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SeaWiFS Technical Report Series

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Volume 12, SeaWiFS Postlaunch Technical Report Series Cumulative Index: Volumes 1–11

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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 was launched on 1 August 1997, onboard the OrbView-2 satellite, built by Orbital Sciences Corporation (OSC). The SeaWiFS Project at the National Aeronautics and Space Administration (NASA) Goddard Space Flight Center (GSFC), undertook the responsibility of documenting all aspects of this mission, which is critical to the ocean color and marine science communities. The start of this documentation was titled the *SeaWiFS Technical Report Series,* which ended after 43 volumes were published. A follow-on series was started, titled the *SeaWiFS Postlaunch Technical Report Series.* This particular volume of the so-called *Postlaunch Series* serves as a reference, or guidebook, to the previous 11 volumes and consists of 5 sections including an errata, an addendum, an index to key words and phrases, a list of acronyms used, and a list of all references cited. The editors will publish a cumulative index of this type after every five volumes.

1. INTRODUCTION

This is the second in a series of indexes, published as a separate volume in the *SeaWiFS Postlaunch Technical Report Series,* and includes information found in the previous 11 volumes of the series. The *SeaWiFS Postlaunch Technical Report Series* has been written under National Aeronautics and Space Administration (NASA) Technical Memorandum (TM) numbers 1998–206892, 1999–206892, 2000–206892, and 2001–206892, with the year part of the TM number changing with each calendar year of its existence. The volume numbers, authors, and titles of the volumes covered in this index are:

Vol. 1: Johnson, B.C., J.B. Fowler, and C.L. Cromer, *The SeaWiFS Transfer Radiometer (SXR).*

Vol. 2: Aiken, J., D.G. Cummings, S.W. Gibb, N.W. Rees, R. Woodd-Walker, E.M.S. Woodward, J. Woolfenden, S.B. Hooker, J-F. Berthon, C.D. Dempsey, D.J. Suggett, P. Wood, C. Donlon, N. González-Benítez, I. Huskin, M. Quevedo, R. Barciela-Fernandez, C. de Vargas, and C. McKee, *AMT-5 Cruise Report.*

Vol. 3: Hooker, S.B., G. Zibordi, G. Lazin, and S. McLean, *The SeaBOARR-98 Field Campaign.*

Vol. 4: Johnson, B.C., E.A. Early, R.E. Eplee, Jr., R.A. Barnes, and R.T. Caffrey, *The 1997 Prelaunch Radiometric Calibration of SeaWiFS.*

Vol. 5: Barnes, R.A., R.E. Eplee, Jr., S.F. Biggar, K.J. Thome, E.F. Zalewski, P.N. Slater, and A.W. Holmes, *The SeaWiFS Solar Radiation-Based Calibration and the Transfer-to-Orbit Experiment.*

Vol. 6: Firestone, E.R., and S.B. Hooker, *SeaWiFS Postlaunch Technical Report Series Cumulative Index: Volumes 1–5.*

Vol. 7: Johnson, B.C., H.W. Yoon, S.S. Bruce, P-S. Shaw, A. Thompson, S.B. Hooker, R.E. Eplee, Jr., R.A. Barnes, S. Maritorena, and J.L. Mueller, *The Fifth SeaWiFS Intercalibration Round-Robin Experiment (SIRREX-5), July 1996.*

Vol. 8: Hooker, S.B., and G. Lazin, *The SeaBOARR-99 Field Campaign.*

Vol. 9: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, *SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1.*

Vol. 10: McClain, C.R., R.A. Barnes, R.E. Eplee, Jr., B.A. Franz, N.C. Hsu, F.S. Patt, C.M. Pietras, W.D. Robinson, B.D. Schieber, G.M. Schmidt, M. Wang, S.W. Bailey, and P.J. Werdell, *SeaWiFS Postlaunch Calibration and Validation Analyses, Part 2.*

Vol. 11: O'Reilly, J.E., and 24 Coauthors, *SeaWiFS Postlaunch Calibration and Validation Analyses, Part 3.*

This volume serves as a reference, or guidebook, to the preceding volumes of the so-called *Postlaunch Series.* It consists of three main sections: a cumulative index to key words and phrases, a glossary of acronyms, and a bibliography of all references cited in the series. An errata section has been added to address issues and needed corrections which have come to the editors' attention since the volumes were first published. In addition, an addendum section has been added to include the revised *SeaWiFS Project In Situ Data Policy,* which is too short in length to warrant a separate volume within the series.

The nomenclature of the index section is a familiar one, in the sense that it is a sequence of alphabetical entries, but it uses a unique format because multiple volumes are involved. Unless indicated otherwise, the index entries refer

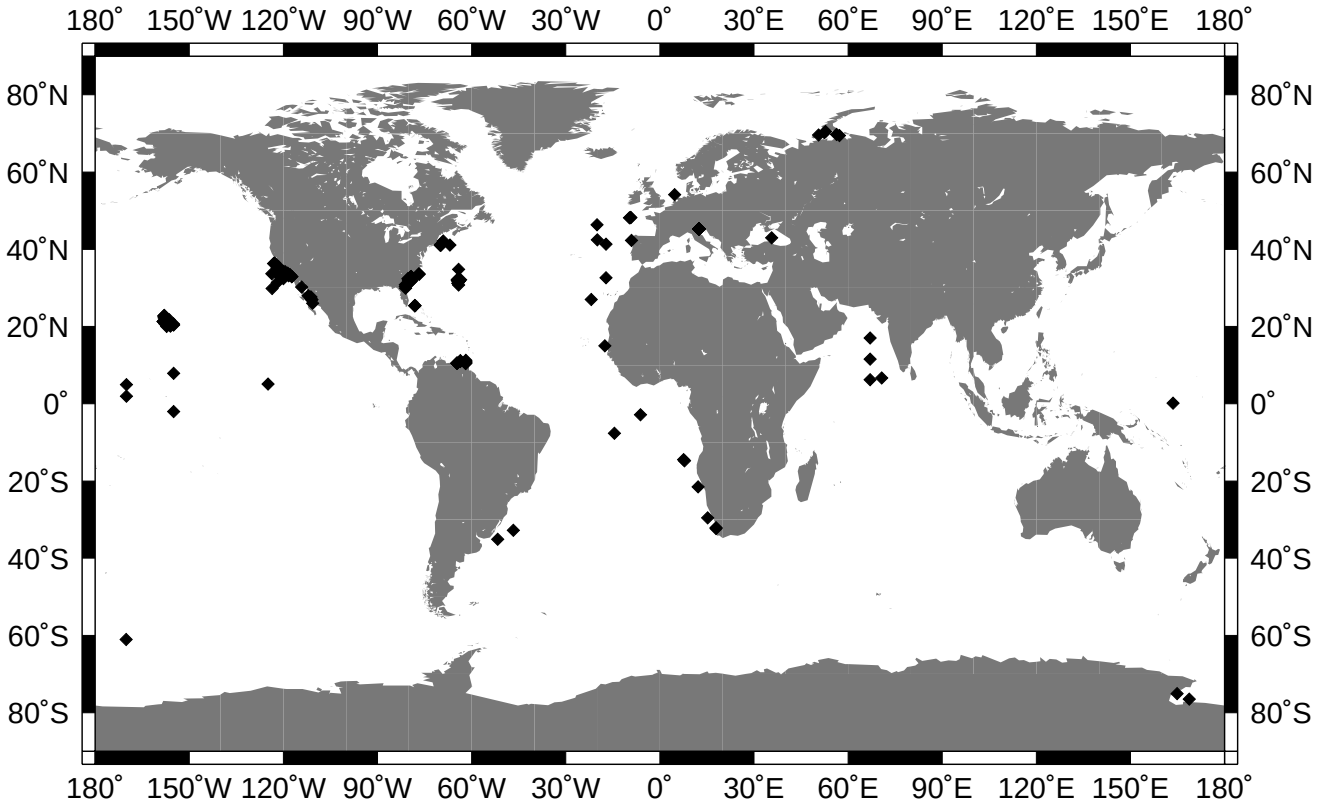

Fig. 29. The map of current station locations in the final match-up data set.

to some aspect of the SeaWiFS Project or instrument. 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 (even if they fall within an already specified page range). In this case, the figure or table number is given with the page number on which it appears.

keyword, **volume**(Fig. # *p.* #).

or

keyword, **volume**(Table # *p.* #).

2. ERRATA

In Volume 10, page 51, the table should be labeled "Table 13" instead of "Table 3."

Figure 29 in Volume 10 did not appear in the published document because of a printing error. The appropriate figure and caption appears above.

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," "accepted," or "in press" to printed matter. In other instances, some part (or parts) of the citation, e.g., the title or year, has changed. Listed below are the references in question as they were cited in one or more of the first 11 volumes in the series, along with how they now appear in the references section of *this* volume.

Original Citation

Biggar, S.F., 1999: A method for correcting the irradiance of standards of spectral irradiance (lamps) operated at non-standard distances. *Opt. Photonics News,* (accepted).

Revised Citation

Biggar, S.F., 2001: A method for correcting the irradiance of standards of spectral irradiance (lamps) operated at non-standard distances. *Opt. Photonics News,* (withdrawn).

Original Citation

Biggar, S.F., P.N. Slater, J.M. Palmer, and K.J. Thome, 2000: Unified approach to absolute radiometric calibration in the solar-reflective range. *Remote Sens. Environ.,* (accepted).

Revised Citation

Biggar, S.F., P.N. Slater, J.M. Palmer, and K.J. Thome, 2001: Unified approach to absolute radiometric calibration in the solar-reflective range. *Remote Sens. Environ.,* (accepted).

Original Citation

Early E.A., P.Y. Barnes, B.C. Johnson, J.J. Butler, C.J. Bruegge, S.F. Biggar, P.R. Spyak, and M.M. Pavlov, 1999: Bidirectional reflectance round-robin in support of the Earth Observing System Program. *J. Atmos. Oceanic Tech.,* (accepted).

Revised Citation

Early E.A., P.Y. Barnes, B.C. Johnson, J.J. Butler, C.J. Bruegge, S.F. Biggar, P.R. Spyak, and M.M. Pavlov, 2000: Bidirectional reflectance round-robin in support of the Earth Observing System Program. *J. Atmos. Oceanic Tech.,* **17,** 1,077–1,091.

Original Citation

Morel, A., and S. Maritorena, 2000: Bio-optical properties of oceanic waters: a reappraisal. *J. Geophys. Res.,* (submitted).

Revised Citation

Morel, A., and S. Maritorena, 2001: Bio-optical properties of oceanic waters: a reappraisal. *J. Geophys. Res.,* **106,** 7,163–7,180.

Original Citation

Subramaniam, A., R.R. Hood, C.W. Brown, E.J. Carpenter, and D.G. Capone, 2000: A classification algorithm for mapping *Trichodesmium* blooms using SeaWiFS. *Deep-Sea Res.,* (submitted).

Revised Citation

Subramaniam, A., R.R. Hood, C.W. Brown, E.J. Carpenter, and D.G. Capone, 2001: Detecting *Trichodesmium* blooms in SeaWiFS imagery. *Deep-Sea Res.,* (in press).

3. ADDENDUM

SeaWiFS Project In Situ *Data Policy*

This policy provides the guidelines for data collected under the NASA Reserach Announcement (NRA) Biological Oceanography Program and SeaWiFS Project field collaborations for inclusion in the calibration and validation database. The *in situ* data is to be submitted to the SeaWiFS Bio-optical Archive and Storage System (SeaBASS) [Hooker et al. 1994c, Fargion and Mueller 2000, and Fargion and McClain 2001]† The SeaBASS database is comanaged by the Sensor Intercomparison and Merger for Biological and Interdisciplinary Oceanic Studies (SIMBIOS) and SeaWiFS Projects at Goddard Space Flight Center (GSFC).

The purpose of SeaBASS is to ensure that a user-friendly, searchable database of *in situ* and airborne bio-optical measurements is readily available to the NASA Ocean Color Science Team members and to other approved individuals (members of other ocean color instrument teams, voluntary data contributors, etc.) for advanced algorithm development and data product validation purposes. In addition, SeaBASS contains a variety of data collected using different methods (e.g., subsurface and above-surface reflectance, high performance liquid chromatography, and fluorometric chlorophyll *a*) which are useful for measurement protocol evaluation purposes (Mueller and Austin 1995, Hooker et al. 1999b, and Fargion and Mueller 2000). This policy supercedes the SeaWiFS Project 1991 policy (Appendix A in Hooker et al. 1993b).

