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 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, but IAH members may publish open access articles in Hydrogeology Journal at a significantly lower cost than non-members. Hydrogeology Journal is key to the IAH mission – to further the understanding, wise use and protection of groundwater resources throughout the world. Each year, five especially interesting Hydrogeology Journal articles are designated as “Editors’ Choice” and are made freely available for a limited period. Also freely available on the IAH website is a regular news update on congresses and on worldwide groundwater matters, and a variety of learning resources. For further information, and to view IAH membership benefits, visit www.iah.org.

GENERAL GUIDELINES

The types of articles published in Hydrogeology Journal are described in Appendix 1. 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. There is no limit to the number of pages, but manuscripts found to be too long will have to be shortened before or after reviews.

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.
- 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 table function, not spreadsheets, to make tables.

<table>
<thead>
<tr>
<th>Title</th>
<th>Example: Three-dimensional benchmark for variable-density flow and transport simulation: matching semi-analytic stability modes for steady unstable convection in an inclined porous box</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors and affiliations</td>
<td>Clifford I. Voss1*, Craig T. Simmons2, Neville I. Robinson2 1. US Geological Survey, 345 Middlefield Road, MS 496, Menlo Park, CA 94025, USA email: <a href="mailto:cvoss@usgs.gov">cvoss@usgs.gov</a> 2. Flinders University, GPO Box 2100, Adelaide, 5011, Australia *corresponding author Note: The first author and corresponding author should be fixed at first submittal.</td>
</tr>
<tr>
<td>Abstract</td>
<td>For Papers, Reports and Technical Notes only (see Appendix 1), provide an English abstract of maximum 250 words. The first sentences should state 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 be translated into French and Spanish, as a minimum, and usually also into Portuguese and Chinese 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.</td>
</tr>
<tr>
<td>Keywords</td>
<td>Example: Analytical solutions · Numerical modeling · Karst · Switzerland Notes: 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 Appendix 2.1).</td>
</tr>
</tbody>
</table>
# 1. Introduction

The introduction gives a short review of the pertinent literature and states the purpose and novelty of the investigation.

# 2. Materials and methods

## 2.1

This section provides enough information to permit repetition of experimental work. Provide a description of the study area and supply an index map of the study area’s country and adjacent countries.

# 3. Results

This section describes the outcomes of the study. Data should be presented concisely, for example in the form of tables or figures.

# 4. Discussion

The discussion gives an interpretation of the results and their significance and limitations, with reference to work by other authors.

# 5. Conclusions

These summarize the objectives, methods, results, discussion and proposals for further work.

## Acknowledgments

Acknowledgments of people, grants, funds, etc. 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. It is appropriate to acknowledge oral communications and the contributions of reviewers and editors.

## Appendices (optional)

Appendix 1, Appendix 2, etc.

## References (see References and Citations)

*Note:* Footnotes and headers/footers are not permitted in the text.

### Types and examples:

- **Journal article:**

- **Book:**

- **Book chapter:**

- **Article by DOI:**

- **Online document:**

### Notes:

- 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.
### Language and style

In Word, set the language to English (UK or US).

All articles are published in English. 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. *Hydrogeology Journal*’s Technical Editorial Advisor and Springer copy-editors will further edit the English of an accepted manuscript to improve the clarity of writing.

Do not use the first person or personal pronouns (I/my, we/our, etc.).

Terms and names must be correct and consistent (spellings, capitalization, etc.) throughout the text, tables and figures. Use ‘groundwater’ (one word) and ‘hydrogeology’ (rather than geohydrology).

Abbreviations should be defined at first mention and used consistently thereafter, e.g. U.S. Geological Survey (USGS).

Use initial capitals for:

- proper names, e.g. River Amazon, Aswan Dam, the Earth;
- adjectives derived from proper names, e.g. Markov series;
- *formal* geological eras, formations, etc., e.g. Cambrian, early Holocene, Upper Greensand;
- references to tables and figures, e.g. “It is seen from Fig. 2 that ...”.

### Numerals and units

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

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 ...”.

Leave a character space between the number and its unit. An exception is for angle units degrees, minutes and seconds (these should not have a blank space after the number). For example: 531 m, 24 °C, 30–40 %, 90°.

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.

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.

Set out dates in the form 20–23 October 1980, the 1950s, 17th century.

Numbers with orders of magnitude should use $10^{power}$, e.g.1.234×10$^5$

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).

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.

Ranges should be given in full, e.g. 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 km$^2$.

### Citations

Personal communications and unpublished works should only be mentioned in the text. Give “name, affiliation, personal communication (or unpublished data), year” in parentheses.

*Example:*

Groundwater is important as a water resource in Ozville (George A. Expert, International Agency for Groundwater, personal communication, 2012).

Cite published references in the text by the first-author name and year in parentheses.

*Examples:*

- 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; Medvec et al. 1993).

