CODECHECK certificate 2026-018

https://doi.org/110.5281/zenodo.21807544

Item	Value
Title of checked publication	Improving reproducibility of GIScience publications through novel reproducibility guidelines and revised review procedures
Author(s)	Carlos Granell, Frank O. Ostermann, Daniel Nüst, Peter Kedron, Eftychia Koukouraki, Miguel Matey-Sanz, Rémy Decoupes, Sergio Trilles, Anita Graser, Tom Niers
Reference	https://doi.org/10.5311/JOSIS.2026.32.591
Codechecker(s)	Alexander Trinidad
Date of check	2026-07-17 11:50:00
Summary	Quarto and Jupyter notebooks used to reproduce the results reported by Granell et al. (2026) and evaluate the reproducibility of the research outputs.
Repository	https://github.com/codecheckers/reproducible-research-giscience-longitudinal-study/tree/main

Table 1: CODECHECK summary

Output	Comment	Size (b)
`outputs/AGILE_pre_post.png`	manuscript Figure 1	
`outputs/AGILE_sankey_year.png`	manuscript Figure 2	
`outputs/figure2_table.png`	manuscript table under Figure 2	
`outputs/GIScience_pre_post.png`	manuscript Figure 3	
`outputs/table1.png`	manuscript Table 1	
`outputs/table5.png`	manuscript Table 5.	
`outputs/table6.png`	manuscript Table 6.	
`outputs/table7_1.png`	manuscript Table 7 (first part)	
`outputs/table7_2.png`	manuscript Table 7 (second part)	

Table 2: Summary of output files generated

Summary

The computational workflow with all Quarto and Jupyter notebooks was reproduced successfully in a local environment without major issues. The reproduced analyses generated all substantive results, figures, and

tables reported in the published paper, with minor differences in numbering between the manuscript and the rendered notebooks while the underlying values and conclusions remained consistent

CODECHECKER notes

The reproduction was carried out on a MacBook Pro equipped with an Apple M5 processor, 32 GB of memory, and macOS Tahoe 26.5.2. The CODECHECK repository can be found here: https://github.com/codecheckers/reproducible-research-giscience-longitudinal-study

The computational workflow included code written in both R and Python. The reproduction followed these steps:

1. Cloned the authors' reproducibility repository from GitHub.
2. Executed the Quarto and Jupyter notebooks sequentially, starting with notebook `01` and continuing through notebook `07`.

No major problems were encountered while running the workflow. The entire CODECHECK process took approximately 60 minutes. This duration includes the additional time required because this was my first time conducting a CODECHECK. The computational reproduction itself took less time, but I am unable to provide a reliable estimate of the execution time alone.

