



Hydrogeology Journal

Instructions for Authors



Hydrogeology Journal is the official journal of the International Association of Hydrogeologists (IAH). The full content of *Hydrogeology Journal* is available to IAH members or subscribers; non-subscribers can view summary content and abstract pages and they may get full content of articles that have been published with open access, or they may purchase articles via SpringerLink (<http://www.springer.com/hydrogeologyjournal>).

Groundwater professionals and others may submit relevant manuscripts to *Hydrogeology Journal* for consideration. Manuscript acceptance is not related to IAH membership.

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GENERAL GUIDELINES

The types of articles published in *Hydrogeology Journal* are described in *Appendix 1*. The journal's aims and scope are given at: <https://www.springer.com/journal/10040/aims-and-scope>. Please study the guidelines given below before submitting your manuscript to *Hydrogeology Journal*, and also the specifications given in *Appendix 2* (keywords, artwork, etc.). The peer review process, publication procedure and open access arrangements are given in *Appendix 3*, and legal requirements in *Appendix 4*. There are no submission or price-per-page fees, and no fee for use of color.

Microsoft Word is the preferred word processing format. Manuscripts that do not conform to the following requirements will be returned for corrections. In brief:

- Write in English. Do not use first-person narrative or personal pronouns.
- Guidance and restrictions on page length are detailed in *Appendix 1*.
- The text must be in a single column with double line spacing; margins must be ≥ 2.5 cm (1 inch) all around.
- Use automatic page numbering and continuous line numbering.
- Save your text and tables in .docx format (Word 2007 or higher) or .doc format (older Word versions). Do not submit TeX or LaTeX files or other formats for text and tables.
- Use a normal plain font (e.g. 10-point Times Roman) for text.
- Use italics for emphasis (do not underline or use bold face).
- Do not use field functions.
- Use tab stops or other commands for indents, not the space bar.
- Use the Word table function, not spreadsheets, to make tables.

Title Concise and informative title, in sentence case	<i>Example:</i> Three-dimensional benchmark for variable-density flow and transport simulation: matching semi-analytic stability modes for steady unstable convection in an inclined porous box
Authors and affiliations First and family names, affiliations, contact details, and email of the corresponding author	<i>Example:</i> Clifford I. Voss ^{1*} , Craig T. Simmons ² , Neville I. Robinson ² 1. International Association of Hydrogeologists (IAH), PO Box 4130, Reading, RG8 6BJ, UK Email: HJ.Editor.CVoss@gmail.com 2. Flinders University, GPO Box 2100, Adelaide, 5011, Australia *corresponding author – displayed in the article as the designated author to accept queries from readers Provide the 16-digit ORCID identifiers of all authors, if available. Note: The first author (as listed in the article – see example above) and the submitting author (i.e. 'contact author' as recorded in the manuscript processing system) should be fixed at first submittal.
Abstract Max 250 or 80 words (depending on article type)	For Papers, Reports and Technical Notes, provide an English abstract of maximum 250 words; for essays, the abstract maximum is 80 words (see <i>Appendix 1</i>). The first sentences should state the importance of the work, the main result, main conclusion, or main point of the manuscript, followed by a statement of the problem, objectives, methods, results, and other conclusions. The abstract should not contain any undefined abbreviations or unspecified references. The title and abstract will usually be translated into Chinese, French, Portuguese and Spanish by hydrogeologists appointed by the editorial team. Translation to approximately 30 other languages is possible, if provided by the author. The author/translator certifies that the translation faithfully represents the official version in English, which is the published title/abstract of record and is the only title/abstract to be used for reference and citation.
Keywords (These are for indexing purposes)	<i>Example:</i> Analytical solutions · Numerical modeling · Karst · Switzerland Notes: <ul style="list-style-type: none"> • Include the name of a country or multi-country region, when appropriate. • Provide up to five keywords. At least two keywords should come from the standard keywords list (see <i>Appendix 2.1</i>).

