SeaWiFS Technical Report Series

Stanford B. Hooker and 
Elaine R. Firestone, Editors

Volume 36, SeaWiFS Technical Report Series
Cumulative Index: Volumes 1–35

Elaine R. Firestone and Stanford B. Hooker

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Abstract

The Sea-viewing Wide Field-of-view Sensor (SeaWiFS) is the follow-on ocean color instrument to the Coastal Zone Color Scanner (CZCS), which ceased operations in 1986, after an eight-year mission. SeaWiFS is expected to be launched in 1997, on the SeaStar satellite, being built by Orbital Sciences Corporation (OSC). The SeaWiFS Project at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center (GSFC), has undertaken the responsibility of documenting all aspects of this mission, which is critical to the ocean color and marine science communities. This documentation, entitled the SeaWiFS Technical Report Series, is in the form of NASA Technical Memorandum Number 104566. All reports published are volumes within the series. This particular volume serves as a reference, or guidebook, to the previous 35 volumes and consists of 6 sections including: an addenda, an errata, an index to key words and phrases, lists of acronyms and symbols used, and a list of all references cited. The editors publish a cumulative index of this type after every five volumes. Each index covers the reference topics published in all previous editions, that is, each new index includes all of the information contained in the preceding indices with the exception of any addenda.

1. INTRODUCTION

This is the sixth in a series of indices, published as a separate volume in the Sea-viewing Wide Field-of-view Sensor (SeaWiFS) Technical Report Series, and includes information found in the first 35 volumes of the series. The Report Series is written under the National Aeronautics and Space Administration’s (NASA) Technical Memorandum (TM) Number 104566. The volume numbers, authors, and titles of the volumes covered in this index are:

Vol. 7: Darzi, M., Cloud Screening for Polar Orbiting Visible and IR Satellite Sensors.


Vol. 21: Acker, J.G., The Heritage of SeaWiFS: A Retrospective on the CZCS NIMBUS Experiment Team (NET) Program.


This volume within the series serves as a reference, or guidebook, to the aforementioned volumes. It consists of the four main sections included with the first two indices published, Volumes 6 and 12, in the series: a cumulative index to key words and phrases, a glossary of acronyms, a list of symbols used, and a bibliography of all references cited in the series. In addition, as in Volumes 12, 18, and 24, an errata section has been added to address issues and needed corrections that have come to the editors’ attention since the volumes were first published. Also, as in some of the previous indices, an addenda section has been added to include the proceedings of various workshops, which are too short in length to warrant a separate volume within the series.

The nomenclature of the index is a familiar one, in the sense that it is a sequence of alphabetical entries, but it utilizes a unique format since multiple volumes are involved. Unless indicated otherwise, the index entries refer to some aspect of the SeaWiFS instrument or project, for example, the mission overview index entry refers to an overview of the SeaWiFS mission. An index entry is composed of a keyword or phrase followed by an entry field that directs the reader to the possible locations where a discussion of the keyword can be found. The entry field is normally made up of a volume identifier shown in bold face, followed by a page identifier, which is always enclosed in parentheses:

keyword, volume(pages).

If an entry is the subject of an entire volume, the volume field is shown in slanted type without a page field:

keyword, Vol. #.

An entry can also be the subject of a complete chapter. In this instance, both the volume number and chapter number appear without a page field:

keyword, volume(ch. #).

Figures or tables that provide particularly important summary information are also indicated as separate entries in the page field. In this case, the figure or table number is given with the page number on which it appears.
2. ERRATA

Note: Since the issuance of previous volumes, a number of the references cited have changed their publication status, e.g., they have gone from “submitted” or “in press” to printed matter. In other instances, some part (or parts) of the citation, e.g., the title or year of publication, has changed or was printed incorrectly. Listed below are the references in question as they were cited in one or more of the first 35 volumes in the series, along with how they now appear in the references section of this volume.

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Revised Citation

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3. ADDENDA

This section presents summaries of the Sixth SeaWiFS Bio-optical Algorithm and Optical Protocols Workshop (BAOPW-6) and the Case-2 Water Measurement Protocol Workshop held 18–21 March 1996 at the National Institute of Standards and Technology (NIST), in Gaithersburg, Maryland; submitted by C. McClain. It also presents a summary of the Seventh SeaWiFS Bio-optical Algorithm and Optical Protocols Workshop (BAOPW-7) held on 21 October 1996 at the Sheraton Halifax Hotel in Halifax, Nova Scotia; submitted by C. McClain.

3.1 BAOPW-6

The primary workshop objectives of BAOPW-6 were to:

1. Review the status of the initial operational SeaWiFS pigment and chlorophyll a algorithms.
2. Review the field programs and bio-optical data sets.
3. Discuss the measurement protocol updates, [fifth SeaWiFS InterCalibration Round-Robin Experiment (SIRREX-5)], and data analysis round-robin.

The team members and invited guests are listed in Table 1.

A. Monday Morning, 18 March

1. Introduction (C. McClain)
   a. Workshop Objectives and Agenda
   b. SeaStar and SeaWiFS Updates
2. Bio-optical Algorithm Session (20 minutes per presentation)
Table 1. Team members and invited guests to the BAOPW-6, held 18–21 March 1996 at NIST, in Gaithersburg, Maryland. The subgroup memberships are as listed in Hooker et al. (1993). Participants are identified with a checkmark (√).

<table>
<thead>
<tr>
<th>Team Members</th>
<th>Present</th>
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<th>Present</th>
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<tbody>
<tr>
<td>J. Aiken</td>
<td>✓</td>
<td>M. Kishino</td>
<td>✓</td>
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<td>K. Arrigo</td>
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<td>O. Kopelovich</td>
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<td>B. Balch</td>
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<td>K. Carder</td>
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<td>S. Matsumara</td>
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<tr>
<td>D. Clark</td>
<td>✓</td>
<td>C. McClain</td>
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<tr>
<td>G. Cota</td>
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<td>G. Mitchell</td>
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<td>C. Davis</td>
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<td>A. Morel</td>
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<td>R. Doerffer</td>
<td>✓</td>
<td>J. Mueller</td>
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<td>W. Esaias</td>
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<td>F. Muller-</td>
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<td>R. Frouin</td>
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<td>D. Siegel</td>
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<td>H. Fukushima</td>
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<td>R. Smith</td>
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<td>S. Hooker</td>
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<td>D. Kamykowski</td>
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<td>R. Zaneveld</td>
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</tbody>
</table>

Other Participants

| S. Ackleson   | G. Kirkpatrick |
| R. Arnone    | R. Ladner     |
| A. Barnard   | R. Maffione   |
| C. Barrientos| S. Maritorena  |
| J. Brock     | S. McLean     |
| C. Brown     | C. Mobley     |
| J. Campbell  | B. Monger     |
| M. Carr      | J. Morrison   |
| Y. Chen      | S. Pegau      |
| S. Gallegos  | D. Phinney    |
| R. Goulde    | M. Pinkerton  |
| L. Hardin    | A. Subramaniam|
| S. Hawes     | G. Valenti    |
| M. Kahru     | C. Woody      |
| E. Kearne    | A. Weidemann  |

3.1.1 Meeting Action Items
The following action items arose from the meeting; the people responsible for them are also presented.

1. The revised $K(490)$ algorithm, which was presented by J. Mueller should be adopted as the SeaWiFS operational algorithm.
2. The SeaWiFS Project should work with A. Morel on implementing (prior to launch) and testing (off line, postlaunch) the variable $Q$ factor algorithm.
3. C. Trees and G. Mitchell will host a workshop on beta factor determination and related topics sometime this year.
4. D. Clark will host a workshop on the estimation of water-leaving radiances from sparsely sampled vertical profiles, e.g., moorings and drifters.

3.2 Case-2 Water Measurement Protocols
This workshop commenced after BAOPW-6 and took place Tuesday afternoon through Thursday, 19–21 May.
The purpose of this workshop was to refine the optical measurement protocols for turbid water. The standard methodology for measuring normalized water-leaving radiance and remote sensing reflectance \( (R_{rs}) \), is to measure downwelling irradiance and upwelling radiance profiles. These profile data are then used to extrapolate the irradiance and radiance values through the air-water interface in order to estimate the above surface values. The normalized water-leaving radiance and \( R_{rs} \) are computed using these values. Because of high extinction coefficients and bottom reflectance, these procedures do not work well in turbid coastal waters. To overcome this problem, a number of groups are using specialized radiometers, or alternate methods to assess \( R_{rs} \) in coastal waters. This workshop began the process of establishing SeaWiFS optical protocols for turbid waters and initial protocols were distributed. The goal of the workshop was to develop a revised version of the protocols. The revised protocols would be tested during SIRREX-5 in July 1996, and a final version would be published by the end of 1996.

A. Tuesday Afternoon, 19 March
1. Statement of the Problem and Goals of the Workshop (C. Davis)
2. Radiance and Irradiance Profile Measurements for Turbid Waters (K. Carder, discussion leader)
   a. Turbid water radiometer with fiber optic heads (D. Clark)
   b. A full spectral system: the Submersible Upwelling and Downwelling Spectrometer (SUDS) (K. Carder)
   c. Shadowing, calibration, and other considerations (J. Mueller)
   d. Tethered spectral radiometer and \( K \)-chain (S. McLean)
3. Group Discussion of Draft Protocols

B. Wednesday Morning, 20 March
1. Brief Presentation on High Performance Liquid Chromatography (HPLC) Versus Fluorometric Pigment Measurements (C. Trees)
2. Measurement of \( R_{rs} \) Using Reflectance Plaques (C. Davis, discussion leader)
   a. \( R_{rs} \) as measured at the Naval Research Laboratory (NRL) (C. Davis)
   b. \( R_{rs} \) as measured at GKSS (R. Doerffer)
   c. Improved model for calculation of \( R_{rs} \) (K. Carder)
   d. Surface reflectance as a function of view angle and wind speed (C. Mobley)
3. Group Discussion of Draft Protocols

C. Wednesday Afternoon
4. Ambrose Tower Project Update (C. Woodie, presentation originally scheduled for Monday, but postponed due to schedule conflict)
5. Estimating \( R_{rs} \) From Measurements of Inherent Optical Properties (IOPs) (D. Siegel, discussion leader)
   a. AC-9 and related instruments (S. Pegau)
   b. Validation of water-leaving radiiances using air-bore active-passive measurements (F. Hoge)
   c. Spectral backscatter and beam attenuation sensor (R. Maffione)
   d. Modeling considerations (R. Maffione)

C. Thursday Morning, 21 March
1. This session was a small group meeting to organize writing assignments for a revision of the Case-2 protocols and to discuss plans for SIRREX-5 field measurements.

3.2.1 Meeting Action Items
The following action items arose from this meeting.
1. A draft of the Case-2 protocols document will be completed by August.
2. SIRREX-5 (July) will provide an opportunity to test some of the protocols. A final version of the protocols will be completed and submitted to the SeaWiFS Project by the end of the calendar year.

3.3 BAOPW-7
The primary workshop objectives of BAOPW-7 were to:
1. Review the status of the initial operational SeaWiFS pigment and chlorophyll \( a \) algorithms.
2. Review the field programs and bio-optical data sets.
3. Discuss the measurement protocol updates and SIRREX-5.
The team members and invited guests are listed in Table 2.

A. Monday Morning, 21 October
1. Introduction (C. McClain)
   a. Workshop Objectives and Agenda
   b. SeaStar and SeaWiFS Updates
2. NASA Research Announcement (NRA) and Sensor Intercomparison and Merger for Biological and Interdisciplinary Ocean Studies (SIMBIOS) Program Update (J. Yoder)
3. Bio-optical Algorithm Session (20 minutes per presentation)
   a. Operational chlorophyll \( a \) algorithm update (S. Hawes)
   b. CZCS pigment algorithm update (G. Moore)
   c. CalCoFI pigment algorithm comparisons (M. Kahru)
Table 2. Team members and invited guests to the BAOPW-7, held 21 October 1996 at the Sheraton Halifax Hotel in Halifax, Nova Scotia. The subgroup memberships are as listed in Hooker et al. (1993). Attendees are identified with a checkmark (√).

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Other Participants

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<tr>
<td>S. Ackleson</td>
<td>Ocean Optics Program, Code 3233</td>
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<td>D. Antoine</td>
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2. Field Program Update Session (20 minutes per presentation)
   a. Ambrose Tower measurement program status (C. Woodie)
   b. National Oceanic and Atmospheric Administration (NOAA) Office of Naval Research (ONR) Santa Barbara Channel time series (D. Siegel)
   c. Bermuda Bio-Optical Profiler (BBOP) calibration history (D. Siegel)
   d. Optical buoy time series (M. Lewis)
   e. Bermuda mooring time series (T. Dickey)

3. Measurement Protocols Session (20 minutes per presentation)
   a. Reflectance measurement comparisons (J. Mueller)
   b. Reflectance measurement comparisons (F. Gilbes)
   c. Protocols for \( R_s \) measurements (Z. Lee)
   d. Absorption measurement comparison results (D. Phinney)
   e. Protocol revisions, in general (J. Mueller)

3.3.1 Meeting Action Items

The following action items arose from the meeting.

1. D. Siegel will host a small algorithm working group meeting in January to reach a final consensus on the pigment and chlorophyll \( a \) algorithms. Good progress has been made, but some decrepencies and issues remain.

2. J. Mueller will begin the next round of protocol revisions.

3.4 Invited Colleagues’ Addresses

Following are the names and addresses of attendees of the various workshops presented in Sections 3.1–3.3. Members of the various teams and panels are identified with their team names(s) shown in slanted type face.

Steven Ackleson
Ocean Optics Program, Code 3233
Office of Naval Research
800 N. Quincy Street
Arlington, VA 22217–1906
USA
Telephone: 703–696–4732
Fax: 703–696–4884
Internet: ackless@onrhq.onr.navy.mil

James Aiken SeaWiFS Science Team
Plymouth Marine Laboratory
Prospect Place
West Hoe
Plymouth, PL1 3DH
UNITED KINGDOM
Telephone: 44–1–752–222–772
Fax: 44–1–752–670–637
Internet: j.aiken@pml.ac.uk
E.R. Firestone and S.B. Hooker

David Antoine
Laboratoire de Physique et Chimie Marines
CNRS et Université Pierre et Marie Curie
BP 08
06238 Villefranche-sur-Mer
FRANCE
Fax: 33–0–4–93–76–37–39
Internet: david@ccrv.obs-vlfr.fr

Robert Arnone
Naval Research Laboratory
Code 7240, Remote Sensing
Stennis Space Center, MS 30529–5004
USA
Telephone: 601–688–5268
Fax: 601–688–4149
Internet: arnone@csips2.nrlssc.navy.mil

Kevin Arrigo
SeaWiFS Project
NASA/GSFC/Code 971
Greenbelt, MD 20771–0001
USA
Telephone: 301–286–9634
Fax: 301–286–0240
Internet: kevin@shark.gsfc.nasa.gov

Ichio Asanuma
Japan Marine Science and Technology Center of Japan
2–15, Natsushima
Yokosuka, 237
JAPAN

Marcel Babin
Laboratoire de Physique et Chimie Marines
BP 8
06230 Villefranche-sur-Mer
FRANCE
Internet: marcel@ccrv.obs-vlfr.fr

William Balch
SeaWiFS Science Team
MBF/RSMAS/Univ. of Miami
4600 Rickenbacker Causeway
Miami, FL 33149–1098
USA
Telephone: 305–361–4653
Fax: 305–361–4600
Internet: balch@rcf.rsmas.miami.edu

Andrew Barnard
Univ. of Rhode Island
Graduate School of Oceanography
Watkins 116
Narragansett, RI 02882–1197
USA
Telephone: 401–874–6863
Fax: 401–874–6728
Internet: andrew@stump.gso.uri.edu

Celso Barrientos
Supervisory Physical Scientist
NOAA/NESDIS E/RA28, Rm. 105
5200 Auth Road
Camp Springs, MD 20746–4304
USA
Telephone: 301–763–8102
Fax: 301–763–8200
Internet: cbarrientos@nesdis.noaa.gov

Jean-Francois Berthon
CEC–JRC
Institute of Remote Sensing Applications
Marine Environment Unit TP 272
Ispra I-21020, Varese
ITALY
Telephone: 39–332–789934
Fax: 39–332–789034
Internet: jean-francois.berthon@jrc.it

Annick Bricaud
Laboratoire de Physique et Chimie Marines
Université Pierre et Marie Curie
La Darse
BP 8
06230 Villefranche-sur-Mer
FRANCE
Internet: annick@ccrv.obs-vlfr.fr
Internet: bricaud@ccrv.obs-vlfr.fr

John Brock
NOAA Coastal Services Center
2224 South Hobson Avenue
Charleston Naval Base
Charleston, SC 29405–2413
USA
Telephone: 803–974–6239
Fax: 803–974–6224
Internet: jbrock@csc.noaa.gov

Christopher Brown
NOAA/NESDIS E/RA3
NSC Rm. 105
Washington, DC 20233–001
USA
Telephone: 301–763–8102
Fax: 301–763–8020
Internet: chrisb@orbit.nesdis.noaa.gov

Janet Campbell
OPAL/Morse Hall
Univ. of New Hampshire
Durham, NH 03824–3525
USA
Telephone: 813–893–9148
Fax: 813–893–9189
Internet: campbell@kelvin.unh.edu
Kendall Carder
SeaWiFS Science Team
Dept. of Marine Science
MODIS Science Team
Univ. of South Florida
140 Seventh Avenue, South
St. Petersburg, FL 33701–5016
USA
Telephone: 813–893–9148
Fax: 813–893–9189
Internet: kcarder@monty.marine.usf.edu

Mary-Elena Carr
MS 300–323
Jet Propulsion Laboratory
4800 Oak Grove Dr.
Pasadena, CA 91109–8099
USA
Telephone: 818–354–5097
Fax: 818–393–6720
Internet: mec@pacific.jpl.nasa.gov

Y. Chen
Department of Marine Resources
National Sun Yat-sen University
Kaohsiung, Taiwan
REPUBLIC OF CHINA
Telephone: 886–7–5255025
Fax: 886–7–5255020
Internet: ylee@mail.nsysu.edu.tw

Dennis Clark
NOAA/NESDIS
MODIS Science Team
MOBY Team
E/RA 28, WWB, Rm. 104
Washington, DC 20233–0001
USA
Telephone: 301–763–8102
Fax: 301–763–8020
Internet: dclark@orbit.nesdis.noaa.gov

Lesley Clementson
CSIRO Division of Marine Research
PO Box 1538
Hobart, Tasmania 7001
AUSTRALIA
Telephone: 61–3–6232–53
Fax: 61–3–6232–5000
Internet: clements@ml.csiro.au

Glenn Cota
Center for Coastal Physical Oceanography
Old Dominion University
768 W. 52nd St.
Norfolk VA, 23529–2026
USA
Telephone: 804–683–5835
Fax: 804–683–5550
Internet: cota@ccpo.odu.edu

Curtiss Davis
NRL/Code 7212/Bldg. 2, Rm. 210
4555 Overlook Avenue
Washington, DC 20375–5000
USA
Telephone: 202–767–9296
Fax: 202–404–7453
Internet: davis.@rira.nrl.navy.mil

