

# ***Limnology and Oceanography: Fluids and Environments***

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### **Aims and Scope**

*Limnology and Oceanography: Fluids and Environments (L&O:F&E)* publishes interdisciplinary papers that relate fluid dynamics and transport properties to biological, chemical, and geological processes that occur in aquatic/aqueous environments. The journal encourages manuscripts treating research in any aspect of limnology and oceanography where advection and/or diffusion or the mechanics of the medium drive biological, chemical, or geological processes from molecular to global scales. It recognizes a variety of approaches, including modeling, theory, and empiricism. It focuses on transport phenomena and their environmental implications, from large-scale currents to organism-induced motions and molecular-level transfers. The interactions of physics with biology, chemistry, or geology, or any combination of these are essential to *L&O:F&E* papers and define the uniqueness of the journal.

Environments of interest include oceans, coastal seas, estuaries, rivers, streams, lakes, ponds, reservoirs, groundwaters, and wetlands, as well as the mats, sediments, and rocks that underlie these waters and the atmosphere immediately above them. Appropriate topic areas include, but are not limited to, carbon dynamics, gas exchange, diagenesis, animal movement, hyporheic flows, life in boundary layers, sediment transport, flow effects on ecosystems, groundwater discharge, biological feeding and growth, environmental fluid dynamics, biogeochemistry, hydrothermal flows, nutrient uptake and release, and contaminant dispersal.

### **General Points**

*L&O:F&E* publishes original articles, brief reviews, and comments/replies. *L&O:F&E* is published online only (in both HTML and PDF formats) by Duke University Press on behalf of the Association for the Sciences of Limnology and Oceanography (ASLO).

Original Articles should describe, interpret, and discuss the results of novel research from empirical, modeling, or theoretical studies. Manuscripts that integrate laboratory, field, and modelling/theoretical work are encouraged. Original articles may include manuscripts presenting new ideas and hypotheses, based on existing findings.

Brief Reviews should focus on important research questions and should provide innovative insights on existing data. They are meant to be provocative rather than exhaustive in nature and should articulate future directions in the field.

Comments/Replies should offer constructive discussion or useful critiques on *L&O:F&E* papers or relevant issues in the field. The goal is to stimulate an exchange of views to the benefit of the field and its readership.

Manuscripts are judged on the originality of their data, interpretations, and ideas, and on the generality of their findings. Empirical, theoretical, and modeling work must have clear relevance to natural environments. Manuscripts that focus primarily on biological, chemical, geological, or physical topics should be submitted to *Limnology and Oceanography* ([www.aslo.org/lo](http://www.aslo.org/lo)); manuscripts that focus on methods should be submitted to *Limnology and Oceanography: Methods* ([www.aslo.org/lomethods](http://www.aslo.org/lomethods)), both published by ASLO. If you are unsure about appropriateness for *L&O:F&E*, please contact the *L&O:F&E* Editor ([lo-fe-editor@aslo.org](mailto:lo-fe-editor@aslo.org)) before submission.

### **Conditions for Publication**

ASLO holds copyright to any material published in *L&O:F&E*. Submissions may not contain material published elsewhere. On-going publication in a discussion forum, including but not limited to Biogeosciences Discussions (BGD), will exclude papers from consideration by *L&O:F&E*. Submissions will not be considered unless the results are amenable to independent verification.

If a manuscript contains data from a biological strain isolated from nature, originating from the author's laboratory, and not available from a public collection, then the author must honor, in a reasonable time, all bona fide requests for samples of the culture or deposit specimens in a public culture collection. Similar expectations apply to results obtained using new antibodies originating from the author's laboratory. Authors of submissions reporting research that includes new nucleotide or amino acid sequences must submit the sequence information to a publicly accessible archive (e.g., GenBank or EMBL) and provide the accession numbers in the part of the manuscript that describes the research methods. Manuscripts that use existing sequences from GenBank/EMBL must cite accession numbers and original literature references to them (if they exist). Authors that utilize computer code or algorithms are encouraged to make the code available on request. Publication of an article in *L&O:F&E* implicitly binds authors to these conditions.

Authors are responsible for supplying complete bibliographic information—editors do not perform library research. Copyediting of *L&O:F&E* articles is overseen by Duke University Press. Authors will have the opportunity to review articles before they are published, but the Editorial Office is not liable for editorial or printing errors or errors in the technical content of the manuscript.

