Template for preparing your manuscript submission to Copernicus journals using RMarkdown

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Abstract. The abstract goes here. It can also be on *multiple lines*.

1 Introduction

Introduction text goes here. You can change the name of the section if necessary using `\introduction[modified`
5 `heading]`.

The following settings can or must be configured in the header of this file and are bespoke for Copernicus manuscripts:

- The `journal` you are submitting to using the official abbreviation. You can use the function `rticles::copernicus_journal`
  `= '...')` to search the existing journals.

- Specific sections of the manuscript:

10   – `running` with `title` and `author`

       – `competinginterests`

       – `copyrightstatement` (optional)

       – `availability` (strongly recommended if any used), one of `code`, `data`, or `codedata`

       – `authorcontribution`

15   – `disclaimer`

       – `acknowledgements`

See the defaults and examples from the skeleton and the official Copernicus documentation for details.

Please note: Per their guidelines, Copernicus does not support additional LaTeX packages or new LaTeX commands than those defined in their `.cls` file. This means that you cannot add any extra dependencies and a warning will be thrown if so. This extends to syntax highlighting of source code. Therefore this template sets the parameter `highlight` in the YAML header to `NULL` to deactivate Pandoc syntax highlighter. This prevent addition of external packages for highlighting inserted by Pandoc. However, it might be desirable to have syntax highlight available in preprints or for others reasons. Please see `?rmarkdown::pdf_document` for available options to activate highlighting.

Important: Always double-check with the official manuscript preparation guidelines at https://publications.copernicus.org/for_authors/manuscript_preparation.html, especially the sections "Technical instructions for LaTeX" and "Manuscript composition". Please contact Daniel Nüst, `daniel.nuest@uni-muenster.de`, with any problems.

2 Content section one

2.1 Subsection Heading Here

Subsection text here.

2.1.1 Subsubsection Heading Here

Subsubsection text here.

3 Content section with citations

See the R Markdown docs for bibliographies and citations.

Copernicus supports biblatex and a sample bibliography is in file `sample.bib`. Read (Feynman and Vernon Jr., 1963), and (see Dirac, 1953).

4 Content section with R code chunks

You should always use `echo = FALSE` on R Markdown code blocks as they add formatting and styling not desired by Copernicus. The hidden workflow results in 42.

You can add verbatim code snippets without extra styles by using ``` ``` ``` without additional instructions.

```
sum <- 1 + 41
```

5 Content section with list

If you want to insert a list, you must

- – leave

- – empty lines

45 – between each list item

because the \tightlist format used by R Markdown is not supported in the Copernicus template. Example:
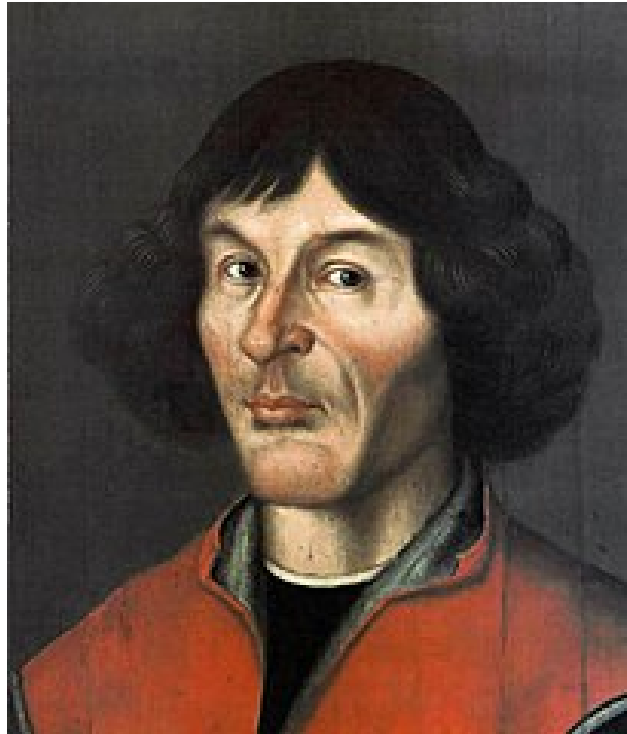
```
- leave

- empty lines
```
50
```
- between each list item
```

6 Examples from the official template

6.1 FIGURES

When figures and tables are placed at the end of the MS (article in one-column style), please add

