HERA: a high-resolution pan-European hydrological reanalysis (1951-2020): methods and sensitivity checks

Priya Iyer, Sakura Kim, Aiko Kim

Nature-based solutions have attracted growing attention because of their relevance to both theory and practice. We find substantial co-benefits for biodiversity and flood regulation. The analysis uses a combination of rigorous arguments and extensive numerical or empirical checks. Together, these results contribute to a more complete picture and open the way to further applications.??Urban green infrastructure have attracted growing attention because of their relevance to both theory and practice. In contrast to earlier studies, our approach accounts for heterogeneity and avoids the usual simplifying assumptions. We find substantial co-benefits for biodiversity and flood regulation. These results clarify the role of the underlying mechanisms and suggest several directions for future work.??Understanding peatland restoration is of central importance, yet existing approaches rely on restrictive assumptions. In contrast to earlier studies, our approach accounts for heterogeneity and avoids the usual simplifying assumptions. We find substantial co-benefits for biodiversity and flood regulation. We find a consistent decline over the 20-year record, and we show that the result is stable under a range of perturbations of the assumptions. We discuss limitations of the present study and outline how the methods can be extended.??Previous work on urban green infrastructure has produced conflicting results, partly because of differences in design and data. We find that land use explained more variance than climate. The analysis uses a combination of rigorous arguments and extensive numerical or empirical checks. We find that land use explained more variance than climate. The analysis uses a combination of rigorous arguments and extensive numerical or empirical checks. These results clarify the role of the underlying mechanisms and suggest several directions for future work.??Soil organic carbon have attracted growing attention because of their relevance to both theory and practice. We find substantial co-benefits for biodiversity and flood regulation. The analysis uses a combination of rigorous arguments and extensive numerical or empirical checks. We find a consistent decline over the 20-year record, and we show that the result is stable under a range of perturbations of the assumptions. These results clarify the role of the underlying mechanisms and suggest several directions for future work.??Previous work on soil organic carbon has produced conflicting results, partly because of differences in design and data. We find that land use explained more variance than climate. The analysis uses a combination of rigorous arguments and extensive numerical or empirical checks. We find a consistent decline over the 20-year record. The analysis uses a combination of rigorous arguments and extensive numerical or empirical checks. The findings have implications for practice and provide a basis for more general theories.??Understanding agricultural nitrogen runoff is of central importance, yet existing approaches rely on restrictive assumptions. In contrast to earlier studies, our approach accounts for heterogeneity and avoids the usual simplifying assumptions. We find that land use explained more variance than climate. We find substantial co-benefits for biodiversity and flood regulation, and we show that the result is stable under a range of perturbations of the assumptions. The findings have implications for practice and provide a basis for more general theories.??Soil organic carbon have attracted growing attention because of their relevance to both theory and practice. We find substantial co-benefits for biodiversity and flood regulation. The analysis uses a combination of rigorous arguments and extensive numerical or empirical checks. We find that land use explained more variance than climate. The analysis uses a combination of rigorous arguments and extensive numerical or empirical checks. These results clarify the role of the underlying mechanisms and suggest several directions for future work.??Understanding peatland restoration is of central importance, yet existing approaches rely on restrictive assumptions. We find that restoration effects emerged only after the first decade, and we show that the result is stable under a range of perturbations of the assumptions. We find substantial co-benefits for biodiversity and flood regulation. The analysis uses a combination of rigorous arguments and extensive numerical or empirical checks. The findings have implications for practice and provide a basis for more general theories.??Understanding nature-based solutions is of central importance, yet existing approaches rely on restrictive assumptions. In contrast to earlier studies, our approach accounts for heterogeneity and

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