Dr. Philippe Rufin

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Professional Appointments

10/2023 – 09/2026
F.R.S.-FNRS Postdoctoral Fellow
Earth and Life Institute
UCLouvain
Louvain-La-Neuve (Belgium)

- Understanding the role of medium-scale farms as drivers of deforestation in Sub-Saharan Africa based on Earth observation and deep learning.

09/2021 – 09/2023
F.R.S.-FNRS Postdoctoral Fellow
Earth and Life Institute
UCLouvain
Louvain-La-Neuve (Belgium)

- Mapping cropland, field sizes and their dynamics in smallholder landscapes in Sub-Saharan Africa using very-high-resolution satellite imagery and deep learning.
- Reference data collection in field using UAV imaging system.

04/2019 – 09/2021
Postdoctoral Researcher
Earth Observation Lab
Humboldt-Universität zu Berlin
Berlin (Germany)

- Research focus on mapping agricultural land use and land use intensity parameters in tropical, sub-tropical, Mediterranean, and semi-arid environments, e.g. in Greece, Turkey, Uzbekistan, Brazil, Nigeria, and Kenya.
- Lecturer in applied remote sensing modules in B.Sc. Geography and M.Sc. Global Change Geography.

09/2017 – 03/2019
10/2014 – 05/2015
Research Associate
Earth Observation Lab
Humboldt-Universität zu Berlin
Berlin (Germany)

- Research on the effects of irrigation dam construction on agricultural land systems.
- Lecturer in remote sensing, geoinformation, and statistics in B.Sc. Geography and M.Sc. Global Change Geography.

05/2014 – 11/2014
Research Associate
Integrated Research Institute on Transformations of Human-Environment Systems (IRI THESys)
Humboldt-Universität zu Berlin
Berlin (Germany)

- Research on social-ecological costs of dam and reservoir construction.
- Analyses of remotely sensed and ancillary geospatial data aiming to observe transforming land systems.

12/2011 – 04/2014

Student Collaborator
Land System Science Cluster
Humboldt-Universität zu Berlin
Berlin (Germany)

- Supporting research on sustainable land management in the context of CarBioCial project, funded by the German Federal Ministry of Education and Research.
- Supporting the teaching of M.Sc. courses in advanced remote sensing and geoinformatics.

Education

11/2014 – 04/2019

Doctoral Studies in Geography
Humboldt-Universität zu Berlin
Berlin (Germany)

- Thesis „A global to regional scale assessment of dam-induced agricultural change by means of remote sensing“ (DOI: 10.18452/20125), referees Patrick Hostert, Volker Radeloff, and Claudia Künzer, graded Magna Cum Laude.
- Graduate Programme: Integrative Research Institute on Transformations of Human-Environment Systems (IRI THESys).

10/2011 – 05/2014

M.Sc. Physical Geography of Human-Environment-Systems
Humboldt-Universität zu Berlin
Berlin (Germany)

- Elective specialization on remote sensing, digital image processing, spatial statistics, and geoinformatics
- Valedictorian of the M.Sc. cohort in 2014.

10/2007 - 9/2011

B.A. Geography
Humboldt-Universität zu Berlin
Berlin (Germany)

- Elective specialization on remote sensing, digital image processing, classification algorithms and geographical information systems, spatial analyses, spatial statistics, and modeling.
- Basics in human and physical geography, social sciences as a secondary subject.

Selected Peer-Reviewed Articles

Frantz, D.; Rufin, P.; Janz, A.; Ernst, S.; Pflugmacher, D.; Schug, F.; Hostert, P. (2023): Understanding the robustness of spectral-temporal metrics across the global Landsat archive from 1984 to 2019 – a quantitative evaluation, *Remote Sensing of Environment*, 298. DOI: https://doi.org/10.1016/j.rse.2023.113823.

Rufin, P.; Peña-Guerrero, M.D.; Umirbekov, A.; Wei, Y.; Müller, D.(2022): Post-Soviet changes in cropping practices in the irrigated drylands of the Aral Sea basin. *Environ. Res. Lett.* 17 (9), p. 95013. DOI: 10.1088/1748-9326/ac8daa.

Rufin, P.; Bey, A.; Picoli, M.; Meyfroidt, P. (2022): Large-area mapping of active cropland and short-term fallows in smallholder landscapes using PlanetScope data. *International Journal of Applied Earth Observation and Geoinformation* 112 (1), p. 102937. DOI: 10.1016/j.jag.2022.102937.

Ibrahim, E.S., Rufin, P., Nill, L., Kamali, BB., Nendel, C., Hostert, P. (2021): Mapping Crop Types and Cropping Systems in Nigeria with Sentinel-2 Imagery. *Remote Sensing* 13 (17), DOI: 10.3390/rs13173523.

