Benefits and challenges of long-term eddy covariance measurements over lakes

Mammarella Ivan
University of Helsinki

Advancing our understanding on physical processes controlling turbulent exchange of material and energy over lacustrine systems is crucial in order to improve climate and weather forecast models.The eddy covariance (EC) technique is the only standard tool for long-term turbulent flux measurements at ecosystem scale. Long series would allow for detection of e.g. inter-annual variability, effects of anomalous weather episodes and trends stemming from environmental changes and climate change. We discuss on challenges for long-term EC measurements over lakes, as well as the requirements for a comprehensive measurement set-up, including auxiliary measurements. We demonstrate the benefits of long-term data for linking lake biogeochemistry and physical processes in the water column via examples from few lake sites in Finland.