



SEFS 12
Symposium for
European Freshwater Sciences

VIRTUAL CONFERENCE | 25–30 JULY 2021 | #SEFS12

Abstract Book



A global dataset on weather, lake physics, and phytoplankton dynamics

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10B_SS10 Management of climatic extreme events in lakes and reservoirs for the protection of ecosystem services, July 30, 2021, 10:30 - 12:00

We compiled data from over 30 lakes across the globe to address how storms influence thermal structure and phytoplankton community dynamics mediated by lake conditions and functional traits. In addition to (generally) fortnightly phytoplankton samples (mean \pm SD temporal coverage across all lakes = 20 ± 13 years), the dataset includes limnological variables from standard long-term monitoring programs (24 ± 15 years coverage), daily weather observations (16 ± 10 years coverage) and, when available, high-frequency lake water temperature and water chemistry profiles (12 ± 7 years coverage). All data have been standardized to similar formats and include complete metadata. We used the dataset to develop an R-package (“algaeClassify”), which assigns phytoplankton genus/species information to multiple functional trait groups, and here we provide a summary of ongoing research using the dataset to investigate: 1) the influence of storm events on seasonal phytoplankton succession, 2) the impact of storms on lake thermal structure, and 3) whether lake phytoplankton communities are shaped by long-term patterns in disturbance frequency and intensity. We give an overview on how to access these data, and we further highlight the opportunities the dataset provides for asking both basic and applied questions in limnology, ecology, climate change, and lake management.