Submission: Ocean color algorithm development is essentially observation limited, and rapid turnaround and access to such data are crucial for progress. Principal Investigators (PIs) supported under the SIMBIOS and SeaWiFS Programs must meet a 6-month data submission deadline. Bio-optical data collected under funding from the NASA Ocean Biology Program, however, must be submitted within 1 year. International Science Team members and members of other ocean color instrument teams who are making suitable observations for algorithm development and validation are encouraged to provide their data as well, to foster collaboration.

Formats and Metadata: Data should be provided in the currently agreed-upon format, along with relevant information describing collection conditions, instrument specifications, instrument performance and calibration, and statements of data accuracy. The currently used data format specifications and examples are posted on the SeaBASS Web site (`http://seabass.gsfc.nasa.gov/~seabass/seabass/html/seabass.html`). The provider should use `FCHECK`, which is an automated format checker program, to test the format validity of SeaBASS data files via return e-mail. Appropriate instrument information, cruise reports, and calibration histories are expected from each data provider. For data providers supported by the SeaWiFS Project Office, submission of the above information is mandatory. Data values shall be in appropriate units (e.g., providing volts together with conversion coefficients and drift data is unacceptable). High level data sets, such as normalized water-leaving radiance spectra, are encouraged together with descriptions or citations of the procedures used to derive the values. Descriptions of data should be segmented into logical groupings, e.g., by station, date, parameter, etc. Data quality, calibration traceability and history, instrument drift, and sampling protocols may be in text format. Future recommended format modifications may be proposed during NASA Ocean Color Science Team meetings and then discussed for approval and implementation.

Data Delivery and Access: Researchers, who are supported by the SeaWiFS Project Office, will be required to deliver data to the SeaWiFS Project Office within six months of data collection. For a period of three years following data collection, access to the digital data will be limited to the NASA Ocean Color Science Team and other approved users as agreed upon by the SeaWiFS Project Office and data providers unless earlier access is granted by individual data providers. Data providers can declare their data sets available for open access anytime prior to the three-year anniversary. The SeaWiFS and SIMBIOS Project Offices will grant access to international science team members on a case-by-case basis according to ongoing collaboration efforts. Other investigators from the ocean color community will be able to query SeaBASS for information about the data (i.e., parameters, locations, dates, and investigators), but will not have access to the data itself. If the investigators are interested in obtaining the data, they will be referred to the appropriate provider. After the third-year anniversary of data collection, all *restricted* data will change to an *open* status, and a copy of the data will be given to the National Oceanographic Data Center (NODC) for distribution. Exceptions to this plan may be made with the approval of the Ocean Color Science Team. For example, some special data sets for algorithm development may be made available to the research community without restrictions.

Use Conditions: Prior to the three-year data collection anniversary, users of data will be required to provide proper credit and acknowledgment of the provider. A citation should also be made of the data archive. Users of data are encouraged to discuss relevant findings with the provider early in the research. The user is required to give all providers of the data being used a copy of any manuscript resulting from use of the data prior to the initial submission for publication, thus giving the data provider an opportunity to comment on the paper. The

† Note that all citations given in this addendum are listed in their entirety in the References section of this Technical Memorandum.

provider(s) shall have the right to be named as a co-author. All users and providers are requested to report possible data errors or mislabeling found in the database, to the SeaBASS administration.

Updates and Corrections: A major purpose of the SeaBASS database is to facilitate comparisons between *in situ* observations (regionally, temporally, by technique, by investigator, etc.), as well as between *in situ* and remotely sensed observations. Updates and corrections to submitted data sets are encouraged. Records will be maintained of updates and corrections; summaries of updates will be posted on a database board, and users shall be notified of the updates. It will be the provider's responsibility to ensure that the current data in the archive is identical to the data used in the provider's most recent publications or current research. When an investigator has determined that the data sets are final, a written certification of data quality is mandatory.

Distribution: After receiving the final data, the SeaWiFS Project Office will forward the data at the appropriate time to NODC for open distribution. A courtesy citation, naming the provider and the funding agency, will accompany the data. The SeaWiFS Project will not be held responsible for any data errors or misuse.

Cumulative Index

Unless otherwise indicated, the index entries that follow refer to some aspect of the SeaWiFS instrument or project.

– T, U –

– V, W, X, Y, Z –

Glossary

6S Not an acronym, but an atmospheric photochemical and radiative transfer model.

– A –

AAOT *Acqua Alta* Oceanographic Tower
AC Alternating Current
ACS Average Calibration Slope
A/D Analog-to-Digital
ADCP Acoustic Doppler Current Profiler
AERONET Aerosol Robotic Network
AI Absorbing Aerosol Index
AI9901 Atlantic–Indian Ocean Cruise, 1999
ALOHA A Long-term Oligotrophic Habitat Assessment
AMT Atlantic Meridional Transect
AMT-1 The First AMT Cruise
AMT-2 The Second AMT Cruise
AMT-5 The Fifth AMT Cruise
AMT-8 The Eighth AMT Cruise
AOP Apparent Optical Property
AOT Aerosol Optical Thickness
ASCII American Standard Code for Information Interchange
ASD Analytical Spectral Devices
ASTER Advanced Spaceborne Thermal Emission and Reflection Radiometer
ASTM American Society for Testing and Materials
ATA Ambient Temperature Plate Assembly
ATSR Along-Track Scanning Radiometer
AU Astronomical Unit
AVHRR Advanced Very High Resolution Radiometer

– B –

BAS British Antarctic Survey
BATS Bermuda Atlantic Time-series Study
BBOP Bermuda BioOptics Project
BCD Binary Coded Decimal
Ber95 Bering Sea Cruise, 1995
Ber96 Bering Sea Cruise, 1996
BNC Bayonet Nut Connector
BNL Brookhaven National Laboratory
BOPSII Bio-Optical Profiling System II (second generation)
BPA Back Plate Assembly
BRDF Bidirectional Reflectance Distribution Function
BSI Biospherical Instruments, Inc.
BSST Bulk Sea Surface Temperature
BTBM Bermuda Test Bed Mooring

– C –

CalCOFI California Cooperative Fisheries Institute
CANIGO Canary Islands, Azores, Gibraltar Observations
CARIACO Carbon Retention in a Colored Ocean
CB-MAB Chesapeake Bay–Middle Atlantic Bight
CC Cloud Cover
CCAR Colorado Center for Astrodynamics Research
CCD Charge-Coupled Device
CCMS Centre for Coastal and Marine Studies
CCN Cloud Condensation Nucleii
CCPO Center for Coastal Physical Oceanography
C/CSC NOAA Coastal Services Center, Charleston, South Carolina
CDOM Colored Dissolved Organic Matter
CEC Commission of the European Communities
CERT Calibration Evaluation and Radiometric Testing
C-FALLS Combined (software package for logging) SeaFALLS data.
CHN Carbon-Hydrogen-Nitrogen
CHORS Center for Hydro-Optics and Remote Sensing
C-mount Not an acronym, but a mounting system for camera lenses.
CNR *Consiglio Nazionale delle Ricerche* (National Research Council)
COARE Coupled Ocean Atmosphere Response Experiment
CoASTS Coastal Atmosphere and Sea Time Series
CoBOP Coastal Benthic Optical Properties (Bahamas)
C-OPS Combined (software package for logging) SeaOPS data.
COTS Commercial Off-The-Shelf
CSC Coastal Service Center
CSH UNIX "C-shell" (script programming utility)
CT Cylindrical Tube or Conductivity and Temperature, depending on usage.
CTD Conductivity, Temperature, and Depth
CV Coefficient of Variation
CVE Calibration and Validation Element
CVT Calibration and Validation Team
CZCS Coastal Zone Color Scanner

– D –

DAAC Distributed Active Archive Center
DalBOSS Dalhousie Buoyant Optical Surface Sensor
DalSAS Dalhousie SeaWiFS Aircraft Simulator
DARR Data Analysis Round-Robin
DARR-94 The first DARR (1994)
DAS Data Acquisition Sequence
DATA Not an acronym, but a designator for the Satlantic, Inc., series of power and telemetry units.
dc Direct Current
DC Direct Current
DCM Deep Chlorophyll Maximum
DCP Data Collection Platform
DIO Digital Input-Output
DIR Not an acronym, but a designator for the Satlantic, Inc., series of directional units.
DMA Dimethylamine
DMM Digital Multimeter
DMS Dimethylsulfide
DMSP Dimethylsulphoniopropionate
DMSPd Dissolved DMSP
DMSPp DMSP within phytoplankton cells
DNA Deoxyribonucleic Acid
DOC Dissolved Organic Carbon
DPA Detector Plate Assembly
DU Dobson Unit (of total ozone)
DUT Device Under Test
DVM Digital Voltmeter

– E –

E East
EcoHAB Ecology of Harmful Algal Blooms
EDTA Ethylenediaminetetraacetic Acid
EEZ Exclusive Economic Zone

e-mail Electronic Mail
EOS Earth Observing System
EP Entrance Pupil
EqPac Equatorial Pacific
ERS-2 The Second Earth Resources Satellite
EU European Union
EUC Equatorial Under Current

– F –

FARCAL Facility for Advanced Radiometric Calibrations
FASCAL Facility for Automated Spectroradiometric Calibrations
FEL Not an acronym, but a lamp designator.
FET Field-Effect Transistor
FIGD-IC Flow Injection Gas-Diffusion Coupled to Ion Chromatography
FL-Cuba Florida–Cuba (cruise)
F-mount Not an acronym, but a mounting system for camera lenses.
FORTRAN Formula Translation (computer language)
FRRF Fast Repetition Rate Fluorometer
FS Field Stop
FWHM Full-Width at Half-Maximum

– G –

GAC Global Area Coverage
GF/F Not an acronym, but a specific type of glass fiber filter manufactured by Whatman.
GLOBEC Global Ocean System Eco-Dynamics
GMT Greenwich Mean Time
GoA97 Gulf of Alaska 1997 (cruise)
GoCal Gulf of California
GOES-8 The Eighth Geostationary Operational Environmental Satellite
GOM Gulf of Maine
GPIB General Purpose Interface Bus
GSE Ground Support Equipment
GSFC Goddard Space Flight Center

– H –

HACR High-Accuracy Cryogenic Radiometer
HDF Hierarchical Data Format
HMS Her Majesty's Ship
HOT Hawaii Optical Time-series
HP Hewlett-Packard
HPLC High Performance Liquid Chromatography
HRPT High Resolution Picture Transmission
HTCO High Temperature Catalytic Oxidation

– I –

IAD Ion-Assisted Beam Deposition
IC Integrated Circuit
ICESS Institute for Computational Earth System Science
ID Inside Diameter
IDL International Date Line or Interactive Data Language (depending on usage).
IEEE Institute of Electrical and Electronic Engineers
IF Interference Filter
ILX Not an acronym, but part of the name of ILX Lightwave Corporation of Bozeman, Montana.
IMSL International Mathematical and Statistical Libraries
IOP Inherent Optical Property
IOS (SOC) Institute of Oceanographic Sciences
ISDGM *Istituto per lo Studio della Dinamica delle Grandi Masse* (Italy)
ISIC Integrating Sphere Irradiance Collector

– J, K –

JCR (RRS) *James Clark Ross*
JES9906 Japan East Sea Cruise, 1999-06
JGOFS Joint Global Ocean Flux Study
JRC Joint Research Centre
JUL98NAN A NOAA-sponsored cruise off Nantucket Island, Massachusetts in July 1998.

