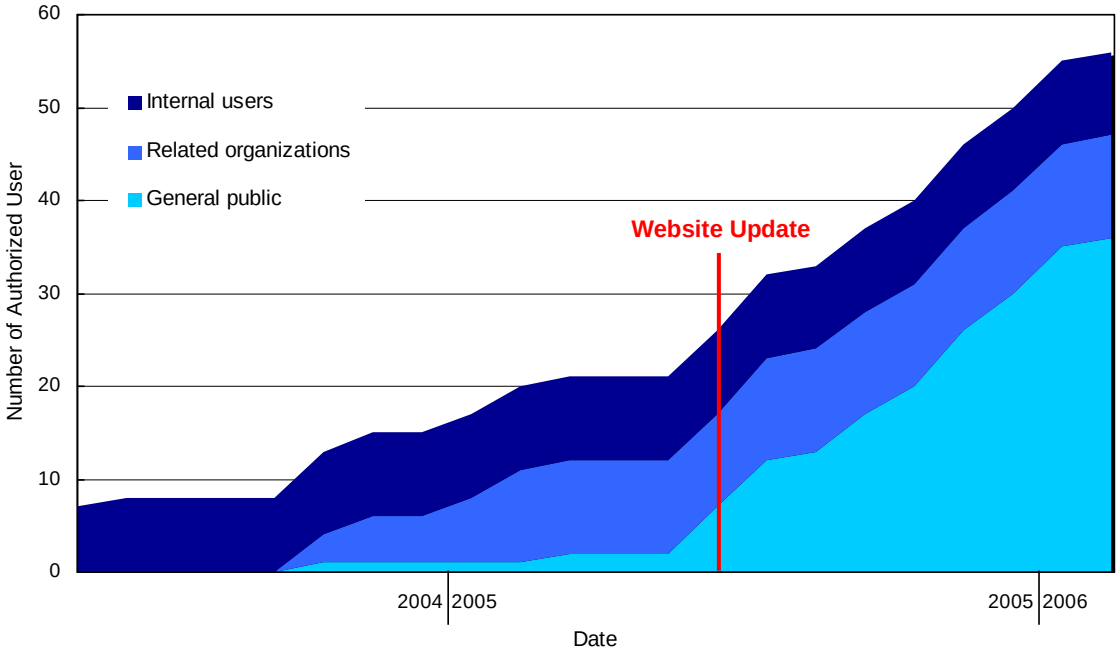

Figure 2.7 Transition in the number of authorized user of the Marine Watch Project from May 2004 to Feb 2006.

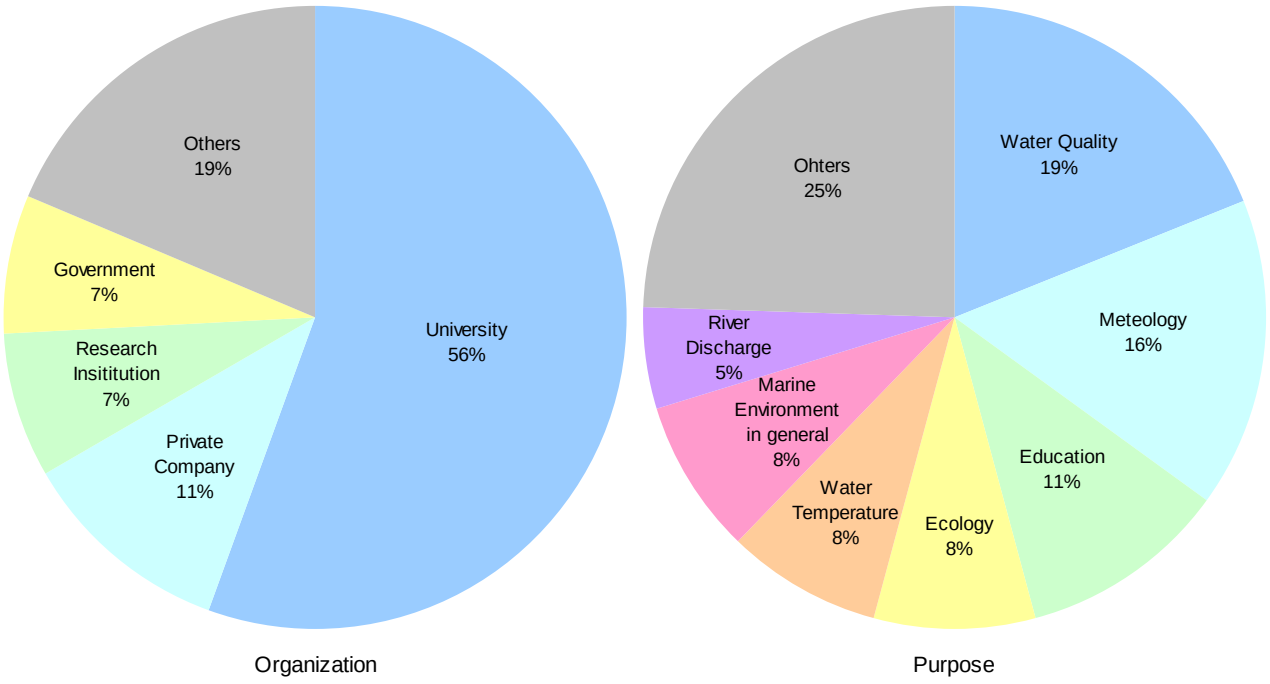

Figure 2.8 Attributes of authorized users by organization and purpose.

Appendix A The list of collected reference information

Reference information collected from National Reports and Integrated Report (135 literatures)

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
1	The primary study on the slope algorithm to measure the suspended material near coastal area.	Deng Ming, Li Yan, Yang Jujie, *et al.*	The Proceeding of 11th Chinese Remote Sensing Conference, 494-495.	1999	China			coastal
2	Extracting spatial patterns of ocean fishery using GIS and RS - Taking the East China Sea as an example.	Du Yunyan, Chenghu Zhou, Fenzhen Su, Baoyin Liu, Quanqin Shao	Acta Oceanologica Sinica, 22, 1, 25-34.	2003	China		Fishery	GIS
3	Construction and implementation of multisource spatial data management system of China's coastal zone and offshore.	Du Yunyan, Jinggui Wang, Zuoyong Wang, Xiaomei Yang	Acta Oceanologica Sinica, 23, 1, 97-108.	2004	China			coastal, offshore
4	The Application Research and development of Satellite Remote Sensing for Marine Fisheries.	Fan Wei, Zhou Sufang, Cui Xuesen, Wang Don, Shen Xinqiang	OCEAN TECHNOLOGY, 21, 1, 15-20.	2002	China			
5	On the fundamental Dynamics of Barotropic Circulation in Shallow Seas.	Feng, S.	Acta Oceanologica Sinica, 9, 3, 315-329.	1990	China			
6	Kuroshio, 1991, warm filament and the source of the warm water of the Tsushima current.	Guo Binghuo *et al.*	Acta Oceanologica Sinica, 10, 3, 325-340.	1991	China			current
7	The study on the inversing model of water transparency using the SeaWiFS data.	He Xianqiang, Delu Pan, Zhihua Mao, Qiankun Zhu	Acta Oceanologica Sinica, 26, 5, 55-62.	2004	China	SeaWiFS		water transparency
8	Ground Receiving Station of China Ocean Satellite HY-1.	Jiang Xinwei, Jianqiang Liu, Mingsen Lin	Satellite Remote Sensing Applications, 10, 3, 41-441.	2002	China			HY-1
9	A study on the quality and availability of the COCTS images of HY-1 satellite by simulation.	Li Shujing, T. Mao and D. Pan	Acta Oceanologica Sinica, 21, 4, 494-504.	2002	China	COCTS		HY-1
10	Remote sensing application in Ocean and Coastal Zone.	Lin Mingji	Ocean Press, Beijing.	1991	China			coastal
11	The atmospheric correction algorithm of SeaWiFS data in China Seas. (in Chinese)	Mao Zhihua, Huang Haiqing, Zhu Qiankun, Pan Delu	Oceanologica et limnologia Sinica, 32, 6, 581-587.	2001	China	SeaWiFS		atmospheric correction
12	The SeaWiFS atmospheric correction algorithm for Chinese coastal area.	Mao Zhihua, Huang Haiqing, Zhou Qiankun, *et al.*	Oceanologica et limnologia Sinica, 32, 6, 581-587.	2001	China	SeaWiFS		
13	A temperature error control technology for an operational satellite application system. (in Chinese)	Mao Z., Q. Zhu and D. Pan	Acta Oceanologica Sinica, 25, 5, 49-57.	2003	China			
14	Remote sensing marine chlorophyll a by fluorescence high line. (in Chinese)	Pan D., J. Gower, and S. Lin	Acta Oceanologica Sinica, 11, 6, 780-787.	1989	China			chlorophyll-a
15	A simulation of radiation imagery for ocean color satellite.	Pan D., R. Doerffer, T. Mao, and S. Li	Acta Oceanologica Sinica, 16, 2, 171-191.	1997	China			ocean color
16	Seasonal variation of the surface chlorophyll distribution along the British Columbia Coast as shown by CZCS satellite imagery.	Pan D., J.F.R. Gower, and G.A. Borstad	Limnol. Oceanogr., 33, 2, 227-244.	1998	China	CZCS		chlorophyll
17	A study on the signal characteristic scale of satellite ocean color remote sensing.	Pan D. and S. Li	J. Remote Sensing, 2, 1, 21-31.	1998	China			ocean color
18	Study on ocean color environment of China coast by satellite remote sensing.	Pan D., Z. Ma, *et al.*	Quaternary Sciences, 20, 3, 240-246.	2000	China			ocean color
19	Atmospheric correction for China's coastal water color remote sensing.	Pan D. and Z. Mao	Acta Oceanologica Sinica, 20, 3, 343-354.	2001	China			coastal, ocean color, atmospheric correction