Recommendations

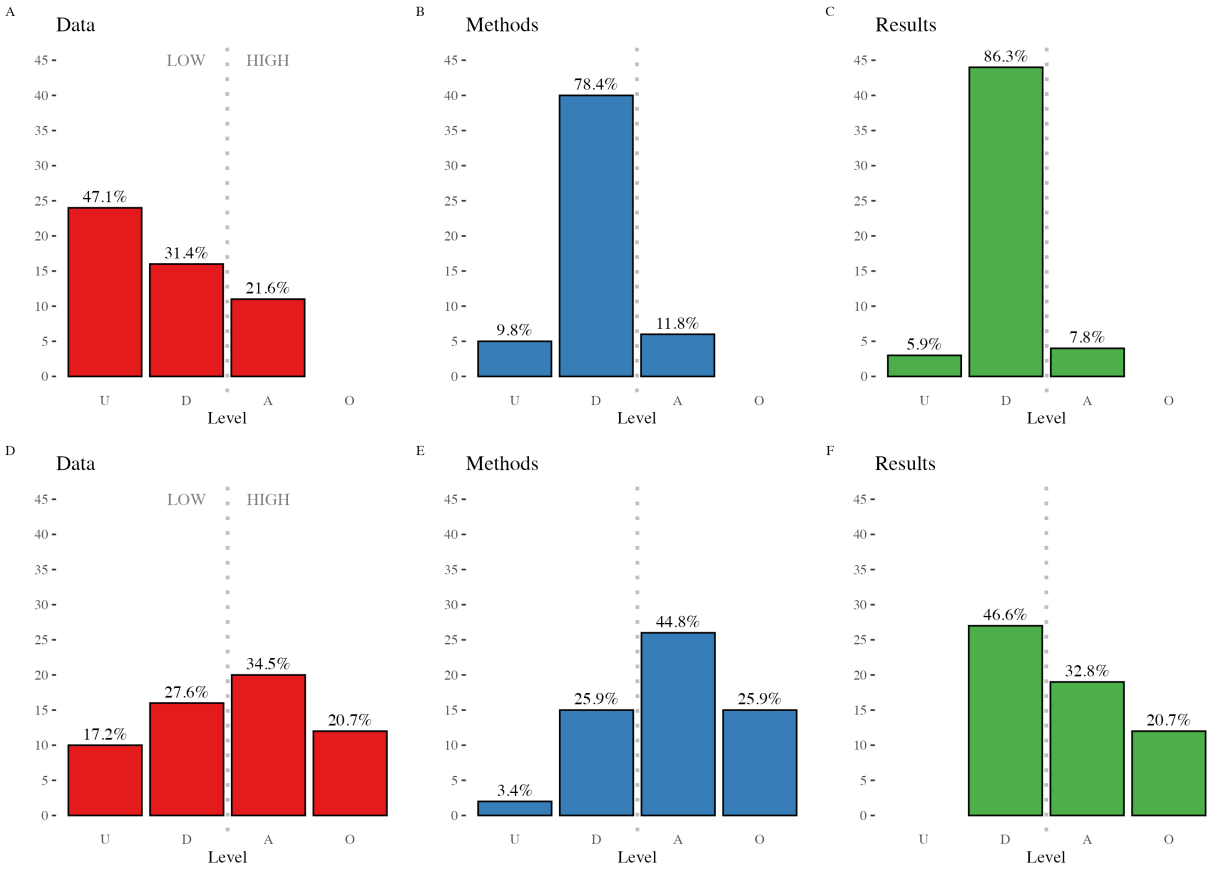
No recommendations. The code run smoothly.

Manifest files

AGILE_pre_post.png

Comment: manuscript Figure 1

AGILE paper assessment according to the criteria 'Data', 'Methods', and 'Results'.
Top: pre-intervention (2017-2019) papers (N=51). Bottom: post-intervention (2021-2024) papers (N=58).
X-axis labels: (U)ndocumented; (D)ocumented; Documented and (A)vailable; Documented, Available and (O)pen.



Note: AGILE 2020 papers excluded (transition year).