Figure 1. one column figure

between bibliography and first table and/or figure as well as between each table and/or figure.
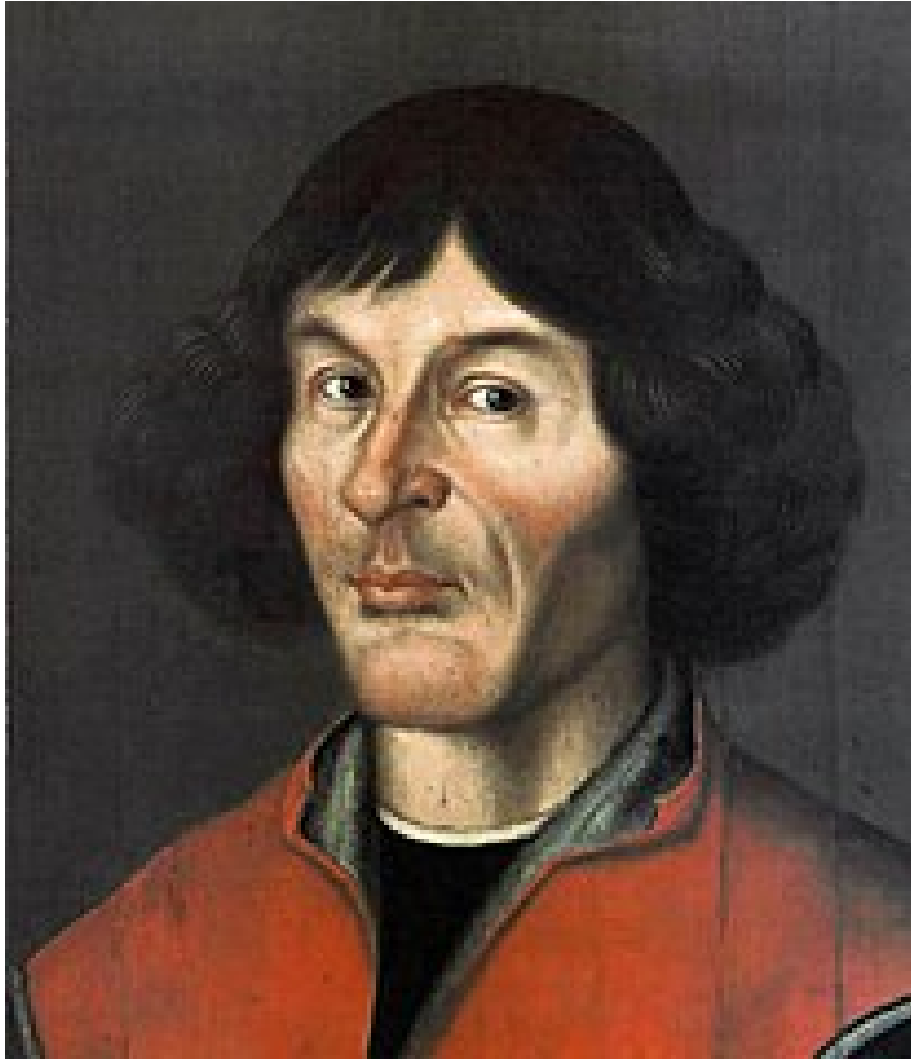
6.1.1 ONE-COLUMN FIGURES

Include a 12cm width figure of Nikolaus Copernicus from Wikipedia with caption using R Markdown.

6.1.2 TWO-COLUMN FIGURES

You can also include a larger figure.

6.2 TABLES

You can ad LATEXtable in an R Markdown document to meet the template requirements.

Figure 2. two column figure

Table 1. TEXT

a	b	c
1	2	3

Table Footnotes

Table 2. TEXT

a	b	c
1	2	3

Table footnotes

6.2.1 ONE-COLUMN TABLE

6.2.2 TWO-COLUMN TABLE

6.3 MATHEMATICAL EXPRESSIONS

65 All papers typeset by Copernicus Publications follow the math typesetting regulations given by the IUPAC Green Book (IUPAC: Quantities, Units and Symbols in Physical Chemistry, 2nd Edn., Blackwell Science, available at: http://old.iupac.org/publications/book 1993).

