



BELGIAN SCIENCE POLICY

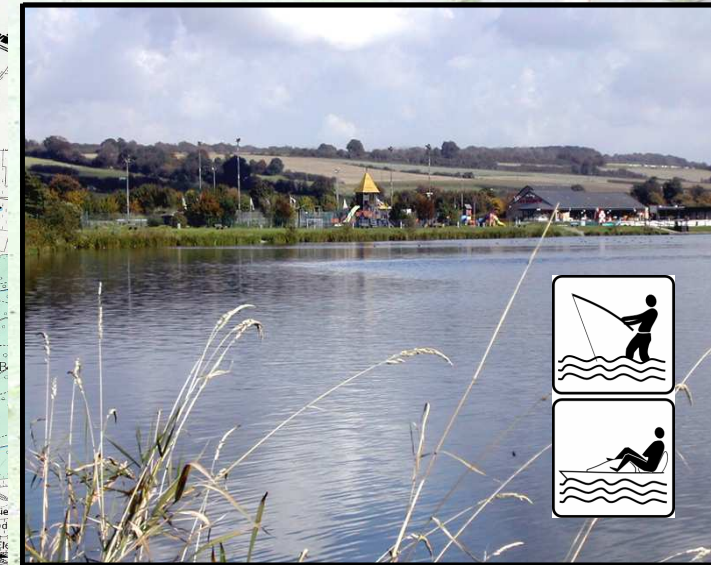


Cyanobacterial blooms : toxicity, diversity, modelling and management

CONTRACT NUMBER
SD/TE/01A



Reference lake : Falemprise



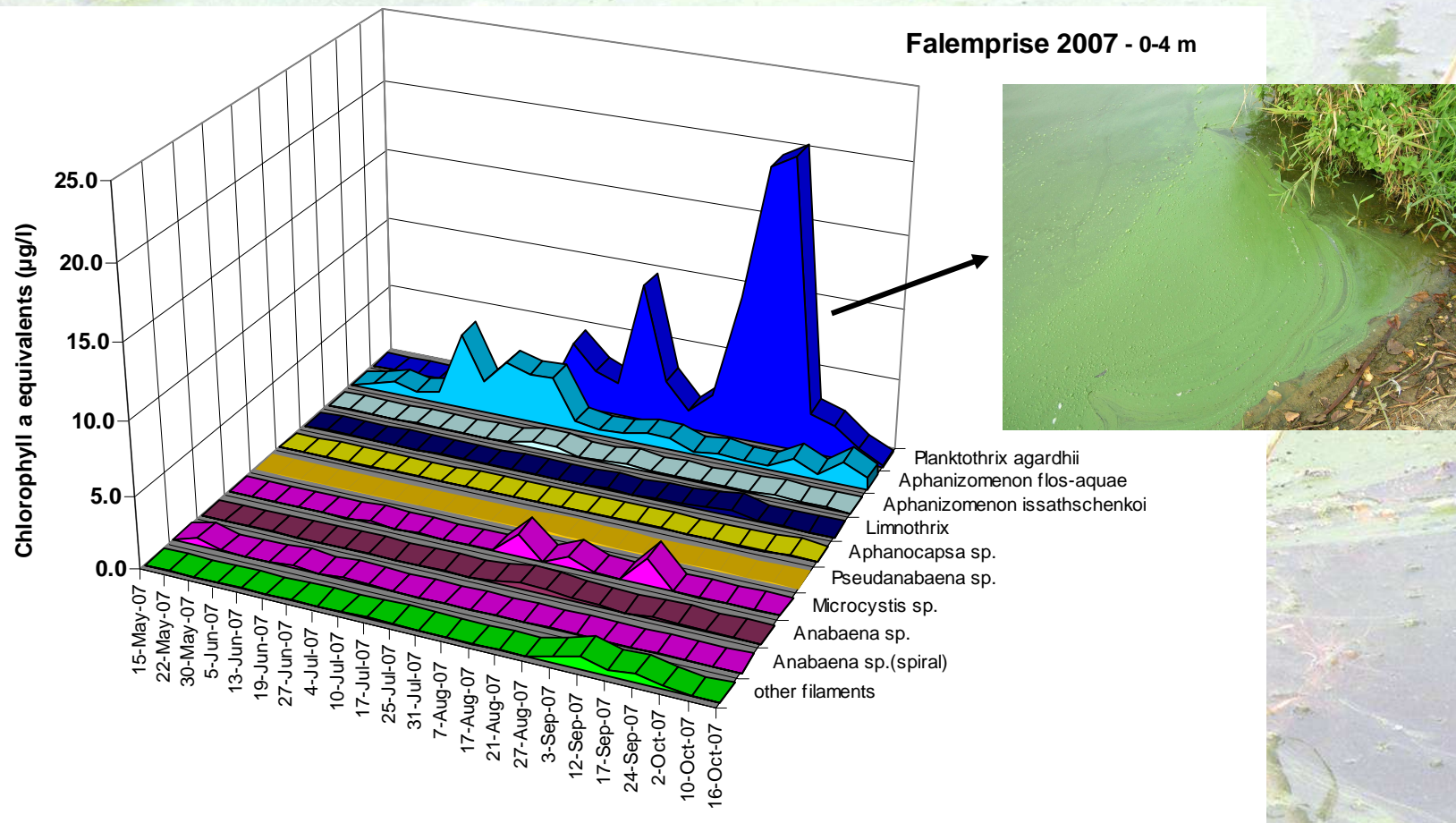
Catchment area =
4164 ha

Surface area = 47 ha
Max. depth = 6 m

Lake Falemprise is one of the Eau d'Heure Lakes and is an official swimming area in the Walloon Region. Therefore, this lake is monitored for microbiological quality by the Walloon authorities.

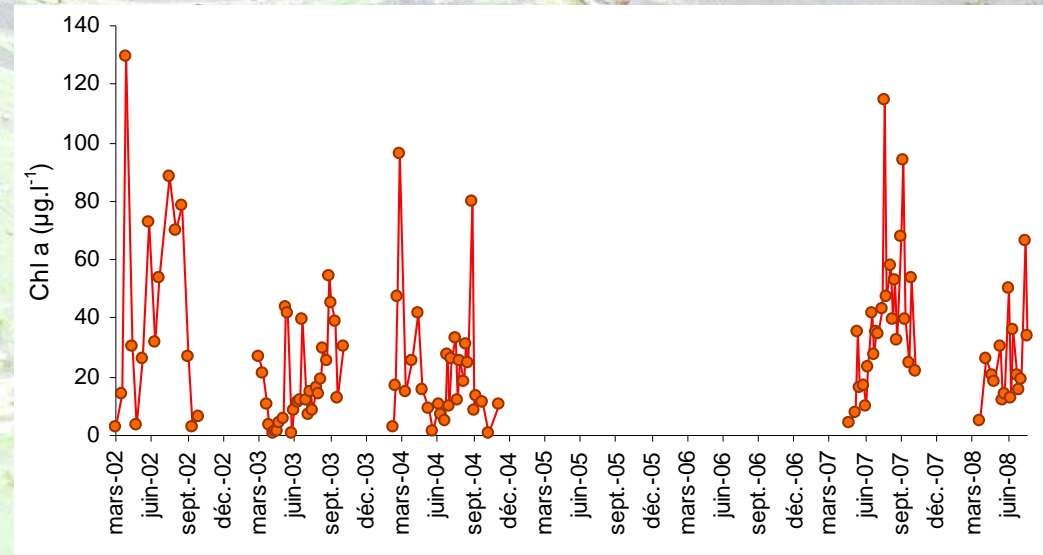
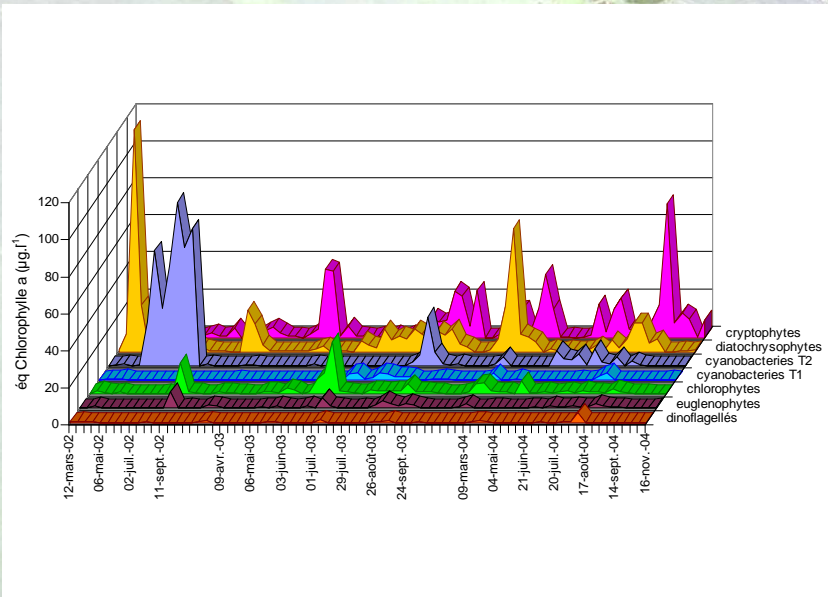
- ❑ Sampling of Falemprise Lake has taken place near the dam where the depth is maximal (5 m). It started at the beginning of May and extended to late October in 2007; samples were taken weekly (24 samples). In 2008, sampling began in April, at different depths, as this lake stratifies from late spring to early autumn
- ❑ All parameters are being measured according to a standard protocol used by all partners; weather data are acquired in situ with a meteorological station and irradiance is recorded with a surface LICOR sensor connected to a data logger
- ❑ Limnological profiles are acquired using a YSI 6600 or Hydrolab DS5 multiprobe.