<p>Text body</p> <p>Use the decimal system of numbered headings with no more than three levels to organize your sections of text. An example of appropriate structure is given here</p>	<p>1. Introduction The introduction gives a short review of the pertinent literature and states the purpose and novelty of the investigation.</p> <p>2. Materials and methods 2.1 2.1.1 2.1.2 etc. This section provides enough information to permit repetition of experimental work. Provide a description of the study area and include a hydrogeological location map (HLM) and detailed study area map (SAM). HLM and SAM content and format are described in the Figures section of these author instructions.</p> <p>3. Results This section describes the outcomes of the study. Data should be presented concisely, for example in the form of tables or figures.</p> <p>4. Discussion The discussion gives an interpretation of the results and their significance and limitations, with reference to work by other authors.</p> <p>5. Conclusions These summarize the objectives, methods, results, discussion and proposals for further work.</p> <p>Acknowledgments Acknowledgments of people, grants, funds, etc. It is appropriate to acknowledge oral communications and the contributions of reviewers and editors.</p> <p>Funding Information and Conflicts of Interest The names of funding organizations should be written in full. Authors must disclose any commercial or other associations that might pose a conflict of interest in connection with the submitted material.</p> <p>Appendices (optional). Appendix 1, Appendix 2, etc.</p> <p>References (see <i>References and Citations</i>)</p> <p>Note: Footnotes and headers/footers are not permitted in the text.</p>
<p>References</p> <p>The References list should include only works that are cited in the text and only works that have been formally published or have a digital object identifier (DOI)</p> <p>References-list entries should be alphabetized by the family name of the first author of each work</p> <p>Unpublished works should only be mentioned in the text (see <i>Citations</i>)</p>	<p><i>Types and examples:</i></p> <p><u>Journal article:</u> Burns ER, Bentley LR, Therrien R, Deutsch CV (2012) Upscaling facies models to preserve connectivity of designated facies, <i>Hydrogeology J.</i> 18(6):1357-1373, doi 10.1007/s10040-010-0607-z</p> <p><u>Book:</u> Taniguchi M, Holman IP (2010) <i>Groundwater Response to Changing Climate</i>. CRC Press</p> <p><u>Book chapter:</u> Brown B, Aaron M (2001) The politics of nature. In: Smith J (ed) <i>The rise of modern genomics</i>, 3rd edn. Wiley, New York. p 230-257</p> <p><u>Article by DOI:</u> Voss CI, Duncan SM (2012) Editors' message: Online re-publication of legacy articles on the occasion of <i>Hydrogeology Journal's</i> 20th anniversary, 1992–2012, <i>Hydrogeology J.</i> doi: 10.1007/s10040-012-0928-1</p> <p><u>Online document or website:</u> USGS (2012) <i>Water Science Glossary of Terms</i>, US Geological Survey Water Science School, https://water.usgs.gov/edu/dictionary.html. Cited 1 December 2013</p> <p>Notes:</p> <ul style="list-style-type: none"> • Use the standard abbreviation of a journal's name according to the ISSN List of Title Word Abbreviations, see http://www.issn.org/services/online-services/access-to-the-ltwa/ • If the reference title is given in a language other than English, include the English translation in parentheses immediately following the title.

<p>Language and style</p> <p>In Word, set the language to English (UK or US)</p>	<p>All articles are published in English. If English is not your native language, please seek assistance from native-English-speaking hydrogeologists (including coauthors) before engaging a commercial editorial service, which should be your last resort. Technical reviewers are instructed to equally consider the technical content and organization of manuscripts from authors that are not fluent in English, although smooth progress will be facilitated by manuscripts that have already received help from suitable native-English-speaking hydrogeologists or related specialists. Once accepted, <i>Hydrogeology Journal's</i> Technical Editorial Advisor and Springer copy editors will further edit the English of the manuscript to improve the clarity of writing.</p> <p>Do not use the first person or personal pronouns (I/my, we/our, etc.).</p> <p>Terms and names must be correct and consistent (spellings, capitalization, etc.) throughout the text, tables and figures. Use 'groundwater' (one word), 'hydrogeology' (not 'geohydrology'), and 'water table' (not 'groundwater table').</p> <p>Abbreviations should be defined at first mention and used consistently thereafter, e.g. U.S. Geological Survey (USGS).</p> <p>Use initial capitals for: proper names, e.g. River Amazon, Aswan Dam, the Earth; adjectives derived from proper names, e.g. Markov series; <i>formal</i> geological eras, formations, etc., e.g. Cambrian, early Holocene, Upper Greensand; references to tables and figures, e.g. "It is seen from Fig. 2 and Table 3 that ...".</p>
<p>Numerals and units</p> <p>These instructions apply to all components of the manuscript (text, tables, figures, electronic supplementary material (ESM), etc.)</p>	<p>Use numerals before units of measurement unless the number is at the beginning of a sentence, e.g. "Fifty-millilitre samples were taken every 10 s ...".</p> <p>Leave a character space between the number and its unit. Exceptions are for: percentage, angle units, degrees, minutes and seconds (these should not have a blank space after the number). For example: 531 m, 24 °C, 40%, 90°, 50 mg/L or 50 mg L⁻¹</p> <p>Numbers from one to nine should be spelled out, except where there are units or the number implies arithmetical manipulation, e.g. a factor of 7.</p> <p>The decimal sign is a full point (period) on the line. Commas can only be used for thousand separators, e.g. 10,347. Numbers less than one must have 0 before the decimal point, e.g. 0.824.</p> <p>Set out dates in the form 20–23 October 1980, the 1950s, 17th century.</p> <p>Numbers with orders of magnitude should use 10^{power}, e.g. 1.234 × 10⁻⁵</p> <p>Standard International (SI) or other metric units should be used. If English units are required, follow them with equivalent SI units in parentheses. All units should be in the same font as the text and these should be upright (not italic).</p> <p>Presentation of units should be consistent throughout the text, tables and figures. For example: mg/L or mg L⁻¹ (not both). Note that compound units are separated from each other by a "/" indicating division or a space indicating multiplication.</p> <p>Ranges should be given in full, e.g. years 1956–1963, pages 241–243; to avoid confusion with subtraction, there should be no space either side of the long dash. Units need not be repeated in ranges, e.g. 0–213 °C, from 822 to 900 km².</p>
<p>Citations</p>	<p>Personal communications and unpublished works should only be mentioned in the text. Give "name, affiliation, personal communication (or unpublished data), year" in parentheses. <i>Example:</i> Groundwater is important as a water resource in Ozville (George A. Expert, International Agency for Groundwater, personal communication, 2012).</p> <p>Cite published references in the text by the first-author name and year in parentheses. <i>Examples:</i></p> <ul style="list-style-type: none"> - Negotiation research spans many disciplines (Thompson 1990). - This result was later contradicted (Becker and Seligman 1996). - This effect has been widely studied (Abbott 1991; Barakat et al. 1995; Kelso and Smith 1998). <p>Online documents and websites should also be cited in the text using the first-author name and year in parenthesis, e.g. (USGS 2012). Details, including the website URL, should be given in the References section.</p> <p>If supplying electronic supplementary material, the text must make specific mention of the material as a citation, similar to that for figures and tables, e.g. "Fig. S1 of the electronic supplementary material (ESM)" (see also <i>Figures, Tables and Appendix 2.2</i>).</p>