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
20	Study on detection of coastal water environment of China by ocean color remote sensing.	Pan D., T. Mao, S. Li, and H. Huang	Acta Oceanologica Sinica, 20, 1, 51-63.	2001	China			coastal, ocean color
21	Study on application potentiality of the first China's ocean satellite HY-1A.	Pan D., Xianqiang He, Shujing Li, Fang Gong.	Acta Oceanologica Sinica, 22, 4, 503-510.	2003	China			HY-1
22	Advances in the Science of Marine Optical Remote Sensing Application in China.	Pan D. and D. Wang	Advances in Earth Science, 19, 4, 506-512.	2004	China			
23	A new model to extract environmental pattern for fishing ground.	Su Fenzhen, Chenghu Zhou, Baoyin Liu, Yunyan Du, Quanqin Shao	Acta Oceanologica Sinica, 21, 4, 483-493.	2002	China		Fishery	
24	A data-mining approach to determine the spatio-temporal relationship between environmental factors and fish distribution.	Su Fenzhen, Chenghu Zhou, Vincent Lyne, Yunyan Du, Wenzhong Shi	Ecological Modelling, 4, 421-431.	2004	China		Fishery	
25	Research of the effects of atmospheric scattering on red tide remote sensing with normalized vegetation index.	Tang Junwu, Ding Jing, Wang Qimao, Ma Chaofei	Acta Oceanologica Sinica, 26, 3, 136-142.	2004	China		Red tide monitoring	red tide, NDVI
26	The Typical Applications of HY-1 Satellite Data in the Oceans.	Wang Qimao, Jiang Xingw ei, Lin Mingsen, Ma Chaofei	Remote Sensing Technology and Application, 18, 6, 374-379.	2003	China			HY-1
27	A practical algorithm for atmospheric correction of SeaWiFS data. (in Chinese)	Wei Jun, Chen Chuqun, Shi Ping	Acta Oceanologica Sinica, 24, 4, 118-126.	2003	China	SeaWiFS		atmospheric correction
28	Construction and implementation of RS integrated application information system of China's coastal zone and offshore.	Yang Xiaomei, Rongqin Lan, Chenghu Zhou, Jiancheng Luo, Fenzhen Su, Yunyan Du, Baoyin Liu	Acta Oceanologica Sinica, 22, 1, 35-45.	2003	China			coastal, offshore
29	Technical foundation research on high resolution remote sensing system of China's coastal zone.	Yang Xiaomei, Rongqin Lan, Yunyan Du, Xiufa Chen	Acta Oceanologica Sinica, 23, 1, 109-118.	2004	China			coastal
30	A Genetic Algorithm for Retrieval of Water Constituents from Ocean Color Remote Sensed Data in Case 2 Waters.	Zhan Haigang, Ping Shi, Chuqun Chen	J. Remote Sensing, 8, 1, 31-36.	2004	China			ocean color, case 2 waters
31	Optical properties control primary productivity model on the East China Sea.	Asanuma, I., J. Nieke, K. Sasaoka, K. Matsumoto, and T. Kawano	Ocean Remote Sensing and Applications, Proc. of SPIE, 4892, 312-319.	2003	Japan	GLI		time and depth resolved primary productivity model, chlorophyll-a, SS, CDOM
32	Spatial distribution of phytoplankton along the Sunda Islands: The monsoon anomaly in 1998.	Asanuma, I., K. Matsumoto, H. Okano, T. Kawano, N. Hendiarti, and S. I. Sachoemar	J. Geophys. Res., 108, C6, 3202, doi:10.1029/1999JC000139.	2003	Japan	PALSAR, SAR		ALOS, JERS-1, wind waves, eddy, current
33	Primary productivity model based on photosynthetically available radiation.	Asanuma, I., T. Tanaka, K. Matsumoto, and T. Kawano	Hyperspectral Remote Sensing of the Ocean, Proc. of SPIE, 4154, 153-158.	2000	Japan	GLI		time and depth resolved primary productivity model, chlorophyll-a, SS, CDOM
34	Photosynthetic rates derived from satellite-based chlorophyll concentration.	Behrenfeld, M. J. and P. G. Falkowski	Limnol. Oceanogr., 42, 1-20.	1997	Japan			chlorophyll-a
35	The ADEOS-II Science Plan, Vol.1 Science Research Project Document Ver. 2	EORC, NASDA		1999	Japan	GLI		ADEOS-II

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
36	From Observation to Action - Achieving Comprehensive, Coordinated, and Sustained Earth Observations for the Benefit of Humankind, Framework for a 10-Year Implementation Plan. (As adopted by Earth Observation Summit II, 25 April 2004)	GEO		2004	Japan			
37	Merging satellite infrared and microwave SSTs - Methodology and evaluation of the new SST.	Guan, L. and H. Kawamura	J. Oceanogr., 60, 905-912.	2004	Japan	AVHRR, MODIS, AMSR-E		SST, NGSST, Merged SST, IOC, WESTPAC
38	Status and Future of Ocean Color Remote Sensing of Coastal Environments.	Ishizaka, J.	Bull. Coast. Oceanogr., 39, 21-26.	2001	Japan			chlorophyll-a, SS, CDOM, in-water algorithm, atmospheric correction, neural-network, ocean color
39	Remote Sensing of Ocean, 4.Primary Production.	Ishizaka, J.	J. Remote Sensing Society of Japan, 22, 4, 457-461.	2002	Japan			two-phytoplankton community model of primary productivity, chlorophyll-a, SS, CDOM, PAR, ocean color
40	Detection of red tide events in the Ariake Sound, Japan.	Ishizaka, J.	Ocean Remote Sensing and Applications, Proc. of SPIE, 4892, 264-268.	2003	Japan	SeaWiFS, MODIS	Red tide detection	Ariake Sea Project, chlorophyll-a, red tide
41	Early scientific results of GLI ocean.	Ishizaka, J., A. Tanaka, H. Sasaki, H. Murakami, W.-Z. Chen, K. Hosoda, K. Sasaoka, Asanuma, I., H. Kawamura, M. Toratani, and H. Fukushima	Sensors, Systems, and Next-Generation Satellites VII, Proc. of SPIE, 5234, 525-530.	2004	Japan	OCTS, GLI		ADEOS, ADEOS-II
42	Satellite Detection of Red Tide in Ariake Sound, 1998-2001.	Ishizaka, J., Y. Kitaura, Y. Touke, H. Sasaki, A. Tanaka, H. Murakami, T. Suzuki, K. Matsuoka, and H. Nakata	J. Oceanogr., 62, 37-45.	2006	Japan	SeaWiFS, MODIS	Red tide detection	Harmful algal bloom, ocean color, chlorophyll-a
43	Development and application study of GLI ocean product (in Japanese).	JAXA/EORC GLI Ocean Group	In: Ocean Home GLI EORC JAXA	2004	Japan			
44	Two-phytoplankton community model of primary production for ocean color satellite data.	Kameda, T., and J. Ishizaka	Hyperspectral Remote Sensing of the Ocean, Proc. of SPIE, 4154, 159-165.	2000	Japan	OCTS, SeaWiFS		primary productivity, chlorophyll-a, SST
45	OCTS mission overview.	Kawamura, H. and the OCTS-team	J. Oceanogr., 54, 383-399.	1998	Japan	OCTS		ADEOS
46	Study on high level mapping of ocean primary productivity and related values by using satellite data (in Japanese).	Matsumoto, K. and I. Asanuma	Cooperative research on the global mapping of carbon cycle and its advancement, Report of phase II, 58-69.	2003	Japan	GLI		time and depth resolved primary productivity model, chlorophyll-a, SS, CDOM