Rufin, P., Müller, D., Schwieder, M., Pflugmacher, D., & Hostert, P. (2021). Landsat time series reveal simultaneous expansion and intensification of irrigated dry season cropping in Southeastern Turkey. *Journal of Land Use Science, 3*, 1–17. DOI: 10.1080/1747423X.2020.1858198

Rufin, P., Frantz, D., Yan, L., & Hostert, P. (2020). Operational Coregistration of the Sentinel-2A/B Image Archive Using Multitemporal Landsat Spectral Averages. *IEEE Geoscience and Remote Sensing Letters*, 1–5. DOI: 10.1109/LGRS.2020.2982245

Rufin, P., Frantz, D., Ernst, S., Rabe, A., Griffiths, P., Özdoğan, M., & Hostert, P. (2019). Mapping Cropping Practices on a National Scale Using Intra-Annual Landsat Time Series Binning. *Remote Sensing, 11*, 232. DOI: 10.3390/rs11030232

do Nascimento Bendini, H., Garcia Fonseca, L.M., Schwieder, M., Sehn Körting, T., Rufin, P., Del Arco Sanches, I., Leitão, P.J., & Hostert, P. (2019). Detailed agricultural land classification in the Brazilian Cerrado based on phenological information from dense satellite image time series. *International Journal of Applied Earth Observation and Geoinformation, 82*, 101872. DOI: 10.1016/j.jag.2019.05.005

Rufin, P., Gollnow, F., Müller, D., & Hostert, P. (2019). Synthesizing dam-induced land system change. *AMBIO, 92*. DOI: 10.1007/s13280-018-01144-z

Gollnow, F., Hissa, L.d.B.V., Rufin, P., & Lakes, T. (2018). Property-level direct and indirect deforestation for soybean production in the Amazon region of Mato Grosso, Brazil. *Land Use Policy, 78*, 377–385. DOI: 10.1016/j.landusepol.2018.07.010

Rufin, P., Levers, C., Baumann, M., Jägermeyr, J., Krueger, T., Kuemmerle, T., & Hostert, P. (2018). Global-scale patterns and determinants of cropping frequency in irrigation dam command areas. *Global Environmental Change, 50*, 110–122. DOI: 10.1016/j.gloenvcha.2018.02.011

Rufin, P., Müller, H., Pflugmacher, D., & Hostert, P. (2015). Land use intensity trajectories on Amazonian pastures derived from Landsat time series. *International Journal of Applied Earth Observation and Geoinformation, 41*, 1–10. DOI: 10.1016/j.jag.2015.04.010

Müller, H., Rufin, P., Griffiths, P., Barros Siqueira, Auberto José, & Hostert, P. (2015). Mining dense Landsat time series for separating cropland and pasture in a heterogeneous Brazilian savanna landscape. *Remote Sensing of Environment, 156*, 490–499. DOI: 10.1016/j.rse.2014.10.014

Selected Conference Contributions

Rufin, P.; Meyfroidt, P. (2023): Transfer learning for smallholder field delineation in Sub-Saharan Africa. Tropentag 2023, Berlin, Germany.

Rufin, P., Picoli, M., Bey, A., Ubisse, Y., Nogueira Lisboa, S., Sitoe, A., Meyfroidt, P. (2022): Mapping field sizes in smallholder agriculture of Sub-Saharan Africa: assessing pathways to overcome the mismatch between spatial resolution and field size. European Space Agency's Living Planet Symposium, Bonn, Germany.

Rufin, P., Rabe, A., Nill, L., Hostert, P. (2021): GEE Timeseries Explorer for QGIS – Instant access to petabytes of Earth observation data. FOSS4G Buenos Aires 2021.

Müller, D., Rufin, P., Dara, A., Krause, C., Peña-Guerrero, M.D., Schmitz, T., Umirbekov, A., Wei, Y. (2021): Post-Soviet changes in irrigated crop production in the Amu Darya Basin. vEGU General Assembly 2021

Bendini, H.; Soares, A.; Rufin, P.; Schwieder, M.; Rodrigues, M.; Maretto, R.; Korting, T.; Leitao, P.; Sanches, I.; Fonseca, L.; Hostert, P. (2020): Applying a Phenological Object-Based Image Analyzes (PHENOBIA) for Agricultural Land Classification: A Study Case in the Brazilian Cerrado. IGARSS 2020 - IEEE International Geoscience and Remote Sensing Virtual Symposium.

Rufin, P.; Schwieder, M.; Bendini, H.; Frantz, D.; Ernst, S.; Rabe, A.; Griffiths, P.; Özdoğan, M.; Hostert, P (2020): Mapping Cropping Practices on a National Scale Using Intra-Annual Landsat Time Series Binning (terrabrasilis.dpi.inpe.br/workshopfip2020/). Research on Vegetation and Agriculture Mapping in the Brazilian Biomes. INPE São José dos Campos, Brazil.