– L –

L1 Level-1 SeaWiFS data product
L1A Level-1a SeaWiFS data product with navigation information
L2 Level-2 SeaWiFS data product
L3 Level-3 SeaWiFS data product
Lab96 Labrador Sea Cruise, 1996
Lab97 Labrador Sea Cruise, 1997
Lab98 Labrador Sea Cruise, 1998
LAC Local Area Coverage
LANDSAT Land Satellite
LLR Low Level Radiance
LoCNESS Low-Cost NASA Environmental Sampling System
LS Light Stability
LSB Least Significant Bit
LTER Long Term Ecological Research
LXR LANDSAT Transfer Radiometer

– M –

MA Methylamine
MBARI Monterey Bay Aquarium Research Institute
MBR Maximum Band Ratio
MCP Modified Cubic Polynomial
MER Marine Environmental Radiometer
MERIS Medium Resolution Imaging Spectrometer
METEOSAT Meteorological Satellite
MF0796 R/V *Miller Freeman* Cruise, 1996-07
MFR-6 Multi-Filter Rotating Shadow-Band Radiometer
miniNESS miniature NASA Environmental Sampling System
MISR Multiangle Imaging Spectroradiometer
MLML Moss Landing Marine Laboratory
MMA Mirror Mount Assembly or Monomethylamine, depending on usage.
MOBY Marine Optical Buoy
MOCE Marine Optical Characterization Experiment
MODIS Moderate Resolution Imaging Spectroradiometer
`MODTRAN` Not an acronym, but an atmospheric photochemical and radiative transfer model.
MOS Modular Optoelectronic Scanner (spaceborne sensor) or Marine Optical Spectroradiometer (depending on usage)
MSB Most Significant Bit
MVDS Multichannel Visible Detector System

– N –

N North
NABE North Atlantic Bloom Experiment
NASA National Aeronautics and Space Administration
NCEP National Center for Environmental Prediction
NCSA National Center for Supercomputing Applications
NDVI Normalized Difference Vegetation Index
NEC Not an acronym, but the present name for the Nippon Electric Company (Japan)
NECC North Equatorial Counter Current
NEGOM Northeast Gulf of Mexico
NEUC North Equatorial Undercurrent
NIR Near-Infrared
NIST National Institute of Standards and Technology
NOAA National Oceanic and Atmospheric Administration
NRL Naval Research Laboratory
NRSR Normalized Remote Sensing Reflectance

– O –

OC2 Ocean Chlorophyll 2 (algorithm)
OC2v1 OC2 version 1
OC2v2 OC2 version 2
OC4 Ocean Chlorophyll 4 (algorithm)
OC4v2 OC4 version 2
OC4v3 OC4 version 3
OC4v4 OC4 version 4
OCI Ocean Color Irradiance (sensor)
OCP Ocean Color Profiler
OCR Ocean Color Radiance (sensor)
OCTS Ocean Color Temperature Scanner
OD Outside Diameter
OL Optronic Laboratories, Inc.
OPC Optical Plankton Counter
OrbView-2 Not an acronym, but the current name for the SeaStar satellite.
ORINOCO Orinoco River Plume
OSC Orbital Sciences Corporation

– P –

PAR Photosynthetically Available Radiation
PC Personal Computer
PCR Polymerase Chain Reaction
PD Percent Difference
PI Principal Investigator
P-I Photosynthesis-Irradiance
PID Proportional, Integral, Differential
PlyMBODy Plymouth Marine Bio-Optical Data Buoy
PM Particulate Matter
PML Plymouth Marine Laboratory
POC Particulate Organic Carbon
PRIME Plankton Reactivity in the Marine Environment
PROSOPE *Productivité des Systèmes Océaniques Pélagiques* (Productivity of Pelagic Oceanic Systems)
PRR Profiling Reflectance Radiometer
PRT Platinum Resistance Temperature (sensor)
PST Pacific Standard Time
PSU Practical Salinity Units
PTFE Polyfluorotetraethylene
PVC Polyvinylchloride

– Q –

QC Quality Control

– R –

RAM Random Access Memory
RE Ramsden Eyepiece
RED9503 Red Tide Cruise, 1995-03
Res94 Resolute Cruise, 1994
Res95-2 Resolute Cruise, 1995
Res96 Resolute Cruise, 1996
Res98 Resolute Cruise, 1998
RH Relative Humidity
RL Relay Lens
RMS Root Mean Square
RMSD Root Mean Square Difference
ROAVERRS Research on Ocean–Atmosphere Variability and Ecosystem Response in the Ross Sea
ROSSA Radiometric Observations of the Sea Surface and Atmosphere
RRS Royal Research Ship
RSG (PML) Remote Sensing Group
RSMAS Rosenstiel School for Marine and Atmospheric Science
RSR Relative Spectral Response
RSS Root-Sum Square
RTV Room Temperature Vulcanizing
RVS (BAS) Research Vessel Services

– S –

S South
SACZ Sub-Antarctic Convergence Zone
SAI Space Applications Institute
SAS Surface Acquisition System
SAS-II Satlantic Airborne Sensor
SBE Sea-Bird Electronics
SBRC Santa Barbara Research Center (Raytheon)
SBRS Santa Barbara Remote Sensing (Hughes)
SBUV Solar Backscatter Ultraviolet Radiometer
S/CSC Stennis (Space Center) Coastal Services Center
SDSU San Diego State University
SDY Sequential Day of the Year
SeaACE SeaWiFS Atlantic Characterization Experiment
SeaBAM SeaWiFS Bio-optical Algorithm Mini-workshop
SeaBASS SeaWiFS Bio-Optical Archive and Storage System
SeaBOARR SeaWiFS Bio-Optical Algorithm Round-Robin
SeaBOARR-98 The First SeaBOARR (1998)
SeaBOARR-99 The Second SeaBOARR (1999)
SeaBOSS SeaWiFS Buoyant Optical Surface Sensor
SeaDAS SeaWiFS Data Analysis System
SeaFALLS SeaWiFS Free-Falling Advanced Light Level Sensors
SeaOPS SeaWiFS Optical Profiling System
SeaPRISM SeaWiFS Photometer Revision for Incident Surface Measurement
SeaSAS SeaWiFS Surface Acquisition System
SeaSHADE SeaWiFS Shadow Band (radiometer)
SeaStar Not an acronym, but the former name of the satellite on which SeaWiFS was launched, now known as OrbView-2.
SeaSURF SeaWiFS Square Underwater Reference Frame
SeaWiFS Sea-viewing Wide Field-of-view Sensor

SEC South Equatorial Current
SEM Scanning Electronic Microscopy
SEUC South Equatorial Undercurrent
SIMBIOS Sensor Intercomparison and Merger for Biological and Interdisciplinary Oceanic Studies
SIO Scripps Institution of Oceanography
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
SMAB Southern Mid-Atlantic Bight
SMSR SeaWiFS Multichannel Surface Reference
S/N Serial Number
SNR Signal-to-Noise Ratio
S/NRL Stennis Space Center, Naval Research Laboratory
SOC Southampton Oceanography Centre
SOMARE Sampling, Observations and Modelling of Atlantic Regional Ecosystems
SOOP SeaWiFS Ocean Optics Protocols
SOSSTR Ship of Opportunity Sea Surface Temperature Radiometer
SPMR SeaWiFS Profiling Multichannel Radiometer
SPO SeaWiFS Project Office
SQM SeaWiFS Quality Monitor
SQM-II The Second Generation SQM
SRF Spectral Response Function
SS Sea State
SSE Size-of-Source Effect
SSH Sea Surface Height
SSM/I Special Sensor for Microwave/Imaging
SSST Sea Surface Skin Temperature
SUnSAS SeaWiFS Underway Surface Acquisition System
SXR SeaWiFS Transfer Radiometer

– T –

TAO Tropical Atmosphere–Ocean
TEC Thermoelectric Cooler
THOR Three-Headed Optical Recorder
TIROS Television Infrared Observation Satellite
TMA Trimethylamine
TOA Top of the Atmosphere
TOC Total Organic Carbon
TOGA Tropical Ocean Global Atmosphere
TOMS Total Ozone Mapping Spectrometer
TOPEX Topography Experiment
TOTO Tongue of the Ocean (Bahamas)
TOVS TIROS Operational Vertical Sounder
TSG Thermosalinograph
TSM Total Suspended Matter
TTL Transistor–Transistor Logic

– U –

UA University of Arizona
UCSB University of California, Santa Barbara
UIC Underway Instrumentation and Control
UK United Kingdom
UM University of Miami
UNC Unified Course
UOR Undulating Oceanographic Recorder
UPS Uninterruptable Power Supply
URL Universal Resource Locator
USF University of South Florida
USN United States Navy
UTC Coordinated Universal Time (definition reflects actual usage instead of following the letters of the acronym)
UV Ultraviolet
UVA Ultraviolet-A

– V –

VAFB Vandenberg Air Force Base
VisSCF Visible Spectral Comparator Facility (NIST)
VXR Visible Transfer Radiometer

– W –

W West
WETLabs Western Environmental Technology Laboratories (Inc.)
WiSPER Wire-Stabilized Profiling Environmental Radiometer
WM Spherical Mirror Wedge Section
WMO World Meteorological Organization
WOCE World Ocean Circulation Experiment
WS Wind Speed
WSSC Washington Suburban Sanitary Commission

– X –

XBT Expendable Bathythermograph
XOTD Expendable Optical, Temperature, and Depth

– Y, Z –

YB71 Not an acronym, but a type of paint for solar diffusers.

References

– A –

Aiken, J., G.F. Moore, and P.M. Holligan, 1992: Remote-sensing of oceanic biology in relation to global climate change. *J. Phycol.,* **28,** 579–590.

——, D.G. Cummings, S.W. Gibb, N.W. Rees, R. Woodd-Walker, E.M.S. Woodward, J. Woolfenden, S.B. Hooker, J-F. Berthon, C.D. Dempsey, D.J. Suggett, P. Wood, C. Donlon, N. González-Benítez, I. Huskin, M. Quevedo, R. Barciela-Fernandez, C. de Vargas, and C. McKee, 1998: AMT-5 Cruise Report. *NASA Tech. Memo. 1998–206892, Vol. 2,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 113 pp.

——, N.W. Rees, S. Hooker, P. Holligan, A. Bale, D. Robins, G. Moore, R. Harris, and D. Pilgrim, 2000: The Atlantic Meridional Transect: overview and synthesis of data. *Prog. Oceanogr.,* **45,** 257–312.

Ainsworth, E.J., and F.S. Patt, 2000: "Modifications to the TOMS ozone ancillary data interpolation." In: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 69–73.

Ångström, A., 1961: Techniques of determining the turbidity of the atmosphere. *Tellus,* **13,** 214–223.

ASTM, 1997: "E1256–95, standard test methods for radiation thermometers (single waveband type)." Temperature Measurement, Vol. 14.03, Sect. 14, General Methods and Instrumentation, *Annual Book of ASTM Standards,* American Society of Testing and Materials, Philadelphia, Pennsylvania, 437–443.

Austin, R.W., 1974: The remote sensing of spectral radiance from below the ocean surface. In: *Optical Aspects of Oceanography,* N.G. Jerlov and E.S. Nielsen, Eds., Academic Press, London, 317–344.

——, 1980: Gulf of Mexico, ocean color surface truth measurements. *Bound.-Layer Meteorol.,* **18,** 269–285.

——, and T.J. Petzold, 1981: The determination of the diffuse attenuation coefficient of sea water using the Coastal Zone Color Scanner. In: *Oceanography from Space,* J.F.R. Gower, Ed., Plenum Press, 239–256.

– B –

Bailey, S.W., C.R. McClain, P.J. Werdell, and B.D. Schieber, 2000: "Normalized water-leaving radiance and chlorophyll *a* match-up analyses." In: McClain, C.R., R.A. Barnes, R.E. Eplee, Jr., B.A. Franz, N.C. Hsu, F.S. Patt, C.M. Pietras, W.D. Robinson, B.D. Schieber, G.M. Schmidt, M. Wang, S.W. Bailey, and P.J. Werdell, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 2. *NASA Tech. Memo. 2000–206892, Vol. 10,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 45–52.

Barlow, R.G., R.F.C. Mantoura, M.A. Gough, and T.W. Fileman, 1993: Pigment signatures of the phytoplankton composition in the northeastern Atlantic during the 1990 spring bloom. *Deep-Sea Res. II,* **40,** 459–477.

——, D.G. Cummings, and S.W. Gibb, 1998: Improved resolution of mono- and divinyl chlorophylls *a* and *b* and zeaxanthin and lutein in phytoplankton extracts using reverse phase C-8 HPLC. *Mar. Ecol. Prog. Ser.,* **161,** 303–307.

Barnes, R.A., 1994: *SeaWiFS Data: Actual and Simulated.* [World Wide Web page.] From URLs: `http://seawifs.gsfc.nasa.gov/SEAWIFS/IMAGES/spectra1.dat` and `/spectra2.dat` NASA Goddard Space Flight Center, Greenbelt, Maryland.

——, 1996a: "Calculation of an equivalent blackbody temperature for the GSFC sphere." In: Barnes, R.A., E-n. Yeh, and R.E. Eplee, 1996: SeaWiFS Calibration Topics, Part 1. *NASA Tech. Memo. 104566, Vol. 39,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 5–17.

——, 1996b: "A comparison of the spectral responses of SeaWiFS and the SeaWiFS Transfer Radiometer." In: Barnes, R.A., E-n. Yeh, and R.E. Eplee, 1996: SeaWiFS Calibration Topics, Part 1. *NASA Tech. Memo. 104566, Vol. 39,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 39–48.

