



# NFDI4Earth

## Research Software and Reproducibility

Interessensgruppe für die Nationale Forschungsdateninfrastruktur in  
den Erdsystemwissenschaften

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<http://bit.ly/nfdi4earth-rsr> (slides)

<https://bit.ly/nfdi4earth-rsr-collab> (pad)

# Forschungssoftware: Herausforderungen & Themen

Nachhaltigkeit

Anerkennung/Zitierung

Archivierung

Finden

Begutachtung/Qualität

Kollaboration (Lizenzierung)

Research Software Engineering

Wo ist die NFSI4Earth?



Anzt H, Bach F, Druskat S *et al.* *An environment for sustainable research software in Germany and beyond: current state, open challenges, and call for action.* F1000Research 2020, **9**:295 (<https://doi.org/10.12688/f1000research.23224.1>)

Katz DS, Chue Hong NP, Clark T *et al.* *The importance of software citation.* F1000Research 2020, **9**:1257 (<https://doi.org/10.12688/f1000research.26932.1>)

*Scholarly Infrastructures for Research Software Report from the EOSC Executive Board Working Group (WG) Architecture Task Force (TF) SIRS.* <https://docs.google.com/document/d/1yObRCR7COQctpjMdg-rNenRZ7ZeUZ-u0iyvdpPRK598/edit>

FAIR for Research Software (FAIR4RS) WG, <https://www.rd-alliance.org/groups/fair-4-research-software-fair4rs-wg>

# Reproduzierbarkeit @ Earth/Geo/Spatial

Reproduzierbarkeit computerbasierter Forschung ist

**möglich** (Problem Kultur >> Technik)

essentiell bei einzigartigen Datensätzen

**nicht weit verbreitet genug** in unserer Disziplin/Community

wird eine harte Anforderung für die Veröffentlichung werden

(vgl. Open Data in Zeitschriften heute)

Wir müssen Wissenschaftler und Infrastruktur vorbereiten: computing environments, Transparenz, Validierung, Verpackung, Forschungskompendien, Wiederverwendbarkeit

Michael F. Goodchild, A. Stewart Fotheringham, Peter Kedron & Wenwen Li (2020) Introduction: Forum on Reproducibility and Replicability in Geography, Annals of the American Association of Geographers, DOI: [10.1080/24694452.2020.1806030](https://doi.org/10.1080/24694452.2020.1806030); aus diesem special issue: Daniel Nüst & Edzer Pebesma (2020) Practical Reproducibility in Geography and Geosciences, Annals of the American Association of Geographers, DOI: [10.1080/24694452.2020.1806028](https://doi.org/10.1080/24694452.2020.1806028); [PDF](#)

Konkol, M., Nüst, D. & Goulier, L. Publishing computational research - a review of infrastructures for reproducible and transparent scholarly communication. *Res Integr Peer Rev* 5, 10 (2020). DOI: [10.1186/s41073-020-00095-y](https://doi.org/10.1186/s41073-020-00095-y)

Markus Konkol, Christian Kray & Max Pfeiffer (2019) Computational reproducibility in geoscientific papers: Insights from a series of studies with geoscientists and a reproduction study, *International Journal of Geographical Information Science*, 33:2, 408-429, DOI: [10.1080/13658816.2018.1508687](https://doi.org/10.1080/13658816.2018.1508687)

# Wer passt in die RSR IG?

- Nutzer von Forschungssoftware, z. B. Wissenschaftler\_innen die digitale/computer-basierte Methoden benutzen
- Entwickler von Forschungssoftware
- Research Software Engineers (RSE)
- Forschungsdatenmanager die Forschungssoftware besser verstehen wollen
- ...?

*Kulturellen Wandel leben!*

*Wer macht mit?*

<https://bit.ly/nfdi4earth-rsr-collab>

# Mögliche Aktivitäten, Ideen, Fragen [EN]

- Keep an eye on **new developments in RS & R** (policies, practices), e.g. RDA's FAIR4RS
  - **Survey on perceptions of the FAIR for research software principles:**  
<https://forms.gle/XLSjbybtjKZuxom39>
- Exchange of **ideas** and sharing of **experiences on software and reproducibility** across tasks and measures > quarterly online **meetings**? monthly when NFDI4Earth started?
- Develop processes and standards for **software developed as part of 4Earth**
- Identify all tasks in the proposal where software/reproducibility play a *crucial* role and connect these activities > worthwhile exercise?
- Alignment and good practices for research software use/dev through **communication**
- Informal help desk? Expert database?
- Formal specification of standards and requirements for software > self-commitment?
- Internal discourse (e.g., software newsletter?) and clear outside communication
- Involve expertise from **community** outside of 4Earth (open IG)
- How can pilots benefit from a conversation about software?
- Connect with research software activities across all consortia (RSEng, NFDI4RSE, ...)
- Consult on infrastructure decisions re. software and from software perspective
- Avoid duplication and inefficiency > **alignment through common tools**