Tom Dickey
Univ. of California at Santa Barbara
ICESS and Dept. of Geography
Santa Barbara, CA 93106–3060
USA
Telephone: 805–893–7354
Fax: 805–893–2878
Internet: tommy@icess.ucsb.edu

Roland Doerffer
SeaWiFS Science Team
GKSS Forschungszentrum Geesthacht
Max-Planck-Strasse
D–2054 Geesthacht
GERMANY
Telephone: 49–4152–87–2480
Fax: 49–4152–87–2444
Telex: 0218712
Internet: doerffer@dvmc10.gkss.de
doeffer@pfsun1.gkss.de

Mark Dowell
CEC–JRC
Institute of Remote Sensing Applications
Marine Environment Unit TP 272
Ispra I–21020, Varese
ITALY
Telephone: 39–332–789873
Fax: 39–332–789034
Internet: mark.dowell@jrc.it

Wayne Esaias
SeaWiFS Science Team
NASA/GSFC/Code 971
MODIS Science Team
Greenbelt, MD 20771–0001
USA
Telephone: 301–286–5465
Fax: 301–286–0240
Internet: wayne@petrel.gsfc.nasa.gov

Robert Evans
SeaWiFS Science Team
MPO/RSMAS/Univ. of Miami
MODIS Science Team
4600 Rickenbacker Causeway
Miami, FL 33149–1098
USA
Telephone: 305–361–4799
Fax: 305–361–4622
Internet: bob@rsmas.miami.edu

Peter Fearns
Remote Sensing and Satellite Research Group
Dept. of Applied Physics
Curtin University of Technology
Box U1987
Perth 6001
AUSTRALIA
Telephone: 61–9–351–7225
Fax: 61–9–351–2377
Internet: peter@ra.cic.curtin.edu.au

Robert Frouin
Scripps Institution of Oceanography
9500 Gilman Drive
La Jolla, CA 92030–0221
USA
Telephone: 619–534–6243
Fax: 619–534–7452
Internet: rfrouin@ucsd.edu
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Phone</th>
<th>Fax</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hajime Fukushima</td>
<td>SeaWiFS Science Team</td>
<td>81–559–68–1211 ext. 4425</td>
<td>81–559–68–1155</td>
<td><a href="mailto:hajime@numazugw.cc.u-tokai.ac.jp">hajime@numazugw.cc.u-tokai.ac.jp</a></td>
</tr>
<tr>
<td>Sonia Gallegos</td>
<td>Naval Research Laboratory</td>
<td>601–688–4867</td>
<td>601–688–4149</td>
<td><a href="mailto:gallegos@snaps.nrlssc.navy.mil">gallegos@snaps.nrlssc.navy.mil</a></td>
</tr>
<tr>
<td>Fernando Gilbes</td>
<td>Dept. of Marine Science</td>
<td>813–893–9186</td>
<td>813–893–9189</td>
<td><a href="mailto:gilbes@carbon.marine.usf.edu">gilbes@carbon.marine.usf.edu</a></td>
</tr>
<tr>
<td>Howard Gordon</td>
<td>SeaWiFS Science Team</td>
<td>305–284–2323</td>
<td>305–284–4222</td>
<td><a href="mailto:gordon@phyvax.ir.miami.edu">gordon@phyvax.ir.miami.edu</a></td>
</tr>
<tr>
<td>Richard Goulde</td>
<td>Naval Research Laboratory</td>
<td>301–405–6372</td>
<td>301–314–9581</td>
<td><a href="mailto:gould@csips.nrlssc.navy.mil">gould@csips.nrlssc.navy.mil</a></td>
</tr>
<tr>
<td>Lawrence Harding</td>
<td></td>
<td>601–688–5587</td>
<td></td>
<td><a href="mailto:hardingl@mbimail.umd.edu">hardingl@mbimail.umd.edu</a></td>
</tr>
<tr>
<td>Steven Hawes</td>
<td>Dept. of Marine Science</td>
<td>813–893–9503</td>
<td></td>
<td><a href="mailto:ska@monty.marine.usf.edu">ska@monty.marine.usf.edu</a></td>
</tr>
<tr>
<td>Frank Hoge</td>
<td>SeaWiFS Science Team</td>
<td>804–824–1567</td>
<td></td>
<td><a href="mailto:hoge@osb1.wff.nasa.gov">hoge@osb1.wff.nasa.gov</a></td>
</tr>
<tr>
<td>Stanford Hooker</td>
<td>SeaWiFS Project</td>
<td>301–286–9503</td>
<td></td>
<td><a href="mailto:stan@ardbeg.gsfc.nasa.gov">stan@ardbeg.gsfc.nasa.gov</a></td>
</tr>
<tr>
<td>Mati Kahru</td>
<td>Scripps Institution of Oceanography</td>
<td>819–534–8947</td>
<td></td>
<td><a href="mailto:mati@spode.ucsd.edu">mati@spode.ucsd.edu</a></td>
</tr>
<tr>
<td>Daniel Kamykowski</td>
<td>SeaWiFS Science Team</td>
<td>81–45–788–7615</td>
<td></td>
<td><a href="mailto:dan_kamykowski@ncsu.edu">dan_kamykowski@ncsu.edu</a></td>
</tr>
<tr>
<td>Kiyoshi Kawasaki</td>
<td>Ocean Dynamics Section</td>
<td>81–45–788–5001</td>
<td></td>
<td><a href="mailto:kkawasak@nrifs.affrc.go.jp">kkawasak@nrifs.affrc.go.jp</a></td>
</tr>
<tr>
<td>Edward Kearns</td>
<td>Computer Sciences Corporation</td>
<td>601–688–2051</td>
<td></td>
<td><a href="mailto:ekearns@tsc.ndbc.noaa.gov">ekearns@tsc.ndbc.noaa.gov</a></td>
</tr>
<tr>
<td>Gary Kirkpatrick</td>
<td>Mote Marine Laboratory</td>
<td>941–388–4441</td>
<td></td>
<td><a href="mailto:gkirkpat@marinelab.sarasota.fl.us">gkirkpat@marinelab.sarasota.fl.us</a></td>
</tr>
</tbody>
</table>
E.R. Firestone and S.B. Hooker

Curtis Mobley
Sequoia Scientific, Inc.
P.O. Box 592
9725 SE 36th Street, Suite 308
Mercer Island, WA 98040–3840
USA
Telephone: 206–230–8166
Fax: 206–230–8175
Internet: mobley@sequoiasci.com

Frank Muller-Karger
SeaWiFS Science Team
Dept. of Marine Science
Univ. of South Florida
140 Seventh St., South
St. Petersburg, FL 33701–5016
USA
Telephone: 813–893–9186
Fax: 813–893–9189
Internet: carib@carbon.marine.usf.edu

Bruce Monger
NASA/GSFC/Code 971.0
Greenbelt, MD 20771–0001
USA
Telephone: 301–286–2128
Fax: 301–286–1761
Internet: monger@neptune.gsfc.nasa.gov

Tomo Oishi
Hokkaido University
Faculty of Fisheries
3-1-1, Minato-Cho
Hakodate, 041
JAPAN

André Morel
SeaWiFS Science Team
Laboratoire de Physique et Chimie Marines
Université Pierre et Marie Curie
La Darse
BP 8
06230 Villefranche-sur-Mer
FRANCE
Internet: morel@ccrv.obs-vlfr.fr

Jay O’Reilly
NOAA NFMS
128 Tarzwell Drive
Narragansett, RI 02882–1129
USA
Telephone: 401–782–3267
Fax: 401–782–3201
Internet: oreilly@fish1.gso.uri.edu

John Morrison
North Carolina State University
Dept. of Marine, Earth, and Atmospheric Sciences
Jordan Hall, Room 1125
Box 8208
Raleigh, NC 27695–8208
USA
Telephone: 919–515–7449
Fax: 919–515–7802
Internet: john.morrison@ncsu.edu

Scott Pegau
Oregon State University
Ocean Administration Bldg. 104
Corvallis, OR 97331–5503
USA
Telephone: 541–737–4635
Fax: 541–737–2064
Internet: spegau@oce.orst.edu

John Morrow
Biospherical Instruments, Inc.
5340 Riley Street
San Diego, CA 92110–2621
USA
Telephone: 619–686–1888
Fax: 619–686–1887
Internet: morrow@biospherical.com

David Phinney
Bigelow Laboratory
McKown Point
W. Boothbay Harbor, ME 04575–9999
USA
Telephone: 207–633–9600
Fax: 207–633–9641
Internet: dphinney@bigelow.org

Matthew Pinkerton
Plymouth Marine Laboratory
Prospect Place
Plymouth, PL1 3DH
UNITED KINGDOM
Telephone: 0–1752–633–406
Fax: 0–1752–633–101
Internet: m.pinkerton@pml.ac.uk

James Mueller
SeaWiFS Science Team
SDSU/CHORS
6505 Alvarado Road, Suite 206
San Diego, CA 92120–5005
USA
Telephone: 619–594–2230
Fax: 619–594–4570
Internet: j.mueller@chor.sdsu.edu

Sei-Ichi Saitoh
Hokkaido University
Faculty of Fisheries
3-1-1, Minato-Cho
Hakodate, 041
JAPAN
Internet: ssaitoh@salmon.fish.hokudai.ac.jp
CUMULATIVE INDEX

Unless otherwise indicated, the index entries that follow refer to some aspect of the SeaWiFS instrument or project. For example, the mission overview index entry refers to an overview of the SeaWiFS mission.

— A —

absorption study:
  pressure and oxygen, 13(ch. 3).

absorption correction, 13(19–20).

acceptance report:
  prelaunch, see SeaWiFS instrument.

addenda, 12(3–8); 18(3–22); 24(2–5).

Advanced Very High Resolution Radiometer, see AVHRR.

aerosols:
  atmospheric, 5(15); 19(26–27, 30–32, Fig. 16 p. 31); 25(19).
  models, see models, aerosol.
  optical depth, 5(38); 19(ch. 1, 30); 25(55); 33(3).
  airborne spectral radiometry, 5(7–8).
  aircraft calibration technique, 3(Fig. 19 p. 27).
  algorithms, 1(3, 17); 4(2); Vol. 28.
  atmospheric correction, 1(19); 3(1–2, Fig. 4 p. 5, 16, 23, 27–28, 31, 32–34); 8(4, Table 1 p. 14, 17, Table 4 p. 21); 13(1, 4, 9, 27); 17(16); 18(11–12); 21(19–20); 28(6); 33(3–11).

band-ratio, 29(8–9, Tables 4–6 p. 9, 9–12, Fig. 8 p. 17, Fig. 9 p. 19).

binning and interpreting, 32(65–69).

bio-optical, Vol. 5; 12(3–5); 20(ch. 3); 25(5).

data, 9(1); 12(3–4).

database development, 3(28).

derived products, 3(27–28); 13(1).

development, 1(5); 3(23, 27–35, Fig. 22 p. 33); 5(Table 4 p. 11); 8(4, 10).

field studies, 3(30–32, Fig. 22 p. 33, 34–35).

input values, 13(Table 16 p. 44).

iterative fitting, 33(33).

level-2 processing, 28(ch. 5).

linearity and stability, 5(12).

optical measurements, Vol. 5.

pigment, 3(28, 29); 8(24); 13(1, 12); 18(3, 4, 14); 24(3);

Vol. 29.

spatial binning, 24(3); Vol. 32.

temporal binning, Vol. 32.

validation of, 1(3); 8(16, Table 4 p. 21).

see also atmospheric correction, algorithm.

see also bio-optical, algorithm.

see also GAC.

see also level-2 processing.

see also NET, pigment algorithm.

see also Protocols Workshop.

along-scan:
  correction, 31(23, Table 11 p. 28, 29, Table 12 p. 29).
  responses, 31(20–21, Table 8 p. 21, Table 14 p. 65).

along-track:
  direction, 31(Figs. 7–8 p. 13, 16, Figs. 17–18 pp. 26–27).
  response, 3(38); 31(21–23, Table 9 p. 22).

see also propagation model.

AMT, Vol. 35.

biogeochemical measurements, 35(3).

bio-optical measurements, 35(2–3).

circulation and backscatter, 35(31, 46, Fig. 29 p. 48).

ocean backscatter, 35(31).

cruise participants, 35(38).

dissolved gases, 35(46, Fig. 31 p. 50).

fluorometry and photochemistry, 35(25–26, Fig. 12 p. 29, 39, Figs. 23–24 p. 41–42, 43).

future plans, 35(61).

hydrography, 35(18, Fig. 10 p. 24, 31, Figs. 17–18 pp. 34–35, 36).

inorganic nutrients, 35(31, 46, Fig. 30 p. 49).

lessons learned, 35(61).

methodology, 35(2).

optics, 35(25, Tables 8–9 p. 25, Fig. 11 p. 27, 36–39, Fig. 20 p. 38, Figs. 21–22 pp. 40–41).

photosynthesis and calcification, 35(26, Fig. 13 p. 29, 43, Figs. 25–26 pp. 44–45).

physical measurements, 35(2).

pigment extractions, 35(26, 43, Fig. 27 p. 45, Tables J1–J3 pp. 77–79).

size fractionation, 35(31, Fig. 26 p. 45, 46).

zooplankton characterization, 35(14–15, 26, Fig. 14 p. 30, 46, Fig. 28 p. 47).

see also cruise synopsis.

see also cruise track.

see also instrumentation, AMT.

analytical methods, 5(33–39); 25(ch. 6).

ancillary:
  data climatologies, 13(2, ch. 7, and Plates 16–18).
  data sets, 8(7); 15(7); 19(ch. 6, ch. 7).
  measurements, 5(8, 9, 13–14, 20, 27–28, 30, 33); 25(11, 35–38).
  observations, 5(9); 25(42).

see also data, ancillary.

animation:
  meteorological data sets, 13(41–42).
  ozone data sets, 13(41–42).

ascending node, Vol. 2.

computation methods, 2(1–2).

tilt strategy, 2(Table 1 p. 2).

Atlantic Meridional Transect, see AMT.

atmospheric aerosols, see aerosols, atmospheric.

atmospheric conditions, 9(6–7).

atmospheric contributions, 9(4–6).

atmospheric correction, 1(3, 5, 7); 3(1, 2, Fig. 4 p. 5, 8, 13, 23, 24, 27, 28–29, 31, 32–34); 4(1); 5(1, 3, 6, 7, 10, 13); 8(4, 6, 7, 26–27, 30–31, 36–37, 42); 14(1); 17(6, 16); 18(13); 19(ch. 1, Fig. 1 p. 11); 21(19–20); 25(34); 33(3–11).

subgroup, 18(11–12).

see also algorithms, atmospheric correction.

atmospheric measurements, 5(2, 28–29); 25(38–39).

at-satellite radiances, 15(7–13, Table 10 p. 11).
AVHRR:
- deriving vegetation index, 7(2).
- GAC data, 7(3–4).
- LAC data, 7(2–4).
- LDTNLR test, 7(4).
- nighttime IR data, 7(5).
- thermal IR channels, 7(1).
- band-7 radiance, 27(ch. 2).
- azimuth, 13(46).
- angles at equinox, 2(2, 10, 16).
- angles at solstice, 2(Fig. 5 p. 7, 10, 16).
- solar angle, 2(2, 16); 7(1); 13(Table 11 p. 29, 46).
- spacecraft angle, 2(2, Fig. 6 p. 8, 16); 13(Table 11 p. 29).
- relative angle, 2(2, Fig. 7 p. 9, 10, Fig. 10 p. 13, 16).

- B -

bio-optical:
- algorithm working group members, 8(Table 1 p. 14); 12(Table 1 p. 3, 3); 18(Table 1 p. 3, Table 5 p. 12, Table 6 p. 14); 24(Table 1 p. 2).
- Algorithm Workshop, 12(3–5, 6–8); 18(3–7, 12–16, 10) 24(3–5).
- algorithms, 1(19); 3(1–2, 6, 8, 11–12, 13, 16, 23, 28–29, Fig. 20 p. 29, 29, 30–31, 32, Fig. 22 p. 33, 34); 4(3); Vol. 5; 8(6, 10); 13(27); 25(4–5, Table 1 p. 8).
- data 12(Table 2 p. 4).
- data bank, 33(13).
- data set, 3(8, 13, 16, 29, 30); 18(4, Table 2 p. 5).
- data system 20(ch. 2).
- processing, 26(ch. 4).
- requirements, 5(3, 8); 25(ch. 1).
- sampling protocols, 18(8–9); 25(43–47).
- see also algorithm.
- see also algorithm, bio-optical.
- see also algorithm development.
- see also AMT, bio-optical measurements.
- see also BBOP data processing.
- see also bio-optical processing.
- see also data processing.
- bio-optical processing, 26(ch. 4).
- data files, 26(Figs. 31–32 pp. 50–51, 52).
- instrumentation, 26(49–50).
- log files, 26(Fig. 33 p. 52).
- see also BBOP data processing.
- bio-optics, 1(3, 5, 7, 19); 8(10).
- algorithm, 13(1, ch. 1, 27).
- bright target recovery, 15(Fig. 8 p. 15); 31(4–5, Tables 1–2 pp. 4–5).
- Brouwer-Lyddane model, 11(2–5, 11, 15–16, Figs. 5–8 pp. 8–9, Fig. 13 p. 12); 15(2–3).
- see also models.
- buoy:
  - drifting optical, 25(12).
  - see also MOBY.
  - see also optical buoy.
  - see also optical mooring.
  - see also PlyMBODY.

- C -

biogeochemical cont.
- see also Science Team Meeting, Abstracts.
- AVHRR:
  - instrument, 25(12).
  - requirements, 25(12).
  - see also AMT, biogeochemical measurements.

SeaWiFS Technical Report Series Cumulative Index: Volumes 1–35

14
calibration cont.

lunar, 1(11–18); 3(Fig. 15 p. 22); 10(1–3, 7, 10, Table 3 p. 10, Fig. 9 p. 11, Figs. 12–15 pp. 14–17, Fig. 16 p. 20, Fig. 19 p. 22, Table 4–5 p. 19, 25); 15(Fig. 2 p. 5, Table 5 p. 7, Figs. 22–23 pp. 34–35).

onboard, 3(21); 5(2–3); 10(1–2).

pigment, 5(24); 25(30).

pefeller and oxygen, 19(ch. 3).

quality control, 10(25).

round-robin, 8(4, 17, Table 4 p. 21); Vol. 14; Vol. 16; 18(3, 9, 13–14, 15); Vol. 34.

sensor, 1(11); 5(2–3); 17(2, 3).

solar, 1(11, 18); 3(24); 10(1–7, Fig. 2 p. 5, Fig. 4 p. 6, Figs. 5–8 pp. 8–9, Figs. 10–11 pp. 12–13, 18); 15(Fig. 3 p. 6, Table 5 p. 7, Fig. 20 p. 32).

solar diffuser, 10(3–5, 7); 23(10).

spectral, 5(24).

sphere test, 14(Fig. B2 p. 48, Table B2 p. 49).

subgroup meeting, 18(11).

sun photometers, 5(24); 25(38).

system test, 14(Fig. B1 p. 48).

trend analysis, 10(25).

vicarious, 5(2–4); 8(10–11); 25(5–6, 47).

working group members, 8(Table 1 p. 14).

see also calibration and validation.

see also round-robin.

see also SeaStar.

see also SIRREX.

see also sphere.

calibration and validation, 1(3, 8, 14, 18–22); Vol. 3; 17(3, 5–6, 10–14, 15).

baselines, 3(17); 8(3).

case studies, Vol. 13; Vol. 19; Vol. 27.

cruises, 17(15–17).

field deployment, 8(17, Table 2 p. 18, Table 4 p. 20); 18(Fig. 1 p. 6).

on-board, 3(21–23).

post-launch, 3(23–27).

prelaunch program, 3(17–21).

program milestones, 3(Fig. 12 p. 14).

program schematic, 3(Fig. 11 p. 14).

team (CVT), 13(1).

see also baselines.

see also calibration.

see also CVT.

see also initialization.

see also round-robin.