——, 1996c: "SeaWiFS center wavelengths." In: Barnes, R.A., E-n. Yeh, and R.E. Eplee, 1996: SeaWiFS Calibration Topics, Part 1. *NASA Tech. Memo. 104566, Vol. 39,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 49–53.

——, 1997: "SeaWiFS measurements in orbit: Band-averaged spectral radiance." In: Barnes, R.A., R.E. Eplee, E-n. Yeh, and W.E. Esaias, 1997: SeaWiFS Calibration Topics, Part 2. *NASA Tech. Memo. 104566, Vol. 40*, S.B. Hooker and E.R. Firestone Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 48–55.

——, and A.W. Holmes, 1993: Overview of the SeaWiFS ocean sensor. *Proc. SPIE,* **1939,** 224–232.

——, W.L. Barnes, W.E. Esaias, and C.R. McClain, 1994a: Prelaunch Acceptance Report for the SeaWiFS Radiometer. *NASA Tech. Memo. 104566, Vol. 22,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 32 pp.

——, A.W. Holmes, W.L. Barnes, W.E. Esaias, C.R. McClain, and T. Svitek, 1994b: SeaWiFS Prelaunch Radiometric Calibration and Spectral Characterization. *NASA Tech. Memo. 104566, Vol. 23,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 55 pp.

——, ——, and W.E. Esaias, 1995: Stray Light in the SeaWiFS Radiometer. *NASA Tech. Memo. 104566, Vol. 31,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 76 pp.

——, and R.E. Eplee, Jr., 1996: "The SeaWiFS solar diffuser." In: Barnes, R.A., E-n. Yeh, and R.E. Eplee, 1996: SeaWiFS Calibration Topics, Part 1. *NASA Tech. Memo. 104566, Vol. 39,* S.B. Hooker and E.R. Firestone Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 54–61.

——, and E-n. Yeh, 1996: "Effects of source spectral shape in SeaWiFS radiance measurements." In: Barnes, R.A., E-n. Yeh, and R.E. Eplee, 1996: SeaWiFS Calibration Topics, Part 1. *NASA Tech. Memo. 104566, Vol. 39,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 18–38.

——, and R.E. Eplee, 1997: "The 1993 SeaWiFS calibration using band-averaged spectral radiances." In: Barnes, R.A., R.E. Eplee, E-n. Yeh, and W.E. Esaias, 1997: SeaWiFS Calibration Topics, Part 2. *NASA Tech. Memo. 104566, Vol. 40,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 39–46.

——, and ——, 1997: "The 1993 SeaWiFS calibration using band-averaged spectral radiances." In: Barnes, R.A., R.E. Eplee, E-n. Yeh, and W.E. Esaias, 1997: SeaWiFS Calibration Topics, Part 2. *NASA Tech. Memo. 104566, Vol. 40,* S.B. Hooker and E.R. Firestone Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 39–47.

——, and W.E. Esaias, 1997: "A nominal top-of-the-atmosphere spectrum for SeaWiFS." In: Barnes, R.A., R.E. Eplee, E-n. Yeh, and W.E. Esaias, 1997: SeaWiFS Calibration Topics, Part 2. *NASA Tech. Memo. 104566, Vol. 40,* S.B. Hooker and E.R. Firestone Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 3–11.

——, R.E. Eplee, and F.S. Patt, 1998: "SeaWiFS measurements of the moon." In: Sensors, Systems, and Next-Generation Satellites II, *SPIE,* **3498,** 311–324.

——, and C.R. McClain, 1999: "The calibration of SeaWiFS after two years on orbit." In: Sensors, Systems, and Next-Generation Satellites V, *SPIE,* **3870,** 214–227.

——, R.E. Eplee, Jr., F.S. Patt, and C.R. McClain, 1999a: Changes in the radiometric sensitivity of SeaWiFS determined from lunar and solar-based measurements. *Appl. Opt.,* **38,** 4,649–4,664.

——, ——, S.F. Biggar, K.J. Thome, E.F. Zalewski, P.M. Slater, and A.W. Holmes, 1999b: The SeaWiFS Solar Radiation-Based Calibration and the Transfer-to-Orbit Experiment. *NASA Tech. Memo. 1999–206892, Vol. 5,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 28 pp.

Biggar, S.F., 2001: A method for correcting the irradiance of standards of spectral irradiance (lamps) operated at non-standard distances. *Opt. Photonics News,* (withdrawn).

——, D.I. Gelman, and P.N. Slater, 1990: Improved evaluation of optical depth components from Langley plot data. *Remote Sens. Environ.,* **32,** 91–101.

——, K.J. Thome, P.N. Slater, A.W. Holmes, and R.A. Barnes, 1993a: Preflight solar radiation-based calibration of SeaWiFS. *SPIE,* **1939,** 233–242.

——, P.N. Slater, K.J. Thome, A.W. Holmes, and R.A. Barnes, 1994: "Preflight solar-based calibration of SeaWiFS." In: McClain, C.R., R.S. Fraser, J.T. McLean, M. Darzi, J.K. Firestone, F.S. Patt, B.D. Schieber, R.H. Woodward, E-n. Yeh, S. Mattoo, S.F. Biggar, P.N. Slater, K.J. Thome, A.W. Holmes, R.A. Barnes, and K.J. Voss, 1994: Case Studies for SeaWiFS Calibration and Validation, Part 2. *NASA Tech. Memo. 104566, Vol. 19,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 25–32.

——, K.J. Thome, P.N. Slater, A.W. Holmes, and R.A. Barnes, 1995: "Second SeaWiFS preflight solar radiation-based calibration experiment." In: Mueller, J.L., R.S. Fraser, S.F. Biggar, K.J. Thome, P.N. Slater, A.W. Holmes, R.A. Barnes, C.T. Weir, D.A. Siegel, D.W. Menzies, A.F. Michaels, and G. Podesta, 1995: Case Studies for SeaWiFS Calibration and Validation, Part 3. *NASA Tech. Memo. 104566, Vol. 27,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 20–24.

——, P.N. Slater, J.M. Palmer, and K.J. Thome, 2001: Unified approach to absolute radiometric calibration in the solar-reflective range. *Remote Sens. Environ.,* (accepted).

Berk, A., L.S. Bernstein, and D.C. Robertson, 1989: `MODTRAN`: A moderate resolution model for `LOWTRAN7`. *Tech. Report GL-TR-90-0122,* Geophysical Directorate Phillips Laboratory, Hanscom AFB, Massachusetts, 44 pp.

Bjornland, T., and S. Liaaen-Jensen, 1989: Distribution patterns of carotenoids in relation to chromophyte phylogeny and systematics. In: *The Chromophyte Algae: Problems and Perspectives.* J.C. Green, B.S.C. Leadbeater, and W.L. Diver, Eds., Clarendon Press, Oxford, 37–61.

Brewer, P.G., and J.P. Riley, 1965: The automatic determination of nitrate in sea water. *Deep-Sea Res.,* **12,** 765–772.

Brown, C.W., 1995: "Classification of coccolithophore blooms in ocean color imagery." In: McClain, C.R., W.E. Esaias, M. Darzi, F.S. Patt, R.H. Evans, J.W. Brown, K.R. Arrigo, C.W. Brown, R.A. Barnes, and L. Kumar, 1995: Case Studies for SeaWiFS Calibration and Validation, Part 4. *NASA Tech. Memo. 104566, Vol. 28,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 13–19.

——, and J.A. Yoder, 1994: Coccolithophorid blooms in the global ocean. *J. Geophys. Res.,* **99,** 7,467–7,482.

Bruegge, C.J., V.G. Duval, N.L. Chrien, and D.J. Diner, 1993: Calibration plans for the multi-angle, imaging spectroradiometer (MISR). *Metrologia,* **30,** 231–221.

Bukata, R.P., J.H. Jerome, and J.E. Bruton, 1988: Particulate concentrations in Lake St. Clair as recorded by a shipborne multispectral optical monitoring system. *Remote Sens. Environ.,* **25,** 201–229.

——, ——, K.Y. Kondrattyev, and D.V. Pozdnyakov, 1995: *Optical Properties and Remote Sensing of Inland and Coastal Waters.* CRC Press, Boca Raton, Florida, 362 pp.

Butler, J.J., and B.C. Johnson, 1996: EOS radiometric measurement comparisons at Hughes Santa Barbara Remote Sensing and NASA's Jet Propulsion Laboratory. *The Earth Observer,* **8**(5), 17–19.

– C –

Carder, K.L., and R.G. Steward, 1985: A remote sensing reflectance model of a red tide dinoflagellate off West Florida. *Limnol. Oceanogr.,* **30,** 286–298.

Charlson, R.J., J.E. Lovelock, M.O. Andreae, and S.G. Warren, 1987: Oceanic phytoplankton, atmospheric sulphur, cloud albedo, and climate. *Nature,* **326,** 655–661.

——, S.E. Schwartz, J.M. Hales, R.D. Cess, J.A. Coakley, J.E. Hansen, and D.J. Hofmann, 1992: Climate forcing by anthropogenic aerosols. *Science,* **255,** 423–430.

Chisholm, S.W., R.J. Olson, E.R. Zettler, R. Goericke, J.B. Waterbury, and N.A. Welschmeyer, 1988: A novel free-living prochlorophyte abundant in the oceanic euphotic zone. *Nature,* **334,** 340–343.

Clark, D., H.R. Gordon, K.J. Voss, Y. Ge, W. Broenkow, and C. Trees, 1997: Validation of atmospheric correction over the oceans. *J. Geophys. Res.,* **102,** 17,209-17,217.

Cox, C., and W. Munk, 1954: Measurements of the roughness of the sea surface from photographs of the sun's glitter. *J. Opt. Soc. Am.,* **44,** 838–850.

– D –

Darzi, M., 1998: SeaWiFS Algorithm Flow Chart. *NASA Contractor Report 1998–206848,* NASA Goddard Space Flight Center, Greenbelt, Maryland, 36 pp.

——, F.S. Patt, and L. Kumar, 1995: "Algorithm for the application of the sensor calibration for SeaWiFS level-2 processing." In: McClain, C.R., K. Arrigo, W.E. Esaias, M. Darzi, F.S. Patt, R.H. Evans, J.W. Brown, C.W. Brown, R.A. Barnes, and L. Kumar, 1995: SeaWiFS Algorithms, Part 1. *NASA Tech. Memo. 104566, Vol. 28,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 26–32.

Dave, J.V., 1972: Development of programs for computing characteristics of ultraviolet radiation, *Tech. Rept.,* Vector Case, IBM Corp., Fed. Syst. Div., Gaithersburg, Maryland, 337 pp.

DeWitt, D.P., and J.C. Richmond, 1988: "Thermal radiative properties of materials." In: *Theory and Practice of Radiation Thermometry,* D.P. DeWitt and G.D. Nutter, Eds., John Wiley and Sons, Inc., New York, 91–187.

Ding, K., and H.R. Gordon, 1994: Atmospheric correction of ocean-color sensors: effects of the Earth's curvature., *Appl. Opt.,* **33,** 7,096–7,106.

– E –

Early, E.A., and B.C. Johnson, 1997: "Calibration and characterization of the GSFC sphere." In: Yeh, E-n., R.A. Barnes, M. Darzi, L. Kumar, E.A. Early, B.C. Johnson, and J.L. Mueller, 1997: Case Studies for SeaWiFS Calibration and Validation, Part 4. *NASA Tech. Memo. 104566, Vol. 41,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 3–17.

——, E.A. Thompson, and P. Disterhoft, 1998a: A field calibration unit for ultraviolet spectroradiometers. *Appl. Opt.,* **37,** 6,664–6,670.

——, A. Thompson, B.C. Johnson, J. DeLuisi, P. Disterhoft, D. Wardle, E. Wu, W. Mou, J. Ehramjian, J. Tusson, T. Mestechkina, M. Beaubian, J. Gibson, and D. Hayes, 1998b: The 1996 North American interagency intercomparison of ultraviolet monitoring spectroradiometers. *J. Res. NIST,* **103,** 449–482.

——, ——, ——, ——, ——, ——, ——, ——, Y. Sun, T. Lucas, T. Mestechkina, L. Harrison, J. Berndt, and D. Hayes, 1998c: The 1995 North American interagency intercomparison of ultraviolet monitoring spectroradiometers. *J. Res. NIST,* **103,** 15–62.