Communication with the Editorial Office at all points of the publication process is encouraged. Send correspondence to:

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## Authorship

Every person listed as an author must have met all of the following conditions: (1) contributed substantially to the study's conception, data acquisition, and/or analysis; (2) contributed substantially to drafting the manuscript; and (3) approved the final submitted manuscript. Acquisition of funding, the collection of data, or general supervision of the research group, by themselves, do not justify authorship.

## Successful Publication in *L&O:F&E*

The most common reasons for manuscript rejection are flawed study design, lack of detail in methods, or lack of clear focus. Rejection is also likely if the writing is unclear or the manuscript is poorly organized, not written in the appropriate style, or incomplete. To prevent reviewers from dwelling on issues of style that subsequently result in the rejection of the manuscript, authors should submit only fully polished manuscripts. In some instances, the editor may invite an author to resubmit a paper for consideration as a new manuscript after, for example, further research has been done. Such a revision is expected to be so profound that the revision is a new manuscript.

We welcome submissions from authors whose first language is not English, but these submissions must be free of serious grammatical errors that prevent the paper's scientific merit from being assessed. If you cannot get someone who is fully competent in English to help you, then we recommend that you make use of a professional scientific copyediting service (e.g., [www.journalexerts.com](http://www.journalexerts.com)). If you receive reviews saying that your paper is disorganized, contains too much detail, or is difficult to understand, then you may want to consult resources such as the Web site [lgmacweb.env.uea.ac.uk/lequere/communication/communication.html](http://lgmacweb.env.uea.ac.uk/lequere/communication/communication.html) for guidance on how to write scientific papers. In addition, we recommend use of *Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers* or the earlier *CBE Manual*.

## How to Submit a Manuscript

Submit all manuscript files, including tables and graphics, electronically at [www.editorialmanager.com/lofe](http://www.editorialmanager.com/lofe). Acceptable electronic formats for review of manuscripts are Microsoft Word, LaTeX, and PDF.

The Editorial Office will return papers to authors whose submissions do not comply with the following requirements.

### *General Style*

- Use a 12-point font (Times New Roman preferred), double-spaced, with 1-inch (2.5-cm) margins on all sides. Submission may be formatted for either A4 or 8.5" x 11" sized paper.
- Manuscripts must be written in English.
- Manuscripts must be double-spaced throughout and include continuous line numbers (including references and figure legends). Original articles should be no more than ~20 manuscript pages in length (Brief Reviews < 30 pages; Comments/Replies < 10 pages) excluding figures and tables. Table captions must be double-spaced, but not the tables themselves.
- All paragraphs in the main text must be numbered. Do not number the abstract, lay abstract, or references. Place the paragraph number within square brackets (e.g., "[1]"). Do not justify (i.e., align text) to the right-hand margin. Do not break (hyphenate) words over lines. Indent the first line of each paragraph. Do not put a blank line between paragraphs. The only allowable footnotes are for author addresses on the title page or when they are unavoidable in tables.
- Use an italic font for lower case Greek letters or quantities and variables (e.g.,  $T$  = temperature;  $V_z$  = velocity in the vertical direction), but use a roman font (i.e., not italic) for units (e.g.,  $T = 5\text{ }^\circ\text{C}$ ;  $\eta \approx 400\text{ }\mu\text{m}$ ), descriptive terms (e.g.,  $T_A$  = air temperature), chemical elements (N = nitrogen), and upper case Greek letters. For additional information, refer to <http://physics.nist.gov/cuu/pdf/typefaces.pdf>.
- For MS Word submissions, use a serif font (Times New Roman preferred); if special mathematical or Greek symbols are not available in that font, use the Symbol font.
- Cite all figures and tables in the text and number them in the order that they appear in the text.
- Cite literature in the text in chronological, followed by alphabetical, order and format the citations in the following way: "Campbell (1983, 1987b)," "(Smith et al. 1984; Karl and Craven 1988; Korobi 1997, 1998)." In the References section, list citations in alphabetical, followed by chronological, order.
- Use only SI units (metric and Celsius; for detailed SI specifications, see <http://physics.nist.gov/cuu/Units>). The following are required formats for situations that are commonly formatted incorrectly:

- Use exponents to indicate multiplication or division in units (slashes are not allowed).
  - Use “mol L<sup>-1</sup>” for molar concentrations (“M” is not acceptable).
  - Use “mol quanta” for photosynthetically available radiation (PAR) (Einsteins are not acceptable).
  - Use × for multiplication (\* is not acceptable).
  - To indicate a power of 10, write, e.g., “5 × 10<sup>-8</sup>” (“5E-8” is not acceptable).
- Do not italicize common Latin terms and abbreviations such as “i.e.,” “e.g.,” “in situ,” “in vivo,” and “et al.”