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
47	Version Up of Near Real-time High Level Processing of MODIS data around Japan (in Japanese).	Murakami, H., K. Sasaoka, K. Hosoda, B. G. Mitchell, R. Frouin, J. Ishizaka, A. Tanaka, H. Sasaki, S. Saitoh, K. Yokouchi, Y. Kiyomoto, and K. Matsumoto	In: MODIS Near Real Time Data	2004	Japan	MODIS, GLI		ADEOS-II, atmosphereic correction, In-water algorithm, chlorophyll-a
48	Environment and biological production in Ariake Sea - Introduction - (in Japanese).	Nakata, H.	KAIYO MONTHLY, 35, 4, 213-216.	2003	Japan			Ariake Sea Project, red tide
49	Report of International Workshop on Remote Sensing of Marine Environment in the Northwest Pacific Region (in Japanese).	NPEC	Newsletter NPEC No.2	2000	Japan			International Workshop on Remote Sensing of Marine Environment in the Northwest Pacific Region
50	Report of the Second International Workshop on Remote Sensing of the Marine Environment in the Northwest Pacific Region (in Japanese).	NPEC	Newsletter NPEC No.5	2002	Japan			International Workshop on Remote Sensing of Marine Environment in the Northwest Pacific Region
51	The Second International Workshop on Remote Sensing of the Marine Environment in the Northwest Pacific Region, Summary Report	NPEC		2003	Japan			International Workshop on Remote Sensing of Marine Environment in the Northwest Pacific Region
52	Workshop on Red Tide Monitoring in Asian Coastal Waters, Program and Extended Abstracts	Red Tide Watcher Project		2003	Japan		Red tide monitoring	Red Tide Watcher Project
53	Forward of Special Issue of ADEOS Field Campaign off Sanriku/North Pacific	Saino, T.	J. Oceanogr., 54, 5, 381-382.	1998	Japan	OCTS		ADEOS, SST, chlorophyll-a, ocean color
54	Project on Ocean Productivity Profiling System: Outline (in Japanese).	Saino, T.	Abstract Volume of Autumn Meeting of Oceanographic Society of Japan, 210.	2001	Japan			Project on Ocean Productivity Profiling System, POPPS, ocean color
55	Status and Issue of Ocean Color Remote Sensing of Coastal area (in Japanese).	Sakuno, Y.	Proceeding of Workshop on Remote Sensing of Ocean, 39-47.	2004	Japan	GLI, MODIS		ocean color
56	Calibration and validation of the ocean color version-3 product from ADEOS OCTS.	Shimada, M., H. Oaku, Y. Mitomi, H. Murakami, A. Mukaida, Y. Nakamura, J. Ishizaka, Kawamura,H. T. Tanaka, M. Kishino, and H. Fukushima	J. Oceanogr., 54, 401-416.	1998	Japan	OCTS		ADEOS, SST, chlorophyll-a, ocean color, calibration, validation
57	Wind jets and wind waves off the Pacific coast of northern Japan under winter monsoon captured by combined use of scatterometer, SAR and altimeter.	Shimada, T. and H. Kawamura	J. Geophys. Res., 109, C12027, doi:10.1029/2004JC002450.	2004	Japan	SAR, QuikSCAT, altimeter, RA		ERS-2, TOPEX/Poseidon, wind jet, wind wave
58	Development of AVHRR data processing system on WWW.	Takeuchi, W., T. Nemoto, S. Ochi, and Y. Yasuoka	J. J. Society of Photogr. and Remote Sensing, 41, 3, 23-27.	2002	Japan	AVHRR		WebPaNDA, WebMODIS, NOAA, BRDF, 6S

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
59	Development of Terra MODIS data pre-processing system on WWW.	Takeuchi, W., T. Nemoto, P. J. Baruah, S. Ochi, and Y. Yasuoka	J. J. Society of Photogr. and Remote Sensing, 42, 2, 21-27.	2003	Japan	MODIS		WebPaNDA, WebMODIS, NOAA, BRDF, 6S
60	Development of a neural network algorithm for retrieving concentrations of chlorophyll, suspended matter and yellow substance from radiance data of the ocean color and temperature scanner.	Tanaka, A., M. Kishino, R. Doerffer, H. Schiller, T. Oishi, and T. Kubota	J. Oceanogr., 60, 519-530.	2004	Japan	MODIS,GLI		ADEOS-II, SS, CDOM, chlorophyll-a, ocean color, in-water algorithm, atmosphereic correction, neural network
61	Remote sensing oceanography of a harmful algal bloom off the coast of southeastern Vietnam.	Tang, D. L., H. Kawamura, H. Doan-Nhu, and W. Takahashi	J. Geophys. Res., 109, C03014, doi:10.1029/2003JC002045.	2004	Japan			QuikSCAT, SST, chlorophyll-a, HAB
62	The Integrated, Strategic Design Plan for the Coastal Ocean Observations Module of the Global Ocean Observing System.	UNESCO	GOOS Report No.125, IOC Information Documents Series No.1183.	2003	Japan			UNESCO, IOC, UNEP, WMO, ICSU, COOP
63	Seasonal and interannual variability of sea surface chlorophyll-a concentration in the Japan/East Sea (JES).	Yamada, K., J. Ishizaka, S. Yoo, H.-C. Kim, and S. Chiba	Progress in Oceanography, 61, 193-211.	2004	Japan	OCTS, SeaWiFS, AVHRR		chlorophyll-a, ocean color, ENSO
64	Spatial and temporal variability of satellite estimated primary production in the Japan Sea from 1998 to 2002.	Yamada, K., J. Ishizaka and H. Nagata	J. Oceanogr., 61, 857-869.	2005	Japan	SeaWiFS, AVHRR		two-phytoplankton community model of primary productivity, ocean color
65	New methods for correcting the atmospheric effects in Landsat imagery over turbid (Case-2) waters.	Ahn Y. H and P. Shanmuganm	Kor. J. Remote Sens., 20, 5, 1-11.	2004	Korea	TM, SeaWiFS		SSMM, case 2 waters, 6S
66	SIMBOS project data processing and analysis results.	Fargion, G., B.A. Franz and E. Kwia	SIMBOS Project Annual Report, 8-27.	2002	Korea	OSMI, SeaWiFS		SIMBIOS, chlorophyll-a, KOMPSAT, calibration, validation
67	Effect of the Environmental Conditions on the Structure and Distribution of Pacific Saury in the Tsushima Warm Current Region.	Gong Y. and Y.S. Suh	J. Environ. Sci., 12, 11, 1137-1144.	2003	Korea	NOAA	Fishery	SST
68	Examination of cross-calibration between OSMI and SeaWiFS: Comparison of ocean color products.	Kim Y.S. and S.G. Lee	Kor. J. Remote Sens., 19, 1, 201-208.	2003	Korea	OSMI, SeaWiFS		SIMBIOS, chlorophyll-a, KOMPSAT, calibration, ocean color
69	Calibration and Validation of Ocean Color Satellite Imagery. (in Korean)	Suh Y.S., B.G. Mitchell, L.H. Jang, S.G. Lee, S.J. Yoo	J. Environ. Sci., 10, 6, 431-436.	2001	Korea	SeaWiFS		chlorophyll-a, case 2 waters, algorithm
70	Detection of low salinity water in the northern East China Sea during summer using ocean color remote sensing.	Suh Y.S., L.H. Jang and N.K. Lee	Kor. J. Remote Sens., 20, 3, 1-11.	2004	Korea	SeaWiFS	Low Salinity detection	salinity, SS, ocean color
71	Study on the Korean Waters using the CAL/VAL of the OSMI Level 2 Data.	Suh Y.S., L.H. Jang, B.G. Mitchell, M. Kahru, K. Prasad and H.Y. Shin	Kor. J. Remote Sens., 18, 3, 127-139.	2002	Korea	OSMI		chlorophyll-a, KOMPSAT, calibration, validation