——, P.Y. Barnes, B.C. Johnson, J.J. Butler, C.J. Bruegge, S.F. Biggar, P.R. Spyak, and M.M. Pavlov, 2000: Bidirectional reflectance round-robin in support of the Earth Observing System Program. *J. Atmos. Oceanic Tech.,* **17,** 1,077–1,091.

Emery, W.J., and J.S. Dewar, 1982: Mean temperature and salinity-depth and temperature-depth curves for the North Atlantic and the North Pacific. *Prog. Oceanogr.,* **11,** 219–305.

Eplee, R.E., Jr., and R.A. Barnes, 1997: "The SeaWiFS temperature calibration." In: Barnes, R.A., R.E. Eplee, E-n. Yeh, and W.E. Esaias, 1997: SeaWiFS Calibration Topics, Part 2. *NASA Tech. Memo. 104566, Vol. 40,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 56–62.

——, and R.A. Barnes, 2000: "Lunar data analysis for SeaWiFS calibration." In: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 17–27.

——, and C.R. McClain, 2000a: "MOBY data analysis for vicarious calibration of SeaWiFS bands 1–6." In: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 43–50.

——, and ——, 2000b: "SeaWiFS global clear-water analysis." In: McClain, C.R., R.A. Barnes, R.E. Eplee, Jr., B.A. Franz, N.C. Hsu, F.S. Patt, C.M. Pietras, W.D. Robinson, B.D. Schieber, G.M. Schmidt, M. Wang, S.W. Bailey, and P.J. Werdell, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 2. *NASA Tech. Memo. 2000–206892, Vol. 10,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 29–33.

——, and F.S. Patt, 2000: "Cloud-top radiance analysis for SeaWiFS bilinear gain knee calibration." In: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 13–16.

——, R.A. Barnes, and F.S. Patt, 2000: "Solar data analysis for SeaWiFS calibration." In: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 28–37.

Eppeldauer, G., 1991: Temperature monitored/controlled silicon photodiodes for standardization. *SPIE,* **1479,** 71–77.

——, and J.E. Hardis, 1991: Fourteen decade photocurrent measurements with large area silicon photodiodes at room temperature. *Appl. Opt.,* **30,** 3,091–3,099.

Evans, R.H., and H.R. Gordon, 1994: Coastal zone color scanner "system calibration": A retrospective examination. *J. Geophys. Res.,* **99,** 7,293–7,307.

– F –

Fargion, G.S., and J.L. Mueller, 2000: Ocean Optics Protocols for Satellite Ocean Color Sensor Validation, Revision 2, *NASA Tech. Memo. 2000-209966,* NASA Goddard Space Flight Center, Greenbelt, Maryland, 184 pp.

——, and C.R. McClain, 2001: SIMBIOS Project 2000 Annual Report, *NASA Tech. Memo. 2001–209976* NASA Goddard Space Flight Center, Greenbelt, Maryland, 164 pp.

Ferrari, G.M., M.D. Dowell, S. Grossi, and C. Targa, 1996: Relationship between the optical properties of chromophoric dissolved organic matter and total concentration of dissolved organic carbon in the southern Baltic Sea region. *Mar. Chem.,* **55,** 299–316.

Firestone, E.R., and S.B. Hooker, 1998: SeaWiFS Prelaunch Technical Report Series Final Cumulative Index. *NASA Tech. Memo. 1998–104566, Vol. 43,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 4–8.

Firestone, J.K., R.H. Woodward, and C.R. McClain, 1994: "An evaluation of surface wind products for use in SeaWiFS." In: McClain, C.R., R.S. Fraser, J.T. McLean, M. Darzi, J.K. Firestone, F.S. Patt, B.D. Schieber, R.H. Woodward, E-n. Yeh, S. Mattoo, S.F. Biggar, P.N. Slater, K.J. Thome, A.W. Holmes, R.A. Barnes, and K.J. Voss, 1994: Case Studies for SeaWiFS Calibration and Validation, Part 2. *NASA Tech. Memo. 104566, Vol. 19,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 50–64.

Flittner, D.E., and P.N. Slater, 1991: Stability of narrow-band filter radiometers in the solar-reflected range. *Photogramm. Eng. Remote Sens.,* **57,** 165–171.

Fowler, J.B., 1977: The electronic aspects of the NBS detector response and intercomparison package and laser stabilization facility. *Electro-Optics/Laser 77 Conference and Exposition,* Industrial and Scientific Conference Management, Chicago, Illinois, 689–695.

Fraser, R.S., S. Mattoo, E-n. Yeh, and C.R. McClain, 1997: Algorithm for atmospheric and glint corrections of satellite measurements of ocean pigment. *J. Geophys. Res.,* **102,** 17,107–17,118.

Fröhlich, C., and G.E. Shaw, 1980: New determination of Rayleigh scattering in the terrestrial atmosphere. *Appl. Opt.,* **19,** 1,773–1,775.

Frouin, R., M. Schwindling, and P.Y. Deschamps, 1996: Spectral reflectance of sea foam in the visible and near infrared: *In situ* measurements and remote sensing implications. *J. Geophys. Res.,* **101,** 14,361–14,371.

Fukushima, H., M. Schmidt, B.J. Sohn, M. Toratani, and I. Uno, 1999: Detection of dust loaded airmass in SeaWiFS Imagery: an empirical dust index in comparison with model-predicted dust distribution over the Pacific in April 1998, *Proc. Int. Symp. Remote Sens. '99,* Korean Society of Remote Sensing, ISSN 1226-9743, 89–94.

Furnas, M.J., 1990: *In situ* growth rates of marine phytoplankton: approaches to measurement, community and species growth rates. *J. Plank. Res.,* **12,** 1,117–1,151.

– G –

Garside, C., 1982: Chemiluminescent technique for the determination of nanomolar concentrations of nitrate and nitrite in seawater. *Mar. Chem.,* **11,** 159–167.

Gentile, T.R., and J.M. Houston, J.E. Hardis, C.L. Cromer, and A.C. Parr, 1996: National Institute of Standards and Technology High-accuracy Cryogenic Radiometer. *Appl. Opt.,* **35,** 1,056–1,068.

Gibb, S.W., J.W. Wood, and R.F.C. Mantoura, 1995: Automation of flow injection gas diffusion-ion chromatography for the nanomolar determination of methylamines and ammonia in seawater and atmospheric samples. *J. Autom. Chem.,* **17,** 205–212.

——, R.F.C. Mantoura, P.S. Liss, and R.G. Barlow, 1998: Distribution and biogeochemistry of methylamines and ammonia in the Arabian Sea. *Deep-Sea Res.,* **46,** 593–615.

Gordon, H.R., 1981: A preliminary assessment of the Nimbus-7 CZCS atmospheric correction algorithm in a horizontally inhomogeneous atmosphere. In: *Oceanography from Space,* J.F.R. Gower, Ed., Plenum Press, 257–266.

——, 1995: Remote sensing of ocean color: A methodology for dealing with broad spectral bands and significant out-of-band response. *Appl. Opt.,* **34,** 8,363–8,374.

——, 1998: In-orbit calibration strategy for ocean color sensors. *Remote Sens. Environ.,* **63,** 265–278.

——, and W.R. McCluney, 1975: Estimation of the depth of sunlight penetration in the sea for remote sensing. *Appl. Opt.,* **14,** 413–416.

——, and D.K. Clark, 1981: Clear water radiances for atmospheric correction of coastal zone color scanner imagery. *Appl. Opt.,* **20,** 4,175–4,180.

——, J.W. Brown, and R.H. Evans, 1988a: Exact Rayleigh scattering calculations for use with the Nimbus-7 Coastal Zone Color Scanner. *Appl. Opt.,* **27,** 862–871.

——, O.B. Brown, R.H. Evans, J.W. Brown, R.C. Smith, K.S. Baker, and D.K. Clark, 1988b: A semianalytic radiance model of ocean color, *J. Geophys. Res.,* **93,** 10,909–10,924.

——, and K. Ding, 1992: Self shading of in-water optical instruments. *Limnol. Oceanogr.,* **37,** 491–500.

——, and M. Wang, 1992: Surface roughness considerations for atmospheric correction of ocean color sensors. 1: Rayleigh scattering component. *Appl. Opt.,* **31,** 4,247–4,260.

——, and ——, 1994a: Retrieval of water-leaving radiance and aerosol optical thickness over the oceans with SeaWiFS: a preliminary algorithm. *Appl. Opt.,* **33,** 443–452.

——, and ——, 1994b: Influence of oceanic whitecaps on atmospheric correction of ocean color sensors. *Appl. Opt.,* **33,** 7,354–7,763.

Graeme, J.G., 1995: *Photodiode Amplifiers: Operational Amplifier Solutions,* McGraw-Hill, New York, 252 pp.

Grasshoff, K., 1976: *Methods of Seawater Analysis.* Verlag Chemie, Weilheim, Germany, 317 pp.

Gregg, W.W., F.S. Patt, and R.H. Woodward, 1993: The Simulated SeaWiFS Data Set, Version 1. *NASA Tech. Memo. 104566, Vol. 9,* S.B. Hooker, E.R. Firestone, and A.W. Indest, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 17 pp.

——, ——, A.L. Mezaache, J.D. Chen, J.A. Whiting, 1994: The Simulated SeaWiFS Data Set, Version 2. *NASA Tech. Memo. 104566, Vol. 15,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 42 pp., plus color plates.

——, and R.H. Woodward, 1998: Improvements in high frequency ocean color observations: Combining data from SeaWiFS and MODIS, *IEEE Trans. Geosci. Remote Sens.,* **36,** 1,350–1,353.

– H –

Hapke, B., 1986: Bidirectional reflectance spectroscopy. 4. Extinction and the opposition effect. *Icarus,* **67,** 246–280.

Harrison, L., J. Michalsky, and J. Berndt, 1994: Automatic multifilter rotating shadow-band radiometer: An instrument for optical depth and radiation measurements. *Appl. Opt.,* **33,** 5,118–5,125.

Heath, D.F., Z. Wei, W.K. Fowler, and V.W. Nelson, 1993: Comparison of spectral radiance calibrations of SBUV-2 satellite ozone monitoring instruments using integrating sphere and flat-plate diffuser techniques. *Metrologia,* **30,** 259–264.

Helfenstein, P., and J. Veverka, 1987: Photometric properties of lunar terrains derived from Hapke's equation. *Icarus,* **72,** 342–357.

Herman, J.R., P.K. Bhartia, O. Torres, N.C. Hsu, C.J. Seftor, and E. Celarier, 1997: Global distribution of UV-absorbing aerosols from Nimbus-7/TOMS data, *J. Geophys. Res.,* **102,** 16,911–16,922.

Holben, B.N., T.F. Eck, I. Slutsker, D. Tanré, J.P. Buis, A. Setzer, E. Vermote, J.A. Reagan, Y.I. Kaufman, T. Nakajima, F. Lavenu, I. Jankowiak, and A. Smirnov, 1998: AERONET—A federal instrument network and data archive for aerosol characterization. *Remote Sens. Environ.,* **66,** 1–16.

Holm-Hansen, O., C.J. Lorenzen, R.W. Holmes, and J.D.H. Strickland, 1965: Fluorometric determination of chlorophyll. *J. du Cons. Int'l. pour l'Explor. de la Mer,* **30,** 3–15.

Hooker, S.B., W.E. Esaias, G.C. Feldman, W.W. Gregg, and C.R. McClain, 1992: An Overview of SeaWiFS and Ocean Color. *NASA Tech. Memo. 104566, Vol. 1,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 24 pp., plus color plates.

——, and ——, 1993: An overview of the SeaWiFS project. *Eos, Trans., Amer. Geophys. Union,* **74,** 241–246.

——, C.R. McClain, and A. Holmes, 1993a: Ocean color imaging: CZCS to SeaWiFS. *Marine Tech. Soc. J.,* **27,** 3–15.

——, W.E. Esaias, and L.A. Rexrode, 1993b: Proceedings of the First SeaWiFS Science Team Meeting. *NASA Tech. Memo. 104566, Vol. 8,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 61 pp.

——, ——, J.K. Firestone, T.L. Westphal, E. Yeh, and Y. Ge, 1994a: The SeaWiFS Bio-Optical Archive and Storage System (SeaBASS), Part 1. *NASA Tech. Memo. 104566, Vol. 20,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 40 pp.

——, T.L. Westphal, Y. Ge, 1994b: "The SIRREX database." In: Hooker, S.B., C.R. McClain, J.K. Firestone, T.L. Westphal, E. Yeh, and Y. Ge, 1994: The SeaWiFS Bio-Optical Archive and Storage System (SeaBASS), Part 1. *NASA Tech. Memo. 104566, Vol. 20,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 23–30.