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 *Figures, Tables and Appendix 2.2*).
Equations and mathematical terms

Use the standard mathematical notation for formulae, symbols, etc. Multiplication should not be represented with an asterisk; alternatives include: A × B, AB or A B, (A)(B) or A ⋅ 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). The standard Jacobian constant 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 $a_{ij}, b_j$).
- 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. $\cos, \sin, \log$, max, min, sin, tan, 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, $K_l$; Darcy velocity in the x direction, $q_x$).
- For vectors and tensors, use bold and upright (e.g. $v$). 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 “×”, e.g. “a 3×3 matrix” or “a n×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:

$$K = \begin{bmatrix} \kappa_{xx} & \kappa_{xy} \\ \kappa_{yx} & \kappa_{yy} \end{bmatrix}$$

- 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. $E_{\text{RMSE}}$) wherever possible.
- Use centered dots to substitute for operators such as “+” and “×” (e.g. $x_i + x_j$) and use line dots to replace commas (e.g. $a_i$, where $i = 0, 1, \ldots , n$).
- For compound parentheses, apply the general hierarchy $\left( \left( \left( \ldots \right) \right) \right)$.

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 $x_{\text{pos}}$, $d_{\text{pos}}$ or $t_{\text{pos}}$ (note the subscript “pos” is upright).

In Eqn (1), $T_{\text{PFL}}$ is the transmissivity of flowing fractures detected with the PFL method ($m^2/s$), $Q$ is the transverse flow rate ($m^3/s$), $r_c$ denotes the radius of influence ($m$), $r_w$ the well radius ($m$), and $\Delta h$ the imposed head ($m$):

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

(1)

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

$$E_p = \frac{1}{n_i} \sqrt{\sum_{i=1}^{n_i} \left( h_{p,i+1} - h_{m,i+1} \right)^2}$$

(2)

In Eqn (3), $R_i$ is the accumulative monthly residual rainfall at time $i$ (months), $M_i$ is rainfall (mm) in month $i$, which corresponds to the $j$-th month of the year, and $M_j$ is the mean monthly rainfall (mm) for the $j$-th month of the year:

$$R_i = \sum_{i=1}^{n_i} (M_{i,j} - M_j)$$

(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], $q$ is the Darcy flux vector [L T$^{-1}$] and $K$ is the tensor of hydraulic conductivity for the saturated medium [L T$^{-1}$]:

$$q = -K \cdot \nabla h$$

(4)
Figures

Initial submission for technical review:
Figures must be embedded into one manuscript file (.doc or .docx), with a figure caption placed beneath each figure.

Final submission: 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 or EPS are preferred but others are acceptable. See Appendix 2.3.

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.

Figure content:
- A country map is required for all studies, locating the study area. Adjacent countries must be located and named. This also applies to large countries, such as China and Russia, and to USA (which must show adjacent countries, not just states). For borders that are disputed, authors must provide a map that delineates and labels nations/regions that are internationally accepted.
- Maps must show locations of any significant places/sample points, etc. cited in the text or tables.
- Rivers should be marked as “River Xyz”, “Riv. Xyz” or “R. Xyz”, preferably in dark blue.
- On every map, include a metric scale bar and a north arrow, or latitude-longitude.
- 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.

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).

Examples:

Fig. 1 Geological map of Serra da Estrela mountain region (adapted from Oliveira et al. 1992). BVMFZ stands for Bragança-Vilarica-Manteigas fault zone.
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 ($DS$)

### Tables

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 footnotes should be numbered consecutively and indicated by superscript lowercase letters (or asterisks for significance values and other statistical data) and included 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)

<table>
<thead>
<tr>
<th>Screen No.</th>
<th>Screen depth (m)</th>
<th>Screen length (m)</th>
<th>% Screen length</th>
<th>Flow rate (m³/day)</th>
<th>Average $K_a$ (m/s)</th>
<th>% Screen length</th>
<th>Flow rate (m³/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>33.2–36.2</td>
<td>3.0</td>
<td>23.1</td>
<td>571.1</td>
<td>$4.1\times10^{-4}$</td>
<td>13.4</td>
<td>331.4</td>
</tr>
<tr>
<td>2</td>
<td>38.1–41.1</td>
<td>3.0</td>
<td>23.1</td>
<td>571.1</td>
<td>$2.0\times10^{-1}$</td>
<td>66.4</td>
<td>1,643.4</td>
</tr>
<tr>
<td>3</td>
<td>50.2–54.2</td>
<td>4.0</td>
<td>30.8</td>
<td>761.5</td>
<td>$3.5\times10^{-4}$</td>
<td>15.3</td>
<td>378.8</td>
</tr>
<tr>
<td>4</td>
<td>57.2–60.2</td>
<td>3.0</td>
<td>23.0</td>
<td>571.1</td>
<td>$1.5\times10^{-4}$</td>
<td>4.9</td>
<td>121.2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>13.0</td>
<td>100</td>
<td>2,474.8</td>
<td></td>
<td>100</td>
<td>2,474.8</td>
</tr>
</tbody>
</table>

* 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
APPENDICES

APPENDIX 1: HYDROGEOLOGY JOURNAL - ARTICLE TYPES

Hydrogeology Journal’s scope includes contributions on any aspect of scientific hydrogeology and related disciplines from authors in any part of the world. 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. 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. (Abstract required)
- **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. (Abstract required)
- **Technical Note**: A short article that describes innovative techniques of data collection or analysis. (Abstract required)
- **Profile**: A biographical 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.
- **Publication Note**: A short description or review of a new or little-known but significant publication.
- **Comment and Reply**: A discussion related to an article published in the journal within the last two years.
- **Essay**: A very short article (maximum of 4 journal pages) giving the author’s view on a technical or philosophical subject related to hydrogeology. See Appendix 2.4 regarding essay manuscript preparation.