AGILE_sankey_year.png

Comment: manuscript Figure 2

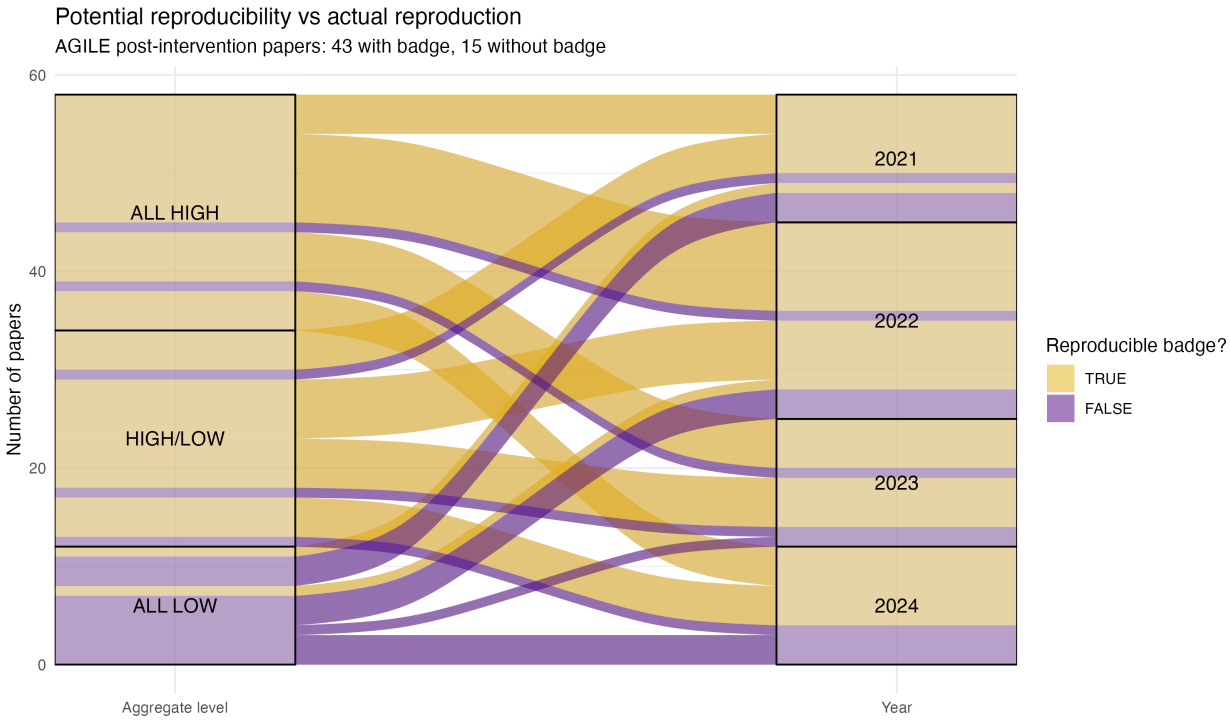


figure2_table.png

Comment: manuscript table under Figure 2

agg_level	n	proportion
TRUE		
ALL HIGH	22	51.2
HIGH/LOW	19	44.2
ALL LOW	2	4.7
FALSE		
ALL HIGH	2	13.3
HIGH/LOW	3	20.0
ALL LOW	10	66.7