——, C.R. McClain, J.K. Firestone, T.L. Westphal, E-n. Yeh, and Y. Ge, 1994c: The SeaWiFS Bio-Optical Archive and Storage System (SeaBASS), Part 1. *NASA Tech. Memo. 104566, Vol. 20,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 40 pp.

——, and J. Aiken, 1998: Calibration evaluation and radiometric testing of field radiometers with the SeaWiFS Quality Monitor (SQM). *J. Atmos. Oceanic Tech.,* 995–1,007.

——, G. Zibordi, G. Lazin, and S. McLean, 1999: The SeaBOARR-98 Field Campaign. *NASA Tech. Memo. 1999–206892, Vol. 3,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 40 pp.

——, and S. Maritorena, 2000: An evaluation of oceanographic radiometers and deployment methodologies. *J. Atmos. Oceanic Technol.,* **17,** 811–830.

——, and C.R. McClain, 2000: The calibration and validation of SeaWiFS data. *Prog. Oceanogr.,* **45,** 427–465.

Hsu, N.C., J.R. Herman, P.K. Bhartia, C.J. Seftor, O. Torres, A.M. Thompson, J.F. Gleason, T.F. Eck, and B.N. Holben, 1996: Detection of biomass burning smoke from TOMS measurements, *Geophys. Res. Lett.,* **23,** 745–748.

——, ——, O. Torres, B.N. Holben, D. Tanre, T.F. Eck, A. Smirnov, B. Chatenet, and F. Lavenu, 1999: Comparisons of the TOMS aerosol index with sun photometer aerosol optical thickness: results and applications, *J. Geophys. Res.,* **104,** 6,269–6,279.

——, W.D. Robinson, S.W. Bailey, and P.J. Werdell, 2000: "The description of the SeaWiFS absorbing aerosol index." In: McClain, C.R., R.A. Barnes, R.E. Eplee, Jr., B.A. Franz, N.C. Hsu, F.S. Patt, C.M. Pietras, W.D. Robinson, B.D. Schieber, G.M. Schmidt, M. Wang, S.W. Bailey, and P.J. Werdell, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 2. *NASA Tech. Memo. 2000–206892, Vol. 10,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 3–5.

– I –

International Organization for Standardization, 1993: *Guide to the Expression of Uncertainty in Measurement,* International Organization for Standardization, Geneva, Switzerland, 101 pp.

Iqbal, M., 1983: *An Introduction to Solar Radiation.* Academic Press, New York, 390 pp.

– J –

Jeffrey S.W., R.F.C. Mantoura, and S.W. Wright, Eds., 1997: "Phytoplankton Pigments in Oceanography: Guidelines to Modern Methods." UNESCO Monograph in Oceanographic Methods. *Report for SCOR WH 78, SCOR-UNESCO Monographs on Oceanographic Methodology.* Paris, France.

Johnson, B.C., S.S. Bruce, E.A. Early, J.M. Houston, T.R. O'Brian, A. Thompson, S.B. Hooker, and J.L. Mueller, 1996: The Fourth SeaWiFS Intercalibration Round-Robin Experiment, SIRREX-4, May 1995. *NASA Tech. Memo. 104566, Vol. 37,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 66 pp.

——, F. Sakuma, J.J. Butler, S.F. Biggar, J.W. Cooper, J. Ishida, and K. Suzuki, 1997: Radiometric measurement comparison using the Ocean Color and Temperature Scanner (OCTS) visible and near infrared integrating sphere. *J. Res. NIST,* **102,** 627–646.

——, P.-S. Shaw, S.B. Hooker, and D. Lynch, 1998a: Radiometric and engineering performance of the SeaWiFS Quality Monitor (SQM): A portable light source for field radiometers. *J. Atmos. Oceanic Tech.,* **15,** 1,008–1,022.

——, J.B. Fowler, and C.L. Cromer, 1998b: The SeaWiFS Transfer Radiometer (SXR). *NASA Tech. Memo. 1998–206892, Vol. 1,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 58 pp.

——, E.A. Early, R.E. Eplee, Jr., R.A. Barnes, and R.T. Caffrey, 1999: The 1997 Prelaunch Calibration of SeaWiFS. *NASA Tech. Memo. 1999–206892, Vol. 4,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 51 pp.

Joint Global Ocean Flux Study, 1994: Protocols for the Joint Global Ocean Flux Study Core Measurements. Intergovernmental Oceanographic Commission, Scientific Committee on Oceanic Research. *Manual and Guides, UNESCO,* **29,** 91–96.

Jones, R.D., 1991: An improved fluorescence method for the determination of nanomolar concentrations of ammonium in natural waters. *Limnol. Oceanogr.,* **36,** 814–819.

– K –

Kahru, M., and B.G. Mitchell, 1998a: Spectral reflectance and absorption of a massive red tide off Southern California. *J. Geophys. Res.,* **103,** 21,601–21,609.

——, and ——, 1998b: Evaluation of instrument self-shading and environmental errors on ocean color algorithms. *Proc. Ocean Optics XIV,* Kona, Hawaii, S. Ackleson and J. Campbell, Eds., [Available on CD-ROM.]

Karsten, F., 1966: A new table and approximate formula for relative optical air mass. *Arch. Meteorol. Geophys. Bioklimatol. Ser. B,* **14,** 206–223.

Keller, M.D., W.K. Bellows, and R.R.L. Guillard, 1989: Dimethylsulphide production in marine phytoplankton. In: *Biogenic Sulphur in the Environment.* E.S. Saltzman and W.J. Cooper, Eds., American Chemical Society, Washington, DC, 167–182.

Kieffer, H.H., and J.M. Anderson, 1998: "Use of the moon for spacecraft calibration over 350–2500 nm." In: Sensors, Systems, and Next-Generation Satellites II, *SPIE,* **3498,** 325–336.

King, G.M., 1988: Distribution and metabolism of quaternary amines in marine sediments. In: *Nitrogen Cycling in Coastal Marine Environments.* T.H. Blackburn and J. Sorenson, Eds., John Wiley and Sons, Chichester, United Kingdom, 143–173.

Kiorbe, T., 1993: Turbulence, phytoplankton cell size, and the structure of pelagic food webs. *Adv. Mar. Biol.,* **29,** 1–72.

Kirkwood, D.S., 1989: Simultaneous determination of selected nutrients in seawater. *ICES CM1989,* **29,** 12 pp.

Koepke, P., 1984: Effective reflectance of oceanic whitecaps. *Appl. Opt.,* **23,** 1,816–1,824.

Kostkowski, H.J., and F.E. Nicodemus, 1978: "An introduction to the measurement equation." In: F.E. Nicodemus, Ed., 1978: Self-Study Manual on Optical Radiation Measurements, Part 1–Concepts, *NBS Tech. Note 910-2,* U.S. Department of Commerce, National Institute of Standards and Technology, Washington, DC, 58–104.

– L –

Landry, M.R., 1993: Estimating rates of growth and grazing mortality of phytoplankton by the dilution method. In: *Handbook of Methods in Aquatic Microbial Ecology,* P.F. Kemp, B.F. Sherr, E.B. Sherr, and J.J. Cole, Eds., Lewis Publishers, Boca Raton, Florida, 714–722.

Lane, A.P., and W.M. Irvine, 1973: Monochromatic phase curves and albedos for the lunar disk. *Astron. J.,* **78,** 267–277.

Lang, K.R., 1980: *Astrophysical Formulae,* Second Edition, Springer-Verlag, New York, 783 pp.

Larason, T.C., S.B. Bruce, and C.L. Cromer, 1996: The NIST high accuracy scale for absolute spectral response from 406 nm to 920 nm. *J. Res. NIST,* **101,** 133–140.

Lazin, G., 1998: Correction Methods for Low-Altitude Remote Sensing of Ocean Color. *M.Sc. Thesis,* Dalhousie University, Halifax, Nova Scotia, 98 pp.

——, S. Hooker, G. Zibordi, S. McLean, and M.R. Lewis, 1998: In-water and above-water measurements of ocean color. *Proc. Ocean Optics XIV,* Office of Naval Research, Washington, DC, [Available on CD-ROM].

Leckner, B., 1978: The spectral distribution of solar radiation at the Earth's surface—Elements of a model. *Solar Energy,* **20,** 143–150.

Lee, Z.P., K.L. Carder, R.G. Steward, T.G. Peacock, C.O. Davis, and J.L. Mueller, 1996: Remote sensing reflectance and inherent optical properties of oceanic waters derived from above-water measurements. *Proc. SPIE,* **2963,** 160–166.

Liu, B.Y.H., and K.W. Lee, 1976: Efficiency of membrane Nucleopore filters for submicrometer aerosols. *Env. Sci. Tech.,* **10,** 345–50.

– M –

Mantoura, R.F.C., and E.M.S. Woodward, 1983: Optimization of the indophenol blue method for the automated determination of ammonia in estuarine waters. *Estuar. Coastal Shelf Sci.,* **17,** 219–224.

——, S.W. Wright, S.W. Jeffrey, R.G. Barlow, and D.G. Cummings, 1997: "Phytoplankton pigments in oceanography: Guidelines to modern methods." In: S.W. Jeffrey, R.F.C. Mantour, and S.W. Wright, Eds., UNESCO Monograph in Oceanographic Methods. *Report for SCOR WH 78, SCOR-UNESCO Monographs on Oceanographic Methodology.* Paris, France, 662 pp.

Marggraf, W.A., and M. Griggs, 1969: Aircraft measurements and calculations of the total downward flux of solar radiation as a function of altitude. *J. Atmos. Sci.,* **26,** 469–477.

Maritorena, S., and J.E. O'Reilly, 2000: "OC2v2: Update on the initial operational SeaWiFS chlorophyll *a* algorithm." In: O'Reilly, J.E., and 24 Coauthors, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 3. *NASA Tech. Memo. 2000–206892, Vol. 11,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 3–8.

McClain, C.R., 2000: "SeaWiFS postlaunch calibration and validation overview." In: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 4–12.

——, W.E. Esaias, W. Barnes, B. Guenther, D. Endres, S.B. Hooker, B.G. Mitchell, and R. Barnes, 1992: SeaWiFS Calibration and Validation Plan. *NASA Tech. Memo. 104566, Vol. 3,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 41 pp.

——, R.H. Evans, J.W. Brown, and M. Darzi, 1995: "SeaWiFS quality control masks and flags: initial algorithms and implementation strategy." In: McClain, C.R., W.E. Esaias, M. Darzi, F.S. Patt, R.H. Evans, J.W. Brown, K.R. Arrigo, C.W. Brown, R.A. Barnes, and L. Kumar, 1995: Case Studies for SeaWiFS Calibration and Validation, Part 4. *NASA Tech. Memo. 104566, Vol. 28,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 3–7.

——, M. Darzi, R.A. Barnes, R.E. Eplee, Jr., J.K. Firestone, F.S. Patt, W.D. Robinson, B.D. Schieber, R.H. Woodward, and E-n. Yeh, 1996: SeaWiFS Calibration and Validation Quality Control Procedures. *NASA Tech. Memo. 104566, Vol. 38,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 68 pp.

——, M.L. Cleave, G.C. Feldman, W.W. Gregg, S.B. Hooker, and N. Kuring, 1998: Science quality SeaWiFS data for global biosphere research. *Sea Technol.,* **39,** 10–16.

——, and G.S. Fargion, 1999a: SIMBIOS Project 1998 Annual Report. *NASA Tech. Memo. 1999–208645,* NASA Goddard Space Flight Center, Greenbelt, Maryland, 105 pp.

——, and ——, 1999b: SIMBIOS Project 1999 Annual Report, *NASA Tech. Memo. 1999–209486,* NASA Goddard Space Flight Center, Greenbelt, Maryland, 128 pp.

McLean, S., S. Feener, J. Scrutton, M. Small, S. Hooker, and M. Lewis, 1998: SQM-II: A commercial portable light source for field radiometer quality assurance. *Proc. Ocean Opt. XIV,* [Available on CD-ROM], Office of Naval Research, Washington, DC.

Monahan, E.C., 1971: Oceanic whitecaps. *J. Phys. Oceanogr.,* **1,** 139–144.

Moore, G., J. Aiken, N. Rees, and S. Hooker, 1997: Remote Sensing of Bio-Optical Provinces. Abstract. *Proc. 23rd Annual Conf. Exhib. Remote Sens. Soc.,* 545–550.