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
72	Feasibility of Red Tide Detection Around Korean Waters Using Satellite Remote Sensing.	Suh, Y.-S., L.-H. Jang, N.-K. Lee, and J. Ishizaka	J. Fish. Sci. Tech., 7, 148-162.	2004	Korea	SeaWiFS, MODIS, AVHRR, OCM	Red tide detection	NFRDI, coastal waters, NOAA, IRS-P4, Terra, chlorophyll-a, SST, OC2
73	Temporal and Spatial Variation of the Mesoscale Cold Core Eddy in the East China Sea Using Satellite Remote Sensing. (in Korean)	Suh Y.S., L.H. Jang, N.K. Lee, Y.H. Ahn and H.J. Yoon	Kor. J. Remote Sens., 20, 4, 1-11.	2004	Korea	AVHRR, QuikSCAT, SeaWiFS		cold core eddy, NOAA
74	Characteristic response of the OSMI bands to estimate chlorophyll-a. (in Korean)	Suh Y.S., N.K. Lee, L.H. Jang, J.D. Hwang, S.J. Yoo and H.S. Lim	Kor. J. Remote Sens., 18, 4, 187-199.	2002	Korea	OSMI		chlorophyll-a, KOMPSAT, calibration, validation
75	Automatic revealing of eddies on satellite infrared images. (in Russian)	Alexanin, A.I. and M.G. Alexanina	Actual problems of Space remote sensing of Earth. Moscow, Poligraph service Publishing House, 382-386.	2004	Russia	AVHRR		NOAA, eddy
76	Regional satellite monitoring of Far East Seas: Modern state and perspectives of development.	Alexanin, A.I., M.G. Alexanina, D.A. Bolovin, F.E. Herbeck, A.V. Gromov, I.I. Gorin, Y.V. Naumkin, E.V. Fomin, Y.S. Epstain	PICES Scientific Report No.26. Proc. Third Workshop on the Okhotsk Sea and Adjacent Areas, S. McKinnell (ed), 81.	2004	Russia			NOAA, GMS-5, FY-2,SST
77	Satellite monitoring of Far Eastern seas. (in Russian)	Alexanin, A.I., M.G. Alexanina, D.A. Bolovin, F.E. Herbeck, A.V. Gromov, Y.V. Naumkin, E.V. Fomin, Y.S. Epstain	All-Russia Conference 'Actual problems of Space remote sensing of Earth', Moscow, 10-12 November, 2003, 123.	2003	Russia			NOAA, GMS-5, FY-2,SST
78	Processing and using of polar-orbiting satellites FengYun. (in Russian)	Alexanin, A.I., S.E. D'yakov, A.V. Gromov, Y.V. Naumkin, and E.V. Fomin	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004, 34.	2004	Russia	MVISR, AVHRR, SeaWiFS		FY-1, NOAA, chlorophyll-a
79	Usage of technology of information system construction for access to satellite data in receiving centers of Federal Service on Hydrometeorology and environment monitoring. (in Russian)	Asmus, V.V., O.E. Milekhin, E.A. Lupyan, R.R. Nazirov, A.A. Mazurov, E.V. Flitman, A.A. Proshin, M.A. Burtsev, V.O. Il'in and V.Yu. Efremov	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004, 56.	2004	Russia			Aqua, Terra, Electro, Meteor-3M, Okean-O, Resurs, NOAA
80	Microwave Emission of the Earth as a Planet (Radioizluchenie Zemli kak planeti). (in Russian)	Basharinov, A.E., A.S. Gurvich and S.T. Egorov	Nauka Publiching House, Moscow	1974	Russia			Kosmos, SST, sea ice, microwave
81	Problems of satellite monitoring of the Earth. (in Russian)	Chernyavskiy, G.M.	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004, 27-28.	2004	Russia			Federal Space Program, Meteor-3M
82	Oceanographic features of the LaPerouse Strait.	Danchenkov, M.A., *et al.*	PICES Scientific Report No.12, 159-171.	1999	Russia			SST
83	Statistics of SAF expressions in the Asian Marginal Seas on ERS-1/2 and Envisat SAR images. (in Russian)	Darkin, D.V., L.M. Mitnik and V.A. Dubina	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004, 134.	2004	Russia	SAR, ASAR	Oil spill detection	ERS-1, ERS-2, Envisat

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84	Investigation of surface circulation in the Japan Sea from satellite multisensor data. (in Russian)	Dubina, V.A. and L.M. Mitnik	Actual problems of Space remote sensing of Earth. Poligraph service Publishing House, Moscow, 340-346.	2004	Russia	SAR, AVHRR		ERS-2, NOAA, eddy
85	Oil pollution of the Asian marginal seas: detection and possibilities of monitoring with the usage of satellite SAR. (in Russian)	Dubina, V.A., L.M. Mitnik and M.V. Mudriy	All-Russia Conference 'Actual problems of Space remote sensing of Earth', Moscow, 10-12 November, 123.	2003	Russia	SAR	Oil spill detection	
86	Evidence of the West Sakhalin Current in ERS-2 and Envisat-1 collocated SAR images.	Dubina, V.A. and L.M. Mitnik	Envisat & ERS ESA Symposium (Salzburg, Austria, 6-10 September 2004), 6.	2004	Russia	SAR, ASAR		ERS-2, Envisat, current
87	On possibilities of radar diagnostic of films on the sea surface. (in Russian)	Ermakov, S.A.	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004, 135.	2004	Russia	SAR		
88	Field experiments on oil product dispersion and their radar sensing. (in Russian)	Ermakov, S.A., O.Yu. Lavrova, E.V. Makarov, I.A. Sergievskaya and Yu. B. Shchegolkov	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004	2004	Russia	SAR	Oil spill detection	
89	Information technology of remote determination of primary productivity in the systems of ocean monitoring. (in Russian)	Fefilov, Yu.V.	All-Russia Conference 'Actual problems of Space remote sensing of Earth', Moscow, 10-12 November, 123.	2003	Russia	SeaWiFS, SAR, AVHRR, altimeter		SST, chlorophyll-a, SSH, NOAA, TOPEX/Poseidon, ERS-2
90	Neural networks for oil spill detection using ERS-SAR data.	Frate, F. D., A. Petrocchi, J. Lichtenegger, and G. Galabresi.	IEEE Trans. Geosci. Remote Sens., 38, 5, 2282-2287.	2000	Russia	SAR	Oil spill detection	neural network, algorithm
91	Using ERS-2 SAR images for routine observation of marine pollution in European coastal waters	Gade, M. and W. Alpers	Sci. Total Environ., 237-238, 441-448.	1999	Russia	SAR	Oil spill detection	
92	Development of program of remote sensing of the Earth at Khrunichev (in Russian).	Glazkova, I.A. and M.A. Stefanofskiy	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004, 126-133.	2004	Russia			
93	Integration of satellite and ground-truth data for the Northwestern Pacific Ocean in corporative oceanographic GIS of FEB RAS. (in Russian)	Golik, A.V., V.K. Fischenko, V.A. Dubina and L.M. Mitnik	Investigation of the Earth from Space, in press.	2004	Russia	AMSR-E		GIS, SST, NEAR-GOOS
94	Usage of Internet-based GIS of POI FEB RAS in satellite oceanography.	Golik, A.V., V.K. Fischenko, V.A. Dubina and L.M. Mitnik	Proc. 25th Asian Conference on Remote Sensing, Thailand, 22-26 November 2004.	2004	Russia	AMSR-E		GIS, SST, NEAR-GOOS
95	Oil pollution of the sea on Kosmos-1870 and Almaz-1 radar imagery	Ivanov, A.Yu.	Earth Observation & Remote Sensing, 15, 6, 949-966.	2000	Russia	SAR	Oil spill detection	Kosmos, Almaz-1
96	Oil spill detection in the sea using Almaz-1 SAR.	Ivanov, A.Yu., K.Os. Litovchenko and S.A. Ermakov	J. Advanced Marine Science Technology Society, 4, 2, 281-288.	1998	Russia	SAR	Oil spill detection	Almaz-1
97	Oil spill detection with the RADARSAT SAR in the waters of the Yellow and East China Sea: A case study.	Ivanov, A.Yu., M.-X. He and M.-Q. Fang	Proc. 23rd Asian Conference on Remote Sensing, 25-29 November 2002, Kathmandu, Nepal.	2002	Russia	SAR	Oil spill detection	RADARSAT