Manuscript submissions should include the following:

- Cover letter
- Title page
- Abstract page (upon acceptance you will be asked to provide a lay version of the abstract for dissemination purposes; abstracts are omitted for Comments/Replies)
- Keywords (list 4–6 keywords for the article; do not include words that are already in the title of the article)
- Main text (Introduction, Methods [or Model Description], Results, Discussion)
- Acknowledgments
- References
- Tables (each on a separate page)
- Figure legends
- Figures (embedded at the end of the manuscript; separate figure source files will be requested once the manuscript has been accepted)
- Appendices (optional; appendices will appear with the main article and may include figures and tables)
- Supplemental data (optional; separate online materials, such as videos and other digital media)

### *Cover Letter*

Clearly indicate in the cover letter whether the submission is intended as an Article, Brief Review, or Comment/Reply. Include a statement that the manuscript contains only original data (i.e., no data in it are already published or currently submitted for review to another journal). If any data in the manuscript were previously published or are used in another manuscript presently under consideration elsewhere, describe the extent of the overlap in the cover letter and include copies of the relevant papers. It will speed review if you include copies of related manuscripts that are in press, submitted to another journal, or that reviewers are likely to have difficulty locating. The journal must receive copies of all such manuscripts electronically (as PDF files). Include a statement that you will pay for page charges if the manuscript is accepted for publication (see below).

For revisions, authors should submit a separate file with detailed responses to the reviewers' and editor's comments. Describe how you modified the manuscript in response to each comment or outline your reasoning carefully if you disagree with the comment.

## *Suggested Reviewers*

During the online submission process authors will be required to enter the names and complete addresses (including e-mail) of **four** people who the authors believe to be qualified reviewers for the paper. Suggested reviewers must be free of any potential conflict of interest. Any of the following situations may constitute a conflict of interest, so these persons should be omitted from your list:

- a co-investigator with either you or a co-author on a current research project;
- a co-author with you or with one of your co-authors on the current manuscript in an article published within the past 5 years;
- a close friend or relative of yours or of a co-author's;
- someone who works at your institution, or that of a co-author; or
- someone who has seen and commented on the manuscript prior to its submission to *L&O:F&E*.

To provide balance, *L&O:F&E* may go outside the list of reviewers you provide. Thus you may wish to make other potential conflicts known to us, in particular potential reviewers with whom you or a co-author have had a significant and acrimonious disagreement at any time in the past.

For revisions, the cover letter must contain detailed responses to the reviewers' and editor's comments. Describe how you modified the manuscript in response to each comment or outline your reasoning carefully if you disagree with the comment.

## *Title Page*

- Capitalize only the first word and proper nouns in the title.
- Do not use abbreviations in the title (e.g., use "iron," not "Fe"; and "southeast," not "SE").
- List the names of all authors below the title. Use footnotes to indicate the corresponding author (if different than the first author listed) and author addresses; these addresses should be those where the authors resided at the time that the work presented in the paper was done (use separate footnotes for current addresses, if different). Spell out state or province names in full. Double-space all footnotes on the title page.
- For articles, provide a running head (shortened title) of no more than 40 characters (including spaces) at the bottom of the page.

## *Abstract Page*

- Articles published in *L&O:F&E* must include an abstract of no more than 250 words. The abstract should summarize the research and the significance of the findings. Please remember that abstracts should be informative. References should not be included in the abstract. Upon manuscript acceptance, you will be asked to provide a lay version of the abstract for distribution to nontechnical audiences.

## Key Words

- List 4–6 keywords for the article; do not include words that are already in the title of the article.

## Main Text

- Follow all directions given in the “General Style” section above. Articles must be structured in the conventional format (Introduction, Methods (or Model Description), Results, Discussion). Distinguish subheadings by setting them on a separate line in italics, as in the following example:

### **Methods**

#### *The Distribution of Lakes*

The power . . . . .