Moore, K.D., K.J. Voss, and H.R. Gordon, 1998: Spectral reflectance of whitecaps: Instrumentation, calibration, and performance in coastal waters. *J. Atmos. Ocean. Tech.,* **15,** 496–509.

——, ——, and ——, 2000: Spectral reflectance of whitecaps: Their contribution to water-leaving radiance. *J. Geophys. Res.,* **105,** 6,493–6,499.

Morel, A., 1974: "Optical properties of pure water and pure seawater." In: *Optical Aspects of Oceanography,* N.G. Jerlov and E. Steemann Nielsen, Eds., Academic Press, San Diego, California, 1–24.

——, 1980: In-water and remote measurements of ocean color. *Bound.-Layer Meteorol.,* **18,** 177–201.

——, 1988: Optical modeling of the upper ocean in relation to its biogenous matter content (Case I waters). *J. Geophys. Res.,* **93,** 10,749–10,768.

——, and B. Gentili, 1996: Diffuse reflectance of oceanic waters. III. Implication of bidirectionality for the remote sensing problem, *Appl. Opt.,* **35,** 4,850–4,862.

——, and S. Maritorena, 2001: Bio-optical properties of oceanic waters: a reappraisal. *J. Geophys. Res.,* **106,** 7,163–7,180.

Morris, A.W., R.J.M. Howland, and A.J. Bale, 1978: A filtration unit for use with continuous autoanalytical systems applied to highly turbid waters. *Estuar. Coastal Mar. Sci.,* **6,** 105–109.

Mueller, J.L., 1993: The First SeaWiFS Intercalibration Round-Robin Experiment, SIRREX-1, July 1992. *NASA Tech. Memo. 104566, Vol. 14,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 60 pp.

——, 1995a: "An integral method for analyzing irradiance and radiance attenuation profiles." In: Siegel, D.A., M.C. O'Brien, J.C. Sorensen, D.A. Konnoff, E.A. Brody, J.L. Mueller, C.O. Davis, W.J. Rhea, and S.B. Hooker, 1995: Results of the SeaWiFS Data Analysis Round-Robin (DARR-94), July 1994. *NASA Tech. Memo. 104566, Vol. 26,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 44–52.

——, 1995b: "Comparison of irradiance immersion coefficients for several Marine Environmental Radiometers (MERs)." In: Mueller, J.L., R.S. Fraser, S.F. Biggar, K.J. Thome, P.N. Slater, A.W. Holmes, R.A. Barnes, C.T. Weir, D.A. Siegel, D.W. Menzies, A.F. Michaels and G. Podesta, 1995: Case Studies for SeaWiFS Calibration and Validation, Part 3. *NASA Tech. Memo. 104566, Vol. 27,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 3–15.

——, 1996: MER-2040 SN 8728: Irradiance Immersion Factors, *CHORS Tech. Memo. 004–96,* Center for Hydro-Optics and Remote Sensing, San Diego State University, San Diego, California, 3 pp.

——, 2000: "SeaWiFS algorithm for the diffuse attentuation coefficient, $K(490)$, using water-leaving radiances at 490 and 555 nm." In: O'Reilly, J.E., and 24 Coauthors, SeaWiFS Postlaunch Calibration and Validation Analyses, Part 3. *NASA Tech. Memo. 2000–206892, Vol. 11,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 24–27.

——, and R.W. Austin, 1992: Ocean Optics Protocols for SeaWiFS Validation. *NASA Tech. Memo. 104566, Vol. 5,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 43 pp.

——, B.C. Johnson, C.L. Cromer, J.W. Cooper, J.T. McLean, S.B. Hooker, and T.L. Westphal, 1994: The Second SeaWiFS Intercalibration Round-Robin Experiment, SIRREX-2, June 1993. *NASA Tech. Memo. 104566, Vol. 16,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 121 pp.

——, and R.W. Austin, 1995: Ocean Optics Protocols for SeaWiFS Validation, Revision 1. *NASA Tech. Memo. 104566, Vol. 25,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 67 pp.

——, B.C. Johnson, C.L. Cromer, S.B. Hooker, J.T. McLean, and S.F. Biggar, 1996: The Third SeaWiFS Intercalibration Round-Robin Experiment, SIRREX-3, September 1994. *NASA Tech. Memo. 104566, Vol. 34,* S.B. Hooker, E.R. Firestone, and J.G. Acker, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 78 pp.

——, and C.C. Trees, 1997: "Revised SeaWiFS prelaunch algorithm for the diffuse attenuation coefficient $K(490)$." In: Yeh, E-n., R.A. Barnes, M. Darzi, L. Kumar, E.A. Early, B.C. Johnson, and J.L. Mueller, 1997: Case Studies for SeaWiFS Calibration and Validation, Part 4. *NASA Tech. Memo. 104566, Vol. 41,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 18–21.

Muller-Karger, F., C.R. McClain, and P. Richardson, 1988: The dispersal of the Amazon water. *Nature,* **333,** 56–59.

– N –

Neckel, H., and D. Labs, 1984: The solar radiation between 3,300 and 12,500Å. *Solar Physics,* **90,** 205–258.

Nicodemus, F.E., 1978: "More on the distribution of optical radiation with respect to position and direction." In: F.E. Nicodemus, Ed., 1978: Self-Study Manual on Optical Radiation Measurements, Part 1—Concepts, *NBS Tech. Note 910-2,* U.S. Department of Commerce, National Institute of Standards and Technology, Washington, DC, 1–57.

– O –

O'Reilly, J.E., S. Maritorena, B.G. Mitchell, D.A. Siegel, K.L. Carder, S.A. Garver, M. Kahru, and C. McClain, 1998: Ocean color chlorophyll algorithms for SeaWiFS. *J. Geophys. Res.,* **103,** 24,937–24,953.

——, and 21 Coauthors, 2000: "Ocean color chlorophyll *a* algorithms for SeaWiFS, OC2, and OC4: Version 4," In: O'Reilly, J.E., and 24 Coauthors, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 3. *NASA Tech. Memo. 2000–206892, Vol. 11,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 9–23.

O'Shea, D.C., 1985: *Elements of Modern Optical Design,* John Wiley and Sons, New York, 402 pp.

Owens, N.J.P., and A.P. Rees, 1989: Determination of Nitrogen-15 at submicrogram levels of nitrogen using automated continuous-flow isotope ratio mass spectrometry. *Analyst,* **114,** 1,655–1,657.

– P –

Pagano, T.S., and R.M. Durham, 1993: Moderate Resolution Imaging Spectroradiometer (MODIS). *SPIE,* **1939,** 2–17.

Partensky, F., N. Hoepffner, W.K.W. Li, O. Ulloa, and D. Vaulot, 1993: Photoacclimation of *Prochlorococcus sp.* (Prochlorophyta) strains isolated from the North Atlantic and the Mediterranean Sea. *Plant Physiol.,* **101,** 285–296.

Pope, R.M., and E.S. Fry, 1997: Absorption spectrum (380–700 nm) of pure water, II. Integrating cavity measurements, *Appl. Opt.,* **36,** 8,710–8,723.

Press, W.H., and S.A. Teukolsky, 1992: Fitting straight line data with errors in both coordinates. *Computers in Phys.,* **6,** 274–276.

– Q –

Quinn, P.K., 1988: Simultaneous observations of ammonia in the ocean and atmosphere in the remote marine environment. *Ph.D. Thesis,* University of Washington, Seattle, Washington, 138 pp.

——, R.J. Charlson, and T.S. Bates, 1988: Simultaneous observations of ammonia in the atmosphere and ocean. *Nature,* **335,** 336–338.

——, T.S. Bates, J.E. Johnson, J.E. Covert, and R.J. Charlson, 1990: Interactions between the sulfur and reduced nitrogen cycles over the central Pacific Ocean. *J. Geophys. Res.,* **95,** 16,405–16,416.

– R –

Remer, L.A., Y.J. Kaufman, and B.N. Holben, 1996: "The size distribution of ambient aerosol particles: smoke vs. urban/industrial aerosol." In: *Biomass Burning and Global Change,* J.S. Levine, Ed., MIT Press, Cambridge, Massachusetts, 519–530.

Ricker, W.E., 1973: Linear regressions in fishery research. *J. Fish. Res. Board Canada,* **30,** 409–434.

Robins, D.B., A.J. Bale, G.F. Moore, N.W. Rees, S.B. Hooker, C.P. Gallienne, A.G. Westbrook, E. Marañón, W.H. Spooner, and S.R. Laney, 1996: AMT-1 Cruise Report and Preliminary Results. *NASA Tech. Memo. 104566, Vol. 35,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 87 pp.

Robinson, N., 1966: *Solar Radiation.* American Elsevier, New York, 347 pp.

Robinson, W.D., and M. Wang, 2000: "Vicarious calibration of SeaWiFS band 7." In: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, 38–42.

——, G.M. Schmidt, C.R. McClain, and P.J. Werdell, 2000: "Changes made in the operational SeaWiFS processing." In: McClain, C.R., R.A. Barnes, R.E. Eplee, Jr., B.A. Franz, N.C. Hsu, F.S. Patt, C.M. Pietras, W.D. Robinson, B.D. Schieber, G.M. Schmidt, M. Wang, S.W. Bailey, and P.J. Werdell, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 2. *NASA Tech. Memo. 2000–206892, Vol. 10,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 12–28.

– S –

Sakuma, F., B.C. Johnson, S.F. Biggar, J.J. Butler, J.W. Cooper, M. Hiramatsu, and K. Suzuki, 1996: EOS AM-1 preflight radiometric measurement comparison using the Advanced Spaceborne Thermal Emission and Reflection radiometer (ASTER) visible/near-infrared integrating sphere. *SPIE,* **2820,** 184–196.

Saunders, R.D., and J.B. Shumaker, 1977: Optical Radiation Measurements: The 1973 NBS Scale of Spectral Irradiance. *NBS Tech. Note 594-13,* National Bureau of Standards, Gaithersburg, Maryland, 29 pp.

——, and ——, 1984: Automated radiometric linearity tester. *Appl. Opt.,* **23,** 3,504–3,506.

Shaw, P-S., B.C. Johnson, S.B. Hooker, and D. Lynch, 1997: The SeaWiFS Quality Monitor—a portable field calibration light source. *Proc. SPIE,* **2963,** 772–776.

Shettle, E.P., and R.W. Fenn, 1979: Models for the Aerosols of the Lower Atmosphere and the Effects of Humidity Variations on Their Optical Properties. *AFGL-TR-79-0214,* U.S. Air Force Geophysics Laboratory, Hanscom Air Force Base, Massachusetts, 94 pp.

Siegel, D.A., M.C. O'Brien, J.C. Sorensen, D.A. Konnoff, E.A. Brody, J.L. Mueller, C.O. Davis, W.J. Rhea, and S.B. Hooker, 1995: Results of the SeaWiFS Data Analysis Round-Robin (DARR-94), July 1994. *NASA Tech. Memo. 104566, Vol. 26,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 58 pp.

——, M. Wang, S. Maritorena, and W. Robinson, 2000: Atmospheric correction of satellite ocean color imagery: the black pixel assumption. *Appl. Opt.,* **39,** 3,582–3,591.

Slater, P.N., and J.M. Palmer, 1991: Solar-diffuser panel and ratioing radiometer approach to satellite sensor on-board calibration. *SPIE,* **1493,** 100–105.

Smith, E.V.P., and D.M. Gottlieb, 1974: Solar flux and its variation. *Space Sci. Rev.,* **16,** 771–802.

Smith, R.C., and K.S. Baker, 1981: Optical properties of the clearest natural waters (200–800 nm). *Appl. Opt.,* **20,** 177–184.

——, and ——, 1984: The analysis of ocean optical data. *Ocean Optics VII,* M. Blizard, Ed., *SPIE,* **478,** 119–126.

——, and ——, 1986: Analysis of ocean optical data II. *Ocean Optics VIII,* P.N. Slater, Ed., *SPIE,* **637,** 95–107.

——, D.A. Menzies, and C.R. Booth, 1997: Oceanographic Bio-Optical Profiling System II, Ocean Optics XIII, S.G. Ackelson and R. Frouin, Eds., *Proc. SPIE,* **2963,** 777–789.

Stout, D.F., 1976: *Handbook of Operational Amplifier Design,* M. Kaufman, Ed., McGraw-Hill, New York, 317 pp.

Strickland, J.D.H., and T.R. Parsons, 1972: *A Practical Handbook of Sea Water Analysis.* Fish. Res. Board. Canada, 310 pp.