Equations and mathematical terms

Use the Word equation editor or another equation editor that works in Word (English versions)

These instructions apply to all components of the manuscript (text, tables, figures, ESM, etc.)

Number all “displayed” equations (e.g. Equation 1 of the examples) in parentheses using sequential whole numbers at the right-hand margin, even if they are not referenced in the text. Inline equations are not numbered and they follow normal punctuation rules as part of the sentence

If there is an appendix and it contains equations, continue the consecutive numbering of the main text

Use the standard mathematical notation for formulae, symbols, etc. Multiplication should not be represented with an asterisk; alternatives include: $A \times B$, AB or $A \cdot B$, $(A)(B)$ or $A \cdot B$

The following rules describe the final appearance of mathematics in published papers. The closer these rules are followed in the initial manuscript, the smaller the risk of errors and misprints:

- Italic for symbols or single letters that denote mathematical constants, variables and unknown quantities. Place the symbol in italic if it is a container that can be replaced by a value (e.g. spatial coordinates x , y and z , time t , hydraulic conductivity K , Darcy velocity q). This rule includes typical subscripts that indicate running indices (e.g. use italic for subscripts i , j , k , such as in a_{ij} , b_k).
- Numbers themselves do not act as containers for other values and so are upright. The typical running index “ i ” (between 0 and 3, for example, $i = 0, 1, 2, 3$) is set in italic, as mentioned just above.
- Upright for numerals, operators and punctuation, and commonly defined functions or abbreviations, e.g. cos, det, e or exp, lim, log or ln, max, min, sin, tan, ndfs, d (for differential). The symbol or single letter is upright if it is a label and it does not act as a container for a value. This is true for superscripts and subscripts as well (e.g. hydraulic conductivity of layer 1, K_1 ; Darcy velocity in the x direction, q_x).
- For vectors and tensors, use bold and upright (e.g. \mathbf{v}). Vector elements/components should be italic, not bold (e.g. k).
- Full matrices should be written as displayed equations. Matrix elements should be italic and nonbold. The superscripts “T” or “t” (transpose) and “H” (Hermitian) should be (nonbold) upright. For matrix dimensions, use “ \times ”, e.g. “a 3×3 matrix” or “a $n \times m$ matrix”. Matrix determinants can be represented using straight vertical lines $|B|$ or as “det B ”. For example, note the use of bold, italic and upright in the hydraulic conductivity matrix:

$$\mathbf{K} = \begin{bmatrix} k_{xx} & k_{xy} \\ k_{xy} & k_{yy} \end{bmatrix}$$

- A multi-letter abbreviation (e.g. RMSE) will be presented as upright, even when it represents a value. Use single-letter variables (with superscripts or subscripts if necessary, e.g. E_{RMS}) wherever possible.
- Use centered dots to substitute for operators such as “+” and “ \times ” (e.g. $x_1 + x_2 + \dots + x_3$) and use line dots to replace commas (e.g. a_i , where $i = 0, 1, \dots, n$).
- For compound parentheses, apply the general hierarchy $\{[()]\}$.

