

Eutrophication and its effect on dissolved Si concentrations in the Garonne River (France)

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ABSTRACT

Dissolved nutrient and chlorophyll-a concentrations were monitored on 17 occasions and at 16 sites in the Garonne River (France). Concentrations of dissolved inorganic nitrogen (DIN) and soluble reactive phosphorus (SRP) increased about threefold downstream of the urban area of Toulouse. Chlorophyll-a concentrations increased concomitantly with DIN and SRP downstream of Toulouse. Chlorophyll-a concentrations were maximal in late winter to early spring and in summer, in-between the snow-melt driven spring flood and rainfall-driven autumn flood. Dissolved silica (DSi) concentrations were negatively correlated with chlorophyll-a concentrations, suggesting uptake by algae. DSi depletion was more severe downstream of Toulouse, suggesting that eutrophication may affect DSi consumption in the Garonne River.

Key words: phytoplankton, diatoms, benthic biofilms, silica, eutrophication, Garonne River