CDF, 13(35, Table 14 p. 36); 19(ch. 5).

characterization cont.

spectral bandpass, 5(15); 25(21–22).

temperature, 5(20–21); 25(25–26).

temporal response, 5(17); 25(22).

see also SeaWiFS instrument.

see also spectral characterization.

chlorophyll:

coccolithophore blooms, 18(4, Table 9 p. 18); 24(4); 28(ch. 3 and Plate 6).

command:

schedules, 15(3–7, Table 3 p. 4, Table 4 p. 6).

sequence, 15(Tables 7–8 p. 11).

commercial applications, 1(7).

Common Data Format, see CDF.

Comprehensive Ocean-Atmosphere Data Set, see COADS.

contingencies:

detector failure, 8(11).

equator crossing, 8(12).

launch slip, 8(11).

loss of tilt, 8(11).

navigation accuracy, 8(11).

orbit, 8(12).

orbital altitude, 8(11).

power limitation, 8(11).


correction scheme:

out-of-band, 23(18); 28(ch. 4, Table A2 p. 34).

correction study:

pressure and oxygen, 13(ch. 4).
cross-track, see propagation model.
cross-track scan, see SeaWiFS instrument.
cruise report, Vol. 35.
cruise synopsis, 35(49, 51–59).
at-sea calibrations, 35(3, Fig. 31 p. 52).
cumulative:
index, 6(1–3); 12(9–13); 18(23–28); 24(6–13); 30(5–13).
CVT, 13(1).
CZCS, 1(1, 5, 6–7, 19); 3(1).
application of data, 9(7–9).
calibration and validation, 17(10–11).
channels, 7(1, 5).
data collection, 3(6, Fig. 5 p. 5, 21, 30), 7(1).
global sampling, 3(Fig. 10 p. 10).
imagery, 28(ch. 2, and Plates 1–6); 32(Plates 1–3).
level-2 processing parameters, 4(Table 2 p. 2).
level-2 products, 4(1).
modeling compared to SeaWiFS, 3(Fig. 4 p. 5).
orbit, 3(2).
orbital characteristics, 9(Table 2 p. 3).
overlapping scenes study, 13(ch. 5).
parameters and characteristics, 1(Table 2 p. 5), 3(Table 1 p.1).
pigment algorithm, 13(Tables 12–13 p. 31); 24(3); Vol. 29.
pigment concentration, 1(5–6); 3(1–2, 8, 27); 13(1, 2, ch. 1,
Figs. 1–5 pp. 5–8, 9, Figs. 8–9 p. 11, 15, Figs. 14–16 pp. 17–18, 22, Figs. 18–19 p. 26, Fig. 20 p. 28, Table 10 p. 29, ch. 6,
Table 18 p. 45, and Plates: 1–14, and 19–20); 17(6–7).
quality control, 3(Fig. 7 p. 8, Fig. 8 p. 9, 32, 35).
ringing mask comparison, 13(2, ch. 8, and Plate 19).
sensor, 1(5); 3(8).
sensor degradation, 3(23).
time of launch, 2(1).
vicarious calibration, 3(Fig. 6 p. 7, 11, 23, 24–27); 5(3–4).
see also bio-optical, algorithms.
see also NET.
see also ocean color, imagery.

— D —
dark level, see SeaWiFS instrument.
The DARR-94. 24(3); Vol. 26.
contributors, 26(Table 1 p. 5).
data analysis methods, 26(6–7).
data and results, 26(7–34, Tables 2–3 p. 7).
estimated data, 26(Figs. 11–17 pp. 18–24, Tables 4–5 p. 25).
ocean optics, 26(ch. 1).
raw data, 26(Figs. 1–10 pp. 9–17).
vertical profiles, 26(Figs. 18–26 pp. 26–34).
data:
access of, 8(12); 17(17).
acquisition, 19(21–22); 33(11–12).
airborne simulation, 33(4–11, Fig. 1 p. 5, Figs. 2–3 p. 7, Figs. 4–7 pp. 9–10, Table 2 p. 11).
data cont.
ancillary, 3(24, 35); 5(3); 7(5); 8(7); 13(2, Fig. 23 p. 36); 19(ch. 6, ch. 7); 28(5).
archive and delivery, 5(2); 8(9–10).
binned, gridding scheme, 32(63–64).
collection, 3(24); 8(4).
day, see data day.
distribution, 1(16); 8(2, 4, 16, 17).
format, 3(32); 8(43–44); 12(5); 15(16–20, Fig. 9 p. 17); 19(ch. 5).
interpolation, 13(22).
management, 1(3, 11–18); 3(32).
policy, 3(37–38); 8(13, Table 4 p. 21, 41–42).
processing, 1(3, Fig. 2 p. 4, 11–16, Fig. 10 p. 20, 22); 3(13, 32); 7(5); 8(4, 8–9); 13(16, 21, 35); 17(3); 20(17–18); 26(ch. 4).
processing, 33(11–12).
processing, SIO method, 26(ch. 5).
products, 4(20); 8(8, 12–13, 15–17, Table 4 pp. 20–21, 42–43); 15(2); Vol. 32.
quality and acceptance, 8(7–8).
requirements, 5(4–6); 25(ch. 2).
scheme for weighting, 32(64–65).
standard format, 19(ch. 5).
strawman, 33(13).
subsampling, 4(1).
system, 17(3–4, 12–14); 20(ch. 2).
using SEAPAK with, 4(1–2).
see also ancillary, data.
see also BBOP data processing.
see also data requirements.
see also LOIS.
data analysis methods, see DARR-94, data analysis methods.
see also DARR-94.
data day, 27(ch. 5).
spatial definition, 27(35–41, Figs. 21–22 p. 37, Table 19 p. 38,
data requirements, 25(ch. 2).
above-water techniques, 25(11).
ancillary measurements, 25(11).
biogeochemical data, 25(9–11).
definitions, 25(7–9, Table 1 p. 8).
optical buoys, drifting, 25(12).
optical moorings, 25(11–12).
data sets, 1(3); 5(3–4, 6, 8, 14, 33, 34, 35); 8(23, 33); Vol. 9;
Vol. 15; 17(2, 5).
animation of, 13(41–42).
atmospheric conditions, 9(6–7).
atmospheric contributions, 9(4–6).
availability of, 9(9–13); 15(40).
code for simulating, 9(13–15).
currently held, 20(Table 2 p. 10).
external, 15(Table 9 p. 11).
gridded wind, 19(ch. 8).
meteorological, 13(35, Table 14 p. 36); 19(43, 47).
meteorological animation, 13(41–42).
methods for simulating, 9(2–7).
normalized water-leaving radiances, 9(2–3).
orbit model, 9(3–4).

16
data sets cont.
  ozone, 13(35, Fig. 31 p. 42); 19(43, 47).
  ozone animation, 13(41–42).
  simulated total radiances, 9(Figs. 2–4 pp. 10–12).
  start and stop times, 9(Table 6 p. 9).
  ten-bit words and data structures, 9(7).
  viewing and solar geometries, 9(4–6).
  see also bio-optical.
  see also SIRREX.
  see also storage.
descending node, Vol. 2.
  see also ascending node.
detector failure contingency, see contingencies.

– E –
EOS-Color, 17(3, 9–10, 11, 13–17).
EOSDIS, 17(3, 13, 17).
equator crossing time, 2(10, 16); 9(Tables 6–7 p. 9).
  contingency, 8(12).
equinox:
  see azimuth.
  see sun glint.
  see zenith.
errata, 12(2); 18(2–3); 24(2); 30(2–4).

– F –
field deployment, see calibration and validation.
field-of-view, see SeaWiFS instrument.
field program, 18(5, 15); 24(4).
  computing network, 3(Fig. 21 p. 31).
  instrumentation, 3(34–35).
filter radiometer, 14(Table B9 p. 56).
flags, 18(4–5).
  algorithm, 8(3, 4, 17); 28(ch. 1).
  level-2, 18(Table 9 p. 18).
  level-2 processing, 8(7); 12(4, Table 3 p. 4).
format:
  conventions, 20(4–5).
  standard data, 8(15); 19(ch. 5).

– G –
GAC, 1(3, 16); 15(4); 17(5, 12); 31(2).
  algorithms, Vol. 4.
  AVHRR data, 7(3).
  correction, 31(69–71, Table 15 p. 71).
  generation mechanisms, 4(Table 1 p. 1).
  generation methods, Vol. 4.
  resolution, 4(Plates 1–8).
  sampling techniques, Vol. 4.
  see also AVHRR.
geometry, 2(1).
  derived parameters, 2(1).
  solar, 2(1, 10, 16).
  sun glint, 2(1).
  viewing, 2(1, 10, 16).
  see also azimuth.
  see also zenith.
  glint correction, 3(23); 8(17); 19(ch. 1, Fig. 1 p. 11).
  see also sun glint.

  global:
  area coverage, see GAC.
  fields, 27(ch. 5).
  scale processes, 1(6–7).
glossary:
  cumulative, 6(3–5); 12(14–17); 18(29–33); 24(14–18); 30(14–18).
ground:
  coverage, 2(2, Fig. 1 p. 3).
  station support, 8(11).
  systems and support, 1(14–15).

– H –
Hierarchical Data Format, see HDF.
HDF, 8(7, 8, 9, 10, 11, 15); 13(ch. 7); 19(ch. 5).
HRPT:
  data, 1(14, 19); 8(8–9, 19); 15(2, 4, 27, Figs. 24–27 pp. 36–39,
  and Plates 4–6).
  policies, 8(17, Table 4 p. 20).
hydrography, see AMT, hydrography.

– I –
ice detection, 28(ch. 2).
immersion coefficients, 18(13); 27(ch. 1).
  linear regression fits, 27(Tables 9–10 p. 15).
  MERs, 24(3); 27(Tables 1–8 pp. 4–6, Figs. 1–8 pp. 7–14).
  index, Vol. 6; Vol. 12; Vol. 18; Vol. 24; Vol. 30.
infrared radiometers, 7(1).
  initialization, 5(4–6, Table 1 p. 5).
  sampling, 5(31–32).
instrumentation at AMT, 35(3–16).
  bridge logs, 35(16, 64, Tables G1–H1 pp. 69–76).
  circulation and backscatter, 35(15).
  CTD, 35(6).
  dissolved gases, 35(16).
  fluorometry, 35(10–12).
  FRRF, 35(12, Table K1 pp. 80–82).
  inorganic nutrients, 35(15, Table L1 p. 82).
  optics, 35(6–10).
  ORKAB, 35(6–7).
  photosynthesis and calcification, 35(12–13).
  pigment extractions, 35(13–14).
  sampling, 35(3).
  UOR, 35(4–6, Fig. 1 p. 5, Table 2 p. 5, 9, 11, 36, Table 11 p. 76).
XBT, 35(4).
  see also AMT.
intercalibration, Vol. 14; Vol. 16; Vol. 34.
  data archive 14(56–57, Tables C1 and C2 p. 57).
  sources, 14(Table 1 p. 4); 16(Table A1 p. 117).
irradiance attenuation profiles, 26(ch. 3).
  bin-averaged, 26(46).
  deck cell smoothing, 26(45–46).
  optical depth, 26(46–48).

– J, K –
joint commercial aspects, 1(8).
LAC, 1(3); 31(2).
data, 1(8, 11); 15(2, 4, 27, Figs. 16–19 pp. 28–31, and Plate 3).
apparent drift, 14(Fig. 6 p. 13).
calibration setup, 14(Fig. B7 p. 53).
GSFC reference, 14(Table 3 p. 12).
irradiance, 14(Fig. B4 p. 50, Table B5 p. 52, Fig. B8 p. 53,
Table B7 p. 55); 34(Table 1 p. 4, 5).
operating currents, 14(Table 8 p. 28).
standards, 14(2, 4–5); 16(3–23); 34(2–28). see also calibra-
tion.
see also spectral irradiance.
see also radiant energy.
see also sphere.
see also transfer.
Land-Ocean Interaction Study, see LOIS.
level-2 processing algorithm, 28(ch. 5).
sensor calibration table, 28(31–32, Fig. 11 p. 32).
see also algorithm, level-2 processing.
level-3 data products, Vol. 32.
binned, 8(8, 12).
LOIS:
airborne campaign, 33(36–37).
ARS, 33(33–34, Table 4 p. 34).
data acquisition, 33(37–38).
data analysis, 33(38–43).
data system, integrated, 33(37).
overview, 33(35–36).
remote sensing, 33(34–44).
look-up tables, 8(4); 19(5–9).
lunar observations, Vol. 10.
lunar reflectance, 3(23); 10(2–3, 7–25); 19(ch. 2); 23(9).

M
MARAS, 33(23, 25).
chlorophyll a concentration estimating, 33(23–25, Fig. 12 p. 24).
marine environmental radiometer, see MER.
marine optical buoy, see MOBY.
marine optical buoy, see MOBY.
Marine Radiometric Spectrometer, see MARAS.
mask, 18(4–5).
algorithm, 8(3, 4, 17); 28(ch. 1).
level-2, 18(Table 9 p. 18).
level-2 processing, 3(6); 8(7); 12(4, Table 3 p. 4).
Miami edge, 13(29).
see also sun glint.
measurement protocols, 5(26–33); 25(ch. 5).
meeting agenda, see Science Team Meeting.
MER, 24(3); 27(ch. 1).
mesoscale processes, 1(6).
Miami edge mask, 13(29).
mission:
operations, 1(14–18); 11(1–2, 15).
overlap, 17(12).
overview, Vol. 1; 8(1).
MOBY, 1(3); 8(3, 4).
calibration, 34(71–75).
review attendees, 18(Table 4 p. 10).
MOBY cont.
review summary, 18(9–11).
system schematic, 3(Fig. 17 p. 25).
see also optical buoy.
see also optical mooring.
modeling, 10(1, 10, 18, 25).
models:
aerosol, 8(17); 19(5–7, Tables 1–2 p. 6, Fig. 6 p. 17).
chlorophyll concentration, 19(Fig. 7 p. 17, Fig. 11 p. 20).
orbital prediction, 1(17).
see also Brouwer-Lyddane models.
see also modeling.
see also perturbation models.
see also propagation models.
MODIS or MODIS-N, 1(19); 17(3, 5, 6–7, 8, 11, 13–15).
instrument characteristics, 3(Table 4 p. 12).
presentations, 8(3–5).
modulation transfer function, see SeaWiFs instrument, MTF.

N
navigation, 8(11); 9(4); 11(2); 15(3).
of pixels, 9(4).
NET, 3(2, Figs. 1–3 pp. 2–4, 23, 27, 28, 29–30); 8(16); 12(4);
Vol. 21.
areas of responsibility, 21(2–3).
aspheric correction algorithm, 21(19–20).
chronology of events, 21(3–11).
pigment algorithm, 3(Fig. 3 p. 3, Fig. 20 p. 29); 29(Tables 10–
14 p. 14, Figs. 6–7 pp. 15–18, 19–22, Table 17 p. 22, Ta-
research methods, 21(11, 16, 19).
sea-truth program, 21(11, Fig. 1 p. 12, Tables 2–6 pp. 13–14,
Figs. 2–6 pp. 15–18).
team members, 21(Table 1 p. 3).
netCDF, 19(ch. 5).
Nimbus Experiment Team, see NET.
non-research uses, 1(7–8).
normalized water-leaving radiances, 1(15); 3(2, 6, 24, 28–29,
37–38); 4(1–3, 20); 5(1, 3–4, 6, 8, 13, 31–32, 37–38); 8(16,
42); 9(2–3).

O
ocean color, 1(1–4, 8, 10); 8(1–3, 22–43); 13(1, ch. 4); Vol. 17;
33(23–25, Figs. 11–12 p. 24).
future missions, 3(Fig. 10 p. 12).
imagery, Vol. 17; 21(5, 6, 10, 11); 28(ch. 3, and Plates 1–6).
projects, 33(22–24).
requirements, 1(2).
see also algorithm development.
see also CZCS, pigment concentration.
ocean model validation:
biological, 33(13–16).
ocean optics protocols, Vol. 5; 8(12, 14–15, Table 4 p. 20);
Vol. 25.
see also Protocols Workshop.
OCTS, 1(2); 3(11); 17(4, 10, 13, 17).
instrument characteristics, 3(Table 3 p. 11).
operational applications, 1(7–8).
optic buoy, 3(Fig. 17 p. 25).
mooring, 3(Fig. 18 p. 26); 5(8, 30–31); 25(11–12).
prototype, 5(30–31); 25(42–43).
see also MOBY.
optical buoy cont.
see also PlyMBODY.
optical instruments, Vol. 5; 10(Figs. 17–19 pp. 21–22); Vol. 25.
optical measurements, Vol. 5; Vol. 25.
accuracy specifications, 5(9–15).
analysis methods, 5(33–39).
science community, role of. 5(3); 25(5).
sensor characterization, 5(Tables 2–4 pp. 10–11, 15–25).
see also MOBY.
see also optical buoy.
optical oceanography, 33(25).
optical thickness, 8(17); 19(5, 7, Tables 3–4 p. 7, Tables 8–11 p. 10).
Rayleigh, 3(34); 9(4–6, Table 4 p. 5); 13(ch. 3, ch. 4).
orbit, 3(23).
characteristics, 9(Table 2 p. 3).
contingency, 8(12).
distribution of local time, 2(Fig. 2 p. 4).
downlink, 15(4, Table 3 p. 4).
parameters, 1(18); 2(2).
propagation, 15(3, Table 3 p. 3).
see also propagation model.
orbital:
altitude contingency, 8(11).
characteristics, 9(1, Table 3 p. 3); 15(Table 1b p. 3).
elements, 11(2).
overview, Vol. 1.
see also index.
oxygen absorption band, 13(16, 19, Fig. 17 p. 19); 27(ch. 2, Figs. 9–10 pp. 17–18, Tables 12–13 p. 19).
see also band-7 radiance.
ozone:
absorption, 13(9, 21).
concentration, 8(7); 9(5); 13(9, Figs. 6–7 p. 10, Figs. 11–12 p. 13, 30, and Plate 15); 16(7, 8).
control point value, 13(Tables 7–9 pp. 24–25).
correction, 13(ch. 4, and Plates 7–13).
data analysis, 13(ch. 2).
images, 13(Plates 7–13).
optical thickness, 13(Fig. 10 p. 12).
see also data set, ozone.