Examples:

- If a point x , distance d or time t may be labeled as being in some positive (pos) region of some space, then the presentation would be as x_{pos} , d_{pos} or t_{pos} (note the subscript “pos” is upright).
- In Eqn (1), T_{PFL} is the transmissivity of flowing fractures detected with the PFL method (m^2/s), Q is the transverse flow rate (m^3/s), r_e denotes the radius of influence (m), r_w the well radius (m), and Δh the imposed head (m):

$$T_{\text{PFL}} = \frac{Q}{2\pi\Delta h} \ln\left(\frac{r_e}{r_w}\right) \quad (1)$$

- In Eqn (2), E_p is the average squared difference between measured and predicted groundwater levels, n_r is the number of records, h_{i+1}^p is the predicted groundwater level at time $i+1$, and h_{i+1}^m is the measured groundwater level at time $i+1$:

$$E_p = \sqrt{\frac{\sum_{i=1}^{n_r} (h_{i+1}^p - h_{i+1}^m)^2}{n_r}} \quad (2)$$

- In Eqn (3), R_t is the accumulative monthly residual rainfall at time t (months), $M_{i,j}$ is rainfall (mm) in month i , which corresponds to the j -th month of the year, and $\overline{M_j}$ is the mean monthly rainfall (mm) for the j -th month of the year:

$$R_t = \sum_{i=1}^t (M_{i,j} - \overline{M_j}) \quad (3)$$

- Here is an example of an equation containing the functions $f(x)$ and $g(x)$ written within lines of text. The equation is $y = f(x) + g(x)$, and it is written according to the normal guidelines.
- In Eqn (4), h is the piezometric head [L], \mathbf{q} is the Darcy flux vector [L T^{-1}] and \mathbf{K} is the tensor of hydraulic conductivity for the saturated medium [L T^{-1}]:

$$\mathbf{q} = -\mathbf{K} \cdot \nabla h \quad (4)$$

Figures

Initial submittal/s for technical review:

Figures must be embedded into one manuscript file (.doc or .docx), with a figure caption placed beneath each figure

Final submittal: Each figure (without caption) must be in a separate file (i.e. separate from the main text file). The figure captions must be listed at the end of the text file. The acceptable resolution of electronic images depends on the type of figure. Files in TIF, TIFF, EPS, AI and PDF are preferred but some others are acceptable. See Appendix 2.3

Hydrogeological location map and study area map:

- *Hydrogeology Journal (HJ)* articles that concern one or more particular locations must include (a) an overall hydrogeological location map (HLM) and (b) detailed study area map (SAM). The purpose of the HLM is to give readers a quick and easy impression of the location of the study area(s) on Earth that provides the large-scale hydrogeological setting for scientific purposes. The HLM is often shown as an inset on the SAM.
- Because groundwater systems mostly occur below land, land area is the focus of *HJ*; thus, the HLM shows the adjoining land area surrounding the study area(s). To provide a geographic context, the HLM extends to the on-land borders of the location country and also includes the closest portion of any neighboring countries.
- The HLM is *not* a political map of all the location country's territories. Offshore borders of countries are not shown in HLMs, nor are distant disconnected parts of the study-area location country, such as islands. For study areas on islands, only the island (or island group) is shown in the HLM.
- Regions/locations that are mentioned in the text or tables should be labelled in the HLM or SAM.
- In the HLM and/or SAM, authors should show:
 - the on-land borders of the studied country and the on-land borders between neighboring countries, with labels for all neighboring country names using either their full names or codes (see links below) and,
 - geographic features of interest, such as rivers, nearby seas, or mountain ranges, with name labels that will make it easy for readers to identify the location, and,
 - hydrogeological features or sections that assist in the explanation of the work, and,
 - metric scale bars and a north arrow, or, latitude-longitude.
- Because *HJ* is the journal of an international scientific organization that has members from all countries, *HJ*'s politically neutral publication policy requires that authors employ United Nations (UN) practices when creating their HLM. This means that authors may use only country names and borders that appear in UN maps and websites. This policy avoids the need for the journal to make political decisions for any manuscript, for example, regarding disputed country names and borders. This policy applies equally to all authors from all countries and regions of Earth.
 - As a first source for borders and names, authors should refer to the UN World Map at <https://www.un.org/Depts/Cartographic/map/profile/world.pdf>
 - More detailed maps of some world regions may be found on the UN geospatial/location (Maps & Geoservices) website at <https://www.un.org/geospatial/mapsgeo/generalmaps>
 - Country names and alpha-2 codes (two characters) used as UN practice may be found on the ISO Online Browsing Platform at <https://www.iso.org/obp/ui> by selecting 'Country codes' (leave search box blank) and clicking on 'SEARCH'.
- Authors may add a disclaimer that indicates their possible disagreement with some of the information presented, and to indicate that the borders and names are those used in UN practice. The UN does not give official endorsement or acceptance of these names and borders, so the UN disclaimer should be added to the figure caption if a UN map is reproduced. Thus, the following disclaimers, indicating use of UN practices, can be added to the figure caption (modify the list of links as appropriate):
 - *The boundaries and names shown and the designations used on the country map do not imply official endorsement or acceptance by the United Nations (map based on <https://www.un.org/Depts/Cartographic/map/profile/world.pdf> --or-- <https://www.un.org/geospatial/mapsgeo/generalmaps>; country names and codes from <https://www.iso.org/obp/ui>).*
 - *Following the Hydrogeology Journal policy, this map and the country/region names shown conform to the current practices of the United Nations and do not necessarily represent the jurisdictional convictions and opinions of the authors.*
- *HJ* is the official journal of the International Association of Hydrogeologists (IAH), which seeks to maintain political neutrality yet understands the sensitivity of country borders, names, and affiliations. Please contact the Executive Editor (HJ.Editor.CVoss@gmail.com) for clarification of the HLM policy in particular cases.
- **Example HLM:**