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
98	An experience of using ERS-1/2, Envisat and Radarsat images for oil spills mapping in the waters of the Caspian, Yellow and East China Sea.	Ivanov, A.Yu., M.-X. He and M.-Q. Fang	Envisat & ERS ESA Symposium, 6-10 September 2004, Salzburg, Austria.	2004	Russia	SAR, ASAR	Oil spill detection	ERS-1, ERS-2, Envisat, RADARSAT
99	Real Aperture Radar (RAR) Imaging from Space.	Kalmykov, A.I.	Radio Science Bulletin, 276, 13-22.	1996	Russia	RAR		Kosmos, Okean
100	Atlas of Synthetic Aperture Radar Images of the Ocean Acquired by ALMAZ-1 Satellite.	Karlin, L. N. (ed).	GEOS Publishing House, Moscow, 119.	1999	Russia	SAR		Kosmos, Almaz-1
101	The current low-parametric models of seawater optical properties.	Kopelevich, O.V.	Proc. Intern. Conference 'Current Problems in Optics of Natural Waters' (0NW'2001), I. Levin and G. Gilbert (eds.), St. Petersburg, 2001, 18-23.	2001	Russia			
102	Mean monthly distributions of bio-optical characteristics in the Barents, White, Caspian, Black and Japan Seas from the data of the SeaWiFS satellite ocean color scanner.	Kopelevich, O.V., V.I. Burenkov, S.V. Sheberstov, S.V.Vazyulya, E.A.Lukianova and M.A. Evdoshenko	Shirshov Institute of Oceanology. Russian Academy of Sciences.	2003	Russia	SeaWiFS		chlorophyll-a, ocean color
103	Satellite remote sensing of oil spill pollution in the southeastern Baltic Sea.	Kostianoy, A.G., S.A. Lebedev, K.Ts. Litovchenko, S.V. Stanichny and O.E. Pichuzhkina	Gayana, 68, 2, 327-332.	2004	Russia	SAR	Oil spill detection	
104	Oceanic front in the Southern Indian Ocean as inferred from the NOAA SST, TOPEX/Poseidon and ERS-2 altimeter data.	Kostianoy, A.G., A.I. Ginzburg, S.A. Lebedev, M. Frankignoulle and B. Delille	Gayana, 68, 2, 333-339.	2004	Russia	AVHRR, altimeter		SST
105	Ecological monitoring from Russian segment of International Space Station. (in Russian)	Kotlyakov, V.M. and L.V. Desinov	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004, 24.	2004	Russia			International Space Station
106	Problems of oil pollution detection in the Black Sea coastal zone with using radar techniques. (in Russian)	Lavrova O.Yu, and T.Yu. Bocharova	All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 10-12 November, 2003, 38.	2003	Russia		Oil spill detection	
107	Radar satellite monitoring of oil pollution in the coastal zone of the Russian seas. (in Russian)	Lavrova O.Yu, M.I. Mityagina, A.G. Kostyanoy and K.Ts. Litovchenko	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004, 146-147.	2004	Russia	SAR	Oil spill detection	ERS-2
108	Hyperspectral remote sensing for shallow waters. A semianalytical model	Lee, Z., K.L. Carder, C.D. Mobley, R.G. Steward and J.S. Patch	Appl. Opt., 37, 27, 6329-6338.	1998	Russia	SeaWiFS		algorithm, chlorophyll-a
109	A Near-Real Time Oil Slick Monitoring Demonstrator for the Mediterranean.	Lichtenegger, J., G. Calabresi and A. Petrocchi	IAPRS, XXXXIII, Amsterdam, 8.	2000	Russia	SAR	Oil spill detection	
110	The rocket-carrier 'Cyclone-3' did not meet the challenge.	Litovkin, D.	'Izvestiya', 27 December 2004.	2004	Russia			
111	Technology of automatic information system construction for collection, processing and archiving of satellite data used for solving of scientific and applied tasks. (in Russian)	Lupyan, E.A., A.A. Mazurov, R.R. Nazirov, A.A. Proshin and E.V. Flitman	Actual problems of Space remote sensing of Earth. Moscow, Poligraph service Publishing House, 81-89.	2004	Russia			Aqua, Terra, Electro, Meteor-3M, Okean-O, Resurs, NOAA
112	Microwave sensing of the ocean-atmosphere system: current state and outlooks. (in Russian)	Mitnik, L.M.	Vestnik DVO. 3, 47-55.	2003	Russia			sea ice, oil spill detection

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
113	Validation of AMSR-based algorithms and microwave study of marine weather systems.	Mitnik, L.M.	Paper presented at ADEOS-II PI Workshop, 8-10 December 2004, Nagahama, Japan.	2004	Russia	AMSR		
114	Features of surface circulation in the Aniva Bay and surrounding waters as seen by ERS synthetic aperture radar.	Mitnik, L.M. and V.A. Dubina	Proc. 18th Intern. Symposium on the Okhotsk Sea and Sea Ice. Mombetsu, Hokkaido, Japan, 22-27 February 2003, 257-264.	2003	Russia	SAR		eddy, current
115	ERS SAR and Envisat ASAR observations of oceanic dynamic phenomena in the southwestern Okhotsk Sea.	Mitnik, L.M., V.A. Dubina and G.V. Shevchenko	Envisat & ERS ESA Symposium (Salzburg, Austria, 6-10 September 2004), 10.	2004	Russia	SAR, ASAR		
116	Marine weather systems: Study with ADEOS-II AMSR, Aqua AMSR-E and Envisat ASAR.	Mitnik, L.M., M.L. Mitnik and V.A. Dubina	Gayana, 68, 2, 389-395.	2004	Russia	AMSR, AMSR-E, ASAR		ADEOS-II, Aqua, Envisat, SST
117	Retrieval of atmospheric and ocean surface parameters from ADEOS-II AMSR data: comparison of errors of global and regional algorithms.	Mitnik, L.M. and M.L. Mitnik	Radio Sciences. 38, 4, 8065.	2003	Russia	AMSR		ADEOS-II, SST, wind speed
118	Okhotsk Sea waters around Cape Krilion: Satellite and mooring station observations.	Mitnik, L.M., G.V. Shevchenko, V.A. Dubina and Yu.A. Sophienko	PICES Scientific Report, No.26. Proc. Third Workshop on the Okhotsk Sea and Adjacent Areas, S. McKinnell (ed), 98-101.	2004	Russia	SAR		eddy, current
119	ERS SAR observations of the Korean coastal waters.	Mitnik, L.M., H-J. Yoon, V.A. Dubina, Y-S. Kim and S.-W. Kim	The 24th Asian Conference on Remote Sensing & 2003 International Symposium on Remote Sensing. Busan, Korea, 3-7 November 2003, 1, 228-230.	2003	Russia	SAR	Oil spill detection	ERS-2, eddy, front, current
120	Radar Sensing of the Earth's Surface from Space (Radiolokatsiya poverkhnosti Zemli iz kosmosa). (in Russian)	Mitnik, L.M. and S.V. Victorov (eds.)	Hydrometeoizdat Publishing House, Leningrad	1990	Russia			Kosmos, sea ice
121	Problems in Detecting Oil Pollution in Black Sea Coastal Zone by Satellite Radar Means.	Mityagina, M.I., A. Churumov and O. Lavrova	Envisat & ERS ESA Symposium (Salzburg, Austria, 6-10 September 2004).	2004	Russia		Oil spill detection	
122	Satellite Hydrophysics (Sputnikovaya Hydrophysica). (in Russian)	Nelepo, B.A., Y.V. Terekhin, V.K. Kosnirev and B.E. Khmirov	Nauka Publishing House, Moscow	1983	Russia			Kosmos
123	A numerical study of barotropic instability associated with the Soya Warm Current in the Sea of Okhotsk.	Ohshima K.I. and M. Wakatsuchi	J. Phys. Oceanogr., 20, 570-584.	1990	Russia			
124	Large-scale circulation and its variability in the South Indian Ocean from TOPEX/POSEIDON altimetry.	Park, Y.H. and L. Gamberoni	J. Geophys. Res., 100, C12, 31447-31462.	1995	Russia	altimeter		TOPEX/Poseidon, ERS-2
125	On the monitoring of illicit vessel discharges using spaceborn SAR remote sensing - a reconnaissance study in the Mediterranean Sea.	Pavlakis, P., D. Tarchi, and A. J. Sieber	Ann. Telecommun, 56, 11-12, 700-718.	2001	Russia	SAR	Oil spill detection	
126	Technological structure of fishery monitoring system in Far Eastern region. (in Russian)	Protsenko, I.G., V.Yu Reznikov, M.V. Andreev, A.V. Babyuk *et al.*	Second Open All-Russian Conference 'Actual problems of Space remote sensing of Earth', Moscow, 16-18 November, 2004, 72.	2004	Russia		Fishery	NOAA, GPS

