ENVIRONMENTAL MODELLING & SOFTWARE

AUTHOR INFORMATION PACK

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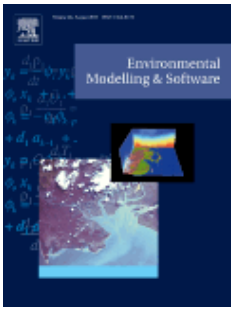

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DESCRIPTION

Environmental Modelling & Software publishes contributions, in the form of research articles, reviews, short communications as well as software and data news, on recent advances in **environmental modelling** and/or **software.** The aim is to improve our capacity to represent, understand, predict or manage the behaviour of **environmental systems** at all practical scales, and to communicate those improvements to a wide scientific and professional audience.

It seeks presentation of:
• Generic frameworks, techniques and issues which either integrate a range of disciplines and sectors or apply across a range
• **Model development**, model evaluation, process identification and applications in diverse sectors of the environment (as outlined below) provided they reveal insights and contribute to the store of knowledge. Insights can relate to the generality and limitations of the modelling, methods, the model application and/or the systems modelled. Insights should be ones that are generalizable in some way and are likely to be of interest to those studying other systems and, preferably, other system types.
• Development and application of **environmental software**, information and decision support systems
• Real-world applications of software technologies - particularly state-of-the-art environmental software able to deal with complex requirements, conflicting user perspectives, and/or evolving data structures. Aspects related to software usability, reliability, verification and validation should be backed up with quantitative results as much as possible. Development and maintenance costs, and adoption and penetration of the software in the target user groups should be addressed. Licensing issues and open source access should be clearly specified.
• Issues and methods related to the integrated modeling, assessment and management of environmental systems - including relevant policy and institutional analysis, public participation principles and methods, decision making methods, model integration, quality assurance and evaluation of models, data and procedures.

Authors must specify clearly the objectives of their models and/or software, and report on the essential steps that were used in their development, normally including the rationale for the type of approach selected and substantial testing and evaluation of it - comparisons with alternative approaches and methods are encouraged. The purpose of this specification, evaluation and reporting is to convey the rigour and credibility of the work and therefore its potential to contribute to knowledge acquisition. To this latter end, authors are expected to briefly review and cite the historical progress made for their problem and clearly show how their work adds value to the literature.

The journal encourages submission of Short Communications of less than 3,000 words, and items of Software and Data News of less than 400 words.
Software and Data News items are short news articles (of 1 journal page at most) about new software products and data sets that fall within the journal's scope. They are expected to treat topics that have been analytically covered in EMS, or elsewhere, and therefore do not require long descriptions. Software and Data News items must not exceed 400 words, should have no section sub-titles, NO images or tables and have no more than 5 references.

For these and the regular papers, supplementary material such as software demonstrations, model simulations and additional performance tests, can be posted in electronic form and commented upon by users.

Authors are invited to submit relevant contributions in the following areas:
• Generic and pervasive frameworks, techniques and issues - including system identification theory and practice, model conception, model integration, model and/or software evaluation, sensitivity and uncertainty assessment, visualization, scale and regionalization issues.
• Integrated assessment and management of systems (river basins, regions etc.) for enhancing sustainability outcomes - including linked socioeconomic and biophysical models that may be developed with stakeholders for understanding systems, communication and learning, and improving system outcomes.
• Artificial Intelligence (AI) techniques and systems, such as knowledge-based systems / expert systems, case-based reasoning systems, data mining, multi-agent systems, Bayesian networks, artificial neural networks, fuzzy logic, or knowledge elicitation and knowledge acquisition methods.
• Decision support systems and environmental information systems- implementation and use of environmental data and models to support all phases and aspects of decision making, in particular supporting group and participatory decision making processes. Intelligent Environmental Decision Support Systems can include qualitative, quantitative, mathematical, statistical, AI models and meta-models.
• Process-identification of environmental dynamics for instance of surface and subsurface hydrology, limnology, meteorology, geophysics with special respect to the interaction of anthroposphere and biosphere.
• GIS, remote sensing and image processing

These methodological developments should be illustrated with applications in the environmental fields, e.g.
• Resource management including water, land, biological, transport systems
• Pollution of different media such as air, water, soil, noise, radiation, as well as multimedia problems
• Global pollution and global climate change
• Regional studies of resource consumption and/or nature conservation in open landscapes as well as in urban regions
• Environmental accidents, prevention and emergency response - resilience, vulnerability, self-repair, damage limitation, and security in infrastructures
• Environmental engineering and technology

Environmental Modelling and Software welcomes review articles on the topics above, especially ones that relate to generic modelling and/or software issues, or are cross-disciplinary in their problem treatment.
Potential authors of review articles should contact either Dr Jakeman or Dr Rizzoli to discuss the topic and coverage of their review. The journal has also published several Position Papers on key topics within its aims and scope at http://www.iemss.org/society/index.php/position-papers

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3. Citations in the text should be included in the Reference list and each reference in the list should be complete in detail and style.
4. Adequate coverage of the literature through the references, especially more recent articles, including those in the Environmental Modelling and Software Journal.
5. The mathematics should be clear and all variables explained/defined.
6. Figures and tables should be of good quality, and must be embedded in the text as well as uploaded separately.
7. Model and/or software evaluation and testing must be adequate.
8. A Software Availability Section must be included if relevant

Types of paper
Types of Contributions: Research articles, review papers, short communications, commentaries, and book reviews.

Research articles are archival, high quality research contributions that improve the state of the art on topics treated by the journal. The work reported needs to be technically sound and sufficiently unique, with the mathematical (algorithmic) foundations of models or software need to be properly documented. It is important to report on model or software performance against data and other considerations, and the relevance to user needs.

Review papers provide an extensive overview of recent developments in specific areas that fall within the scope of the journal. They are expected to have an extensive literature review followed by an in- depth analysis of the state of the art, and identify challenges for future research.

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Book reviews are short articles that introduce new books in the areas relevant for the journal audience. In particular we are interested in covering books that can be used for teaching environmental modelling and software topics.

Contact details for submission
If you are not able to submit your paper to ENVSOFT electronically please contact the Editor-in-Chief, Dr. A. J. Jakeman at: tony.jakeman@anu.edu.au

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Title, Authors, Affiliations and Contact details Abstract Keywords Software and/or data availability Introduction Material and methods Results Discussion Conclusions Acknowledgements References Appendices

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