



## 2025 Helmholtz – OCPC – Programme for the involvement of postdocs in bilateral collaboration projects

### PART A

**Title of the project:**

Understanding drivers of concurrent crop failure at the global scale

**Helmholtz Centre and/or institute:**

Helmholtz Centre for Environmental Research - UFZ

**Project leader:**

Jakob Zscheischler

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**Department:** (at the Helmholtz centre or Institute)

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**Programme Coordinator** (Email, telephone and telefax)

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**Description of the project:**

The possibility of concurrent crop failures in different breadbasket of the world poses considerable risks to global food security. However, the likelihood of such concurrent crop failures is not well constrained and our understanding of the local and large-scale drivers behind such events is very limited. This project will combine historical crop yield statistics with innovative data-analysis techniques from the field of causal inference and explainable machine learning to reveal the meteorological drivers of concurrent crop failure events. This data-driven approaches will be used to create hypotheses that will be further tested with the Lagrangian particle dispersion model FLEXPART. Once critical weather patterns associated with global crop failure are identified, future climate simulations based on different socio-economic scenarios will be used to project crop failure risks into the future. Relevant data sources to be analysed include crop yield statistics, reanalysis data and climate model projections.



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**Description of existing or sought Chinese collaboration partner institute:**

We have already an established collaboration with Peking University on topics related to climate change, climate extremes and vegetation, for instance with Shilong Piao and Yao Zhang. This project could extend this collaboration.

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**Required qualification of the postdoc:**

- PhD in Climate Science, Hydrology, Environmental Sciences, or similar
- Experience with large data analysis, statistics and machine learning
- Language requirement: fluent in English (spoken and written)