APPENDIX 2: MANUSCRIPT PREPARATION (further information)

2.1 **Keywords** describe the content of articles. Really, they are subject index terms. 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 | Groundwater development | Paleohydrology |
| Analytical solutions | Groundwater exploration | Profile (eminent hydrogeologist) |
| Aquitard | Groundwater flow | Radioactive isotopes |
| Arid regions | Groundwater hydraulics | Radon |
| Arsenic | Groundwater management | Rainfall/runoff |
| Artificial recharge | Groundwater monitoring | Regional review |
| Biological conditions | Groundwater protection | Remote sensing |
| Bioremediation | Groundwater recharge/water budget | Reply |
| Carbonate rocks | Groundwater statistics | Review (book) |
| Chlorinated hydrocarbons | Groundwater/surface-water relations | Salinization |
| Climate change | Health | Salt-water/fresh-water relations |
| Coastal aquifers | Heterogeneity | Satellite imagery |
| Comment | History of hydrogeology | Scale effects |
| Compaction | Hydraulic properties | Sedimentary rocks |
| Conceptual models | Hydraulic testing | Socio-economic aspects |
| Confining units | Hydrochemical modeling | Soil processes |
| Contamination | Hydrochemistry | Solute transport |
| [country or region name] | Hydrogeology Journal | Stable isotopes |
| Crystalline rocks | Igneous rocks | Statistical modeling |
| Developing countries | Injection wells | Subsidence |
| Diffusion | Inverse modeling | Tectonics |
| Drilling | Island hydrology | Thermal conditions |
| Earthquake | Karst | Trace tests |
| Ecology | Laboratory experiments/measurements | Transboundary aquifer |
| Editorial | Landfills | Unconsolidated sediments |
| Equipment/field techniques | Legislation | Unsaturated zone |
| Fracture rocks | Lineaments | Urban groundwater |
| Foundations (pedagogy) | Matrix diffusion | Volcanic aquifer |
| General hydrogeology | Metamorphic rocks | Vulnerability mapping |
| Geographic information systems | Microbial processes | Waste disposal |
| Geologic fabric | Mining | Water-resources conservation |
| Geomorphology | Multiphase flow | Water supply |
| Geophysical methods | Nitrates | Well enhancement |
| Geostatistics | Numerical modeling | Wetlands |
| Groundwater age | Organizations | |
| Groundwater density/viscosity | Over-abstraction | |
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, illustrations.

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).

ESM files and formats: Submit the ESM text and presentations in PDF format, because .doc, .docx or .ppt files are not suitable for long-term viability. Remove any line numbering before saving as PDF. A collection of figures and/or tables should be combined in one PDF file. For audio, video and animations, always use MPEG-1 (.mpg) format. Specialized formats such as .pdb (chemical), .wrl (VRML), .nb (Mathematica notebook), and .tex can also be supplied. Name the submitted ESM files consecutively, e.g. “ESM1.mp4”, “ESM2.pdf”. By special arrangement, it is possible to collect multiple files in a .zip or .gz file that will be posted as the single permanent ESM file online.

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 .xlsx files (MS Excel).

For each item of supplementary material, 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 submittal (see instructions below) and must 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.
- Final submittal: Each figure (without caption) must be in a separate file. For vector graphics, the preferred format is EPS; for halftones, use TIF or TIFF format. Most MS Office files are also acceptable for figures, except .xls 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.

Combination art (a combination of halftone and line art, e.g. halftones containing line drawing, extensive lettering, color diagrams): Combination artwork should have a minimum resolution of 600 dpi.

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.
2.4) Essays. Notes for creating essays within 4 journal pages:

If there are no figures, tables or internal headings, a four-page essay will occupy approximately 24,700 characters with spaces, including the references (approximately 4,100 six-letter words). If there are internal headings or a long title, these numbers will be reduced and the author must judge the likely reduction necessary. If the essay contains figures or tables, the number of characters (or words) that would be replaced by these figures/tables must be calculated. It is important to first ensure that the labels/text within each figure/table are adequately sized (and still capable of being read after being reduced to fit into a single journal column or across a journal page). The caption or title will be regarded as part of the figure/table.

The following estimates can be subtracted from the total character/word count:
- A whole page figure/table replaces approx. 6700 characters (1100 words)
- A full width, half page-height figure/table replaces approx. 3400 characters (570 words)
- A full width, quarter page-height figure/table replaces approx. 1700 characters (280 words)
- A half width, half page-height figure/table replaces 1700 characters (280 words)
- A half width, quarter page-height figure/table replaces approx. 850 characters (140 words).

APPENDIX 3: PUBLICATION PROCEDURE

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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.

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. 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. 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).

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

During the final production phase the following issues will be addressed:
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