—P—

PACE, 33(20–22, Fig. 10 p. 21).
perturbations model:
general, 11(2–3).
special, 11(2).
photodetector measurements, 14(Table A1 p. 47).

pigment, 17(7); 25(56); 29(Tables 8–9 p. 12); Vol. 35.
algorithm, 3(28, 29); 8(24); 28(ch. 3); Vol. 29.
concentration, 1(Plates 1–5); 3(1, 2, 6, 8, 13, 23, 27, 28, 31–32, 35); 4(Table 1 p. 1, 2, Table 3 p. 3, Figs. 5–11 pp. 6–9, 20, and Plates 1–8); 5(2); 7(1); 8(4, 14, 24, 30, 36, 40); 13(ch. 2, ch. 3); 17(7, 11, 15–16); 25(9–11, 44); 28(Tables 2–3 p. 11, 9–12, and Plates 1–6); Vol. 29; 32(Plates 1–3).
data, 9(2).
database, 20(ch. 3).
data sets, 20(18, Table 5 pp. 20–21, 21).
mean, 13(Tables 1–2 p. 8).
ratios, 24(3); 29(Fig. 5 p. 7, Table 3 p. 8).
regressions, 29(Table 2 p. 3, Fig. 4 p. 6).
values, 4(Fig. 26 p. 15, Figs. 31–33 pp. 18–19).

pigment cont.
see also algorithm, pigment.
see also calibration.
see also coccolithophore blooms.
see also CZCS, pigment concentration.

pixel size, 3(Fig. C1 p. 39).
plaques, see reflectance, plaques.

PlyMBODY, 33(16–20, Fig. 10 p. 21).
design, 33(18, 20).
PACE, 33(20–22, Fig. 10 p. 21).
program overview, 33(18).
project progress, 33(20).
Plymouth Atmospheric Correction Experiment, see PACE.
Plymouth Marine Bio-Optical Data Buoy, see PlyMBODY.
Prelaunch Science Working Group, see SPSWG.
pressure:
surface, see surface pressure.
pressure and oxygen:
absorption study, 13(ch. 3).
correction study, 13(ch. 4, and Plates: 8, 10, and 12).
primary productivity, 1(1); 5(7); 8(1, 15, 22–41); 17(8–9); 25(10–11).
working group members, 8(Table 1 p. 14).

proceedings:
Science Team Meeting, Vol. 8.
SeaWiFS Exploitation Initiative (SEI), Vol. 33.
see also Science Team Meeting.
see also SEI.

Project, 1(3); 3(1, 13, 16, 23–24, 32, 34, 38).
goals, 1(2–3).
objectives, 1(3).
organization and personnel, 1(Table 4 p. 22); 3(Fig. 13 p. 15).
presentations, 8(3–5).
responsibilities, 12(3–4).
schematic, 1(Fig. 8 p. 12, Fig. 9 p. 13).
structure, 3(13–16).

propagation model:
along-track, 11(5, Figs. 1–8 pp. 6–9, Fig. 11 p. 11, Figs. 12–14 pp. 12–13, Fig. 16 p. 14).
cross-track, 11(5, Fig. 9 p. 10, Fig. 15 p. 13, Fig. 17 p. 14).
orbit, Vol. 11.
radial, 11(4, 5, Fig. 10 p. 10).

Protocols:
ocean optics, Vol. 5; Vol. 25.
Protocols Workshop, (ocean optics), 12(3, 5–8); 18(3–9, 12–18); 24(2–5).
attendees addresses, 12(6–8).
Subgroup Workshop, 18(3, 7–9, 12–13, 14–16).
team members and guests, 12(Table 1 p. 3); 18(Table 1 p. 3, Table 3 p. 7, Table 5 p. 12, Table 6 p. 14); 18(19–22).
see also ocean optics.

—Q—

quality control, 3(29–30, 35–36); 10(Fig. 20 p. 23); 12(5).
flags, 12(3–4); 28(ch. 1).

level-1 screening, 3(35).
level-2 product screening, 3(35–36).
level-2 quality control, 3(35); 8(4).
level-3 product screening, 3(36).

masks, 12(4); 28(ch. 1).
see also bio-optical algorithm workshop.
radiometric: see propagation model.

radiance measurements, 26(ch. 3).

bin-averaged, 26(46).
deck cell smoothing, 26(45–46).
optical depth, 26(46–48).

radiance measurements, 14(Table 9 pp. 29–30, Table 10 p. 31, Fig. 15 p. 32, Table 11 pp. 33–35, 44); 16(Table 6–7 pp. 37–44); 19(Figs. 2–6 pp. 14–15, 23); 25(34–35, 54–55); 33(16, Fig. 8 p. 17); 34(Fig. B2 p. 72).

calibration factors, 16(Fig. 18 p. 46).

output, 14(Table 12–14 pp. 38–41).
see also spectral radiance.
see also spectral radiance.

radiometer:

above water, 5(38); 25(17–18, 28–29).
airborne, 5(7–8, 23–24); 25(33–34).
moored, 5(38); 25(55).
see also filter radiometer.
see also SeaWiFS instrument.

radiometric:

calibration, Vol. 23; 25(20–21, Fig. 1 p. 21).
profiles, 5(33–39).
specifications, 3(36–37, Table A1 p. 36); 8(4); 25(ch. 3).
standards, 5(21–23); 25(26–28, Fig. 2 p. 28).
see also SeaWiFS instrument.

references:
cumulative, 6(5–9); 12(21–28); 18(38–46); 24(24–34); 30(27–40).
CZCS data, 21(23–41).

reflectance:

gradients, 10(2–3); 19(Tables 6–7 pp. 8, 8).
plaque, 5(15–17); 14(5, 31, 41); 16(111); 34(63–67, Fig. 33–34 pp. 65–66, 69).

research:

applications, 1(3–5).
cruises, 3(30–32).

round-robin:

calibration, 8(4, 17, Table 4 p. 21); 12(4).
tercalibration, Vol. 14; Vol. 16; Vol. 34.
protocols working group, 8(Table 1 p. 14); 18(Table 3 p. 7).
see also calibration, round-robin.

satellite remote sensing, 7(1).
saturation radiances, 3(Tables A2–A4 pp. 36–37); 15 (Table 11 p. 13); 19(Table 5 p. 8).
SBRC database, see SIRREX, SBRC database.

scale, Vol. 14; Vol. 16; Vol. 34.
see also transfer.

scanning characteristics, 9(1).

Science Team Meeting, Vol. 8.

abstracts, 8(22–41).
agenda, 8(5–6).
attendees, 8(51–59).
executive committee, 8(22).
invited presentations, 8(1–3).
questionnaire, 8(19–22, 44–51).

SeaBASS, Vol. 20; 33(13).

file architecture, 20(ch. 1).

SEAPAK, 4(1–2, 20).
SeaStar, 1(1, 3, 8); 2(1–2); 3(21); 10(3, 7).
launch sequence, 1(Fig. 4 p. 9).
operational system, 1(Fig. 6 p. 10).
orbital simulation parameters, 2(Table 1 p. 2); 11(Table 1 p. 1).
pitch rate, 10(7).
satellite, 1(Fig. 5 p. 9).

spacecraft description, 1(8–10).

SeaWiFS Exploitation Initiative, see SEI.

SeaWiFS Exploitation Initiative Bio-optical Archive and Storage System, see SEIBASS. see SEI.

SeaWiFS instrument, 1(1, 5–6, 8, 10–11); 4(1); 5(6, 9–14); 8(7–8, 17).

absolute accuracy, 22(19–20).
acceptance report, prelaunch, Vol. 22.
acceptance testing, 8(4, 13–14, Table 4 p. 20).
bond co-registration, 22(10–11, Fig. 5 p. 12, Tables 12–13 p. 12).
band edge wavelengths, 23(51, Table 13 p. 52).
band tolerances, 22(7–8, Tables 5–7 p. 9).
bandwidths, 1(Table 1 p. 1, Fig. 2 p. 2, 11).
bilinear gains, 23(2, 4, Fig. 4 p. 5, Tables 1–4 pp. 6–7, Fig. 5 p. 8, 18); 31(6, Fig. 3 p. 7, Tables 3–6 p. 8, Fig. 4 p. 9).
bright target recovery 15(Fig. 8 p. 15); 31(4–5, Tables 1–2, pp. 4–5).
calibration and characterization, 3(Fig. 14 p. 18); 8(4); 25(4, ch. 4).
calibration constants, 23(17–18, Table 9 p. 19).
calibration equations, 23(8–14, 18).
calibration, 22(10–11, Table 1 p. 2); 3(Table 2 p. 11, 13).
cross-track scan, 22(4, Figs. 3–4 pp. 6, 7).
dark level, 22(7).
description of, 1(10–11); 23(2, Figs. 1–3 pp. 3–4); 31(3–4, Fig. 2 p. 3).
dynamic range, 22(14, Tables 16–18 p. 17).
electronic recovery tail, 31(6, 9–10, Fig. 5 p. 11).
field-of-view, 1(11); 5(1, 10, 12–18, 20–24, 28–29, 31, 38); 22(2, Fig. 1 p. 3, 4, Table 3 p. 4, Fig. 2 p. 5).
fore-and-aft pointing, 22(7, Table 4 p. 7).
gains, 22(18, Table 21 p. 19); 23(14–17).
in-flight data, 22(29).
launch time, 2(1).
major milestones, 3(Table 7 p. 21); 22(Table 1 p. 2).
mirror sides, 23(7–8, Table 5 p. 9).
monitoring of, 1(18).

MTF, 22(14, Tables 19–20 pp. 18–19).
operations schedules, 1(17–18).
out-of-band response, 22(8, Tables 8–11 pp. 10–11); 23(51, Table 14 p. 53).
pointing knowledge, 22(24, 28).
polarization, 22(12–14, Table 15 p. 13, Figs. 6–7 pp. 15–16).
radometric calibration, Vol. 23.
scanner, 1(11, Fig. 7 p. 14).
sensitivities, 1(5, Fig. 3 p. 6); 5(Table 4 p. 11, 14); 22(11–12, Table 14 p. 13).
spectral bands, 1(11); 9(1, Table 1 p. 2).
spectral characterization, Vol. 23.
spectral differences, 22(8, 10).
spectral response, 23(21–43).
stability and repeatability, 22(28–29).
stray light response, 23(2, 13); Vol. 31.
system level response, 23(43–51).
telemetry parameters, 3(Table 8 p. 23).
SeaWiFS instrument cont.
temperature factors, 23(18–21).
testing and design, 22(1–2).
test plan summary, 3(Table 6 pp. 19–20).
transient response, 22(18–19, Tables 22–23 p. 20).
vicarious calibration, 5(3–4, 33).
see also along-scan, correction.
see also optical instruments.
see also solar diffuser.
see also stray light.
SEI:
abstracts, extended, 33(2–44).
agenda, 33(2).
attendees, 33(45–47).
CASI band set, definition, 33(44).
contributors, 33(44–45).
SEIBASS, 33(13).
sensor:
calibration, 5(2–3); 25(4, ch. 4).
characterization, 5(15–25); 9(Table 2 p. 3); 15(13); 25(4, ch. 4).
CZCS, see CZCS.
monitoring, 1(18).
operations schedules, 1(17).
radiometry, 25(20–26).
ringing, 4(2).
ringing mask, 13(2, 27, and Plate 19).
SeaWiFS, see SeaWiFS instrument.
tilt, 15(Fig. 1 p. 5).
see also characterization.
see also CZCS, ring mask comparison.
see also SeaWiFS instrument.
see also solar diffuser.
see also specifications.
ship shadow, 8(14); 27(ch. 4).
avoidance, 5(25–26); 25(31–32).
experimental methods, 27(26, Fig. 13 p. 27).
remote sensing reflectance, 27(Fig. 18 p. 33).
shunts, 16(111–116); 34(67).
tests, 14(41–42).
SIRREX:
database, 20(ch. 4).
SBRC database, 20(ch. 5).
see also SIRREX-1.
see also SIRREX-2.
SIRREX-1, Vol. 14; 18(9).
attendees, 14(57–58).
equipment and tests, 14(Table B1 p. 49).
participants, 14(Table 1 p. 4).
validation process, 14(Fig. 1 p. 3).
SIRREX-2, Vol. 16; 18(9).
attendees, 16(116–118).
equipment and tests, 16(Table A1 p. 117).
participants, 16(Table A1 p. 117).
SIRREX-3, 18(9, 13, 16); Vol. 34.
attendees, 34(75–76).
equipment and tests, 34(Table A1 p. 70).
participants, 34(Table A1 p. 70).
solar:
solar cont.
diffuser, 3(11, 13, 21, 23, 24, 38); 5(2, 17, 19, 22); 8(13, 36); Vol. 10; 15(7, Table 8 p. 11, 27, Figs. 20–21 pp. 32–33); 17(13); 19(26–32, Figs. 11–12 p. 28); 23(9–10).
irradiance measurements, 3(Fig. 16 p. 22).
observations, Vol. 10.
see also calibration.
solar radiation, 27(ch. 3).
solstice:
see azimuth.
see sun glint.
see zenith.
specifications, 25(ch. 3).
airborne, 5(13–14).
above-water radiometry, 25(17–18).
atmospheric aerosols, 25(19).
hydrographic profiles, 25(19, Table 6 p. 19).
IOP instruments, 5(14–15); 25(18–19, Table 5 p. 18).
spectral characteristics, 5(10); 22(8–10); 25(13–14, Tables 2–3 pp. 13–14, Table 4 p. 15, Table 5 p. 18).
spectral sky radiances, 25(19).
surface radiances, 5(13); 25(17).
see also radiometer.
see also SeaWiFS instrument.
spectral absorption, 25(56–59).
spectral bands, 1(1–2); 5(Table 2 p. 10, 17); 9(1, Table 1 p. 2); 15(Table 1a p. 2).
see also characterization.
see also SeaWiFS instrument.
spectral differences, see SeaWiFS instrument.
spectral irradiance, 5(13, 16, 25–27); 8(25); 14(Figs. 2–5 pp. 8–11, Figs. 7–14 pp. 20–27, Fig. 18 p. 43); 16(Figs. 2–5 pp. 6–9, Tables 1–5 pp. 10–23, Figs. 6–16 pp. 25–35); 19(7); 25(7–11, 17, 31–35, 48–54); 34(5–11, Figs. 1–5 pp. 6–10, Figs. 6–7 pp. 12–13, Tables 2–6 pp. 14–28, 28, Figs. 8–15 pp. 29–36, 67–68).
and radiance measurements, 5(2); 5(13, 16, 21–23, 25–27).
calibration geometry, 14(Fig. B3 p. 50).
see also lamps.
spectral irradiance, 5(21–23, 25–27); 8(25); 14(Figs. 16–17 pp. 36–37, 45–47, Fig. A2 p. 46, 47, 52, 55–56); 19(ch. 4); 25(7–11, 31–35, 54–55); 34(36, 38–63, Figs. 16–20 pp. 40–46, Table 8 p. 47, Figs. 21–22 pp. 48–49, Figs. 23–27 pp. 51–55, Figs. 28–31 pp. 57–59, Fig. 32 p. 61, 68).
spectral reflectance, 5(37, 38); 8(27, 29–30, 35, 49); 16(2–3, Table 20 pp. 112–113, Fig. 31 p. 114); 19(ch. 2).
BSI sphere, 16(62, Fig. 22 p. 73, Table 14 pp. 79–81).
CHORS sphere, 16(62, Figs. 23–27 pp. 74–78, Tables 15–16 pp. 82–90).
calibration, 14(Fig. A1 p. 46).
GSFC sphere, 16(36, Fig. 17 p. 45, Figs. 19–20 pp. 47–48, Tables 8–10 pp. 49–61, Fig. 21 p. 63, Tables 11–13 pp. 64–72, 118–119, Figs. C1 and C2 p. 119).
NOAA sphere, 16(81, Table 19 pp. 106–109, Fig. 30 p. 110).
UCSB sphere, 16(62, 81, Table 17 pp. 91–95, Fig. 28 p. 96).
WFF sphere, 16(81, Table 18 pp. 97–103, Fig. 29 p. 104).
see also sphere sources.
spectral response, 23(21–43).
sphere, Vol. 14, Vol. 16; Vol. 34.
calibration setup, 14(Fig. B5 p. 51, Fig. B9 p. 54).
integrating, 5(15); 14(28–31, 45); 16(2); 19(ch. 4); 23(13).
measurements, 14(Table B8 p. 55).
sphere cont.

radiance, 14(Table B3 p. 49, Fig. B6 p. 51, Table B4 p. 52, Table B6 p. 52).

source comparisons, 14(42–44).
sources, 14(28, 31); 16(23–111); 19(25, 33); 34(28–63).

see also spectral reflectance.

SPSWG, 1(1); 3(Table 5 p. 16, 27–28).

stability tests, 14(42).

standard data format, see format, standard data.

statistics, 32(3–10, Table 1 p. 12, 29).

spatial, 32(10, Table 1 p. 12, Figs. 3–4 pp. 13–17, Figs. 5–14 pp. 19–28, Tables 2–3 pp. 30–35, Figs. 15–16 pp. 36–37).

temporal, 32(29–62, Table 4 p. 38, Fig. 17 p. 39, Figs. 18–28 pp. 41–48, Table 5 p. 49–52, Figs. 26–31 pp. 53–58, Table 6 p. 59, Table 7 p. 61, Fig. 33 p. 62).

storage:
data sets, 19(Table 19 p. 44, Figs. 19–20 pp. 44–45, Table 20 p. 48); 20(Table 1 p. 9).

stray light:

assessment, 31(23, Table 10 p. 28).

post-modification tests, 31(16–23, Figs. 11–13 pp. 17–19, Tables 8–9 pp. 21–22, Fig. 14 p. 22, Figs. 15–18 pp. 24–27).

proposed modifications, 31(16, Table 7 p. 16, 71–73).

response, 15(Fig. 7 p. 14); 23(2, 13); 28(5).
sources, 31(10–16, Fig. 6 p. 11, Figs. 7–8 p. 13, Figs. 9–10 p. 15).

summary, see index.

sun glint, 1(18); 2(1, 10, 14); 3(6, 34); 9(2, 4–5, 6, 7, 9); 15(3, 4, 21, 27); 28(5–6, 12).
at equinox, 2(10).
at solstice, 2(10, 16).

flag sensitivity study, 13(ch. 9, and Plate 20).

radiance distribution, 2(Fig. 8 p. 11, Fig. 11 p. 14).
surface pressure, 8(4, 7); 13(Table 3 p. 16, Fig. 13 p. 17, 19–22, Tables 4–6 pp. 23–24, and Plates: 6–7, and 17); 28(11).
surface wind products, 19(ch. 8).
symbols:
cumulative, 6(5); 12(18–20); 18(34–37); 30(19–26).

t, U

telemetry, 1(10, 14); 8(11); 9(1, 2, 7, Fig. 1 p. 8, 9); 10(1, Figs. 20–21 pp. 23–24, 25); 15(2, 13–20, Figs. 9–10 pp. 17–18, Tables 12–13 pp. 19–20, Table 14 p. 21); 28(Table 2 p. 6).

transfer, Vol. 14; Vol. 16; Vol. 34.

irradiance scale, 14(Table 2 pp. 6–7, Tables 4–7 pp. 14–19, 28); Vol. 16.

methods, 34(37–38).

see also spectral irradiance.

validation, 19(9–20).
algorithm, 8(16).

product, 8(10, 16).
sampling, 5(2, 31–33).

see also algorithms.

see also calibration.

see also calibration and validation.

viewing and solar geometries, 9(4–6); 13(3, 46).

visible radiometers, 7(1).

see also AVHRR.

see also CZCS.

see also MODIS.

see also SeaWiFS instrument.

voltmeter, 16(111–116); 34(67).
tests, 14(41–42).