- Include a brief discussion of the relevance of the findings to the broader community of aquatic researchers in a subheading titled “Significance to Aquatic Environments” to be placed at the end of the Discussion. There should be no “Conclusions” section at the end of the Discussion.
- Define all abbreviations and acronyms at first use.
- Provide the systematic authority for the first mention of species in the text.
- Describe statistical methods in enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. Provide indication of central tendency (e.g., mean), spread (e.g., standard error of the mean, RMS), and sample size (e.g.,  $n$ ) for data (e.g.,  $2.34 \pm 0.05$ ; include “[mean  $\pm$  SE]” the first time it appears in the text), as well as error estimates for all parameter fits (e.g.,  $y = (9.5 \pm 0.2)x + 2.22 \pm 0.01$ ,  $r^2 = 0.96$ ,  $n = 32$ ,  $p = 0.002$ ). Give test statistic value, degrees of freedom, and  $p$ -value for each statistical evaluation reported (e.g., “ $F_{4, 23} = 16.45$ ,  $p < 0.001$ ”, “ $t_3 = 4.54$ ,  $p = 0.02$ ”, “ $\chi^2_{15} = 27.49$ ,  $p = 0.025$ ”).
- Use italics for symbols representing a statistic:  $p$  for probability level,  $n$  for the sample size,  $r$  for the correlation coefficient,  $R^2$  to denote the coefficient of determination. ( $r^2 = R^2$  only for a linear regression.)
- Use the same font for the same mathematical symbol regardless of where it appears in the manuscript (text, displayed equations, tables, figures, or figure legends).
- Use periods after all abbreviations except for metric measures, compass directions, and time (e.g., “s,” “min,” “h,” “d,” “yr”; do not abbreviate 'week' or 'month'). Use hh:mm h or hh:mm:ss h for time of day. Do not use a.m. or p.m. (e.g., “09:30 h, 18:24:44 h”).
- Use day-month-year for all dates in the text, figures, and tables (e.g., “15 June 1999”). Time series may be reported in “day of the year” format, but not Julian days.
- Do not abbreviate names of states, provinces, or cities. Abbreviate names of countries only after defining on first use: e.g., United Kingdom (UK), United States of America (USA).

- Please provide the model name and the manufacturer’s name and location (country) for equipment and/or software, e.g., “fed with commercial algae (Nanno 3600, Reed Mariculture, USA) . . .” or “fed with Nanno 3600 (Reed Mariculture, USA), a commercial algae consisting of . . .”

### *Acknowledgments*

- Include brief statements about granting agencies, important aid received from institutions, and any potential conflicts of interest, as well as statements of thanks to anyone who made a substantial contribution to the work (e.g., data collection, analysis, or writing or editing assistance). Authors are responsible for ensuring that all persons named in the Acknowledgments section know and agree to being identified there (since it may be interpreted as endorsement of the work).

### *References*

- All references cited in the text must appear in the References, and vice versa.
- No more than three references can be cited to support any statement, i.e., the study that first suggests the idea, a recent review or another paper that discusses it in detail, and perhaps the most recent important study.
- Double check the spelling of author names and years of publication. All author names must be given—even if there are more than eight (the copyeditor will abbreviate the list to “and others” if appropriate).
- Manuscripts in preparation, submitted manuscripts, unpublished theses, or similar sources should be cited in text by giving the author(s) initial(s), last name(s), affiliation, and “pers. comm.” or “unpubl.” For example, (A. B. Jones, ABC University, unpubl.) Such materials must **NOT** appear in the References. Verify all references against original sources; check especially journal titles, accents, diacritical marks, and spelling in languages other than English.
- Make sure that each citation is complete, according to the following examples:

#### Article

Nowell, A. R. M., and P. A. Jumars. 1984. Flow environments of aquatic benthos. *Annu. Rev. Ecol. Syst.* **15**: 303–328.

#### Articles with a Digital Object Identifier (DOI)

Include DOIs for references, if they are available. Check that every DOI that you cite is correct via the DOI system Web site ([www.doi.org](http://www.doi.org)). Many older papers that were originally published with page numbers have been retroactively assigned DOIs, whereas some newer electronic journals assign article identifiers instead of page numbers (HTML being the primary form of publication). Thus, a paper with a DOI may contain page numbers, an article identifier, or both, and at least one of these is needed to complete the reference.