Fig. 1a Location of the study area near Aachen, Germany (modified from Bruckmann and Clauser, 2020)

Other figure requirements:

Figures should be cited in the text in consecutive numerical order (Fig. 1, Fig. 2, etc.). If there is an appendix and it contains one or more figures, continue the consecutive numbering of the main text.

- For graphs, all axes should be labeled with appropriate metric/SI units. Use circles or boxes as coordinate points in graphs.
- Labels/data in figures should match the relevant text.
- Labels/data should be legible and adequately sized, preferably in black (see *Appendix 2.3*). Labels must be in English.
- An explanation of all symbols is preferred within the figure, rather than in the caption. Symbols/shading should be adequately sized/matched in the figure itself and the legend. Head the legend as “Legend” or “Explanation”.
- Rotated labeling (e.g. axes for graphs) or lettering (e.g. within maps) should read from left to right when the paper is turned clockwise by 90 degrees.
- All contour labels should face in the up-gradient direction so that any change in gradient can be seen by a change in orientation of the contour label; alternatively, all contour labels should be upright.
- *Example:*

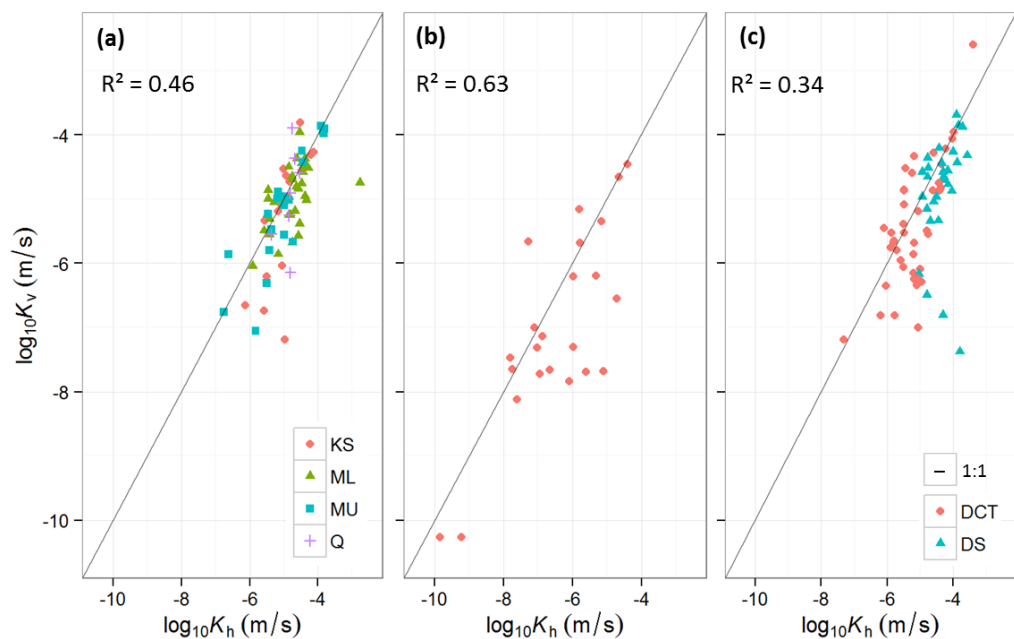


Fig. 2 Scatterplots of K_h versus K_v derived from laboratory measurements of the 100-cm³ steel-ring core samples for: **a** the upper aquifer units of the Quaternary (*Q*), Mol Upper (*MU*) and Lower (*ML*), and Kasterlee Sands (*KS*); **b** the Kasterlee Clay aquitard; **c** the lower aquifer units of Diest Clayey Top (*DCT*) and the Diest Sands (*DS*)

Figure captions:

- For each figure, supply a figure caption describing accurately what the figure depicts. Figure captions begin “Fig.” followed by the figure number (Arabic numeral), in bold type.
- Any terms in the caption that describe internal items in the figure (except mathematical terms) should be italicized, e.g. The *yellow stars* indicate data points...
- Figure parts should be denoted by lowercase letters (a, b, c, etc.) and explained by parts in the caption.
- Identify previously published material with a reference citation (see *Appendix 4*).

Tables

Tables should be in original Word table format (not as imported objects or spreadsheets)

Tables in .xls or .xlsx format are not permitted

Tables should be cited in the text in consecutive numerical order (e.g. Table 1, Table 2, etc.). Table parts (1a, 1b, etc.) are not permitted. If there is an appendix and it contains tables, continue the consecutive numbering of the main text.