Physical quantities/variables are typeset in italic font (t for time, T for Temperature)

Indices which are not defined are typeset in italic font (x, y, z, a, b, c)

70 Items/objects which are defined are typeset in roman font (Car A, Car B)

Descriptions/specifications which are defined by itself are typeset in roman font (abs, rel, ref, tot, net, ice)

Abbreviations from 2 letters are typeset in roman font (RH, LAI)

Vectors are identified in bold italic font using x

Matrices are identified in bold roman font

75 Multiplication signs are typeset using the LaTeX commands `\times` (for vector products, grids, and exponential notations) or `\cdot`

The character * should not be applied as mutliplication sign

6.4 EQUATIONS

6.4.1 Single-row equation

80 Unnumbered equations (i.e. using `$$` and getting inline preview in RStudio) are not supported by Copernicus.

6

$$1 \times 1 \cdot 1 = 42 \tag{1}$$

$$A = \pi r^2 \tag{2}$$

$$x = \frac{2b \pm \sqrt{b^2 - 4ac}}{2c}. \tag{3}$$

6.4.2 Multiline equation

$$3 + 5 = 8 \tag{4}$$
$$3 + 5 = 8 \tag{5}$$
$$3 + 5 = 8 \tag{6}$$

6.5 MATRICES

$x \quad y \quad z$

$x \quad y \quad z$

$x \quad y \quad z$

6.6 ALGORITHM/PROGRAMMING CODE

If you want to use algorithms, you need to make sure yourself that the LaTeXpackages `algorithms` and `algorithmicx` are installed so that `algorithm.sty` respectively `algorithmic.sty` can be loaded by the Copernicus template. Both need to be available through your preferred LaTeX distribution. With TinyTeX (or TeX Live), you can do so by running `tinytex::tlmgr_install(c("algorithms", "algorithmicx"))`

```
## tlmgr update --all --self

## tlmgr install algorithms algorithmicx
```

Copernicus staff will no accept any additional packages from your LaTeX source code, so please stick to these two acceptable packages. They are needed to use the example below

6.7 CHEMICAL FORMULAS AND REACTIONS

For formulas embedded in the text, please use `\chem{}`, e.g. A $\rightarrow$ B.

The reaction environment creates labels including the letter R, i.e. (R1), (R2), etc.

Algorithm 1 Algorithm Caption

$i \leftarrow 10$
if $i \geq 5$ **then**
  $i \leftarrow i - 1$
else
  if $i \leq 3$ **then**
    $i \leftarrow i + 2$
  end if
end if

- `\rightarrow` should be used for normal (one-way) chemical reactions

- `\rightleftharpoons` should be used for equilibria

- `\leftrightarrow` should be used for resonance structures

$$A \rightarrow B \tag{R1}$$

$$Coper \rightleftharpoons nicus \tag{R2}$$

$$Publi \leftrightarrow cations \tag{R3}$$

6.8 PHYSICAL UNITS

Please use `\unit{}` (allows to save the math/`$` environment) and apply the exponential notation, for example $3.14\,\mathrm{km\,h^{-1}}$ (using LaTeX mode: `\( 3.14\,\unit{...} \)`) or $0.872\,\mathrm{m\,s^{-1}}$ (using only `\unit{0.872\,m\,s^{-1}}`).

7 Conclusions

The conclusion goes here. You can modify the section name with `\conclusions[modified heading if necessary]`.

Code and data availability. use this to add a statement when having data sets and software code available

Sample availability. use this section when having geoscientific samples available

Appendix A: Figures and tables in appendices

Regarding figures and tables in appendices, the following two options are possible depending on your general handling of figures and tables in the manuscript environment:

A1 Option 1

If you sorted all figures and tables into the sections of the text, please also sort the appendix figures and appendix tables into the respective appendix sections. They will be correctly named automatically.

A2 Option 2

If you put all figures after the reference list, please insert appendix tables and figures after the normal tables and figures.

To rename them correctly to A1, A2, etc., please add the following commands in front of them: `\appendixfigures` needs to be added in front of appendix figures `\appendixtables` needs to be added in front of appendix tables

Please add `\clearpage` between each table and/or figure. Further guidelines on figures and tables can be found below.

References

Dirac, P.: The lorentz transformation and absolute time, Physica, 19, 888–896, https://doi.org/10.1016/S0031-8914(53)80099-6, 1953.

135 Feynman, R. and Vernon Jr., F.: The theory of a general quantum system interacting with a linear dissipative system, Annals of Physics, 24, 118–173, https://doi.org/10.1016/0003-4916(63)90068-X, 1963.