W, X, Y

water samples, 25(39–42, 43–47).

wind:

see data sets, gridded wind.

see surface wind products.

Z

zenith, 2(10).

angles at equinox, 2(2, 16).

angles at solstice, 2(10, 16).

satellite angle, 13(15, 19, 46).

solar angle, 2(2, Fig. 3 p. 5, 10, Fig. 9 p. 12, Fig. 12 p. 15, Table 3 p. 16, 16); 3(2, 8, 23); 7(1, 4); 9(Table 6 p. 9); 13(Table 11 p. 29, 46); 28(5).

spacecraft angle, 2(2, Fig. 4 p. 6, 10, 16); 13(Table 11 p. 29); 28(5).
Glossary

– A –

A-band Absorption Band
A/D Analog-to-Digital (also written as AD)
A&M (Texas) Agriculture and Mechanics (University)
AC Alternating Current
ACC Antarctic Circumpolar Current
ACRIM Active Cavity Radiometer Irradiance Monitor
ACS Attitude Control System
ADC Analog-to-Digital Converter
ADCP Acoustic Doppler Current Profiler
ADEOS Advanced Earth Observation Satellite (Japan)
AE Ångström Exponent
AIBOP Automated and Interactive Bio-Optical Processing
ALSCAT ALPHA and Scattering Meter [Note: the symbol α corresponds to \(c(\lambda)\), the beam attenuation coefficient, in present usage.]
AM-1 Not an acronym, used to designate the morning platform of EOS.
AMC Angular Momentum Compensation
AMT Atlantic Meridional Transect
AMT-1 The First AMT Cruise
ANSI American National Standards Institute
AOCI Airborne Ocean Color Imager
AOL Airborne Oceanographic Lidar
AOP Apparent Optical Property
AOS/LOS Acquisition of Signal/Loss of Signal
APL Applied Physics Laboratory
APT Automatic Picture Transmission
ARGOS Not an acronym, but the name given to the data collection and location system on the NOAA Operational Satellites.
ARI Accelerated Research Initiative
ARS Airborne Remote Sensing
ASCII American Standard Code for Information Interchange
ASI Italian Space Agency
ASR Absolute Spectral Response
AT Along-Track
ATLAS Auto-Tracking Land and Atmosphere Sensor
ATM Airborne Thematic Mapper
AU Astronomical Unit
AVHRR Advanced Very High Resolution Radiometer
AVIRIS Advanced Visible and Infrared Imaging Spectrometer
AXBT Airborne Expendable Bathythermograph

BAOPW-7 Seventh Bio-optical Algorithm and Optical Protocols Workshop
BAOPW-6 Sixth Bio-optical Algorithm and Optical Protocols Workshop
BAOPW-5 Fifth Bio-optical Algorithm and Optical Protocols Workshop
BAOPW-4 Fourth Bio-optical Algorithm and Optical Protocols Workshop
BAOPW-3 Third Bio-optical Algorithm and Optical Protocols Workshop
BAOPW-2 Second Bio-optical Algorithm and Optical Protocols Workshop
BAOPW-1 First Bio-optical Algorithm and Optical Protocols Workshop
BAS British Antarctic Survey
BATS Bermuda Atlantic Time-Series Station
BBOP Bermuda Bio-Optical Profiler
BBR Band-to-Band Registration
BCRS Dutch Remote Profiler Board
BEP Benguela Ecology Programme
BER Bit Error Rate
BIOS Biophysical Interactions and Ocean Structure (NERC research program)
BMFT Minister for Research and Technology (Germany)
BNL Brookhaven National Laboratory
BNSC British National Space Center
BOAWG Bio-Optical Algorithm Working Group
BODC British Oceanic Data Center
BOFS British Ocean Flux Study
BOMS Bio-Optical Moored Systems
BOPS Bio-Optical Profiling System
bpi bits per inch
BRDF Bidirectional Reflectance Distribution Function
BSI Biospherical Instruments, Incorporated
BSIXR BSI’s Transfer Radiometer
BSM Bio-Optical Synthetic Model
BTB Bright Target Detection
BTR Bright Target Recovery
BUV Backscatter Ultraviolet Spectrometer
BWI Baltimore-Washington International (airport)

– C –

c.i. confidence interval

C/N Carbon-to-Nitrogen (ratio)
CalCoFI California Cooperative Fisheries Institute
Cal/Val Calibration and Validation
CALVAL Calibration and Validation
Case-1 Water whose reflectance is determined solely by absorption.
Case-2 Water whose reflectance is significantly influenced by scattering.
CASI Compact Airborne Spectrographic Imager
CCD Charge Coupled Device
CCPO Center for Coastal Physical Oceanography (Old Dominion University)
CDF (NASA) Common Data Format
CDOM Colored Dissolved Organic Material
CD-ROM Compact Disk-Read Only Memory
CDR Critical Design Review
CEC Commission of the European Communities
CENR Committee on Environment and Natural Resources
CHN Carbon, Hydrogen, and Nitrogen
CHORS Center for Hydro-Optics and Remote Sensing (San Diego State University)
CICESE Centro de Investigación Científica y de Educación Superior de Ensenada (Mexico)
CIMEL Not an acronym, but the name of a sun photometer manufacturer.
CIRES Cooperative Institute for Research in Environmental Sciences
COADS Comprehensive Ocean-Atmosphere Data Set
COARE Coupled Ocean-Atmosphere Response Experiment
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>COAST</td>
<td>Coastal Earth Observation Application for Sediment Transport</td>
</tr>
<tr>
<td>COOP</td>
<td>Coastal Ocean Optics Program</td>
</tr>
<tr>
<td>COTS</td>
<td>Commercial Off-The-Shelf (software)</td>
</tr>
<tr>
<td>CPR</td>
<td>Continuous Plankton Recorder</td>
</tr>
<tr>
<td>CRM</td>
<td>Contrast Reduction Meter</td>
</tr>
<tr>
<td>CRN</td>
<td>Italian Research Council</td>
</tr>
<tr>
<td>CRSEO</td>
<td>Center for Remote Sensing and Environmental Optics (University of California at Santa Barbara)</td>
</tr>
<tr>
<td>CRT</td>
<td>Calibrated Radiance Tapes or Cathode Ray Tube (depending on usage)</td>
</tr>
<tr>
<td>CRTT</td>
<td>CZCS Radiation and Temperature Tape</td>
</tr>
<tr>
<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organization (of Australia)</td>
</tr>
<tr>
<td>CSC</td>
<td>Computer Sciences Corporation</td>
</tr>
<tr>
<td>CSL</td>
<td>Computer Systems Laboratory</td>
</tr>
<tr>
<td>CT</td>
<td>Cross-Track</td>
</tr>
<tr>
<td>CTD</td>
<td>Conductivity, Temperature, and Depth</td>
</tr>
<tr>
<td>c.v.</td>
<td>coefficient of variation</td>
</tr>
<tr>
<td>CVT</td>
<td>Calibration and Validation Team</td>
</tr>
<tr>
<td>CW</td>
<td>Continuous Wave</td>
</tr>
<tr>
<td>CWL</td>
<td>Center Wavelength</td>
</tr>
<tr>
<td>CWR</td>
<td>Clear Water Radiance</td>
</tr>
<tr>
<td>CXR</td>
<td>CHORS Transfer Radiometer</td>
</tr>
<tr>
<td>CZCS</td>
<td>Coastal Zone Color Scanner</td>
</tr>
<tr>
<td>DAAC</td>
<td>Distributed Active Archive Center</td>
</tr>
<tr>
<td>DAO</td>
<td>Data Assimilation Office</td>
</tr>
<tr>
<td>DARR</td>
<td>Data Analysis Round-Robin</td>
</tr>
<tr>
<td>DARR-2</td>
<td>Second Data Analysis Round-Robin</td>
</tr>
<tr>
<td>DAT</td>
<td>Digital Audio Tape</td>
</tr>
<tr>
<td>DC</td>
<td>Direct Current or Digital Count (depending on usage)</td>
</tr>
<tr>
<td>DCF</td>
<td>Data Capture Facility</td>
</tr>
<tr>
<td>DCM</td>
<td>Deep Chlorophyll Maximum</td>
</tr>
<tr>
<td>DCOM</td>
<td>Dissolved Colored Organic Material</td>
</tr>
<tr>
<td>DCP</td>
<td>Data Collection Platform</td>
</tr>
<tr>
<td>DEC</td>
<td>Digital Equipment Corporation</td>
</tr>
<tr>
<td>DJW</td>
<td>Distilled Water</td>
</tr>
<tr>
<td>DML</td>
<td>Dunstaffnage Marine Laboratory (Scotland)</td>
</tr>
<tr>
<td>DMS</td>
<td>dimethyl sulfide</td>
</tr>
<tr>
<td>DOC</td>
<td>Dissolved Organic Carbon</td>
</tr>
<tr>
<td>DoD</td>
<td>Department of Defense</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Energy</td>
</tr>
<tr>
<td>DOM</td>
<td>Dissolved Organic Matter</td>
</tr>
<tr>
<td>DON</td>
<td>Dissolved Organic Nitrogen</td>
</tr>
<tr>
<td>DOS</td>
<td>Disk Operating System</td>
</tr>
<tr>
<td>DSP</td>
<td>Not an acronym, but an image display and analysis package developed at RSMAS—University of Miami.</td>
</tr>
<tr>
<td>DU</td>
<td>Dobson Units</td>
</tr>
<tr>
<td>DUT</td>
<td>Device Under Test</td>
</tr>
<tr>
<td>DXW</td>
<td>Not an acronym, but a lamp designator.</td>
</tr>
<tr>
<td>E-mail</td>
<td>Electronic Mail</td>
</tr>
<tr>
<td>EAFB</td>
<td>Edwards Air Force Base</td>
</tr>
<tr>
<td>EC</td>
<td>Excluding CHORS (data)</td>
</tr>
<tr>
<td>ECEF</td>
<td>Earth-Centered Earth-Fixed</td>
</tr>
<tr>
<td>ECMWF</td>
<td>European Centre for Medium Range Weather Forecasts</td>
</tr>
<tr>
<td>ECT</td>
<td>Equator Crossing Time</td>
</tr>
<tr>
<td>EDMED</td>
<td>European Directory of Marine and Environmental Data</td>
</tr>
<tr>
<td>EDT</td>
<td>Eastern Daylight Time</td>
</tr>
<tr>
<td>EEZ</td>
<td>Exclusive Economic Zone</td>
</tr>
<tr>
<td>EG&amp;G</td>
<td>Not an acronym, but a shortened form of EG&amp;G-Gamma Scientific (now known simply as Gamma Scientific).</td>
</tr>
<tr>
<td>ENSO</td>
<td>El Niño Southern Oscillation</td>
</tr>
<tr>
<td>ENVISAT</td>
<td>Environmental Satellite</td>
</tr>
<tr>
<td>EOF</td>
<td>Empirical Orthogonal Function</td>
</tr>
<tr>
<td>EOS</td>
<td>Earth Observing System</td>
</tr>
<tr>
<td>EOSAT</td>
<td>Earth Observation Satellite Company</td>
</tr>
<tr>
<td>EOSDIS</td>
<td>EOS Data Information System</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>EP-TOMS</td>
<td>Earth Probe-Total Ozone Mapping Spectrometer</td>
</tr>
<tr>
<td>EqPac</td>
<td>Equatorial Pacific (Process Study)</td>
</tr>
<tr>
<td>ER-2</td>
<td>Earth Resources-2</td>
</tr>
<tr>
<td>ERBE</td>
<td>Earth Radiation Budget Experiment</td>
</tr>
<tr>
<td>ERBS</td>
<td>Earth Radiation Budget Sensor</td>
</tr>
<tr>
<td>ERDAS</td>
<td>Not an acronym, but a trade name for an image analysis system.</td>
</tr>
<tr>
<td>ERL</td>
<td>(NOAA) Environmental Research Laboratories</td>
</tr>
<tr>
<td>ERS</td>
<td>Earth Resources Satellite</td>
</tr>
<tr>
<td>ESA</td>
<td>European Space Agency</td>
</tr>
<tr>
<td>EST</td>
<td>Eastern Standard Time</td>
</tr>
<tr>
<td>EURASEP</td>
<td>European Association of Scientists in Environmental Pollution</td>
</tr>
<tr>
<td>EUVE</td>
<td>Extreme Ultraviolet Explorer</td>
</tr>
<tr>
<td>FASCAL</td>
<td>Fast Calibration (Facility)</td>
</tr>
<tr>
<td>FDDI</td>
<td>Fiber Data Distribution Interface</td>
</tr>
<tr>
<td>FEL</td>
<td>Not an acronym, but a lamp designator.</td>
</tr>
<tr>
<td>FGGE</td>
<td>First GARP Global Experiment</td>
</tr>
<tr>
<td>FLUPAC</td>
<td>(Geochemical) Fluxes in the Pacific (Ocean)</td>
</tr>
<tr>
<td>FNOC</td>
<td>Fleet Numerical Oceanography Center</td>
</tr>
<tr>
<td>FORTRAN</td>
<td>Formula Translation (computer language)</td>
</tr>
<tr>
<td>FOV</td>
<td>Field-of-View</td>
</tr>
<tr>
<td>FPA</td>
<td>Focal Point Assembly</td>
</tr>
<tr>
<td>FRD</td>
<td>Federal Republic of Deutschland (Germany)</td>
</tr>
<tr>
<td>FRRF</td>
<td>Fast Repetition Rate Fluorometer</td>
</tr>
<tr>
<td>ftp</td>
<td>File Transfer Protocol</td>
</tr>
<tr>
<td>FWHM</td>
<td>Full-Width at Half-Maximum</td>
</tr>
<tr>
<td>FY</td>
<td>Fiscal Year</td>
</tr>
<tr>
<td>GAC</td>
<td>Global Area Coverage, coarse resolution satellite data with a nominal ground resolution at nadir of approximately 4 km.</td>
</tr>
<tr>
<td>GARP</td>
<td>Global Atmospheric Research Program</td>
</tr>
<tr>
<td>GASM</td>
<td>General Angle Scattering Meter</td>
</tr>
<tr>
<td>gcc</td>
<td>GNU C Compiler</td>
</tr>
<tr>
<td>GF/F</td>
<td>Not an acronym, but a specific type of glass fiber filter manufactured by Whatman.</td>
</tr>
<tr>
<td>GIN</td>
<td>Greenland, Iceland, and Norwegian Seas</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographical Information System</td>
</tr>
<tr>
<td>GISS</td>
<td>Goddard Institute for Space Studies</td>
</tr>
<tr>
<td>GLI</td>
<td>Global Imager</td>
</tr>
<tr>
<td>GLOBEC</td>
<td>Global Ocean Ecosystems dynamics</td>
</tr>
</tbody>
</table>
E.R. Firestone and S.B. Hooker

GMT Greenwich Mean Time
GNU GNU’s Not UNIX
GOES Geostationary Operational Environmental Satellite
GOFS Global Ocean Flux Study
GOMEX Gulf of Mexico Experiment
GP Global Processing (algorithm)
GPM General Perturbations Model
GPS Global Positioning System
GRGS Groupe de Recherche de Geodesie Spatial
GRIB Gridded Binary
GRIDTOMS Gridded TOMS (data set)
GSFC Goddard Space Flight Center
GSO Graduate School of Oceanography (University of Rhode Island)
G/T System Gain/Total System Noise Temperature
GUI Graphical User Interface

– H –

HAPEX Hydrological Atmospheric Pilot Experiment
HDDT High Density Data Tape
HDF Hierarchical Data Format
HEI Hoffman Engineering, Incorporated
HeNe Helium-Neon
IHCRM Hand-Held Contrast Reduction Meter
HIRIS High Resolution Imaging Spectrometer
HN (Polaroid) Not an acronym, but a linear sheet polarizer used to check the polarization sensitivity of SeaWiFS bands 7 and 8.
HOTS Hawaiian Optical Time Series
HP Hewlett Packard
HPGL Hewlett Packard Graphics Language
HPLC High Performance Liquid Chromatography
HQ Headquarters
HR (Polaroid) Not an acronym, but a linear sheet polarizer used to check the polarization sensitivity of SeaWiFS bands 1–6.
HRPT High Resolution Picture Transmission
HST Hawaii Standard Time
HYDRA Hydrographic Data Reduction and Analysis

– I –

I/O Input/Output
IAPSO International Association for the Physical Sciences of the Ocean
IAU International Astrophysical Union
IBM International Business Machines
ICARUS Instrumentation Characterizing Aerosol Radii Using Sun photometry
ICD Interface Control Document
ICES International Council on Exploration of the Seas
ICESS Institute for Computational Earth System Science (University of California at Santa Barbara)
IDL Interactive Data Language
IDS Integrated Data System
IFOV Instantaneous Field of View
ILS Incident Light Sensor
IMS Information Management System
IOP Inherent Optical Property
IOSDL Institute of Oceanographic Sciences, Deacon Laboratory (UK)

– J –

IP Internet Protocol
IPD Image Processing Division
IR Infrared
IRIX Not an acronym, but a computer operating system.
ISA Integrating Sphere Accessory
ISCCP International Satellite Cloud Climatology Project
ISIC Integrating Sphere Irradiance Collector
ISTP International Solar Terrestrial Program
IUCRM Inter-Union Commission on Radio Meteorology
IUE International Ultraviolet Explorer

– K –

JAM JYACC Application Manager
JARE Japanese Antarctic Research Expedition
JCR (RRS) James Clark Ross
JGOFS Joint Global Ocean Flux Study
JHU Johns Hopkins University
JOI Joint Oceanographic Institute
JPL Jet Propulsion Laboratory
JRC Joint Research Center
JYACC Not an acronym, but the name of the company that makes JAM.