Rovegno, P. S., C. A. Edwards, and K. W. Bruland. 2009. Observations of a Kenai Eddy and a Sitka Eddy in the Northern Gulf of Alaska. *J. Geophys. Res.* **114**: C11012, doi:10.1029/2009JC005451.

If there are page numbers, the last part would be “**114**: 15–32, doi:10.1029/2009JC005451.”

If there are both page numbers and an article identifier, the last part would be “**114**: 15–32, C11012, doi:10.1029/2009JC005451.”

#### Book

Okubo, A. 1980. *Diffusion and Ecological Problems*. Springer.

#### Chapter

Packman, A. I., and K. E. Bencala. 2000. Modeling surface-subsurface hydrological interactions. Pp. 45-80. *In* J. B. Jones and P. J. Mulholland [eds.], *Streams and Ground Waters*. Academic Press.

#### Theses and dissertations

Van Duren, L. A. 2000. *Moving (in) water: behavioural kinematics, hydrodynamics and energetics of the calanoid copepod *Temora longicornis**. PhD diss., Univ. of Groningen.

#### Unpublished papers

Papers which are unconditionally accepted for publication but for which exact publication data are not yet available should be formatted according to the above examples but with the phrase “In press” appearing instead of the year of publication.

#### Web sites

A Web site may be referred to only if it is sponsored by an organization that is committed to maintaining it in perpetuity. Personal or university-based Web sites are *not* allowed in *L&O:F&E* because such sites are prone to disappear when the scientist who created them moves or loses interest in material. Web sites and the date they were consulted are referred to only in the text and are not included in the list of references.

#### Other notes

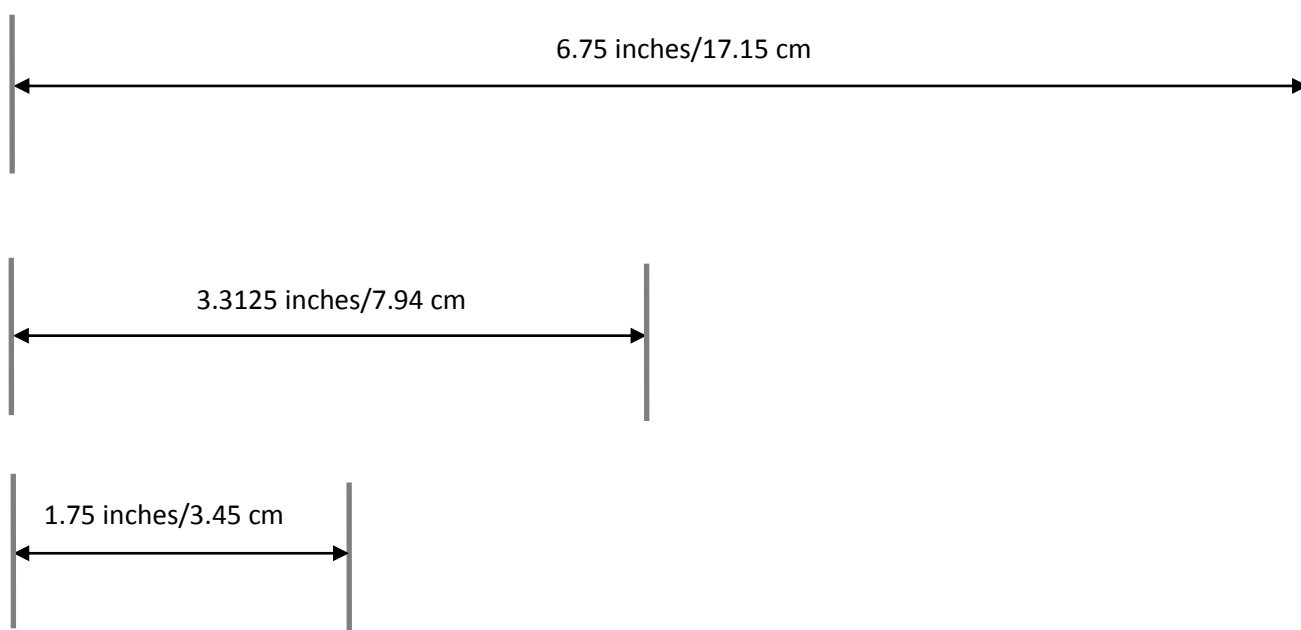
- Use mixed case (upper and lower case or caps and small caps) for all text in the References section.
- For abbreviations of journal names refer to Chemical Abstracts Service Source Index (CASSI).
- Do not include part (issue) numbers after volume numbers unless each part of the volume is paginated separately.