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
127	Warm core in the East Korean Bay in winter. In: Oceanography of the Japan Sea.	Shin, C.-W., Byun S.-K., C. Kim and Y.H. Seung	Proc. CREAMS'2000 Intern. Symposium. M.A. Danchenkov (ed.). Vladivostok, Dalnauka, 41-46.	2000	Russia	SAR		
128	Study of a recurring anticyclonic eddy off the northeast Korean coast using satellite ocean color and sea surface temperature imagery.	Suh, Y.S., S.D. Hahn, Y.Q. Kang, and B.G. Mitchell	J. Advanced Marine Science Technology Society, 4, 275-280.	1998	Russia			SST, ocean color
129	Automatic detection of oil spills in ERS SAR images.	Solberg, A.H.S., G. Storvik, R. Solberg and E. Volden	IEEE Trans. Geosci. Remote Sens., 37, 4, 1916-1924.	1999	Russia	SAR	Oil spill detection	
130	Automatic detection of oil spills in Envisat, Radarsat and ERS SAR images.	Solberg, A.H.S., S.T. Dokken and R. Solberg	Proc. IGARSS 2003, IV, 2747-2749.	2003	Russia	SAR	Oil spill detection	
131	paper presented at Envisat & ERS ESA Symposium (Salzburg, Austria, 6-10 September 2004).	Solberg, A.H.S.		2004	Russia	SAR, ASAR	Oil spill detection	
132	Space monitoring of ice cover for operational mapping and long-term investigations. (in Russian)	Trenina, I.S.	In: Actual problems of Space remote sensing of Earth. E.A. Lupyan and O.Yu. Lavrova (eds.), Moscow, Poligraph service Publishing House, 303-313.	2004	Russia			Resurs, Meteor, Okean, NOAA, Terra, Aqua, sea ice
133	A History of Oceanography from Space.	Wilson, W.S., J.-L. Fellous, H. Kawamura and L.M. Mitnik	In: Manual of Remote Sensing, 7, Marine Environment. John Wiley, in press.	2005	Russia			sea ice, oil spill detection
134	Development and validation of algorithms for sea surface wind speed retrieval from SSM/I data with using neural networks and physical constrains. (in Russian and translated into English)	Zabolotskikh, E.V., L.M. Mitnik, L.P. Bobylev and O.M. Johannessen	Earth Observation and Remote Sensing, 9, 43-55.	2000	Russia			neural network
135	Neural network algorithms for retrieval of the ocean-atmosphere system parameters from microwave satellite sensing data. (in Russian)	Zabolotskikh, E.V., L.M. Mitnik, L.P. Bobylev and O.M. Johannessen	In: Actual problems of Space remote sensing of Earth. E.A. Lupyan and O.Yu. Lavrova (eds.) Moscow, Poligraph service Publishing House, 447-458.	2004	Russia			neural network

Reference information collected from other sources (60 literatures)

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
1	Calibration of SeaWiFS. I. Direct Techniques.	Barnes, R. A., R. E. Eplee, G. M. Schmidt, F. S. Patt, and C. R. McClain	Appl. Opt., 40, 6701-6718.	2001	U.S.	SeaWiFS		
2	Algal biomass and sea surface temperature in the Mediterranean Basin: Intercomparison of data from various satellite sensors, and implications for primary production estimates.	Bricaud, A., E. Bosc and D. Antoine	Remote Sens. Environ., 81, 163-178.	2002	Europe	OCTS, POLDER, SeaWiFS		
3	Development and application of a neural network based ocean colour algorithm in coastal waters.	Dzwonkowski, B. and X.-H. Yan	Int. J. Remote Sens., 26, 1175-1200.	2005	U.S.	SeaWiFS		
4	Evaluation of Marine Surface Winds Observed by SeaWinds and AMSR on ADEOS-II.	Ebuchi, N.	J. Oceanogr., 62, 293-301.	2006	Japan	SeaWinds, AMSR		ADEOS-II, wind speed
5	Calibration of SeaWiFS. II. Vicarious Techniques.	Eplee, R. E., W. D. Robinson, S. W. Bailey, D. K. Clark, P. J. Werdell, M. Wang, R. A. Barnes, and C. R. McClain	Appl. Opt., 40, 6701-6718.	2001	U.S.	SeaWiFS		
6	Seasonal and interannual variability of satellite-derived chlorophyll pigment, surface height, and temperature off Baja California.	Espinosa-Carreon, T. L., P. T. Strub, E. Beier, F. Ocampo-Torres, and G. Gaxiola-Castro	J. Geophys. Res., 109, C03039, doi:10.1029/2003JC002105.	2004	Others	SeaWiFS, AVHRR, altimeter		SST, chlorophyll, SSH, NOAA, TOPEX, ERS-2, upwelling
7	Retrieval of Chlorophyll-a Concentration via Linear Combination of ADEOS-II Global Imager Data.	Frouin, R., P.-Y. Deschamps, L. Gross-Colzy, H. Murakami, and T. Y. Nakajima	J. Oceanogr., 62, 331-337.	2006	U.S.	GLI		ADEOS-II
8	Basin scale estimates of Sea Surface Nitrate and New Production from remotely sensed Sea Surface Temperature and Chlorophyll.	Goes, J. I., T. Saino, H. Oaku, J. Ishizaka, C. S. Wong, and Y. Nojiri	Geophys. Res. Let., 27, 1263-1266.	2000	Japan	OCTS		ADEOS, SST, chlorophyll-a, SSN
9	A five channel chlorophyll concentration algorithm applied to SeaWiFS data processed by SeaDAS in coastal waters.	Gohin, F., J. N. Druon, and L. Lampert	Int. J. Remote Sens., 23, 1639-1661.	2002	Europe	SeaWiFS		
10	Temporal and spatial variability of satellite sea surface temperature and ocean colour in the Japan/East Sea.	Gould R. W. and R. A. Arnone	Int. J. Remote Sens., 25, 1377-1382.	2004	U.S.	SeaWiFS, AVHRR		SS
11	On the potential of MODIS and MERIS for imaging chlorophyll fluorescence from space.	Gower, J. F. R. and G. A. Borstad	Int. J. Remote Sens., 25, 1459-1464.	2004	Others	MODIS, MERIS	Red tide detection	
12	Merging Satellite Infrared and Microwave SSTs: Methodology and Evaluation of the New SST.	Guan, L. and H. Kawamura	J. Oceanogr., 60, 905-912.	2004	Japan	AVHRR, S-VISSR, MI, VIRS		NOAA, GMS, TRMM
13	Latitudinal and Vertical Distributions of Phytoplankton Absorption Spectra in the Central North Pacific during Spring 1994.	Harimoto, T., J. Ishizaka, and R. Tsuda	J. Oceanogr., 55, 667-680.	1999	Japan			EOF, chlorophyll-a, pigment, Kuroshio
14	Retrieval of Chlorophyll from Remote-Sensing Reflectance in the China Seas.	He, M.-X., Z.-S. Liu, K.-P. Du, L.-P. Li, R. Chen, K. L. Carder, and Z.-P. Lee	Appl. Opt., 39, 2467-2474.	2000	China	SeaWiFS		
15	Red tide detection and tracing using MODIS fluorescence data: A regional example in SW Florida coastal waters.	Hu, C., F. E. Muller-Karger, C. Taylor, K. L. Carder, C. Kelble, E. Johns, and C. Heil	Remote Sens. Environ., 97, 311-321.	2005	U.S.	SeaWiFS, MODIS	Red tide detection	HAB
16	Atmospheric Correction of SeaWiFS Imagery over Turbid Coastal Waters: A Practical Method.	Hu, C., K. L. Carder, and F. E. Muller-Karger	Remote Sens. Environ., 74, 195-206.	2000	U.S.	SeaWiFS		
17	AVHRR detection of red tides with neural networks.	Huang, W. G. and X. L. Lou	Int. J. Remote Sens., 24, 1991-1996.	2003	China	AVHRR		

