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**Ocean Optics Protocols For Satellite Ocean Color Sensor
Validation, Revision 5, Volume V:**

**Biogeochemical and Bio-Optical Measurements and Data
Analysis Protocols**

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Preface To Revision 5

This document stipulates protocols for measuring bio-optical and radiometric data for the Sensor Intercomparison and Merger for Biological and Interdisciplinary Oceanic Studies (SIMBIOS) Project activities and algorithm development. The document is organized into 6 separate volumes, and in Revision 5, Volume VI is divided into 2 parts. Revision 5 consists of a new version of Volume V (Biogeochemical and Bio-Optical Properties) that supercedes and replaces Volume V (Revision 4), and new additions to Volume VI (Special Topics) are issued as Part 2 of that volume. The currently effective ocean optics protocol volumes, as of Revision 5, are:

Ocean Optics Protocols for Satellite Ocean Color Sensor Validation

Volume I: Introduction, Background and Conventions (Rev. 4)

Volume II: Instrument Specifications, Characterization and Calibration (Rev. 4)

Volume III: Radiometric Measurements and Data Analysis Methods (Rev. 4)

Volume IV: Inherent Optical Properties: Instruments, Characterization, Field Measurements and Data Analysis Protocols (Rev. 4 and Erratum 1 dated 28 Aug. 2003)

Volume V: Biogeochemical and Bio-Optical Measurements and Data Analysis Methods (Rev. 5)

Volume VI: Special Topics in Ocean Optics Protocols and Appendices (Rev. 4)

Volume VI, Part 2: Special Topics in Ocean Optics Protocols, Part 2 (Rev. 5)

Volume V (Revision 5): This volume is issued as a complete replacement for **Volume V (Revision 4)**. The overview chapter (Chapter 1) briefly reviews biogeochemical and bio-optical measurements, and points to literature covering methods for measuring these variables. Detailed protocols for HPLC measurement of phytoplankton pigment concentrations are given in Chapter 2, and the Revision 5 version incorporates the **Erratum** issued in June 2003 to modify the HPLC protocols related to water retention by GF/F filters. Chapter 3 gives protocols for Fluorometric measurement of chlorophyll *a* concentration, and is carried over unchanged from Revision 4. Chapter 4 is a new addition which describes protocols for determining backscattering by Coccolithophorids and detached Coccoliths.

Volume VI, Part 2 (Revision 5): This volume supplements the 5 chapters of Volume VI (Rev. 4), adding two new “Special Topics” chapters:

- Chapter 6 briefly reviews recent progress in protocols for instrument self shading corrections to in-water upwelled radiance measurements;
- Chapter 7 reviews recent advances in radiometric characterization and measurement methods that are directly relevant to ocean color remote sensing and validation of satellite ocean color sensors.

This technical report is not meant as a substitute for scientific literature. Instead, it will provide a ready and responsive vehicle for the multitude of technical reports issued by an operational Project. The contributions are published as submitted, after only minor editing to correct obvious grammatical or clerical errors.