Table content and captions:

- See *Numerals and units*. In particular, note that the decimal sign is a full point (period), not a comma.
- Use only horizontal labels for column headers and rows/subheadings.
- Insert hyphens in cells to indicate the unavailability or inapplicability of data.
- Table footnote markers should be consecutive (top left to lower right) using superscript lowercase letters a, b, etc. (or asterisks for significance values and other statistical data) and explained beneath the table body.
- For each table, supply a table caption that explains clearly and concisely the components of the table.
- Any terms in the caption or table footnotes that describe internal items in the table should be italicized (however, do not adjust mathematical terms in this way).
- Identify any previously published material by giving the original source in the form of a reference citation in the table caption.

Example:

Table 1 Proportioning of total pumping rate for multiple well screens in WW2 (from Bridger and Allen 2010)

Screen No.	Screen depth (m)	Screen length (m)	% Screen length	Non-layered domain	Layered domain		
				Flow rate (m ³ /day)	Average <i>K</i> ^a (m/s)	% Screen length ^b	Flow rate (m ³ /day)
1	33.2–36.2	3.0	23.1	571.1	4.1×10 ⁻⁴	13.4	331.4
2	38.1–41.1	3.0	23.1	571.1	2.0×10 ⁻³	66.4	1,643.4
3	50.2–54.2	4.0	30.8	761.5	3.5×10 ⁻⁴	15.3	378.8
4	57.2–60.2	3.0	23.0	571.1	1.5×10 ⁻⁴	4.9	121.2
Total	-	13.0	100	2,474.8	-	100	2,474.8

^a Average *K* obtained based on average of Hazen *K* values from grain size results within screened interval

^b % *Screen length* for *Layered domain* calculated by multiplying the length of screen section by the average hydraulic conductivity value within the screen section divided by the total length

APPENDIX 1: HYDROGEOLOGY JOURNAL - ARTICLE TYPES and PAGE LENGTH

Hydrogeology Journal's scope includes contributions on any aspect of scientific hydrogeology and related disciplines from authors in any part of the world (for scope, see <http://www.springer.com/hydrogeologyjournal>). An article based on supporting disciplines is acceptable if a primary emphasis is also on or dependent upon hydrogeology – the study of the interaction of subsurface water with the solid earth.

For article types that have no maximum page limit, manuscripts will be returned to authors if they exceed a length that seems necessary to convey the science adequately. Guidance on the typical or maximum page length is given below for each article type. If there are no figures, tables or internal headings, one “article page” will occupy approximately 6,000 characters with spaces (approximately 1,000 six-letter words). FOR ALL MANUSCRIPTS, subtract 3,000 characters (500 words) for the first-page layout (contact details, white space, etc.) – subtract more if there are several co-authors. Thereafter, the following *estimates* can be subtracted from the total character/word count:

- A whole page figure/table replaces approx. 6,000 characters (1,000 words)
- A full width, half page-height figure/table replaces approx. 3,000 characters (500 words)
- A full width, quarter page-height figure/table replaces approx. 1,500 characters (250 words)
- A half width, half page-height figure/table replaces 1,500 characters (250 words)
- A half width, quarter page-height figure/table replaces approx. 750 characters (130 words).

Articles are classified into one of the following categories for publication:

- **Paper:**
An article concerning new scientific results of general interest, or an article that applies innovative techniques to evaluate the hydrogeology of an area, or a regional or subject-oriented review, or a pedagogic ‘Foundations’ article. Typically 10 article pages (abstract required, max 250 words).
- **Report:**
An article that applies conventional techniques to evaluate the hydrogeology of an area, or an article that gives a description of the hydrogeology of an area. Reports must contain interpretation as well as characterization. Typically 10 article pages (abstract required, max 250 words).
- **Technical Note:**
A short article that describes innovative techniques of data collection or analysis. Typically less than 10 article pages (abstract required, max 250 words).
- **Profile of Eminent Hydrogeologist:**
A biographical-historical sketch of an eminent hydrogeologist (retired or deceased), describing his or her contributions to the science. Permission must be sought from the profile subject (or their family) before the manuscript is submitted. Typically 6 article pages (no abstract required).
- **Comment and Reply:**
A discussion related to an article published in the journal within the last two years. *Maximum* 4 article pages (no abstract required).
- **Essay:**
A *very short* article with quite flexible content, giving the author’s view on a technical or philosophical subject related to hydrogeology. *Maximum* 4 article pages (abstract required, max 80 words).