Subramaniam, A., R.R. Hood, C.W. Brown, E.J. Carpenter, and D.G. Capone, 2001: Detecting *Trichodesmium* blooms in SeaWiFS imagery. *Deep-Sea Res.,* (in press).

– T, U –

Tanré, D., C. Deroo, P. Duhaut, M. Herman, J.J. Morcrette, J. Perbos, and P.Y. Deschamps, 1990: Description of a computer code to simulate the satellite signal in the solar spectrum: The 5S code. *Int. J. Remote Sens.,* **11,** 656–668.

Tassan, S., and M. Ferrari, 1995: An alternative approach to absorption measurements of aquatic particles retained on filters. *Limnol. Oceanogr.,* **40,** 1,358–1,368.

Taylor, B.N., and C.E. Kuyatt, 1994: Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results. *NIST Tech. Note 1297,* U.S. Department of Commerce, National Institute of Standards and Technology, Washington, DC, 20 pp.

Tegen, I., and A.A. Lacis, 1996: Modeling of particle size distribution and its influence on the radiative properties of mineral dust aerosol, *J. Geophys. Res.,* **101,** 19,237–19,244.

Thompson, A., and H-M. Chen, 1994: Beamcon III, a linearity measurement instrument for optical detectors. *J. Res. NIST,* **99,** 751–755.

Thuillier, G., M. Herse, P.C. Simon, D. Labs, H. Mandel, and D. Gillotay, 1998: Observation of the solar spectral irradiance from 200 to 870 nm during the ATLAS 1 and 2 missions by the SOLSPEC spectrometer. *Metrologia,* **35,** 689–695.

Tsai, B.K., and B.C. Johnson, 1998: Radiometric traceability for fundamental measurements: Estimation and evaluation of combined standard uncertainties, *Metrologia,* **35,** 587–593.

– V –

Vance, T.C., J.D. Schumacher, P.J. Stabeno, C.T. Baier, T. Wyllie-Echeverria, C.T. Tynan, R.D. Brodeur, J.M. Napp, K.O. Coyle, M.B. Decker, G.L. Hunt, Jr., D. Stockwell, T.E. Whitledge, M. Jump, and S. Zeeman, 1998: Aquamarine waters recorded for the first time in the Eastern Bering Sea. *EOS,* **79,** 121 and 126.

Van Neste, A., R.A. Duce, and C. Lee, 1987: Methylamines in the marine atmosphere. *Geophys. Res. Lett.,* **14,** 711–714.

Verity, P.G., D.K. Stoecker, M.E. Sieracki, and J.R. Nelson, 1996: Microzooplankton grazing of primary production at 140°W in the equatorial Pacific. *Deep-Sea Res. II,* **43,** 1,227–1,255.

Vermote, E.F., D. Tanre, J.L. Deuze, M. Herman, and J-J. Morcrette, 1997: Second simulation of the satellite signal in the solar spectrum, 6S: An Overview. *IEEE Trans. Geosci. Remote Sens.,* **35,** 675–686.

Vigroux, E., 1953: *Contribution à l'étude expérimentale de l'absorption de l'ozone. Ann. Phys.,* **8,** 709–762.

– W, X –

Walker, J.H., R.D. Saunders, and A.T. Hattenburg, 1987a: Spectral Radiance Calibrations. *NBS Special Publication 250-1,* U.S. Department of Commerce, National Institute of Standards and Technology, Washington, DC, 68 pp.

——, ——, J.K. Jackson, and D.A. McSparron, 1987b: Spectral Irradiance Calibrations. *NBS Special Publication 250-20,* U.S. Department of Commerce, National Institute of Standards and Technology, Washington, DC, 37 pp., plus Appendices.

——, and A. Thompson, 1994: Improved automated current control for standard lamps. *J. Res. NIST,* **99,** 255–261.

Wang, M., 1999a: Atmospheric correction of ocean color sensors: Computing atmospheric diffuse transmittance, *Appl. Opt.,* **38,** 451–455.

——, 1999b: A sensitivity study of the SeaWiFS atmospheric correction algorithm: Effects of spectral band variations. *Remote Sens. Environ.,* **67,** 348–359.

——, 2000: "The SeaWiFS atmospheric correction algorithm updates." In: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 57–63.

——, and H.R. Gordon, 1994: A simple, moderately accurate, atmospheric correction algorithm for SeaWiFS. *Remote Sens. Environ.,* **50,** 231–239.

——, and B. Franz, 2000: Comparing the ocean color measurements between MOS and SeaWiFS: A vicarious intercalibration approach for MOS. *IEEE Trans. Geosci. Remote Sens.,* **38,** 184–197.

——, and S.W. Bailey, 2000: "Correction of the sun glint contamination on the SeaWiFS aerosol optical thickness retrievals." In: McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 64–68.

——, ——, C.M. Pietras, and C.R. McClain, 2000: "SeaWiFS aerosol optical thickness match-up analyses." In: McClain, C.R., R.A. Barnes, R.E. Eplee, Jr., B.A. Franz, N.C. Hsu, F.S. Patt, C.M. Pietras, W.D. Robinson, B.D. Schieber, G.M. Schmidt, M. Wang, S.W. Bailey, and P.J. Werdell, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 2. *NASA Tech. Memo. 2000–206892, Vol. 10,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 39–44.

——, B.A. Franz, and R.A. Barnes, 2000: "Analysis of the SeaWiFS spectral band-pass effects." In: McClain, C.R., R.A. Barnes, R.E. Eplee, Jr., B.A. Franz, N.C. Hsu, F.S. Patt, C.M. Pietras, W.D. Robinson, B.D. Schieber, G.M. Schmidt, M. Wang, S.W. Bailey, and P.J. Werdell, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 2. *NASA Tech. Memo. 2000–206892, Vol. 10,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 6–11.

Waters, K.J., R.C. Smith, and M.R. Lewis, 1990: Avoiding ship-induced light-field perturbation in the determination of oceanic optical properties, *Oceanogr.,* **3,** 18–21.

Wehrli, C., 1985: *Extraterrestrial Solar Spectrum,* Publ. 615, *Physikalisch-Meterologisches Observatorium* World Radiation Center, Davos-Dorf, Switzerland, 23 pp.

Welschmeyer, N.A., 1994: Fluorometric analysis of chlorophyll-*a* in the presence of chlorophyll-*b* and pheopigments. *Limnol. Oceanogr.,* **39,** 1,985–1,992.

Woodward, R.H., R.A. Barnes, C.R. McClain, W.E. Esaias, W.L. Barnes, and A.T. Mecherikunnel, 1993: Modeling of the SeaWiFS Solar and Lunar Observations. *NASA Tech. Memo. 104566, Vol. 10,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 26 pp.

Wright, S.W., S.W. Jeffrey, R.F.C. Mantoura, C.A. Llewellyn, T. Bjornland, D. Repeta, and N. Welschmeyer, 1991: Improved HPLC method for the analysis of chlorophylls and carotenoids from marine phytoplankton. *Mar. Ecol. Prog. Ser.,* **77,** 183–196.

Wyatt, C.L., 1978: *Radiometric Calibration: Theory and Methods,* Academic Press, New York, 200 pp.

——, 1987: *Radiometric System Design,* Macmillan Publishing Company, New York, 315 pp.

– Y –

Yang, H., and H.R. Gordon, 1997: Remote sensing of ocean color: Assessment of water-leaving radiance bidirectional effects on atmospheric diffuse transmittance. *Appl. Opt.,* **36,** 7,887–7,897.

Yeh, E-n., M. Darzi, and L. Kumar, 1997: "SeaWiFS stray light correction algorithm." In: Yeh, E-n., R.A. Barnes, M. Darzi, L. Kumar, E.A. Early, B.C. Johnson, J.L. Mueller, and C.C. Trees, 1997: Case Studies for SeaWiFS Calibration and Validation, Part 4. *NASA Tech. Memo. 104566, Vol. 41,* S.B. Hooker, and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 24–30.

Young, A.T., 1980: Revised depolarization corrections for atmospheric extinction. *Appl. Opt.,* **19,** 3,427–3,428.

– Z –

Zaneveld, J.R.V., J.C. Kitchen, A. Bricaud, and C. Moore, 1992: Analysis of *in situ* spectral absorption meter data. *Ocean Optics XI, Proc. SPIE,* **1750,** 187–200.

Zibordi, G., and M. Ferrari, 1995: Instrument self-shading in underwater optical measurements: Experimental data. *Appl. Opt.,* **34,** 2,750–2,754.

——, J.P. Doyle, and S.B. Hooker, 1999: Offshore tower shading effects on in-water optical measurements. *J. Atmos. Oceanic Tech.,* **16,** 1,767–1,779.

The SeaWiFS Postlaunch Technical Report Series

Vol. 1

Johnson, B.C., J.B. Fowler, and C.L. Cromer, 1998: The SeaWiFS Transfer Radiometer (SXR). *NASA Tech. Memo. 1998–206892, Vol. 1,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 58 pp.

Vol. 2

Aiken, J., D.G. Cummings, S.W. Gibb, N.W. Rees, R. Woodd-Walker, E.M.S. Woodward, J. Woolfenden, S.B. Hooker, J-F. Berthon, C.D. Dempsey, D.J. Suggett, P. Wood, C. Donlon, N. González-Benítez, I. Huskin, M. Quevedo, R. Barciela-Fernandez, C. de Vargas, and C. McKee, 1998: AMT-5 Cruise Report. *NASA Tech. Memo. 1998–206892, Vol. 2,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 113 pp.

Vol. 3

Hooker, S.B., G. Zibordi, G. Lazin, and S. McLean, 1999: The SeaBOARR-98 Field Campaign. *NASA Tech. Memo. 1999–206892, Vol. 3,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 40 pp.

Vol. 4

Johnson, B.C., E.A. Early, R.E. Eplee, Jr., R.A. Barnes, and R.T. Caffrey, 1999: The 1997 Prelaunch Radiometric Calibration of SeaWiFS. *NASA Tech. Memo. 1999–206892, Vol. 4,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 51 pp.

Vol. 5

Barnes, R.A., R.E. Eplee, Jr., S.F. Biggar, K.J. Thome, E.F. Zalewski, P.N. Slater, and A.W. Holmes 1999: The SeaWiFS Solar Radiation-Based Calibration and the Transfer-to-Orbit Experiment. *NASA Tech. Memo. 1999–206892, Vol. 5,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, 28 pp.

Vol. 6

Firestone, E.R., and S.B. Hooker, 2000: SeaWiFS Postlaunch Technical Report Series Cumulative Index: Volumes 1–5. *NASA Tech. Memo. 2000–206892, Vol. 6,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 14 pp.

Vol. 7

Johnson, B.C., H.W. Yoon, S.S. Bruce, P-S. Shaw, A. Thompson, S.B. Hooker, R.E. Eplee, Jr., R.A. Barnes, S. Maritorena, and J.L. Mueller, 1999: The Fifth SeaWiFS Intercalibration Round-Robin Experiment (SIRREX-5), July 1996. *NASA Tech. Memo. 1999–206892, Vol. 7,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, 75 pp.

Vol. 8

Hooker, S.B., and G. Lazin, 2000: The SeaBOARR-99 Field Campaign. *NASA Tech. Memo. 2000–206892, Vol. 8,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, 46 pp.

Vol. 9

McClain, C.R., E.J. Ainsworth, R.A. Barnes, R.E. Eplee, Jr., F.S. Patt, W.D. Robinson, M. Wang, and S.W. Bailey, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 1. *NASA Tech. Memo. 2000–206892, Vol. 9,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, 82 pp.

Vol. 10

McClain, C.R., R.A. Barnes, R.E. Eplee, Jr., B.A. Franz, N.C. Hsu, F.S. Patt, C.M. Pietras, W.D. Robinson, B.D. Schieber, G.M. Schmidt, M. Wang, S.W. Bailey, and P.J. Werdell, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 2. *NASA Tech. Memo. 2000–206892, Vol. 10,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, 57 pp.

Vol. 11

O'Reilly, J.E., and 24 Coauthors, 2000: SeaWiFS Postlaunch Calibration and Validation Analyses, Part 3. *NASA Tech. Memo. 2000–206892, Vol. 11,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, 49 pp.

Vol. 12

Firestone, E.R., and S.B. Hooker, 2001: SeaWiFS Postlaunch Technical Report Series Cumulative Index: Volumes 1–11. *NASA Tech. Memo. 2001–206892, Vol. 12,* S.B. Hooker and E.R. Firestone, Eds., NASA Goddard Space Flight Center, Greenbelt, Maryland, 24 pp.