



The impact of drought upon reservoir phytoplankton blooms

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Drought and water stress

- Drought restricts water quantity
- Stresses related services e.g. human, ecological
- However, water quality is often not considered



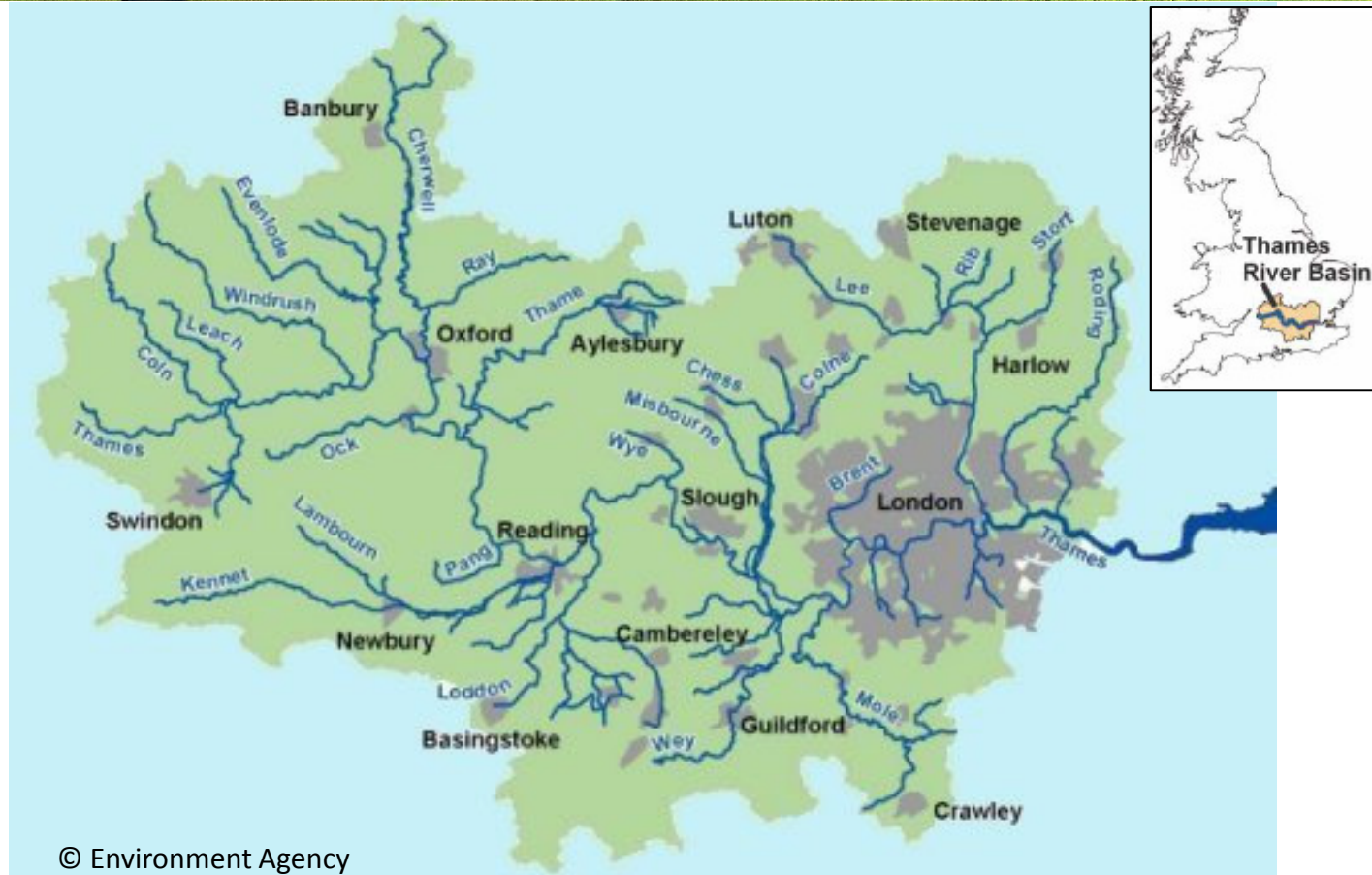


The study

- To investigate the impact of drought on a reservoir in the Thames catchment
- Model 3 periods of time: present, near future and far future