No.	Title	Author	Source	Year	Country	Sensor	Application	Keyword
18	Coupling of Coastal Zone Color Scanner Data to a Physical-Biological Model of Southeastern U.S. Continental Shelf Ecosystem. 1. CZCS Data Description and Lagrangian Particle Tracing Experiments.	Ishizaka, J.	J. Geophys. Res., 95, C11, 20,167-20,181.	1990	U.S.	CZCS		chlorophyll
19	Coupling of Coastal Zone Color Scanner Data to a Physical-Biological Model of the Southeastern U.S. Continental Shelf Ecosystem. 2. An Eulerian model.	Ishizaka, J.	J. Geophys. Res., 95, C11, 20,183-20,199.	1990	U.S.	CZCS		chlorophyll
20	Coupling of Coastal Zone Color Scanner Data to a Physical-Biological Model of the Southeastern U.S. Continental Shelf Ecosystem. 3. Nutrient and Phytoplankton Fluxes and CZCS Data Assimilation.	Ishizaka, J.	J. Geophys. Res., 95, C11, 20,201-20,212.	1990	U.S.	CZCS		chlorophyll
21	Spatial Distribution of Primary Production off Sanriku, Northwestern Pacific, during Spring Estimated by Ocean Color and Temperature Scanner (OCTS).	Ishizaka, J.	J. Oceanogr., 54, 553-564.	1998	Japan	OCTS		chlorophyll-a, SST, ocean color
22	Phytoplankton Pigment Distributions in Regional Upwelling around the Izu Peninsula Detected by Coastal Zone Color Scanner on May 1982.	Ishizaka, J., H. Fukushima, M. Kishino, T. Saino, and M. Takahashi	J. Oceanogr., 48, 305-327.	1992	Japan	CZCS		chlorophyll-a, SST
23	Time Series of Physical and Optical Parameters off Shimane, Japan, during Fall of 1993: First Observation by Moored Optical Buoy System for ADEOS Data Verification.	Ishizaka, J., I. Asanuma, N. Ebuchi, H. Fukushima, H. Kawamura, K. Kawasaki, M. Kishino, M. Kubota, H. Masuko, S. Matsumura, S. Saitoh, Y. Senga, M. Shimanuki, N. Tomii, and M. Utashima	J. Oceanogr., 53, 245-258.	1997	Japan	OCTS, AVHRR		ADEOS, NOAA, MCSST, ERS-1, TOPEX/POSEIDON, ocean color, SST, phytoplankton bloom
24	Size-Fractionated Primary Production Estimated by a Two-Phytoplankton Community Model Applicable to Ocean Color Remote Sensing.	Kameda, T. and J. Ishizaka	J. Oceanogr., 61, 663-672.	2005	Japan	SeaWiFS		VGPM, chlorophyll, SST
25	Evaluation of the Diurnal Warming of Sea Surface Temperature Using Satellite-Derived Marine Meteorological Data.	Kawai, Y. and H. Kawamura	J. Oceanogr., 58, 805-814.	2002	Japan			SST
26	Temporal and Spatial Variability of Phytoplankton Pigment Concentrations in the Japan Sea Derived from CZCS Images.	Kim, S.-W., S. Saitoh, J. Ishizaka, Y. Isoda, and M. Kishino	J. Oceanogr., 56, 527-538.	2000	Japan	CZCS		critical depth, mixed layer depth, seasonal variation
27	Retrieval of Chlorophyll *a*, suspended solids, and colored dissolved organic matter in Tokyo Bay using ASTER data.	Kishino, M., A. Tanaka, and J. Ishizaka	Remote Sens. Environ., 99, 66-74.	2005	Japan	VNIR		ASTER, Neural Network, chlorophyll-a, SS, CDOM
28	Verification plan of ocean color and temperature scanner atmospheric correction and phytoplankton pigment by moored optical buoy system.	Kishino, M., J. Ishizaka, S. Saitoh, Y. Senga, and M. Utashima	J. Geophys. Res., 102, D14, 17,197-17,207.	1997	Japan	OCTS		ADEOS, chlorophyll-a, fluorometer, ocean color
29	Ocean Color Satellite Imagery and Shipboard Measurements of Chlorophyll a and Suspended Particulate Matter Distribution in the East China Sea.	Kiyomoto, Y., K. Iseki, and K. Okamura	J. Oceanogr., 57, 37-45.	2001	Japan	CZCS, OCTS		Nimbus-7, ADEOS, SPM, turbid water
30	The detection and mapping of algal blooms from space.	Lavender, S. J. and S. B. Groom	Int. J. Remote Sens., 22, 197-201.	2001	Europe	SeaWiFS	HAB detection	