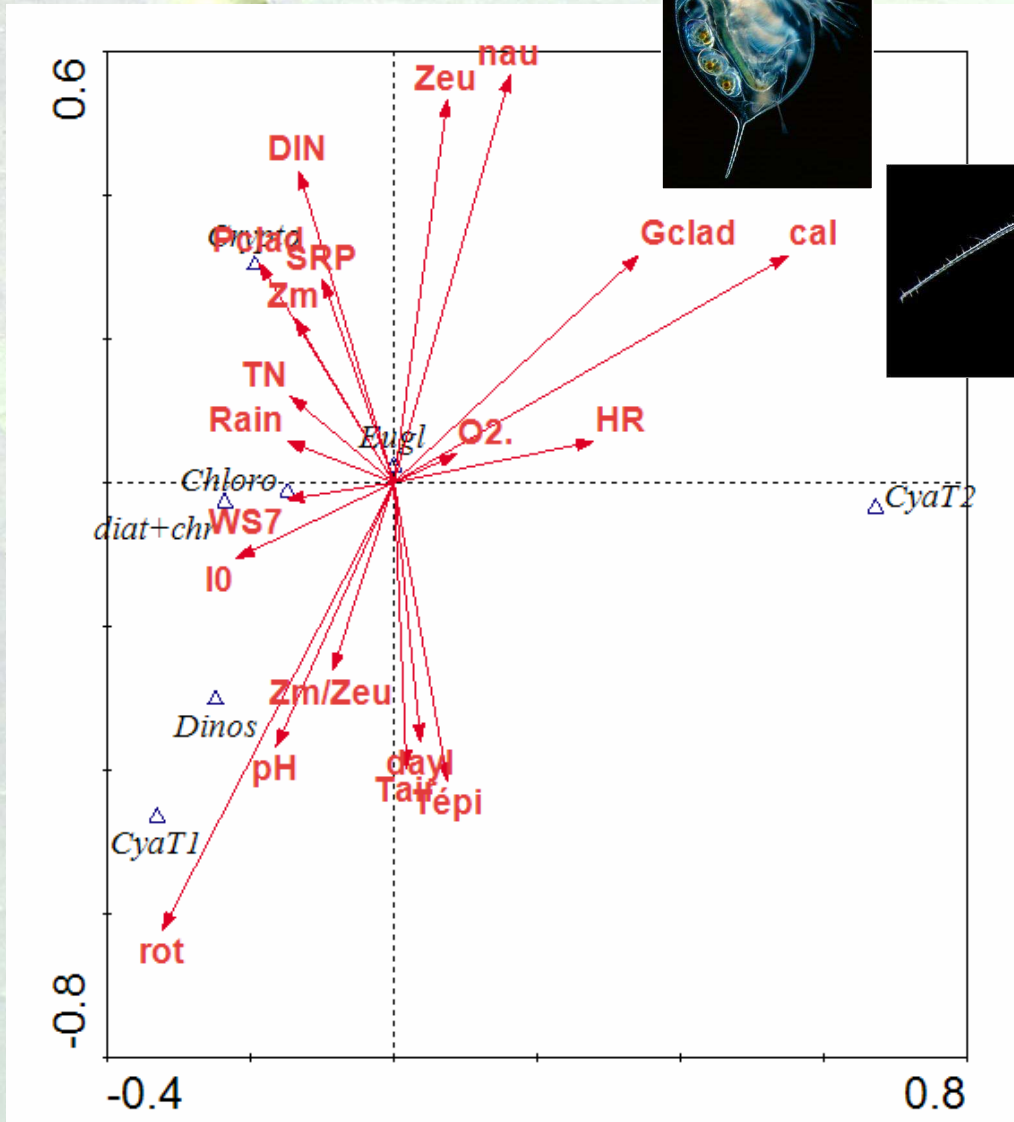




Other taxa present in the samples : *Microcystis aeruginosa*, *Anabaena* sp and *Limnothrix* sp, with *Gomphosphaerium* sp and *Aphanocapsa* sp more sporadically. In 2008, no *Planktothrix*, but *Microcystis*