#### *Tables*

- Tables should be provided in MS Word or LaTeX. Start each table on a new page.
- Every table must have a descriptive title legend. Type table legends as double-spaced paragraphs at the top of each table.
- Note that each column, including the first column, must carry an appropriate heading.

## Figures


- **Color images are encouraged.** There are no additional charges for color images, but please be aware that they will be converted to grayscale in any possible future print editions. For color images, the graphic's color mode should be RGB.
- At the time of submission, figures should be embedded at the end of the manuscript file. Once the manuscript is accepted, figures should be provided as individual, high-quality electronic graphic files. Preferred formats are EPS, TIFF, PDF (created to "Press Quality" job option), and high-quality JPEG.
- Ensure legibility of figure text, symbols, and patterns at all potential widths:



- The graphic should be at least 950 pixels wide to ensure adequate resolution on screen and in print. This is roughly equivalent to 150 pixels per inch or 60 pixels per centimeter at the widest image width on the page.
- Figures will be placed in the article PDF at one of the standard widths shown above.
- Be sure your figure is legible when sized to the at least two of these standard widths.
- All text should be 9 to 11 points in Helvetica or Calibri:
  - Nine points
  - Ten points
  - Eleven points
- Number figures with Arabic numerals in the order of their citation in the text.

- Panel labels in the figure should match how the panels are referenced in the text and should be consistent:

A. B. C. *not*  
(a) (B) C.

- If a figure consists of multiple panels, put all panels on one page and repeat axes titles on each panel only if they are different.
- Symbols used in the figure (e.g., circles, squares, etc.) must be explained on the figure itself (i.e., not in the figure legend). Open symbols (○△) read more easily than solid ones (●▲).
- All lines must be at least 0.25 points thickness: \_\_\_\_\_
- Be sure that colors and shades in the graphic are distinguishable when printed in black and white. 
- Use color combinations easily distinguished by colorblind persons. **Avoid combinations** that include

green & <b>white</b>	pink & <b>white</b>
green & bluish white	pink & light gray
green & blue-greens	red & red-orange
red & brown	dark red & black

- Do not use effects like shadows and fades. Avoid use of 3D effects.
- Keep pattern fills simple (as shown below): solid black lines, diagonals, and simple hatching, with black borders. Complex patterns can become illegible.



- In multipart figures, minimize space between parts and arrange as symmetrically as possible.
- Put scale bars on the figure, not in the figure legend.
- Make figures as simple as possible. For example, avoid grid lines and boxes around symbol definitions.
- Maps must include latitude and longitude, an indication of compass direction, a scale bar, and a thin line as a border. All markings must be legible.

### *Figure Legends*

- Group figure legends together in the manuscript. Do not put figure legends on the figures.
- No special symbols are allowed in the figure legend.
- Explain all panels in each figure.

### *Appendices (Optional)*

- Appendices, which may include figures and tables, will be reviewed and will appear with the main article.

### *Supplemental Data (Optional)*

- Supplemental data, which may include separate supporting online materials such as databases, long derivations, and video of results or observations, will also be reviewed.

### **Page Charges**

All accepted manuscripts will incur charges of \$50 per full or partial page in the final PDF file of the article and any supplemental data, if either the lead author or the corresponding author is an ASLO member. If neither lead nor corresponding author is an ASLO member, the charge is \$75 per page.

### **Free Access**

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Authors will be given the opportunity to subscribe to this service during the production process. The cost for the service is added to the invoice sent from Duke University Press for the publication charges for the article. For authors who wish to place their articles into Free Access retroactively, a US\$25 service charge will be added to the invoice if Free Access is purchased after the PDF files for an issue have been posted on the *L&O:F&E* Web site.

### **Images for the *L&O:F&E* Web site**

We encourage authors of accepted articles to provide images (e.g., photographs and graphics that relate to fluid dynamic interactions) for display on the journal's home page (<http://aslo.org/lofe>). Authors will be invited to submit images for consideration as part of the acceptance process. The images must meet the minimum graphic standards mentioned under "Figures" above, and the author must provide proof that he or she is the copyright holders to provide use of the image.

*Updated 5 December 2011*