– L –

KQ $K_d$ Quality (flag)

L&N Leeds & Northrup
LAC Local Area Coverage, fine resolution satellite data with a nominal ground resolution at nadir of approximately 1 km.
LAN Local Area Network
LANDSAT Land Resources Satellite
LCD Least Common Denominator (file)
LDEO Lamont-Doherty Earth Observatory (Columbia University)
LDGO Lamont-Doherty Geological Observatory (Columbia University)
LDTNLR Local Dynamic Threshold Nonlinear Raleigh Level-0 Raw data.
Level-1 Calibrated radiances.
Level-2 Derived products.
Level-3 Gridded and averaged derived products.
LHCI Light-Harvesting Complex II
LMCE Laboratoire de Modélisation du climat et de l’Environnement (France)
LOC Local Time
LODYC Laboratoire d’Océanographie et de Dynamique du climat (France)
LOICZ Land Ocean Interaction in the Coastal Zone
LOIS Land-Ocean Interaction Study
LPCM Laboratoire de Physique et Chimie Marines (France)
LRER Long-Range Ecological Research
LSB Least Significant Bits
LSF Line Spread Function
LUT Look-Up Table
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAFF</td>
<td>Ministry of Agriculture, Fisheries, and Food (UK)</td>
</tr>
<tr>
<td>MARAS</td>
<td>Marine Radiometric Spectrometer</td>
</tr>
<tr>
<td>MAREX</td>
<td>Marine Resources Experiment Program</td>
</tr>
<tr>
<td>MARMAP</td>
<td>Marine Resources Monitoring, Assessment, and Prediction</td>
</tr>
<tr>
<td>MARS</td>
<td>Multispectral Airborne Radiometer System</td>
</tr>
<tr>
<td>MASSS</td>
<td>Multi-Agency Ship-Scheduling for SeaWiFS</td>
</tr>
<tr>
<td>MBARI</td>
<td>Monterey Bay Aquarium Research Institute</td>
</tr>
<tr>
<td>MCMC</td>
<td>Markov Chain Monte Carlo</td>
</tr>
<tr>
<td>MEM</td>
<td>Maximum Entropy Method</td>
</tr>
<tr>
<td>MER</td>
<td>Marine Environmental Radiometer</td>
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<tr>
<td>MERIS</td>
<td>Medium Resolution Imaging Spectrometer</td>
</tr>
<tr>
<td>METEOSAT</td>
<td>Meteorological Satellite</td>
</tr>
<tr>
<td>MF</td>
<td>Major Frame</td>
</tr>
<tr>
<td>mF</td>
<td>Minor Frame</td>
</tr>
<tr>
<td>MIPS</td>
<td>Millions of Instructions Per Second</td>
</tr>
<tr>
<td>MIT</td>
<td>Massachusetts Institute of Technology</td>
</tr>
<tr>
<td>MIZ</td>
<td>Marginal Ice Zone</td>
</tr>
<tr>
<td>MLE</td>
<td>Maximum Likelihood Estimator</td>
</tr>
<tr>
<td>MLML</td>
<td>Moss Landing Marine Laboratory (San Jose State University)</td>
</tr>
<tr>
<td>MO</td>
<td>Magneto-Optical</td>
</tr>
<tr>
<td>MOBY</td>
<td>Marine Optical Buoy</td>
</tr>
<tr>
<td>MOCE</td>
<td>Marine Optical Characterization Experiment</td>
</tr>
<tr>
<td>MODIS-N</td>
<td>MODIS Document Archive</td>
</tr>
<tr>
<td>MODIS-T</td>
<td>MODerate Resolution Imaging Spectroradiometer</td>
</tr>
<tr>
<td>MODIS-N</td>
<td>MODIS Document Archive</td>
</tr>
<tr>
<td>MODIS-T</td>
<td>MODerate Resolution Imaging Spectroradiometer</td>
</tr>
<tr>
<td>MODIS-0</td>
<td>MODIS instrument</td>
</tr>
<tr>
<td>MOS</td>
<td>Marine Optical Spectroradiometer</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>MRF</td>
<td>Meteorological Research Flight</td>
</tr>
<tr>
<td>MSB</td>
<td>Most Significant Bits</td>
</tr>
<tr>
<td>MS/DOS</td>
<td>Microsoft/Disk Operating System (also written as MS-DOS)</td>
</tr>
<tr>
<td>MTF</td>
<td>Modulation Transfer Function</td>
</tr>
<tr>
<td>MVDS</td>
<td>Multichannel Visible Detector System</td>
</tr>
<tr>
<td>NABE</td>
<td>North Atlantic Bloom Experiment</td>
</tr>
<tr>
<td>NAS</td>
<td>National Academy of Science</td>
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<tr>
<td>NASA</td>
<td>National Aeronautics and Space Administration</td>
</tr>
<tr>
<td>NASCOM</td>
<td>NASA Communications</td>
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<tr>
<td>NASA</td>
<td>National Space Development Agency (Japan)</td>
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<tr>
<td>NASIC</td>
<td>NASA Aircraft/Satellite Instrument Calibration</td>
</tr>
<tr>
<td>NAVSPASUR</td>
<td>Naval Space Surface Surveillance</td>
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<tr>
<td>NCAR</td>
<td>National Center for Atmospheric Research</td>
</tr>
<tr>
<td>NCCOSC</td>
<td>Navy Command, Control, and Ocean Surveillance Center</td>
</tr>
<tr>
<td>NCDC</td>
<td>National Climatic Data Center</td>
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<tr>
<td>NCDS</td>
<td>NASA Climate Data System</td>
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<tr>
<td>NCSA</td>
<td>National Center for Supercomputing Applications</td>
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<tr>
<td>NCSU</td>
<td>North Carolina State University</td>
</tr>
<tr>
<td>NDBC</td>
<td>National Data Buoy Center</td>
</tr>
<tr>
<td>NDVI</td>
<td>Normalized Difference Vegetation Index</td>
</tr>
<tr>
<td>NEAT</td>
<td>Northeast Atlantic</td>
</tr>
<tr>
<td>NECC</td>
<td>North Equatorial Counter Current</td>
</tr>
<tr>
<td>NEdL</td>
<td>Noise Equivalent Differential Spectral Radiance</td>
</tr>
<tr>
<td>NEAT</td>
<td>Noise Equivalent Delta Temperature</td>
</tr>
<tr>
<td>NE5L</td>
<td>Noise Equivalent delta Radiance</td>
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<tr>
<td>NER</td>
<td>Noise Equivalent Radiance</td>
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<tr>
<td>NERC</td>
<td>Natural Environment Research Council (UK)</td>
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<tr>
<td>NESDIS</td>
<td>National Environmental Satellite Data Information Service</td>
</tr>
<tr>
<td>NESS</td>
<td>National Environmental Satellite Service</td>
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<tr>
<td>NET</td>
<td>NIMBUS Experiment Team</td>
</tr>
<tr>
<td>netCDF</td>
<td>(NASA) Network Common Data Format</td>
</tr>
<tr>
<td>NFS</td>
<td>Network File System</td>
</tr>
<tr>
<td>NGDC</td>
<td>National Geophysical Data Center</td>
</tr>
<tr>
<td>NIMBUS</td>
<td>Not an acronym, but a series of NASA experimental weather satellites containing a wide variety of atmosphere, ice, and ocean sensors.</td>
</tr>
<tr>
<td>NIR</td>
<td>Near-Infrared</td>
</tr>
<tr>
<td>NIST</td>
<td>National Institute of Standards and Technology</td>
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<tr>
<td>NMC</td>
<td>National Meteorological Center</td>
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<tr>
<td>NMFS</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
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<tr>
<td>NOARL</td>
<td>Naval Oceanographic and Atmospheric Research Laboratory</td>
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<tr>
<td>NODC</td>
<td>National Oceanographic Data Center</td>
</tr>
<tr>
<td>NORAD</td>
<td>North American Air Defense (Command)</td>
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<tr>
<td>NOPS</td>
<td>NIMBUS Observation Processing System</td>
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<tr>
<td>NOS</td>
<td>National Ocean Service</td>
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<tr>
<td>NRA</td>
<td>NASA Research Announcement</td>
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<tr>
<td>NRD</td>
<td>Naval Research and Development</td>
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<tr>
<td>NRIFFS</td>
<td>National Research Institute of Far Seas Fisheries (Japan)</td>
</tr>
<tr>
<td>NRL</td>
<td>Naval Research Laboratory</td>
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<tr>
<td>NRT</td>
<td>Near-Real Time</td>
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<tr>
<td>NSCAT</td>
<td>NASA Scatterometer</td>
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<tr>
<td>NSF</td>
<td>National Science Foundation</td>
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<tr>
<td>NSSDC</td>
<td>National Space Science Data Center</td>
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<tr>
<td>OAM</td>
<td>Optically Active Materials</td>
</tr>
<tr>
<td>OCDM</td>
<td>Ocean Color Data Mission</td>
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<tr>
<td>OCEAN</td>
<td>Ocean Colour European Archive Network</td>
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<tr>
<td>OCI</td>
<td>Ocean Color Irradiance (sensor)</td>
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<tr>
<td>OCR</td>
<td>Ocean Color Radiance (sensor)</td>
</tr>
<tr>
<td>OCS</td>
<td>Ocean Color Scanner</td>
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<tr>
<td>OCTS</td>
<td>Ocean Color and Temperature Sensor (Japan)</td>
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<tr>
<td>ODAS</td>
<td>Ocean Data Acquisition System</td>
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<tr>
<td>ODEX</td>
<td>Optical Dynamics Experiment</td>
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<tr>
<td>ODU</td>
<td>Old Dominion University</td>
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<tr>
<td>OFFI</td>
<td>Optical Free-Fall Instrument</td>
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<tr>
<td>OI</td>
<td>Original Irradiance</td>
</tr>
<tr>
<td>OL</td>
<td>Optronics Laboratories</td>
</tr>
<tr>
<td>OLIPAC</td>
<td>Oligotrophy in the Pacific (Ocean)</td>
</tr>
<tr>
<td>ORGO</td>
<td>Ocean Remote Sensing Group</td>
</tr>
<tr>
<td>OMP-8</td>
<td>Not an acronym, but a type of marine anti-biofouling compound</td>
</tr>
<tr>
<td>ONR</td>
<td>Office of Naval Research</td>
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<tr>
<td>OPC</td>
<td>Optical Plankton Counter</td>
</tr>
<tr>
<td>OPT</td>
<td>Ozone Processing Team</td>
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<tr>
<td>ORKA</td>
<td>On-line Real-time Knowledge-based Analysis</td>
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<tr>
<td>OS</td>
<td>Operating System</td>
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<tr>
<td>OSC</td>
<td>Orbital Sciences Corporation</td>
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<tr>
<td>OSFI</td>
<td>Optical Surface Floating Instrument</td>
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<tr>
<td>OSSA</td>
<td>Office of Space Science and Applications</td>
</tr>
<tr>
<td>OSU</td>
<td>Oregon State University</td>
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</table>
ROSIS Remote Sensing Imaging Spectrometer, also known as the Reflective Optics System Imaging Spectrometer (Germany)

ROV Remotely Operated Vehicle

ROW Reverse Osmosis Water

RR Round-Robin

RRS Royal Research Ship

RSADU Remote Sensing Applications Development Unit

RSMAS Rosenstiel School for Marine and Atmospheric Sciences (University of Miami)

RSS Remote Sensing Systems (Inc.)

RTM Reversing Thermometer

RTOP Research and Technology Operation Plan

S/C Spacecraft

S/N Serial Number

SAC Satellite Applications Centre

SARSAT Search and Rescue Satellite

SBEE Sea-Bird Electronics

SBRC (Hughes) Santa Barbara Research Center

SBUV Solar Backscatter Ultraviolet Radiometer

SBUV-2 Solar Backscatter Ultraviolet Radiometer–2

SCADP SeaWiFS Calibration and Acceptance Data Package

SCDR SeaWiFS Critical Design Review

SCOR Scientific Committee on Oceanographic Research

SDPS SeaWiFS Data Processing System

SDS Scientific Data Set

SDSU San Diego State University

SDY Sequential Day of the Year

SeaBASS SeaWiFS Bio-Optical Archive and Storage System

SeaDAS SeaWiFS Data Analysis System

SeaOPS SeaWiFS Optical Profiling System

SEAPAK Not an acronym, but an image display and analysis package developed at GSFC.

SeaSCOPE SeaWiFS Study of Climate, Ocean Productivity, and Environmental Change

SeaStar Not an acronym, but the name of the satellite on which SeaWiFS will fly.

SeaWiFS Sea-viewing Wide Field-of-view Sensor

SEEP Shelf Edge Exchange Program

SEI SeaWiFS Exploitation Initiative (UK)

SEIBASS SeaWiFS Exploitation Initiative Bio-Optical Archive and Storage System (UK)

SES Shelf Edge Study

SFP Size-Fractionated Pigments

SGI Silicon Graphics, Incorporated

SHP Shaft Horsepower

SI International System of Units or Système International d’Unités

SIG Special Interest Group

SIMBIOS Sensor Intercomparison and Merger for Biological and Interdisciplinary Ocean Studies

SIO Scripps Institution of Oceanography

SIO/MPL Scripps Institution of Oceanography/Marine Physical Laboratory

SIRREX SeaWiFS Intercalibration Round-Robin Experiment

SIRREX-1 The First SIRREX (July 1992)
SIRREX-2 The Second SIRREX (June 1993)
SIRREX-3 The Third SIRREX (September 1994)
SIRREX-4 The Fourth SIRREX (May 1995)
SIRREX-5 The Fifth SIRREX (July 1996)

SIS Spherical Integrating Source or Sensoren-Instrumente Systeme (depending on usage).
SISSR Submerged In Situ Spectral Radiometer
SJUS San Jose State University
SMM Solar Maximum Mission
SNR Signal-to-Noise Ratio
SO Southern Ocean (algorithm)
SOC Southampton Oceanography Center (UK) or Simulation Operations Center (depending on usage).
SOGS SeaStar Operations Ground Subsystem
SOH State of Health
SOW Statement of Work
SPIE Society of Photo-Optical Instrumentation Engineers
SPM Suspended Particulate Material or Special Perturbations Model (depending on usage).
SPMPR SeaWiFS Post-Modification Preship Review
SPO SeaWiFS Project Office
SPOT Satellite Pour l’Observation de la Terre (France)
SPR SeaWiFS Preship Review
SPSWG SeaWiFS Prelaunch Science Working Group
SQL Sequential Query Language
SRC Satellite Receiving Station (NERC)
SRT Sigma Research Technology, Incorporated
SSLSP SeaWiFS Strap Light Signal Paths
SSMI Special Sensor for Microwave/Imaging
SST Sea Surface Temperature or SeaWiFS Science Team (depending on usage).
ST Science Team
Stern Not an acronym, but a BOFS Antarctic research project.
STM Science Team Member
SUDS Submersible Upwelling and Downwelling Spectrometer
SUN Sun Microsystems
SWAP Sylter Wattentmeer Austausch-prozesse
SWG Science Working Group
SWIR Shortwave Infrared
SWL Safe Working Load
SXR SeaWiFS Transfer Radiometer

– T –

T-S Temperature-Salinity
TAE Transportable Applications Executive
TAO Thermal Array for the Ocean or more recently, Tropical Atmosphere-Ocean
TBD To Be Determined
TBUS Not an acronym, but a NOAA orbital element.
TDI Time-Delay and Integration
TDRSS Tracking and Data Relay Satellite System
TIROS Television Infrared Observation Satellite
TLM Telemetry
TM Technical Memorandum
TOA Top of the Atmosphere
TOGA Tropical Ocean Global Atmosphere program
TOMS Total Ozone Mapping Spectrometer
TOPEX Topography Experiment
TOVS TIROS Operational Vertical Sounder

TRMM Tropical Rainfall Measuring Mission
TSM Total Suspended Material
TV Thermal Vacuum

– U –

UA University of Arizona
UARS Upper Atmosphere Research Satellite
UAXR University of Arizona’s Transfer Radiometer
UCAR University Consortium for Atmospheric Research
UCMBO University of California Marine Bio-Optics
UCSB University of California at Santa Barbara
UCSD University of California at San Diego
UC University of Hawaii
UIC Underway Instrumentation and Control (room)
UIM/X User Interface Management/X-Windows
UM University of Miami
UNESCO United Nations Educational, Scientific, and Cultural Organizations
UNIX Not an acronym, but a computer operating system.
UoP University of Plymouth (UK)
UOR Undulating Oceanographic Recorder
UPS Uninterruptable Power System
URI University of Rhode Island
USC University of Southern California
USF University of South Florida
UTC Coordinated Universal Time (definition reflects actual usage instead of following the letters of the acronym)
UTM Universal Transverse Mercator (projection)
UV Ultraviolet
UVB Ultraviolet-B
UWG User Working Group

– V –

V0 Version 0
V1 Version 1
VAX Virtual Address Extension
VCS Version Control Software
VDC Volts Direct Current
VHF Very High Frequency
VHRR Very High Resolution Radiometer
VI Virtual Instrument
VISLAB Visibility Laboratory (Scripps Institution of Oceanography)
VISNIR Visible and Near Infrared
VMS Virtual Memory System
VSM Volume Scattering Function

– W –

WFF Wallops Flight Facility
WHOI Woods Hole Oceanographic Institute
WMO World Meteorological Organization
WOCE World Ocean Circulation Experiment
WORM Write-Once Read-Many (times)
WP2 Not an acronym, but a standard net mesh size (200 µm).
WVS World Vector Shoreline

– X –

XBT Expendable Bathythermograph
XDR External Data Representation

– Y, Z –

YBOM Yamato Bank Optical Mooring
SYMBOLS

– A –

\( a \) The semi-major axis of the Earth’s orbit, a formulation constant, a constant equal to 0.983, a constant equal to \(-20/\tanh(2)\); an exponential value in the expression relating the radiance of scattered light to wavelength; or a a regression coefficient (depending on usage).

\( \tilde{a} \) The measured value of \( a \).

\( a' \) The absorption at the Raman excitation wavelength.

\( a(\lambda) \) Total absorption coefficient.

\( a(z, \lambda) \) Spectral absorption coefficient.

\( a_a \) The specific absorption of chlorophyll \( a \).

\( a_{abc} \) The specific absorption of chlorophylls \( a, b, \) and \( c \).

\( a_b \) The specific absorption of chlorophyll \( b \).

\( a_c \) The specific absorption of chlorophyll \( c \).

\( a_d(\lambda) \) Absorption coefficient due to substances other than water.

\( a_f(z, \lambda) \) \( a_f(\lambda) - a(z, \lambda) \).

\( a_g \) The DOM/detritus specific absorbance.

\( a_P \) Gelbstoff spectral absorption coefficient.

\( a_0 \) Cubic polynomial coefficients.

\( a_{\text{ABS}} \) Coefficient for absorption.

\( a_{\text{OXY}} \) Oxygen absorption coefficient.

\( a_{\text{OZ}} \) Coefficient for ozone absorption.

\( a_{\text{PASC}}(\lambda) \) Particulate spectral absorption coefficient.

\( a_{\text{PASC}} \) The specific absorption of PSC.

\( a_{\text{PS}} \) The specific absorption of PSC.

\( a_{\text{PS}} \) The specific absorption of PSC.

\( a_{\text{WV}} \) The absorption coefficient for pure water.

\( a_{\text{DOM/CHL}} \) The DOM/chlorophyll combined absorbance.

\( a_{\text{CHL}}(\lambda) \) Phytoplankton pigment spectral absorption coefficient.

\( a_{\text{CHL}}(\lambda) \) Phytoplankton pigment spectral absorption coefficient determined in methanol extract.

\( A(\lambda) \) Greybody radiance model.

\( A(k) \) Absorptivity.

\( A(\lambda) \) Coefficient for calculating \( b_b(\lambda) \).

\( A(\lambda) \) AC-9 instrument calibration factor for absorption.