Rufin, P.; Frantz D.; Dierkes H.; Pflugmacher D.; Röder A.; Hostert P. (2019): Mapping Olive Tree Cover Using Land Surface Phenology Derived From Sentinel-2A/B Time Series. European Space Agency's Living Planet Symposium, Milan, Italy.

Frantz, D.; Hostert, P.; Ernst, S.; Rufin, P.; Röder, A.; van der Linden, S. (2019): Land Use 2.0: how dense time series and phenometrics have improved the monitoring of long-term vegetation dynamics in Mediterranean rangelands. European Space Agency's Living Planet Symposium, Milan, Italy.

Hostert, P.; Baumann, M.; Gerten, D.; Kuemmerle, T.; van der Linden, S.; Lucht, W.; Rufin, P. (2019): Quantifying a planetary land systems boundary. GLP Open Science Meeting, Bern, Switzerland.

Rufin, P.; Frantz, D.; Rabe, A.; Hostert, P. (2019): Landsat time series for mapping cropland management at the national scale in Turkey. 3rd joint EARSel & NASA LULCC Workshop, Crete, Greece

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Teaching

05/2023	Predictive modeling Machine Learning 4 Earth Observation Training GIZ, Kigali, Rwanda
10/2017 – 03/2021	Earth Observation M.Sc. Global Change Geography Humboldt-Universität zu Berlin
10/2019 – 03/2021	Introduction to Remote Sensing B.Sc. Geography Humboldt-Universität zu Berlin
03/2015 – 04/2015	Statistics for Geographers B.Sc. Geography Humboldt-Universität zu Berlin
04/2015 – 08/2015	Applied Geoinformation Science B.Sc. Geography Humboldt-Universität zu Berlin
10/2015 – 03/2016	Quantifying and understanding land change in social-ecological systems: Impacts of dam construction B.Sc. Geography Humboldt-Universität zu Berlin

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Supervision

Co-Supervision of Doctoral Researchers

02/2019 - ongoing	Esther Shupel Ibrahim "Diseases and Pests Impacts on Crop Production under Climate Change in Nigeria: Combining Remote Sensing and Agro-Ecosystem Modeling' Main supervisor Prof. Dr. Claas Nendel, ZALF, Müncheberg, Germany

10/2019 - ongoing	Pius Mwenda Borona „Land use and cover change in semi-arid Kenya: a socio-ecological and spatial approach“ Main supervisor Prof. Dr. Tobias Krüger, IRI THESys, Berlin, Germany

Dissertation Committee Member

05/2020	Dr. Batunacun "Modelling land use and land cover change on the Mongolia Plateau" Humboldt-Universität zu Berlin
06/2019	Dr. Andrey Dara „Understanding grassland dynamics in the steppe zone of Kazakhstan – a remote sensing analysis“ Humboldt-Universität zu Berlin

Thesis Supervision

10/2016 – 10/2023	4 M.Sc. theses 6 B.Sc. theses

Awards, Grants & Scholarships

06/2023	F.R.S.-FNRS Postdoctoral Fellowship Research project on medium-scale farms (3 years)
06/2023	ESA Third-Party-Mission Project Grant for SPOT 6/7 data access
06/2023	WINS Postdoctoral Fellowship (Co-PI) Women in Natural Science research stay funding for collaboration with Dr. Felicia Akinyemi
06/2021	Shortlist for Teaching Award at Faculty and University Humboldt-Universität zu Berlin Digital teaching formats
06/2019	Digital Teaching Grant bologna.lab, Humboldt-Universität zu Berlin Student collaborator implementing e-Learning
04/2019	IRI THESys Graduate Certificate IRI THESys, Humboldt-Universität zu Berlin Completion of IRI THESys Graduate Program
06/2018	Travel Grant IRI THESys, Humboldt-Universität zu Berlin Funding for conference participation
06/2015	Q-Team Grant bologna.lab, Humboldt-Universität zu Berlin Funding for implementing research-based learning

02/2015	Elsa Neumann Scholarship Federal State of Berlin Ph.D. Scholarship
01/2015	Best Student Award Geography Department, Humboldt-Universität zu Berlin Best student of M.Sc. Physical Geography of Human-Environment Systems cohort

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Peer-Reviews for International Journals

25 verified reviews for peer-reviewed international journals including Science, Nature Sustainability, Remote Sensing of Environment, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, International Journal of Applied Earth Observation and Geoinformation, Remote Sensing in Ecology and Conservation, GIScience & Remote Sensing, International Journal of Remote Sensing, Water Resources Research, Applied Geography, World Development, Remote Sensing, Agronomy.