For advice on or proposals related to **special issues** and **topical collections**, please contact the Executive Editor: HJ.Editor.CVoss@gmail.com

APPENDIX 2: MANUSCRIPT PREPARATION (further information)

2.1) Keywords are subject index terms that are included with the submitted manuscript. A maximum of five keywords is permitted. The following is a list of the most commonly used keywords. Authors are encouraged to select at least two keywords from this list. If needed, the authors may create additional ones of their own.

agriculture	geothermal systems	organizations
alluvial aquifers	groundwater age	over-abstraction
analytical solutions/modelling	groundwater and society	paleohydrology
aquifer properties	groundwater density/viscosity	parameter estimation
aquifer testing	groundwater development	participatory methods
aquitard	groundwater exploration	permafrost hydrology
arid regions	groundwater flow	pore scale study
arsenic	groundwater hydraulics	profile of eminent hydrogeologist
artificial recharge	groundwater management	pumping/well test
biological conditions	groundwater monitoring	radioactive isotopes
bioremediation	groundwater protection	radon
capture zones	groundwater recharge/water budget	rainfall/runoff
carbonate rocks	groundwater remediation	reactive transport
chlorinated hydrocarbons	groundwater sampling and monitoring	recharge
clay rocks	groundwater science communication	remote and satellite sensing
climate change	groundwater statistics	rural groundwater
CO ₂ sequestration	groundwater/surface-water relations	salinization
coastal aquifers	health	salt-water/fresh-water relations
cold regions hydrogeology	heterogeneity	satellite imagery
compaction	history of hydrogeology	scale effects
conceptual models	hydraulic fracturing	sea-level rise
confining units	hydraulic properties	sedimentary rocks
contamination/contaminants	hydraulic testing	site characterization
cryohydrogeology	hydrochemical modeling	socio-economic aspects
crystalline rocks	hydrochemistry	soil processes
data assimilation	hydrogeomechanics	solute transport
decision making	hyporheic zone	springs
developing countries	igneous rocks	stable isotopes
diffusion	injection wells	statistical modeling
dispersion	inverse modeling	stochastic hydrogeology
drilling	island hydrology	submarine groundwater discharge
earthquakes	isotopes	subsidence
ecology	karst	sustainability
economics	laboratory experiments/measurements	tectonics
emerging contaminants	landfills	thermal conditions
environmental tracers	landslides	tracer tests
equipment/field techniques	legislation	transboundary aquifers
evapotranspiration	lineaments	unconsolidated sediments
fault hydrogeology	low-permeability media	unsaturated zone
fluid dynamics	machine learning	urban groundwater
fluid-rock interaction	managed aquifer recharge (MAR)	vegetation/groundwater relations
fractured/macroporous systems	matrix diffusion	viruses
fractured rocks	metamorphic rocks	volcanic aquifer
foundations (pedagogy)	microbial processes	vulnerability
general hydrogeology	micro-organisms	waste disposal
geochemistry	mining	water-energy nexus
geoethics	mountain hydrology	water-resources management
geographic information systems	multiphase flow	water supply
geologic fabric	nitrate	well enhancement
geomorphology	non-aqueous phase liquids (NAPLs)	wetlands
geophysical methods	numerical modeling	<u>[country or region name]</u>
geostatistics	optimization	

2.2) Electronic supplementary material (ESM)

ESM is published only online and it is linked to the main article, without it appearing in the main article. Journal subscribers will have access to this additional material. Such material might include:

- information that cannot be printed: animations, video clips, sound recordings;
- information that is more convenient in electronic form: sequences, spectral data, etc;
- large original data, e.g. additional tables and illustrations, and supplementary text that would make the main article too long.

The ESM should not contain programs that might need updating at a later stage. Links to other websites may be provided for such codes.

The text must make specific mention of the ESM material as a citation, similar to that for tables and figures.

ESM submission: Include in each ESM file submitted the following information: article title, author names, “Electronic supplementary material – Hydrogeology Journal”, and the affiliation and e-mail address of the corresponding author. To accommodate user downloads, please keep in mind that larger-sized files may require very long download times and that some users may experience other problems during downloading; however, where file size is not large, keep ESM figures/tables/text in one file (or in as few files as possible).

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Spreadsheets should be converted to PDF if no reader interaction with the data is intended. If the readers are being encouraged to make their own calculations, spreadsheets should be submitted as .xls or .xlsx files (MS Excel). However, ESM should not contain programs that might need updating in the future (place these programs on a cited but separate website).

For each item in the ESM file (figure, table, etc.), supply a concise caption describing the content. Captions should be located at the top of tables and at the bottom of figures. Use a consecutive numbering system beginning with number 1 (unrelated to the numbering system in the main article). Begin with “Fig. S1”, “Table S1”, etc.

2.3) Artwork specifications

Figures

- **Initial submittal and all submittals during the technical review process:** Figures should be created as for the final submission (see instructions below) and must then be embedded, in sequential order, as objects into the body of the manuscript file (Word .doc or .docx), or placed together in sequence at the end of the manuscript text. Figures may not be created within the manuscript file itself as Word artwork (i.e. figures must be created externally to the manuscript file). Use the Word facility to compress embedded figures to help reduce total file size. It is required that a caption is placed beneath each figure in the manuscript file, as this helps the reviewers.
- **Final submittal:** Each figure (without caption) must be in a separate file. For vector graphics, the preferred formats are EPS, AI and PDF; for halftones, use TIF or TIFF format. Most MS Office files are also acceptable for figures, except .xls, .xlsx and .ppt. Vector graphics containing fonts must have the fonts embedded in the files. Name the individual figure files with “Fig” and the two-digit figure number, then the graphic format, e.g. Fig04.eps.