GIScience_pre_post.png

Comment: manuscript Figure 3

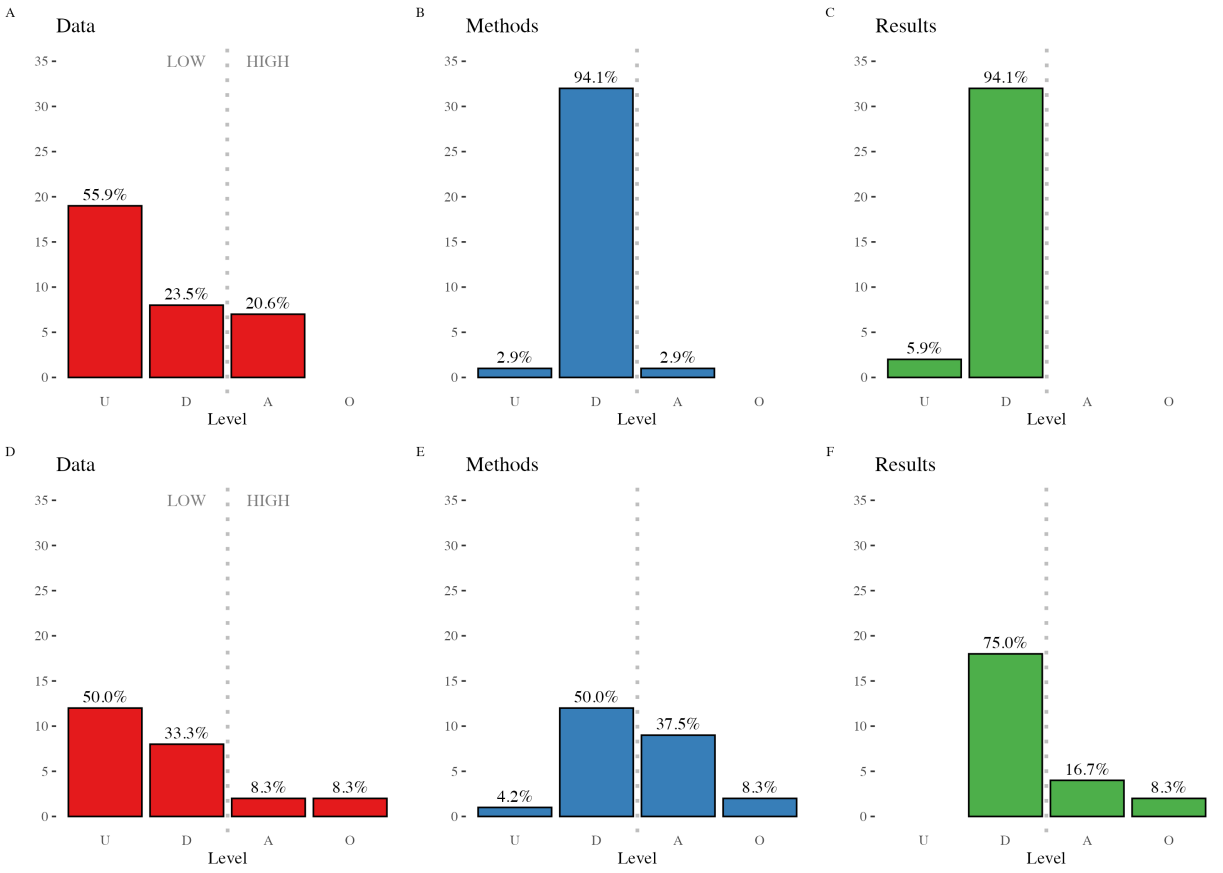


table1.png

Comment: manuscript Table 1

Table 1: Distribution of eligible conference papers

Distribution of eligible conference papers (N=167)

Table 1 of the published paper - *Note: transition year is excluded here*

	Year	no. papers	no. papers eligible
agile			
	2017	20	16
	2018	19	17
	2019	19	18
	2020	22	0
	2021	16	13
	2022	22	20
	2023	14	13
	2024	14	12
Total	—	146	109
giscience			
	2016	21	17
	2018	17	17
	2020	16	0
	2021	13	13
	2023	11	11
Total	—	78	58

table5.png

Comment: manuscript Table 5.

GIScience vs AGILE: Absolute change in percentage points

Variation between *HIGH* and *LOW* before and after the intervention.

Aggregate level per criterion*	*GIScience*	*AGILE*
Input data-HIGH	−3.9%	33.6%
Methods-HIGH	42.9%	58.9%
Results-HIGH	25.0%	45.6%

table6.png

Comment: manuscript Table 6.

Table 1: Distribution of disagreement types

Distribution of disagreement types			
No grouping (N=224). Table 3 of the published paper			
	Disagreement type	**#**	**%**
	uncertain assessment	100	44.6%
	no disagreement	63	28.1%
	significant disagreement	42	18.8%
	borderline conceptual paper	14	6.2%
	annotation inconsistencies	5	2.2%
Total	—	224	1

table7_1.png

Comment: manuscript Table 7 (first part)

Table 5: Distribution of 'Uncertain disagreement'

Uncertain disagreement (N=100)									
Applied to *Input data*, *Methods, ...* and *Results* dimensions.									
Conf Series	**Input Data**			**Methods, ...**			**Results**		
	Disagr?	*#*	*%*	*Disagr?*	*#*	*%*	*Disagr?*	*#*	*%*
AGILE	no	23	35.4%	no	46	70.8%	no	36	55.4%
AGILE	yes	42	64.6%[1]	yes	19	29.2%[2]	yes	29	44.6%
GISCIENCE	no	7	20.0%	no	24	68.6%	no	28	80.0%
GISCIENCE	yes	28	80.0%[1]	yes	11	31.4%	yes	7	20.0%[3]

[1] Major disagreements at both conferences.

[2] Minor disagreements at the AGILE conference.

[3] Minor disagreements at the GIScience conference.

table7_2.png

Comment: manuscript Table 7 (second part)

Table 6: Distribution of 'significant disagreement'

Significant disagreement (N=42)									
Applied to *Input data*, *Methods,...* and *Results* dimensions.									
Conf Series	**Input data**			**Methods,...**			**Results**		
	Disagr?	*#*	*%*	*Disagr?*	*#*	*%*	*Disagr?*	*#*	*%*
AGILE	no	6	20.0%	no	9	30.0%	no	13	43.3%
AGILE	yes	24	80.0%[1]	yes	21	70.0%	yes	17	56.7%[2]
GISCIENCE	no	3	25.0%	no	5	41.7%	no	5	41.7%
GISCIENCE	yes	9	75.0%[1]	yes	7	58.3%[3]	yes	7	58.3%[3]

[1] Major disagreements at both conferences.

