The authors' guiding idea for this web site is to create a web-based, dynamically growing, community resource that addresses both the education and reference needs of the broad optical oceanography and ocean color remote sensing communities and that will be freely accessible to all. We intend that the presentation eventually will span single particles to ecosystems, and theory to observations to instruments, at user-selectable levels of detail. We modestly hope that this site will become a new paradigm for education.

Why did we choose a web-based "book" format as opposed to a hardcover book? Because we wish to

- **Make comprehensive material freely available to all.** University professors and commercial publishers are experimenting with electronic and on-line text books. However, those on-line resources are often either limited in scope (such as lecture notes on a particular topic) or have unacceptable license restrictions (such as being able to view a given page only a few times or being able to view the book only on one computer). We make our material freely available to everyone under a Creative Commons License.

- **Allow for on-going updates of the material.** As new results (be they observations, theory, techniques, or instrument designs) become available, they can be readily incorporated into the web book, so that the material does not go out of date.

- **Go beyond static black and white.** A web book can make extensive use of color figures, PowerPoint files, video loops, Java applets, and executable codes that a user can run to illustrate certain concepts or investigate selected problems. The entire web site is searchable using key words so that particular topics can be easily located. There are also extensive embedded links to references.

- **Allow for community input.** This web book can become a community learning center with other people contributing additional material after the present "first edition," as with the open source software world. We (or others as time passes) would then fill the role of editors of material submitted by others for incorporation into the web site.

Levels of Presentation

The web book has three levels of presentation:

- **Level 1: Introductory and Basic Material.** This level presents the basic definitions, concepts, example data, and accepted facts of optical oceanography. The intended audience is people new to the field, and those who want just a summary presentation of the subject matter. The page you are now reading is at Level 1.

- **Level 2: In-depth Examination of the Material of Level 1.** This level goes into the details (at the level of widely used texts such as *Light and Water* and *Light and Photosynthesis in Aquatic Ecosystems*) of the various level 1 topics so as to bring the reader up to the level of current research. The intended audience is people who plan to do research in optical oceanography, and researchers who are expert in one area and desire to learn the details of another area. For example, the radiative transfer equation is derived in Level 1, and solution methods and related topics are discussed in level 2. This chapter has level 2 pages showing other web resources for optical oceanography. and text books on optical oceanography..

- **Level 3: Ancillary Material.** Here we intend to discuss the design, calibration, and data processing for various instruments, or link to websites with such information (e.g., to a particular company's website for information about their instruments, or to NASA protocol documents). Level 3 material also includes pdf files of selected papers (copyrights permitting) and technical reports. Tabulated numerical data as needed for research or as used to generate some of the figures in Levels 1 and 2 can also be found in Level 3.

  All levels contain links to available software and other resources such as NASA's *SeaBASS* data archive.

We invite others to contribute material to the book to expand our initial offerings. However, we did not choose a wiki format in which anyone can add or modify material without restriction. This is first because we wish, at least initially, to retain editorial control over the organization of the book and quality of its content. Second, technical details related to how material such as complicated equations must be formatted for good appearance when translated for display in a web browser go beyond the abilities of standard text-based wiki syntax.

Indeed, generating complex material with equations, tables, and figures on a format that can be easily moved to the web site while preserving its appearance on any browser requires that all material be formatted as LaTeX files, which can then be automatically translated into html code using concrete5 software. concrete5 is very powerful and, for example, automatically converts LaTeX equations into figures that display well. There is, however, a bit of a learning curve in this process. If you wish to add material to the web site, let us know and we will provide documentation and examples showing how to prepare your material in LaTeX format for uploading to this website.

The mechanics of usage.

The content is ordered by chapters, pages, and files. A chapter discusses a general topic, such as absorption. A page is the amount of material that can be scrolled through on the browser without clicking to go to another page. A page usually presents the details on a specific subject, e.g., black body radiation or absorption by CDOM. Level 3 material is often files, which can be downloaded or opened outside of the current browser window.

When viewing a particular page of the book, a chapter-level table of contents is always seen at the left side of the window. Clicking on a chapter title expands the contents to show all Level 1 pages in the chapter and a Level 2 button, which can be expanded to show all Level 2 pages for that chapter. Clicking again collapses the contents back to the original level.

The information bar at the top of each page contains a search box at the upper right. If you enter a key word or phrase in the box and click on "go", a column appears at the right showing the search results with page names and a few words of text before and after each occurrence of the search string. Clicking on any of these listings takes you to the appropriate page, where the search string is highlighted. You can also right click on a search result and select to open the page in a new browser window or tab, in the customary fashion. When done with the search results, click the "clear" button at the upper right to make the column of search results disappear. The search string is taken exactly as typed. If you enter "volume scattering functions" the search will find only that exact phrase and will not show occurrences of "volume scattering function" or just "scattering." A search on "scattering" would find any of these strings.

If you wish to print a page, just use your browser's print feature. The page will be reformatted for printing and can be viewed via the browser's "print preview" option.

The bottom of each page contains buttons to move to the next or preceding page. There is also an option to "comment on this page." This opens a window where you can enter your name,

email address, and comment. Your comment will go to the "principle author" of the page, who is named at the upper right of each page. Each page has a principle author who generated the original material and who is responsible for maintaining the page. That person will act on your comment as needed, e.g., by correcting an error or adding new material and, if appropriate (and with your permission) adding your name as a contributor to the page.

Known bugs

Dynamic numbering of equations, figures, and tables is a powerful feature of LaTeX. However, dynamic figure and table numbers sometimes get lost in the LaTeX to html translation. Missing or "bad" numbers are replaced with a $\boxed{\text{go to} \rightarrow}$ button, so that you sometimes see text like "Figure $\boxed{\text{go to} \rightarrow}$ illustrates...." Clicking on the $\boxed{\text{go to} \rightarrow}$ will take you to the referenced figure or table, even if its number is not shown correctly.

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Excuses

We originally planned to have much more material on the web site for its initial release, and we have all of the usual excuses for not having accomplished more with the available funding. Developing the website management and LaTeX-to-html conversion software was non-trivial, and there was a steep learning curve for generating figures that display well on low to high resolution monitors and any web browser. However, we hope you find that the initial material is well presented, useful, and worthy of expansion (with your help!) to fill in the many missing topics and details. *We have no intention that the website will ever be complete.* But enough of philosophy—please start using!