Reproducible Research Repository

Assessing the value of impact-based forecasting for early action to reduce flood impacts

Third Submission: RR_BRA_2026_740

Vaishnavi Dhas
reproducibility@worldbank.org
October 27, 2026

This review verifies the reproducibility of the exhibits included in the paper *"Assessing the value of impact-based forecasting for early action to reduce flood impacts"*.

Contents in this review:

1. Main findings
2. List of exhibits and reproducibility status
3. Reproduction Environment

Main findings

- **Every exhibit in the main section of the paper and the appendix were reproduced accurately**
- The code was successfully executed on a new computer after:
  1. The GEB model simulations were not rerun by the reviewers, as they require several weeks of computing time.
  2. The reviewers used the simulation outputs supplied by the authors to regenerate all results. This was done by restoring the environment in "environment.yml" and running `"RP_Processing_Model_Results_And_Figures.py"`.
- The output demonstrates consistent stability across multiple runs. Specifically, executing the code two times consecutively yielded identical results.
- The code takes approximately 24 hours to run.
- We conducted our reproducibility analysis based on the paper shared by the authors by email on August 20, 2026.
- **Verification Process and Data Handling**:
  - The reproducibility package relies on 1 type of data: open.
  - Open data is included in the public reproducibility package.
  - *data_hash_report.csv* lists the SHA256 hashes of all files in the Data folder to support data integrity checks.
- **Reproducibility Summary**:

- **Data**: All data sources are publicly available and included in the reproducibility package.
- **Code**: All code files are included in the reproducibility package but operate from intermediate data, not raw data.
- **Outputs**: All outputs are generated by code included in the reproducibility package.
- **Dependencies environment**: The reviewers created a new environment using the latest versions of dependencies available at the moment of the review.

List of exhibits and reproducibility status

Results in the Main Section of the Paper

- **Figure 1** Reproduced with changes.
- **Figure 2** Does not apply. Figure 2 is generated by the GEB model evaluation, not by `RP_Processing_Model_Results_And_Figures.py`. The reviewers did not run the model, as it takes several weeks to run on a regular laptop.
- **Figure 3** Does not apply. The exhibit is not an analytical output.
- **Figure 4** Reproduced.
- **Figure 5** Does not apply. Figure 5 is generated by the GEB model evaluation, not by `RP_Processing_Model_Results_And_Figures.py`. The reviewers did not run the model, as it takes several weeks to run on a regular laptop.
- **Figure 6** Does not apply. Figure 6 is generated by the GEB model evaluation, not by `RP_Processing_Model_Results_And_Figures.py`. The reviewers did not run the model, as it takes several weeks to run on a regular laptop.
- **Figure 7** Reproduced with changes.
- **Figure 8** Reproduced.
- **Figure 9** Reproduced with changes.
- **Figure 10** Reproduced.
- **Figure 11** Reproduced.
- **Figure 12** Reproduced with changes.
- **Figure 13** Reproduced.
- **Table 1** Does not apply. The exhibit is not an analytical output.
- **Table 2** Does not apply. The exhibit is not an analytical output.
- **Table 3** Reproduced with changes.
- **Table 4** Reproduced with changes.

- **Table 5** Reproduced with changes.

Results in the Annex

- **Figure A1** Does not apply. Figure A1 is generated by the GEB model evaluation, not by `RP_Processing_Model_Results_And_Figures.py`. The reviewers did not run the model, as it takes several weeks to run on a regular laptop.
- **Figure B1** Reproduced. Compared against `ibf_warning_zoom_2_2024-05-01_50_0.6_10.0.png` located in `\outputanalysisscripts\output\warnings\ibf_warnings`.
- **Figure C1** Reproduced with changes. Compared against figures located in `1\outputanalysisscripts\output\warnings\general_flood_warnings`.
- **Figure D1** Reproduced with changes.
- **Figure E1** Reproduced with changes.
- **Figure E2** Reproduced with changes.
- **Table E1** Reproduced with changes.
- **Table F1** Does not apply. Some values cited from external sources and some generated by the GEB model evaluation, not by `RP_Processing_Model_Results_And_Figures.py`. The reviewers did not run the model, as it takes several weeks to run on a regular laptop.
- **Figure G1** Reproduced.
- **Figure G2** Reproduced.
- **Figure G3** Reproduced.

Reproduction Environment

Paper exhibits were reproduced on a computer with the following specifications:

- OS: Windows 11 Enterprise
- Processor: Intel(R) Xeon(R) Gold 5218 CPU @ 2.30GHz (2.30 GHz) (2 processors)
- Memory available: 16.0 GB
- Software version: Python 3.13.7