[2] Minor disagreements at the AGILE conference.

[3] Minor disagreements at the GIScience conference.

Acknowledgements

I would like to thank Dr. Nüst for introducing me to the CODECHECK workflow and the other authors for providing the reproducible workflow accompanying their paper.

Citing this document

Alexander Trinidad (2026). CODECHECK Certificate 2026-018. Zenodo. https://doi.org/110.5281/zenodo.21807544

About CODECHECK

This certificate confirms that the codechecker could independently reproduce the results of a computational analysis given the data and code from a third party. A CODECHECK does not check whether the original computation analysis is correct. However, as all materials required for the reproduction are freely available by following the links in this document, the reader can then study for themselves the code and data.

About this document

This document was created using R Markdown using the `codecheck` R package. `make codecheck.pdf` will regenerate the report file.

```
sessionInfo()
```

```
## R version 4.6.0 (2026-04-24)
## Platform: aarch64-apple-darwin23
## Running under: macOS Tahoe 26.5.2
##
## Matrix products: default
## BLAS:   /System/Library/Frameworks/Accelerate.framework/Versions/A/Frameworks/vecLib.framework/Versi
## LAPACK: /Library/Frameworks/R.framework/Versions/4.6/Resources/lib/libRlapack.dylib;  LAPACK version
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## time zone: Europe/Berlin
## tzcode source: internal
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets
## [6] methods   base
##
## other attached packages:
##  [1] readr_2.2.0           tibble_3.3.1
##  [3] xtable_1.8-8          yaml_2.3.12
##  [5] rprojroot_2.1.1       knitr_1.51
##  [7] codecheck_0.25.0.9000 parsedate_1.3.2
##  [9] R.cache_0.17.0        gh_1.6.0
##
## loaded via a namespace (and not attached):
##  [1] xfun_0.60         httr2_1.3.0       tzdb_0.5.0
##  [4] vctrs_0.7.3       tools_4.6.0       generics_0.1.4
##  [7] curl_7.1.0        pkgconfig_2.0.3   pdftools_3.9.0
## [10] R.oo_1.27.1       readxl_1.5.0      assertthat_0.2.1
```

```
## [13] lifecycle_1.0.5   compiler_4.6.0    stringr_1.6.0
## [16] git2r_0.36.2      tinytex_0.60      keyring_1.4.1
## [19] httpuv_1.6.17     htmltools_0.5.9   later_1.4.8
## [22] pillar_1.11.1     whisker_0.4.1     R.utils_2.13.0
## [25] openssl_2.4.2     cachem_1.1.0      zen4R_0.10.6
## [28] magick_2.9.1      tidyselect_1.2.1  digest_0.6.39
## [31] stringi_1.8.7     dplyr_1.2.1       purrr_1.2.2
## [34] rsvg_2.7.0        fastmap_1.2.0     cli_3.6.6
## [37] magrittr_2.0.5    triebeard_0.4.1   XML_3.99-0.23
## [40] crul_1.6.0        utf8_1.2.6        osfr_0.2.9
## [43] withr_3.0.3       promises_1.5.0    rmarkdown_2.31
## [46] httr_1.4.8        gitcreds_0.1.2    otel_0.2.0
## [49] qpdf_1.4.1        cellranger_1.1.0  askpass_1.2.1
## [52] R.methodsS3_1.8.2 hms_1.1.4         memoise_2.0.1
## [55] evaluate_1.0.5    urltools_1.7.3.1  rlang_1.3.0
## [58] Rcpp_1.1.2        glue_1.8.1        httpcode_0.3.0
## [61] xml2_1.6.0        fauxpas_0.6.0     rorcid_0.7.0
## [64] jsonlite_2.0.0    R6_2.6.1          plyr_1.8.9
## [67] fs_2.1.0
```