Line art (black and white graphic with no shading): Do not use faint lines and/or lettering and check that all lines and lettering within the figures are legible at final size. All lines should be at least 0.1 mm (0.3 pt) wide. Scanned line drawings and line drawings in bitmap format should have a minimum resolution of 1200 dpi. Vector graphics containing fonts must have the fonts embedded in the files.

Halftone art (photographs, drawings, paintings with fine shading, etc.): If any magnification is used in the photographs, indicate this by using scale bars within the figures themselves. Halftones should have a minimum resolution of 300 dpi.

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Color art is published free of charge. Color illustrations should be submitted as RGB (8 bits per channel).

Figure lettering: To add lettering, it is best to use Helvetica or Arial (non-serif fonts). Keep lettering consistently sized for groups of features throughout the final-sized artwork; the best sizes in the final figure that appears in a single column (there are two columns on each page) or across a page (see *Figure placement and size*) are about 2–3 mm (8–12 pt). Variance of type size within an illustration should be minimal, e.g. do not use 8-pt type on an axis and 20-pt type for the axis label. Avoid effects such as shading, outline letters, etc. Do not include titles or captions in the illustrations.

Figure placement and size: When preparing the figures, size figures and their content to be clearly visible. Each figure must fit within a single column width whenever possible, and will fit across a page when this is not possible. One column width is 8.6 cm and page width is 17.6 cm.

Accessibility: In order to give people of all abilities and disabilities access to the content of the figures, please make sure that all figures have descriptive captions (blind users could then use text-to-speech software or text-to-Braille hardware). Try to use patterns instead of or in addition to colors for conveying information so that color-blind users would then be able to distinguish the visual elements. Any figure lettering should have a contrast ratio of at least 4.5:1.

APPENDIX 3: PUBLICATION PROCEDURE

Publication speed

For most scientific articles that must go through the full technical review process, the minimum time from initial submittal until formal online publication is about 6 months. Longer times are possible, depending on how quickly the author makes required revisions and resubmits their revised manuscript, and depending on whether additional rounds of revision are required. Manuscript types that, in some cases, may require less review, such as Editor Messages, Profiles and Essays, can be published online only a few months after initial submittal.

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Scientific-technical (peer) reviews

Upon initial receipt of a manuscript, an Editor will make a preliminary judgment of acceptability for publication in *Hydrogeology Journal*. All promising articles within the journal’s subject matter scope then undergo two or more independent scientific-technical reviews; this process is overseen by an Associate Editor and completed reviews are returned to the Editor with the Associate Editor’s recommendation. The Editor then makes a publication decision and will return the reviewers’ and Associate Editor’s comments to the author, with the publication decision. The decision categories resulting from the review process are “provisional accept”, “provisional accept following minor revisions”, “provisional accept following major revisions”, and “not accept”. The decision is provisional because final formal acceptance for publication will depend on the success of the author(s) in making the required revisions and in successfully completing the technical editorial process (see next section). The Editor also confirms or designates article type (see *Appendix 1*). This first decision usually takes about 3 months from the time of initial submittal.

For all categories except “not accept”, the author must consider review comments, revise the manuscript accordingly, and submit the revised version online. Any discussion or disagreement of the author with review comments or questions about required revisions may be sent by e-mail to the Editor. A required part of the resubmittal is a complete list of author responses to each review comment made by the reviewers, Associate Editor and Editor. The length of time for this step depends on the speed with which the author makes revisions and resubmits (a maximum of 2 months is allowed for resubmittal).

Following submittal of a revised manuscript by the author, the Editor then makes another publication decision (same categories as *Appendix 1*), occasionally after additional reviews by the Associate Editor or other reviewers and forwards this decision to the author. It is possible that the author may be requested to make an additional revision and submit again.

Please note: an article is considered to be withdrawn if a revised version is not submitted or the author does not otherwise respond within 2 months following the publication decision.

Technical editorial stage: editing for scientific expression, language and format

Following receipt of a scientific review-process “provisional accept” decision from the Editor, the manuscript passes to *Hydrogeology Journal*’s Technical Editorial Advisor. The Technical Editorial Advisor undertakes or supervises a review of scientific expression, language and conformance to journal format and will correspond with the author concerning any required changes. Only editorial changes are made at this stage; authors may not make revisions that alter the technical arguments or data presented in the manuscript. Following acceptable revisions, the Technical Editorial Advisor forwards the manuscript to the publisher (Springer), who then issues the final decision, an “accept for publication” notification. The technical editorial step can take up to 2 months.

After acceptance by the publisher (author selects either subscription based publication or open access publication)

Upon acceptance by Springer, the manuscript receives a digital object identifier (DOI) and it can be cited, although it is, as yet, unpublished.

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