- Compared to 2002 - 2004, no large cyanobacteria bloom occurred in 2007 - 2008
- This could be related to the poor weather conditions of the summer 2007 (maximum mean weekly air temperature 18,5 °C , maximum water temperature 21,9 °C on June 16
- This contrasts with earlier reports on the same lake (Verniers & Sarmiento 2004), which recorded a maximum of 27,2 °C





The data analysis using CCA shows (as expected) a significant effect of large zooplankton on phytoplankton structure and on cyanobacteria abundance

Other techniques will be used for developing bloom prediction models, based on the data from all teams

CCA on Falemprise data (2003-2008)

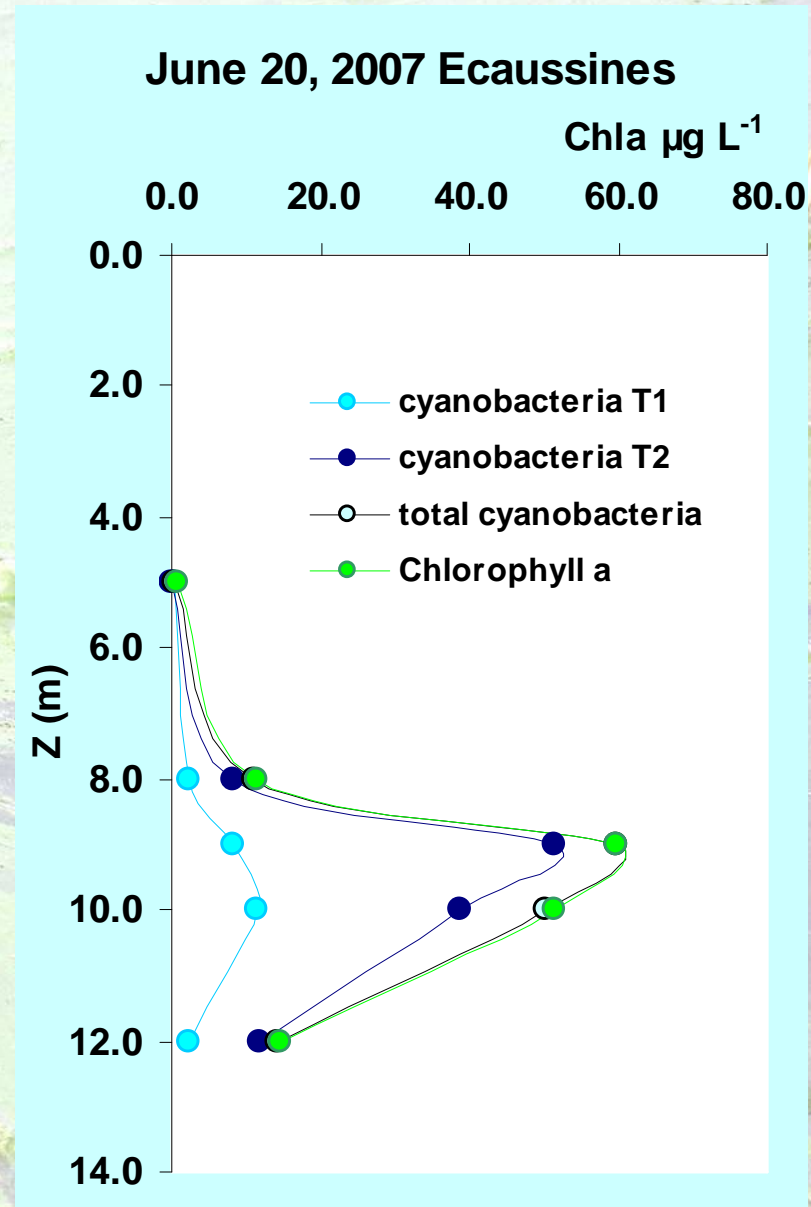
BLOOMNET in Wallonia

- The network was essentially based on the follow-up of swimming areas authorized in Wallonia and surveyed by the Walloon Region (DGRNE – Direction des Eaux de Surface).
- ISSeP (Institut Scientifique des Services Publics), sampled the official swimming areas once a week, and included counting of cyanobacteria in the regular survey.
- In 2007, only one significant *Microcystis* bloom was recorded on 28 August in the Lake Chérapont near Gouvy
- In 2008, important blooms were recorded in Lake Bambois (*Anabaena*), in Lake Virelles (*Anabaena*, *Microcystis*, *Planktothrix*), in Lake Féronval (in October, till last week!)



There may have been more blooms than those recorded ...

→ This calls for an activation of BLOOMNET in phase 2



Detection of a deep *Planktothrix* bloom, based on pigment analysis