\( A(\lambda) \) AC-9 instrument calibration factor for beam attenuation.

\( A(\lambda) \) Coefficient for the linear term in the scan modulation correction equation.

\( A_d \) The detector aperture.

\( A_f(z, \lambda) \) Linear regression intercepts at the center of a fitted depth interval for \( \ln \) of \( A_f(z, \lambda) \) (defined in Vol. 26).

\( A_f \) The foam reflectance.

\( A_i \) The intersection area or an arbitrary constant (depending on usage).

\( A_i^* \) An arbitrary constant.

\( A_j \) An arbitrary constant.

\( A_j^* \) An arbitrary constant.

\( A_k(\lambda) \) Linear regression intercepts at the center of a fitted depth interval for \( \ln \) of \( A_k(\lambda) \) (defined in Vol. 26).

\( A_l(\lambda) \) Linear regression intercepts at the center of a fitted depth interval for \( \ln \) of \( A_l(\lambda) \) (defined in Vol. 26).

\( a \) A formulation coefficient, a constant equal to 1/3, or a regression coefficient (depending on usage).

\( b(z, \lambda) \) The total scattering coefficient.

\( b(\theta, z, \lambda) \) Volume scattering coefficient.

\( b_w \) Backscattering coefficient.

\( b_w \) The backscatter ratio \( (b_w/b) \).

\( b_0(z, \lambda) \) The spectral backscattering coefficient.

\( b(b_0) \) The backscatter coefficient of water.

\( b(\lambda) \) Initial estimate of the particle scattering coefficient; used for determining the apparent particle scattering coefficient for substances other than water.

\( b_{\text{PS}}(\lambda) \) Scattering associated with phytoplankton (Prieur and Satyendranath 1981).

\( b_p(\lambda) \) Total particle scattering.

\( b_{\text{PS}}(\lambda) \) Total Raman scattering coefficient.

\( b_{\text{PS}}(\lambda) \) The Raman scattering coefficient.

\( b_{\text{PS}}(\lambda) \) The sediment specific scattering coefficient.

\( b_{\text{PS}}(\lambda) \) The total scattering coefficient for pure seawater.

\( b_{\text{PS}}(\lambda) \) Input data for polarization calculations for SeaWiFS band 1.

\( b_{\text{PS}}(\lambda) \) Input data for polarization calculations for SeaWiFS band 7.

\( B(\lambda) \) Coefficient for calculating \( b_b(\lambda) \).

\( B(\lambda) \) Coefficient for the power term in the scan modulation correction equation.

\( B_{\text{PS}} \) BBOP casts 1 m from the ship’s stern.

\( B_{\text{PS}} \) BBOP casts 6 m from the ship’s stern.

\( B_{\text{PS}} \) An empirical constant dependent on the backscatter ratio.

\( B_{\text{PS}}(\lambda) \) Greybody radiance model.

– C –

\( \tilde{c} \) The measured value of \( c \).

\( c(z, \lambda) \) Spectral beam attenuation coefficient.

\( c(z, 660) \) Red beam attenuation (at 660 nm).

\( c_{\text{PS}}(\lambda) \) Corrected non-water beam attenuation coefficient.

\( c_{\text{PS}}(\lambda) \) Initial estimate of the beam attenuation coefficient (used for determining the apparent beam attenuation coefficient for substances other than water).

\( c_{\text{PS}}(\lambda) \) Beam attenuation coefficient due to particles.

\( c_{\text{PS}}(\lambda) \) Beam attenuation coefficient for pure water equal to \( a_{\text{CHL}}(\lambda) + b_b(\lambda) \).

\( \text{[chl. a]} / K \) Concentration of chlorophyll \( a \) over \( K \), the diffuse attenuation coefficient.

\( C(\lambda) \) Chlorophyll \( a \) pigment, or just pigment concentration.

\( C^*(\lambda) \) AC-9 factory calibration coefficient.

\( C^*(\lambda) \) Additional AC-9 factory calibration coefficient.

\( C_{\text{PS}} \) Measured value for the flight diffuser on a given scan line in counts, or a polynomial regression factor (depending on usage).

\( C_{\text{PS}} \) Measured value of the flight diffuser for the scan line immediately sequential to the first scan line used to measure the flight diffuser (i.e., \( S_1 \) in counts).
C_{13} \text{ Pigment concentration derived using CZCS bands 1 and 3.}
C_{23} \text{ Pigment concentration derived using CZCS bands 2 and 3.}
C_{a} \text{ The concentration of chlorophyll a.}
C_{abc} \text{ The concentration of chlorophylls a, b, and c.}
C_{b} \text{ The concentration of chlorophyll b.}
C_{c} \text{ The concentration of chlorophyll c.}
C_{dark} \text{ Instrument dark restore value, in counts.}
C_{est} \text{ Estimated chlorophyll concentration.}
C_{ext} \text{ Average total extinction cross-section of a particle.}
C_{F} \text{ The calibration factor.}
C_{out} \text{ Instrument output, in counts.}
C_{P} \text{ Phaeopigment concentration.}
C_{PPC} \text{ PPC concentration.}
C_{R}(\lambda) \text{ Digital response of reference detector.}
C_{ref} \text{ Reference chlorophyll value (0.5).}
C_{S} \text{ Simulated C.}
C_{sed} \text{ Sediment concentration (SPM).}
C_{temp} \text{ Temperature sensor output, in counts, represented by an 8-bit digital word in the SeaStar telemetry.}
C_{TP} \text{ Total pigment concentration.}
[C + P] \text{ Pigment concentration defined as mg chlorophyll a plus phaeopigments m}^{-3}.

\textbf{D—}

d \text{ The distance between source and detector apertures.}
d(I(\lambda)) \text{ An increment in detector current.}
d_{i} \text{ Distance from the ith observation point to the point of interest.}
d_{j} \text{ Distance from the jth observation point to the point of interest.}
ds \text{ Detector configuration datum.}
d\lambda \text{ An increment in wavelength.}
D \text{ Sequential day of the year.}
D_{at} \text{ Along-track position difference vector.}
D_{ct} \text{ Cross-track position difference.}
D_{rad} \text{ Radial position difference.}
DC \text{ Digital count (value), or direct current (depending on usage).}
DC_{10} \text{ Digital counts at 10-bit digitization.}
DC_{meas} \text{ The digital counts measured unshadowed.}
DC_{scat} \text{ The digital counts due to scattered sunlight.}
DC_{TOA} \text{ The digital counts measured at the top of the atmosphere.}

e \text{ Orbit eccentricity of the Earth.}
E(z,m) \text{ A smoothed estimate of irradiance obtained by a least-squares regression fit in the center of a depth interval.}
E(\lambda) \text{ Spectral irradiance.}
E(\lambda, 50) \text{ Spectral irradiance measured at 50 cm from a source.}
E_{0} \text{ Incident downwelling irradiance.}
E_{0}^{\prime} \text{ The downwelling irradiance at the Raman excitation wavelength.}
E_{a}(\lambda) \text{ Irradiance in air.}
E_{beg} \text{ Beginning irradiance value.}
E_{cal} \text{ Calibration source irradiance.}
E_{d}(\lambda) \text{ Incident downwelling irradiance.}

\textbf{E—}

f \text{ The fraction of the surface covered by foam, the ratio of sensor-to-instrument diameters, or a factor relating IOPs to irradiance reflectance (depending on usage).}
f_{i} \text{ Filter number, i=0–11.}
f(T) \text{ Offset voltage correction from the linear function characterizing temperature response.}
f(\lambda) \text{ Instrument spectral response function.}
f-ratio \text{ The ratio of new to total production.}
F \text{ Fluorescence.}
F \text{ Arithmetic average.}
\overline{F}(\lambda) \text{ A mean conversion factor.}
F(\lambda) \text{ A calibration factor.}
F(\lambda) \text{ A conversion factor to convert PR714 readings to the GSFC sphere radiance scale.}
F(\lambda) \text{ Average of calibration factors.}
F_{0} \text{ The extraterrestrial irradiance corrected for Earth-sun distance, or initial fluorescence (depending on usage).}
F_{0} \text{ The scalar value of the solar spectral irradiance at the top of the atmosphere, multiplied by a columnar matrix of the four Stokes parameters (1/2, 1/2, 0, 0).}
\overline{F}_{0} \text{ Mean solar irradiance.}
F_{0} \text{ Extraterrestrial irradiance corrected for the atmosphere.}
F_{0}(\lambda) \text{ Mean extraterrestrial spectral irradiance.}
F_{0}(\lambda) \text{ Mean extraterrestrial irradiance.}
F_{1} \text{ Pigment biomass loading factor.}
F_{2} \text{ Detritus concentration loading factor.}
F_{3} \text{ Carotenoid concentration (or relative pigment abundance) loading factor.}
F_{3} \text{ Forward scattering probability of the aerosol.}
F_{t} \text{ The total flux incident on the surface if it did not reflect light.}
F_{t} \text{ The total flux incident on the surface, corrected for surface reflection.}
F_{c} \text{ The scalar value of the total flux incident on the surface, corrected for surface reflection, multiplied by a columnar matrix of the four Stokes parameters.}
\( F_{\text{GAC}} \) A GAC correction factor.
\( F_i \) A correction factor, or an immersion coefficient (depending on usage).
\( F_m \) Total sample maximal fluorescence (directly comparable to values measured by standard active fluorometers).
\( F_{\text{SL}} \) A correction factor for stray light.
\( F_i(\lambda) \) Field-of-view coefficient or variable fluorescence, \( F_m - F_0 \).

\(-G-
\)
\( g \) A constant that consists of the ratios of the air-sea interface effects, the effects of the light field, and the relative spectral variation of \( Q \).
\( g(T) \) Coefficient of a linear function characterizing temperature response.
\( g_1 \) A constant equal to 0.82.
\( g_2 \) A constant equal to −0.55.
\( g_{ij} \) Integrals of \( \gamma_{ij} \) (defined in Vol. 26).
\( g_{\text{sl}} \) Gain selection datum.
\( G \) Gain factor or the concentration of DOM and DOM-like absorbers (depending on usage).
\( G(z, \lambda) \) Solid angle dependence with water depth.
\( G(\mu_0, \lambda) \) The effect of the downwelling light field.
\( G_1 \) Gain setting 1.
\( G_2 \) Gain setting 2.
\( G_3 \) Gain setting 3.
\( G_4 \) Gain setting 4.
\( G_e \) Gravitational constant of the Earth (398,600.5 km\(^3\) s\(^{-2}\)).
\( G_n \) Gain factor at gain setting \( n \).

\(-H-
\)
\( h(k) \) Residual values without the calculated sinusoidal response.
\( h(\lambda) \) Normalized response function.
\( h_{ij} \) Analytic integral coefficients over the Hermitian polynomials \( \gamma_{ij} \).
\( h_{nj} \) Matrix elements (defined in Vol. 26).
\( h_{\text{ij}} \) Matrix of coefficients \( h_{ij} \), or \( [h_{nj}] \) (depending on usage).
\( H(\lambda_i; \lambda_j) \) Pigment calculated from the hyperbolic transform of \( E \).
\( H_{\text{GMT}} \) GMT in hours.
\( H_{\text{MT}} \) The measured moon irradiance.
\( H_s \) Altitude of the spacecraft (for SeaStar 705 km).

\(-I-
\)
\( i \) Inclination angle, interval index, or variable infrared bands (depending on usage).
\( i' \) Inclination angle minus 90°.
\( I(\lambda) \) Detector current.
\( I_0 \) Surface downwelling irradiance.
\( I_1 \) Radiant intensity after traversing through an absorbing medium.
\( I_2 \) Reflected radiant energy received by the satellite sensor.
\( I_{\text{max}} \) Recorded maximum instrument output in response to linearly polarized light.
\( I_{\text{min}} \) Recorded minimum instrument output in response to linearly polarized light.
\( I_{\text{CS}} \) Current from the current source diode.

\(-J-
\)
\( j \) Interval index, or variable infrared bands (depending on usage).
\( J_2 \) The \( J_2 \) gravity field term (0.0010863).
\( J_3 \) The \( J_3 \) gravity field term (−0.0000254).
\( J_4 \) The \( J_4 \) gravity field term (−0.0000161).
\( J_5 \) The \( J_5 \) gravity field term.

\(-K-
\)
\( k \) Wavenumber of light (1/\( \lambda \)), the fractional factor of total particle scattering, the molecular absorption cross-section area, or an index to two vectors of band ratios \( k_1 \) and \( k_2 \) (depending on usage).
\( k' \) \( y/\tan \theta_{\text{ow}} \).
\( k_1 \) Beginning wavenumber, or a band ratio vector (depending on usage).
\( k_2 \) Ending wavenumber, or a band ratio vector (depending on usage).
\( k_{\text{c}}(\lambda) \) Spectral fit coefficient weighted over the SeaWiFS bands; \( k'_{\text{c}}(\lambda) \) also used.
\( k_{\text{c}} \) A constant related to \( a_s \) and \( b_s \).
\( \frac{2}{R} \) Vector of \( R \).
−L−

\(l\)  Cuvette pathlength.

\(l_i\)  Nominal absorption pathlength.

\(L\)  Radiance of light transmitted through absorbing oxygen.

\(L(0,0)\)  Spectral radiance measured at the point closest to the center of a sphere.

\(L(411.5)\)  Spectral radiance at 411.5 nm.

\(L(532)\)  Spectral radiance at 532 nm.

\(L(z, \theta, \phi)\)  Submerged upwelled radiance

\(L(\lambda)\)  Spectral radiance.

\(L(\lambda_m)\)  The radiance of a calibration sphere at the nominal peak wavelength of a filter. distribution.

\(L^i(\lambda, \theta, \phi)\)  Atmospheric path radiance at flight altitude.

\(L_0\)  The radiance of the atmosphere.

\(L_1(\lambda)\)  Apparent radiance response to a linearly polarized source.

\(L_d(\lambda)\)  Orthogonal apparent radiance response to a linearly polarized source.

\(L_a\)  Atmospheric path radiance due to aerosols.

\(L_{atm}\)  Radiance of light reflected from the atmosphere.

\(L_c(\lambda)\)  Cloud radiance threshold.

\(L_{cal}\)  Calibration source radiance.

\(L_{cloud}\)  The maximum radiance from reflected light off of clouds.

\(L_d\)  A matrix of the four Stokes parameters for radiance incident on the surface.

\(L_0(\lambda)\)  Sun glint radiance.

\(L_i\)  Incident light, or the length of the \(i\)th element (depending on usage).

\(L_i(\lambda)\)  Spectral radiance for run number \(i\), or radiance, where \(i\) may represent any of the following: \(m\) for measured; \(LU\) for look-up table; \(0\) for light scattered by the atmosphere; \(sfc\) for reflection from the sea surface; and \(w\) for water-leaving radiances.

\(L_{i,j}\)  The ratio of normalized water-leaving radiance at wavelengths \(i(\lambda_i)\) to \(j(\lambda_j)\): \(L_{WN}(\lambda_i)/L_{WN}(\lambda_j)\).

\(L_{LU}\)  The radiance calculated for the look-up tables.

\(L_{min}\)  The radiance of the ocean-atmosphere system measured at a satellite.

\(L_M\)  The radiance of the moon.

\(L_{max}\)  Maximum saturation radiance.

\(L_{nadir}\)  Measured radiance at nadir.

\(L_{NER}(\lambda)\)  Noise equivalent radiance.

\(L_{r0}(\lambda)\)  Atmospheric path radiance due to Rayleigh scattering.

\(L_{r0}(\lambda)\)  Rayleigh radiance at standard atmospheric pressure, \(P_0\).

\(L_s(\lambda)\)  Subsurface water radiance.

\(L_{sea}\)  \(L_0 + L_{sea}\).

\(L_{sat}(\lambda)\)  Saturation radiance for the sensor.

\(L_{scan}\)  Measured radiance at any pixel in a scan.

\(L_{sef}\)  The radiance of the light reflected from the sea surface.

\(L_{sef}\)  The columnar matrix of the four Stokes parameters

\(L_{sky}(\lambda)\)  Spectral sky radiance distribution.

\(L_t(\lambda)\)  Total radiance at the top of the atmosphere (where a satellite sensor is located).

\(L_{top}\)  Radiance emerging at the top of the atmosphere.

\(L_{typical}\)  Expected radiance from the ocean measured on orbit.

\(L_u(\lambda, \phi)\)  Upwelling spectral radiance profile.

\(L_u(0^\circ, \phi)\)  Upwelling spectral radiance just beneath the sea surface.

\(L_u(\lambda)\)  True upwelled spectral radiance.

\(L_u(\lambda)\)  Measured upwelled spectral radiance.

\(L_{up}(\lambda)\)  The columnar matrix of light leaving the surface containing the values \(L_{up,1}, L_{up,2}, L_{up,3}, \text{ and } L_{up,4}\).

\(L_{up,1}\)  The RADTRAN radiance parameters (for \(i = 1, 4\)).

\(L_{W}\)  The scalar value of the light leaving the radiance multiplied by a columnar matrix of the four Stokes parameters.

\(L_{W}\)  The water-leaving radiance of light scattered from beneath the surface and penetrating it.

\(L_{W}(443)\)  Water-leaving radiance at 443 nm.

\(L_{W}(520)\)  Water-leaving radiance at 520 nm.

\(L_{W}(550)\)  Water-leaving radiance at 550 nm.

\(L_{W}(670)\)  Water-leaving radiance at 670 nm.

\(L_{WN}\)  Normalized water-leaving radiance at the Raman excitation wavelength.

\(L_{WN}(\lambda)\)  Normalized water-leaving radiance.

\(L_{S1}\)  Measured radiance for mirror side 1.

\(L_{S2}\)  Measured radiance for mirror side 2.

−M−

\(m\)  Index of refraction, or an air mass (depending on usage).

\(M\)  Path length through the atmosphere, or the total number of discrete data points in a vertical radiometric profile (depending on usage).

\(M_{p}\)  The corrected mean orbit anomaly of the Earth, which is a function of date, and refers to an imaginary moon in a circular orbit.

\(M_{oa}\)  Path length for ozone transmittance.

−N−

\(n(\lambda)\)  An exponent conceptually similar to the Ångström exponent.

\(n_{o}(\lambda)\)  Index of refraction of Plexiglas™.

\(n_{w}(\lambda)\)  Index of refraction of water.

\(N\)  The total number of something, or the ending index in a measurement sequence for angular measurements, or node index for the integral K analysis (depending on usage).

\(n(\lambda)\)  An exponent conceptually similar to the Ångström exponent.

\(N_D\)  The compensation factor for a 4 log neutral density filter.

\(N_i\)  Total number density of either the first or second aerosol model when \(i = 1 \text{ or } 2\), respectively.

−O−

\(\vec{O} \cdot \vec{P} \times \vec{V}\).

\(O_{20}\)  OFFI casts 20 m from the ship’s stern.

\(OD_{i}(\lambda)\)  Baseline optical density spectrum.

\(OD_{i}(\lambda)\)  Optical density of soluble material (Gelbstoff).

\(OD_{i}(\lambda)\)  Optical density spectra of filtered particles.

\(OD_{i}(\lambda)\)  Optical density reference for filtered or distilled water.

