Notes on assigning functional classifications to genera and species.

Phytoplankton were assigned to morpho-functional group (MFG; Salmaso et al. 2015) and CSR (Reynolds 1988). Species with functional trait data in Rimet et al. (2019) were classified using criteria in Salmaso et al. (2015). Unclassified species were assigned to MFG based on library of species- and genus-level classifications derived from online trait databases and published literature. Library is available in the algaeClassify R package. CSR classifications were assigned based on Reynolds et al. (1988) where surface area (SA), volume (VOL), and linear dimension (LD) were available. SA and VOL refer to the biological unit (single cell for unicellular species, colony dimensions for a colonial species). If only LD and cell/colony geometries were available, SA and VOL calculations were calculated from Hillebrand et al. (1999). When relevant trait values were not available, CSR groups were assigned based on MFG classifications and a cross-mapping between functional traits associated with MFG and CSR groups, which was derived by the GEISHA group (Stockwell et al. 2020). All methods can be implemented in algaeClassify R package. Classifications reflect typical morphological characteristics of phytoplankton species under the conditions of common study. However, classifications are based on plastic traits that can vary among systems, seasons, and environmental change. We encourage users to derive functional classifications based on site- and time-specific trait data when possible.