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31	SeaWiFS validation in European coastal waters using optical and bio-geochemical measurements.	Lavender, S. J., M. H. Pinkerton, J.-M. Froidefond, J. Morales, J. Aiken, and G. F. Moore	Int. J. Remote Sens., 25, 1481-1488.	2004	Europe	SeaWiFS		SeaDAS
32	Global distribution of Case-1 waters: An analysis from SeaWiFS measurements.	Lee, Z. and C. Hu	Remote Sens. Environ., 101, 270-276.	2006	U.S.	SeaWiFS		ocean color
33	A new method for cross-calibration of two satellite sensors.	Liu, J.-J., Z. Li, Y.-L. Qiao, Y.-J. Liu, and Y.-X. Zhang	Int. J. Remote Sens., 25, 5267-5281.	2004	U.S.	MVIRS, MODIS, AVHRR		
34	Marine oil spill detection, statistics and mapping with ERS SAR imagery in south-east Asia.	Lu, J.	Int. J. Remote Sens., 24, 3013-3032.	2003	Others	SAR	Oill spill detection	ERS
35	Consistent merging of satellite ocean color data sets using a bio-optical model.	Maritorena, S. and D. A. Siegel	Remote Sens. Environ. 94, 429-440.	2005	U.S.	SeaWiFS, MODIS		data merging
36	Estimation of the Processes Controlling Variability in Phytoplankton Pigment Distributions on the Southeastern U.S. Continental Shelf.	McClain, C. R., J. Ishizaka, and E. E. Hofmann	J. Geophys. Res., 95, C11, 20,213-20,235.	1990	U.S.	CZCS		chlorophyll
37	Improved detection of turbid waters from ocean color sensors information.	Morel, A. and S. Bélanger	Remote Sens. Environ.	2006	Europe	SeaWiFS, MERIS		chlorophyll
38	ADEOS observations of chlorophyll *a* concentration, sea surface temperature, and wind stress change in the equatorial Pacific during the 1997 El Niño onset.	Murakami, H., J. Ishizaka, and H. Kawamura	J. Geophys. Res., 105, C8, 19,551-19,559.	2000	Japan	OCTS		surface wind stress vector, SST, chlorophyll-a, ADEOS
39	Validation of ADEOS-II GLI ocean color products using *in-situ* observations.	Murakami, H., K. Sasaoka, K. Hosoda, H. F. M. Toratani, R. F. B. G. Mitchell, M. Kahru, P.-Y. Deschamps, D. Clark, S. Flora, M. Kishino, S. Saitoh, I. Asanuma, A. Tanaka, H. Sasaki, K. Yokouchi, Y. Kiyomoto, H. Saito, C. Dupouy, A. Siripong, and J. Ishizaka	J. Oceanogr., 62, 373-393.	2006	Japan	GLI		atmospheric correction, chlorophyll-a, match-up
40	Response of the equatorial Pacific to chlorophyll pigment in a mixed layer isopycnal ocean general circulatio model.	Nakamoto, S., S. P. Prasanna Kumar, J.M. Oberhuber, J. Ishizaka, K. Muneyama, and R. Frouin	Geophys. Res. Let., 28, 10, 2021-2024.	2001	Japan	CZCS		chlorophyll, SST
41	Automatic detection of oil spills from SAR images.	Nirchio, F., M. Sorgente, A. Giancaspro, W. Biamino, E. Parisato, R. Ravera, and P. Trivero	Int. J. Remote Sens., 26, 1157-1174.	2005	Europe	SAR	Oill spill detection	ERS
42	Global verification of critical depth theory for phytoplankton bloom with climatological in situ temperature and satellite ocean color data.	Obata, A., J. Ishizaka, and M. Endoh	J. Geophys. Res., 101, C9, 20,657-20,667.	1996	Japan	CZCS		critical depth, mixed layer depth, seasonal variation
43	Satellite and Ship Observations of Kuroshio Warm-Core Ring 93A off Sanriku, Northwestern North Pacific, in Spring 1997.	Saitoh, S., D. Inagake, K. Sasaoka, J. Ishizaka, Y. Nakame, and T. Saino	J. Oceanogr., 54, 495-508.	1998	Japan	OCTS, AVHRR		chlorophyll-a, spring bloom, ADEOS
44	Seasonal variation of absorption by particles and colored dissolved organic matter (CDOM) in Funka Bay, southwestern Hokkaido, Japan.	Sasaki, H., T. Miyamura, S. Saitoh, and J. Ishizaka	Estuar. Coast. Shelf Sci., 64, 447-458.	2005	Japan			chlorophyll-a, spring bloom, phytoplankton

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45	Calibration and Validation of the Ocean Color Version-3 Product from ADEOS OCTS.	Shimada, M., H. Oaku, Y. Mitomi, H. Murakami, A. Mukaida, Y. Nakamura, J. Ishizaka, H. Kawamura, T. Tanaka, M. Kishino, and H. Fukushima	J. Oceanogr., 54, 401-416.	1998	Japan	OCTS		chlorophyll-a, normalized water-leaving radiance
46	Estimating Chlorophyll-*a* Vertical Profiles from Satellite Data and the Implication for Primary Production in the Kuroshio Front of the East China Sea.	Siswanto, E., J. Ishizaka, and K. Yokouchi	J. Oceanogr., 61, 575-589.	2005	Japan	SeaWiFS, AVHRR		ocean color, deep chlorophyll-a maximum
47	Variability in chlorophyll and sea surface temperature fronts in the Long Island Sound outflow region from satellite observations.	Stegmann, P. M. and D. S. Ullman	J. Geophys. Res., 109, C07S03, doi:10.1029/2003JC001984.	2004	U.S.	SeaWiFS, AVHRR		NOAA, SST, ocean color, chlorophyll, thermal fronts
48	Improved Estimates of Wide-Ranging Sea Surface Temperature from GMS S-VISSR Data.	Takahashi, S., H. Kawamura, T. Matsuura, T. Takahashi, and H. Yusa	J. Oceanogr., 56, 345-358.	2000	Japan	S-VISSR		SST, GMS
49	Seasonal variability of SeaWiFS chlorophyll *a* in the Malacca Straits in relation to Asain monsoon.	Tan, C. K., J. Ishizaka, S. Matsumura, F. M. Yusoff, and M. I. H. Ibrahim	Cont. Shelf Res. 26, 168-178.	2006	Japan	SeaWiFS		OC4, upwelling
50	Developing an In-water Algorithm for GLI Using Neural Network Technique with Optical Model Based on Optical Properties in East China Sea, Ariake Sound and Isahaya Bay.	Tanaka, A., H. Sasaki, Y. Toke, E. Siswanto, C. K. Tan, A. Wakamatsu, and J. Ishizaka	J. Oceanogr.	2005	Japan	GLI		IOPS, coastal water, ocean color, ADEOS-II, chlrorophyll-a
51	Development of a Neural Network Algorithm for Retrieving Concentrations of Chlorophyll, Suspended Matter and Yellow Substance from Radiance Date of the Ocean Color and Temperature Scanner.	Tanaka, A., M. Kishino, R. Doerffer, H. Schiller, T. Oishi, and T. Kubota	J. Oceanogr., 60, 519-530.	2004	Japan	OCTS		ADEOS, yellow substance, suspended matter
52	Evaluation of the use of SeaWiFS imagery for detecting *Karenia brevis*> harmful algal blooms in the eastern Gulf of Mexico.	Tomlinson, M. C., R. P. Stumpf, V. Ransibramanakul, E. W. Truby, G. J. Kirkpatrick, B. A. Peterson, G. A. Vargo, and C. A. Heil	Remote Sens. Environ., 91, 293-303.	2004	U.S.	SeaWiFS		
53	Correction of Sun glint Contamination on the SeaWiFS Ocean and Atmosphere Products.	Wang, M. and S. W. Bailey	Appl. Opt., 40, 4790-4798.	2001	U.S.	SeaWiFS		
54	An improved in-situ bio-optical data set for ocean color algorithm development and satellite data product validation.	Werdell, P. J. and S. W. Bailey	Remote Sens. Environ., 98, 122-140.	2005	U.S.	SeaWiFS		SeaBASS, phytoplankton, chlorophyll, SST
55	Estimation of interdecadal change of spring bloom timing; in the case of the Japan Sea	Yamada, K. and J. Ishizaka	Geophys. Res. Let., 33, L02608.	2006	Japan	SeaWiFS, AVHRR		chlorophyll-a, primary production, NOAA
56	Spatial and Temporal Variability of Satellite Primary Production in the Japan Sea from 1998 to 2002.	Yamada, K., J. Ishizaka, and H. Nagata	J. Oceanogr., 61, 857-869.	2005	Japan	SeaWiFS, AVHRR		ocean color, spring bloom, chlorophyll-a, primary production, PAR, SST, NOAA
57	Seasonal and interannual variability of sea surface chlorophyll *a* concentration in the Japan/East Sea (JES).	Yamada, K., J. Ishizaka, S. Yoo, H. Kim, and S. Chiba	Prog. Oceanogr., 61, 193-211.	2004	Japan	OCTS, SeaWiFS, AVHRR		ENSO, seasonal variation, phytoplankton, bloom, ocean color, SST
58	OCTS-Derived Chlorophyll-*a* Concentration and Oceanic Structure in the Kuroshio Frontal Region off the Joban/Kashima Coast of Japan.	Yokouchi, K., K. Takeshi, I. Matsumoto, G. Fujiwara, H. Kawamura, and K. Okuda	Remote Sens. Environ., 73, 188-197.	2000	Japan	OCTS		

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59	Modeling of Spring Bloom in the Western Subarctic Pacific (off Japan) with Observed Vertical Density Structure.	Yoshimori, A., J. Ishizaka, T. Kono, H. Kasai, H. Saito, M. J. Kishi, and S. Taguchi	J. Oceanogr., 51, 471-488.	1995	Japan	CZCS		chlorophyll, primary production
60	Bridging between SeaWiFS and MODIS for continuity of chlorophyll-*a* concentration assessments off Southeastern China.	Zhang, C., C. Hu, S. Shang, F. E. Muller-Karger, Y. Li, M. Dai, B. Huang, X. Ning, and H. Hong	Remote Sens. Environ., 102, 250-263.	2006	U.S.	SeaWiFS, MODIS		turbid coastal water