\(OD_{i}(\lambda)\)  Optical density of non-pigmented particulates (trippton).
- P -

\( p \) Surface pressure.
\( p_a \) A factor to account for the probability of scattering to the spacecraft for three different paths from the sun.
\( p_{CO_2} \) The partial pressure of CO_2.
\( p_{dev} \) Pressure deviation between the minimum and maximum surface pressures compared to 1.013 mb.
\( p_{ref} \) Reference pressure.
\( p_w \) The probability of seeing sun glint in the direction \( \theta, \Phi \) given the sun in position \( \theta_0, \Phi_0 \) as a function of wind speed (W).
\( P \) Nodal period, phaeopigment concentration, local surface pressure, or the particulate concentration including detrital material (depending on usage).
\( \vec{P} \) Orbit position vector.
\( P(\theta^+) \) Phase function for forward scattering.
\( P(\theta^-) \) Phase function for backward scattering.
\( P(\lambda) \) Polarization sensitivity.
\( P_0 \) Standard atmospheric pressure (1.013.25 mb).
\( P_a \) Probability of scattering to the spacecraft.
\( P_{edge} \) A pixel located on the exact edge of a bright source in a GAC scene.
\( P_{PR714} \) PR714 raw radiance, the fitting coefficient for \( i = 1-5 \), or the \( i \)th pixel under correction (depending on usage).
\( P_S \) Simulated \( C_a + C_P \) (q.v.).
\( P_{slit} \) Designates the number of pixels after the slit for the instrument to return to the residual counts allowed in the specification.
\( P_W \) Probability of seeing sun glint in the spacecraft direction.
\( P_{xsl} \) Pixel number, i.e., the numerical designation of a pixel in a scan line.
\( P_{zero} \) Designates the number of pixels required for the instrument to settle to a level of zero residual counts.
\( P_{B_{max}} \) Maximum biomass-specific photosynthetic rate.
\( PF \) Polarization factor.
\( P_\alpha \) The location of the pixel to be corrected in GAC pixels relative to the (bright target) edge pixel.
\( P_{\sigma} \) Phaeopigment concentration.
\( - Q - \)

\( q \) Water transmittance factor.
\( Q \) The ratio of upwelling irradiance to radiance, which varies with the angular distribution of the upwelling light field, and is \( \pi \) for an isotropic distribution.
\( Q(\lambda) \) \( L_a(0^+, \lambda) \) to \( E_a(0^+, \lambda) \) relation factor (equal to \( \pi \) for a Lambertian surface).
\( - R - \)

\( r \) Water-air reflectance for totally diffuse irradiance, the radius coordinate, the Earth-sun distance, or the lamp-to-plaque distance in centimeters (depending on usage).
\( r_1 \) The radius of circle one, or source aperture (depending on usage).
\( r_2 \) The radius of circle two, or detector aperture (depending on usage).
\( r_\text{geom} \) The geometric mean radii of either the first or second aerosol model when \( i = 1 \) or 2, respectively.
\( R \) Reflectance, or the linear correlation coefficient (depending on usage).
\( R \) The reflection matrix.
\( \mathcal{R} \) Mean Earth-sun distance.
\( R^2 \) The square of the linear correlation coefficient.
\( R(0^-, \lambda) \) Irradiance reflectance just below the sea surface.
\( R(\lambda) \) The irradiance reflectance at a particular wavelength.
\( R_1 \) A multiplier for mirror side 1.
\( R_2 \) A multiplier for mirror side 2.
\( R_a \) Aerosol reflectance.
\( R_a/(qT_2^2) \) Bidirectional reflectance distribution function.
\( R_a \) Mean Earth radius (6,378.137 km).
\( R_a \) Effective resistance for the thermistor-resistor pair.
\( R_i \) Radiance of the \( i \)th pixel.
\( R_{i,f} \) Reflectance from an uncalibrated radiometer.
\( R_L(z, \lambda) \) Spectral reflectance.
\( R_{s,ref} \) Limiting reflectance for defining Case-1 water.
\( R_a \) Rayleigh reflectance.
\( R_{ref} \) Remote sensing reflectance.
\( R_{e,ref}(z, \lambda) \) Spectral remote sensing reflectance profile.
\( R_{s,ref} \) Subsurface reflectance.
\( R_t \) Total reflectance at the sensor.
\( R_{i,t} \) (\( R_t - R_r \))/(\( qT_2^2 \)).
\( R_{det} \) Resistance of the thermistor.
\( R_s \) Sunspot number.

- S -

\( s \) The reflectance of the atmosphere for isotropic radiation incident at its base.
\( s(\lambda) \) The slope for the range 0–1,023.
\( s_{xy} \) Residual standard deviation.
\( S \) The solar constant, or the slope of a line (depending on usage).
\( S(\lambda) \) The solar spectral irradiance, or \( L_a(\lambda)/L_a(670) \) (depending on usage).
\( S(\lambda_r) \) A coefficient of water temperature variation in \( a_w(\lambda, T) \).
\( S_{C}(\lambda) \) Radiometer signal (uncalibrated) measured viewing a reflectance plaque.
\( S_i \) Initial detector signal.
\( S_{sky} \) Detector signal with gain.
\( S_{sky}(\lambda) \) Radiometer signal (uncalibrated) measured viewing the sky.
\( S_W(\lambda) \) Radiometer signal (uncalibrated) measured viewing the water.

- T -

\( t \) Time variable, or the transmission of \( L_{\text{sky}} \) through the atmosphere (depending on usage).
\( t' \) The transmission of \( L_{W} \) through the atmosphere.
\( t(k) \) Spectral transmission as a function of wavenumber.
\( t(\lambda) \) Diffuse transmittance of the atmosphere.
\( t(750, \theta) \) Diffuse transmittance between the ocean surface and the sensor at 750 nm.
\( t_0 \) Initial time, or the sum of the direct and diffuse transmission of sunlight through the atmosphere (depending on usage).
\( t_1 \) First observation time.
\( t_2 \) Second observation time.
\( t_{as} \) Aerosol transmittance after absorption.
\( t_{abs} \) Aerosol transmittance after scattering.
$t_d$ Direct component of transmittance after absorption by the gaseous components of the atmosphere, scattering and absorption by aerosols, and scattering by Rayleigh.

$t_d(z, \lambda)$ Downward spectral irradiance transmittance from flight altitude $z$ to the surface.

$t_e$ Time difference in hours between present position and most recent equator crossing.

$t_{EC}$ Equator crossing time.

$t_{oa}$ Transmittance after absorption by ozone.

$t_r$ Transmittance after Rayleigh scattering.

$t_i$ Diffuse component of transmittance after absorption by the gaseous components of the atmosphere, scattering and absorption by aerosols, and scattering by Rayleigh.

$t_{ww}$ Transmittance after absorption by water vapor.

$T$ Tilt position.

$T'$ Instrument temperature during calibration.

$T(\lambda)$ The transmittance along the slant path to the sun.

$T(\lambda, \theta)$ Total transmittance (direct plus diffuse) from the ocean through the atmosphere to the spacecraft along the path determined by the spacecraft zenith angle $\theta$.

$T(\lambda, \theta, \theta_0)$ Two-way transmission through oxygen in the model layer in terms of zenith angle $(\theta)$, and solar angle $(\theta_0)$.

$T_0(\lambda, \theta_0)$ Total downward transmittance of irradiance.

$T_{2r}$ Two-way diffuse transmittance for Rayleigh attenuation.

$T_e$ Equation of time.

$T_g(\lambda)$ Transmittance through a glass window.

$T_{ox}$ Transmittance of oxygen (O$_2$).

$T_{oz}$ Transmittance of ozone (O$_3$).

$T_{wv}(\lambda)$ Transmittance through a water path.

$T_{ww}$ Transmittance of water vapor (H$_2$O).

$\beta$ A formulation coefficient (slope) or a constant in the Ångström formulation, the exponential value in the expression relating the extinction coefficient to wavelength, or the off-axis angle (depending on usage).

$\alpha$ Percent albedo, tilt angle, formulation coefficient (intercept), the power constant in the Ångström formulation, the ordinate, meridional coordinate, or an empirical factor (depending on usage).

$\gamma$ The Ångström exponent.

$\gamma(\lambda)$ The ratio of the aerosol optical thickness at wavelength $\lambda$ to the aerosol optical thickness at 670 nm.

$\beta(z, \lambda, \theta)$ Spectral volume scattering function.

$\gamma(z)$ The corrected depth for pressure transducer depth offset relative to a sensor.

$\gamma_i$ Tilt position.

$\gamma(z, \theta)$ The ordinate, meridional coordinate, or an empirical factor (depending on usage).

$\alpha_i$ A power law constant.

$\alpha_i$ A curve fitting constant.

$\alpha_i$ A curve fitting constant.

$\alpha_i$ A curve fitting constant.

$\alpha_i$ A curve fitting constant.

$\beta$ A formulation coefficient (slope) or a constant in the Ångström formulation (depending on usage).

$\beta(\theta)$ The normalized scattering phase function $\langle \beta(\theta) \rangle / b$.

$\beta$ The extinction coefficient of either the first or second aerosol model when $i = 1$ or 2, respectively; or the filter absorption correction factor for scattering within the filter.

$\gamma$ The Ångström exponent.

$\gamma(\lambda)$ The ratio of the aerosol optical thickness at wavelength $\lambda$ to the aerosol optical thickness at 670 nm.

$\gamma_i(\xi)$ Hermitian cubic polynomial.

$\sigma$ The great circle distance from $\Psi(t_0)$ to $\Psi(t - t_0)$, the departure of each individual conversion factor from the mean, a relative difference, the absorption coefficient, or the cosine response asymmetry (depending on usage).
$\Delta k$ Equivalent bandwidth.
$\Delta L$ The difference between $L$ and $L_0$.
$\Delta L_W(670)$ The error in the water-leaving radiance for the red channel.
$\Delta p$ The difference in atmospheric pressure.
$\Delta p_{\text{CO}_2}$ The difference in the partial pressure of CO$_2$ in the air and in the sea.
$\Delta P$ The difference in successive pixels, or the pressure deviation from standard pressure, $P_0$ (depending on usage).
$\Delta t$ Time difference.
$\Delta T(\lambda)$ The error in transmittance.
$\Delta z$ Half-interval depth increment.
$\Delta \theta$ Angular increment.
$\Delta \theta_s$ The error (in radians) in the knowledge of $\theta_s$.
$\Delta \lambda$ An interval in wavelength.
$\Delta \rho_w(\lambda)$ The error in the water-leaving reflectance for the red channel.
$\Delta \sigma(\lambda)$ The absolute error in spectral optical depth.
$\Delta \tau_n$ The error in the aerosol optical thickness.
$\Delta \Phi_{\text{max}}$ The ratio $F_n/F_m$ which corresponds to the (normalized) maximum number of reaction centers in the chlorophyll population which are capable of photosynthesis.
$\Delta \omega$ The longitude difference from the sub-satellite point to the pixel.
$\Delta \omega_s$ Longitude difference.
$\epsilon$ Cosine collector response error or an atmospheric correction parameter (depending on usage).
$\epsilon(i,j)$ The ratio of $L_n$ in two bands $i$ and $j$.
$\epsilon_{\text{sky}}$ Self-shading error for $E_{\text{sky}}$.
$\epsilon_{\text{sun}}$ Self-shading error for $E_{\text{sun}}$.
$\epsilon(\lambda) = 1 - e^{-\kappa'(\lambda)r}$.
$\eta$ The bearing from the sub-satellite point to the pixel along the direction of motion of the satellite.
$\theta$ The spacecraft zenith angle, spacecraft pitch, the polar angle of the line-of-sight at a spacecraft, the centroid angle of the scattering measurement, or a generalized angle (depending on usage).
$\theta_e$ The Fresnel reflectance for sun and sky irradiance.
$\theta_i$ The Fresnel reflectance for viewing geometry.
$\theta_m$ The bidirectional reflectance.
$\theta_{\text{sun}}$ Refracted solar zenith angle.
$\theta_{\text{sky}}$ The intersection angle of circle one or the lower integration limit (depending on usage).
$\theta_u$ The intersection angle of circle two or the upper integration limit (depending on usage).
$\theta_{\mu_{\text{sun}}}$ In-air measurement angle.
$\theta_0$ Any nominal angle.
$\theta_1$ The zenith angle of the vector normal to the surface vector for which glint will be observed or an angular origin (depending on usage).
$\theta_N$ The angle with respect to nadir that the sea surface slopes to produce a reflection angle to the spacecraft or an angular terminus (depending on usage).
$\theta_s$ Scan angle of sensor or the solar zenith angle (depending on usage).
$\theta'_s$ Scan angle of sensor adjusted for tilt.
$\theta_t$ Tilt angle.
$\theta_w$ In-water measurement angle.
$\kappa$ An integration constant: $\kappa = A_d \pi r^2 (r_1^2 + r_2^2 + d^2)^{-1}$.
$\kappa'$ Self-shading coefficients.
$\lambda$ Wavelength of light.
$\lambda'$ A channel of nominal wavelength, or the Raman excitation wavelength (depending on usage).
$\lambda_0$ Center wavelength.
$\lambda_i$ Starting wavelength.
$\lambda_f$ Ending wavelength.
$\lambda_i$ A wavelength of light at a particular band.
$\lambda_f$ A wavelength of light at a particular band.
$\lambda_{\text{nm}}$ Nominal center wavelength.
$\lambda_n$ Any nominal wavelength.
$\lambda_c$ Near-IR wavelength.
$\mu$ Mean value, or cosine of the satellite zenith angle (depending on usage).
$\mu_0$ Cosine of the solar zenith angle.
$\Pi_d(z, \lambda)$ Spectral mean cosine for downwelling radiance at depth $z$.
$\Pi_d(0^+, \lambda)$ Spectral mean cosine for downwelling radiance at the sea surface.
$\mu_s$ The reciprocal of the effective optical length to the top of the atmosphere, along the line of sight to the sun.
$\nu_j$ The $j$th temporal weighting factor.
$\xi$ A local depth coordinate ranging from $-1$ at node $z_{i-1}$ to $+1$ at node $z_i$, or actual deployment distance (depending on usage).
$\xi(\lambda)$ Minimum ship-shadow avoidance distance.
$\xi_d$ The calculated deployment distance for downwelling irradiance measurements.
$\xi_{\text{EM}}$ The distance between the Earth and the moon.
$\xi_L$ The calculated deployment distance for upwelling radiance measurements.
$\xi_a$ The calculated deployment distance for upwelling irradiance measurements.
$\rho$ The Fresnel reflectivity, the weighted direct plus diffuse reflectance, or the average reflectance of the sea (depending on usage).
$\rho(\theta)$ Fresnel reflectance for viewing geometry.
$\rho(\theta_0)$ Fresnel reflectance for solar geometry.
$\rho(\lambda)$ The bidirectional reflectance.
$\rho_{\mu_{\text{sun}}}$ Reflectance of clouds and ice.
$\rho_G(\lambda)$ Gray card or plaque reflectance.
$\rho_{\text{sun}}$ The reflectance of the sea of either the first or second aerosol model when $i = 1$ or 2, respectively.
$\rho_i(\lambda)$ The reflectance where $i$ may represent any of the following: $m$ for measured; $LU$ for look-up table; $s$ for light scattered by the atmosphere; $sfc$ for reflection from the sea surface; or $w$ for water-leaving radiance.
$\rho_{\text{sea}}$ Sea surface reflectance for direct irradiance at normal incidence for a flat sea.
$\rho_{\text{sun}}$ Reflectance for diffuse irradiance.
σ One standard deviation of a set of data values.

σ² The mean square surface slope distribution.

σ(λ) The spectral optical depth.

σ² = (log r - log rᵢ)².

σₑ The density of sea water determined from the in situ salinity and temperature, but at atmospheric pressure.

σ₀ The density of sea water determined from the in situ salinity and the potential temperature (θ), but at atmospheric pressure.

τ Vector of measured optical depths.

τ(z,λ) Vertical profile of the spectral optical depth.

τ̂(z,λ) The estimated vertical profile of the spectral optical depth.

τ₀ Aerosol optical thickness.

τₒ(λ) Uniform mixed gas optical thickness.

τₒ Ozone optical thickness.

τₒ(750) Oxygen optical thickness at 750 nm.

τₒ(λ) Optical thickness due to oxygen absorption.

τₒ The optical thickness of ozone.

τᵣ Rayleigh optical thickness (due to scattering by the standard molecular atmosphere).

τᵣ’ Pressure corrected Rayleigh optical thickness.

τᵣ Rayleigh optical thickness.

τᵣ₁ Rayleigh optical thickness at standard atmospheric pressure, P₀.

τᵣ₂ Rayleigh optical thickness weighted by the SeaWiFS spectral response.

τₛ(λ) Spectral solar atmospheric transmission.

τₛ Water vapor optical thickness.

τₗ Water vapor optical thickness.

φ Azimuth angle of the line-of-sight at a spacecraft.

φ₀ Azimuth angle of the direct sunlight.

Φ Spacecraft azimuth angle or roll (depending on usage).

Φ Roll rate.

Φ₀ Solar azimuth angle.

Φ₀ The detector solid angle.

Φₘ The solid angle subtended by the moon at the measuring instrument.

χ Proportionality constant.

Ψ Pixel latitude or yaw (depending on usage).

Ψ Yaw rate.

Ψₘ Solar declination latitude.

Ψₘ(t) Subsatellite latitude as a function of time.

ω Longitude variable, the surface reflection angle, or the single scattering albedo (depending on usage).

ω₀ Old longitude value.

ωₑ Single scattering albedo of the aerosol.

ωₑ Equator crossing longitude.

ωₛ Spatial weighting factor.

ωₛ Longitude variable.

Ω Solar hour angle, or the amount of ozone in Dobson units (depending on usage).
References


C—


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E.R. Firestone and S.B. Hooker


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Vol. 1

Vol. 2

Vol. 3

Vol. 4

Vol. 5

Vol. 6

Vol. 7

Vol. 8

Vol. 9

Vol. 10

Vol. 11

Vol. 12

Vol. 13

Vol. 14

Vol. 15

Vol. 16

Vol. 17

Vol. 18
The Sea-viewing Wide Field-of-view Sensor (SeaWiFS) is the follow-on ocean color instrument to the Coastal Zone Color Scanner (CZCS), which ceased operations in 1986, after an eight-year mission. SeaWiFS is expected to be launched in 1997, on the SeaStar satellite, being built by Orbital Sciences Corporation (OSC). The SeaWiFS Project at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center (GSFC), has undertaken the responsibility of documenting all aspects of this mission, which is critical to the ocean color and marine science communities. This documentation, entitled the SeaWiFS Technical Report Series, is in the form of NASA Technical Memorandum Number 104566. All reports published are volumes within the series. This particular volume serves as a reference, or guidebook, to the previous 35 volumes and consists of 6 sections including: an addenda, an errata, an index to key words and phrases, lists of acronyms and symbols used, and a list of all references cited. The editors publish a cumulative index of this type after every five volumes. Each index covers the reference topics published in all previous editions, that is, each new index includes all of the information contained in the preceding indices with the exception of any addenda.

Elaine R. Firestone: General Sciences Corporation, Laurel, Maryland