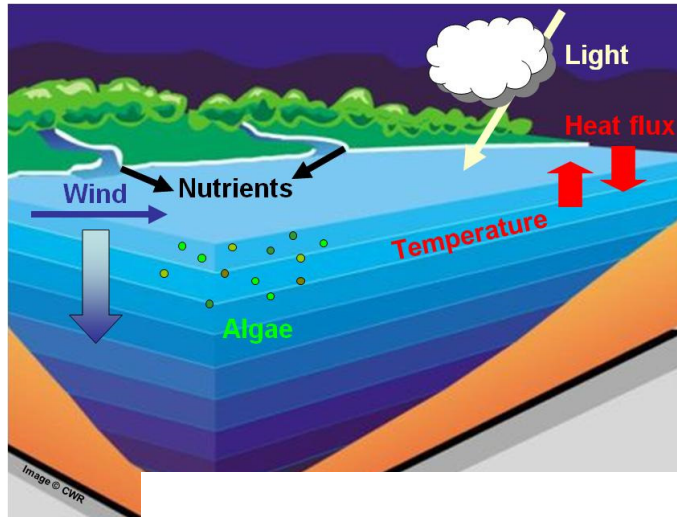
The Thames catchment



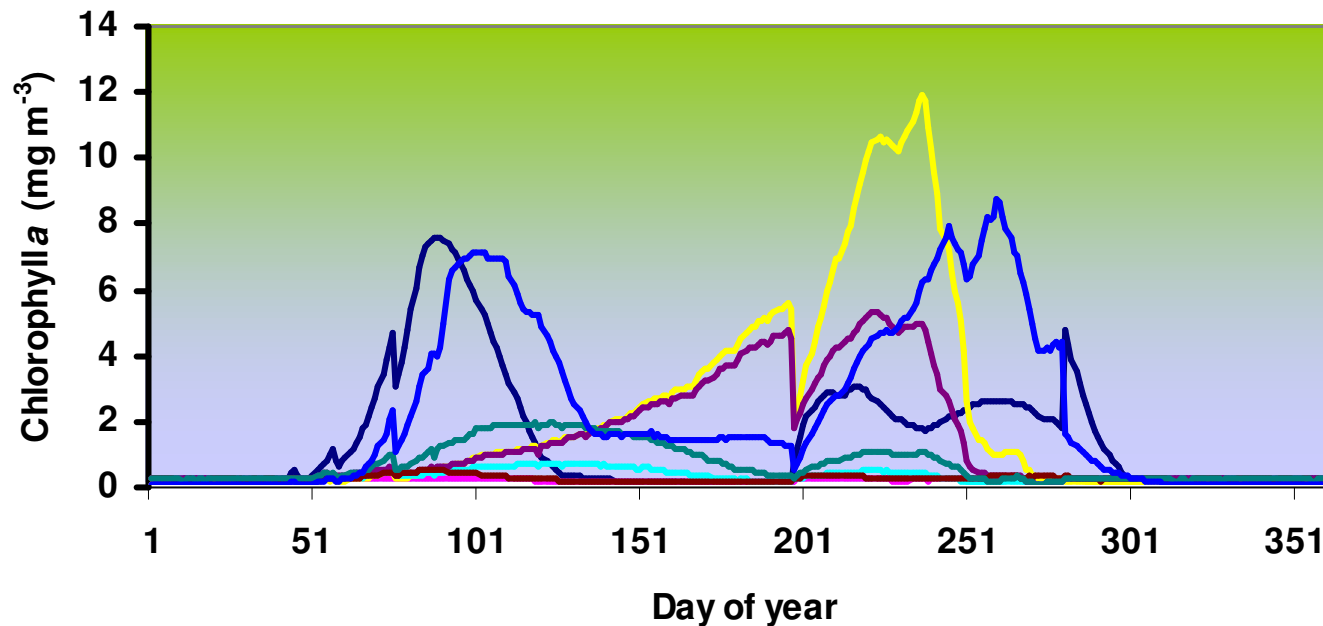
- 13 million people use its water (c. 1/5 UK pop.)

The model: PROTECH

(Phytoplankton Responses To Environmental Change)

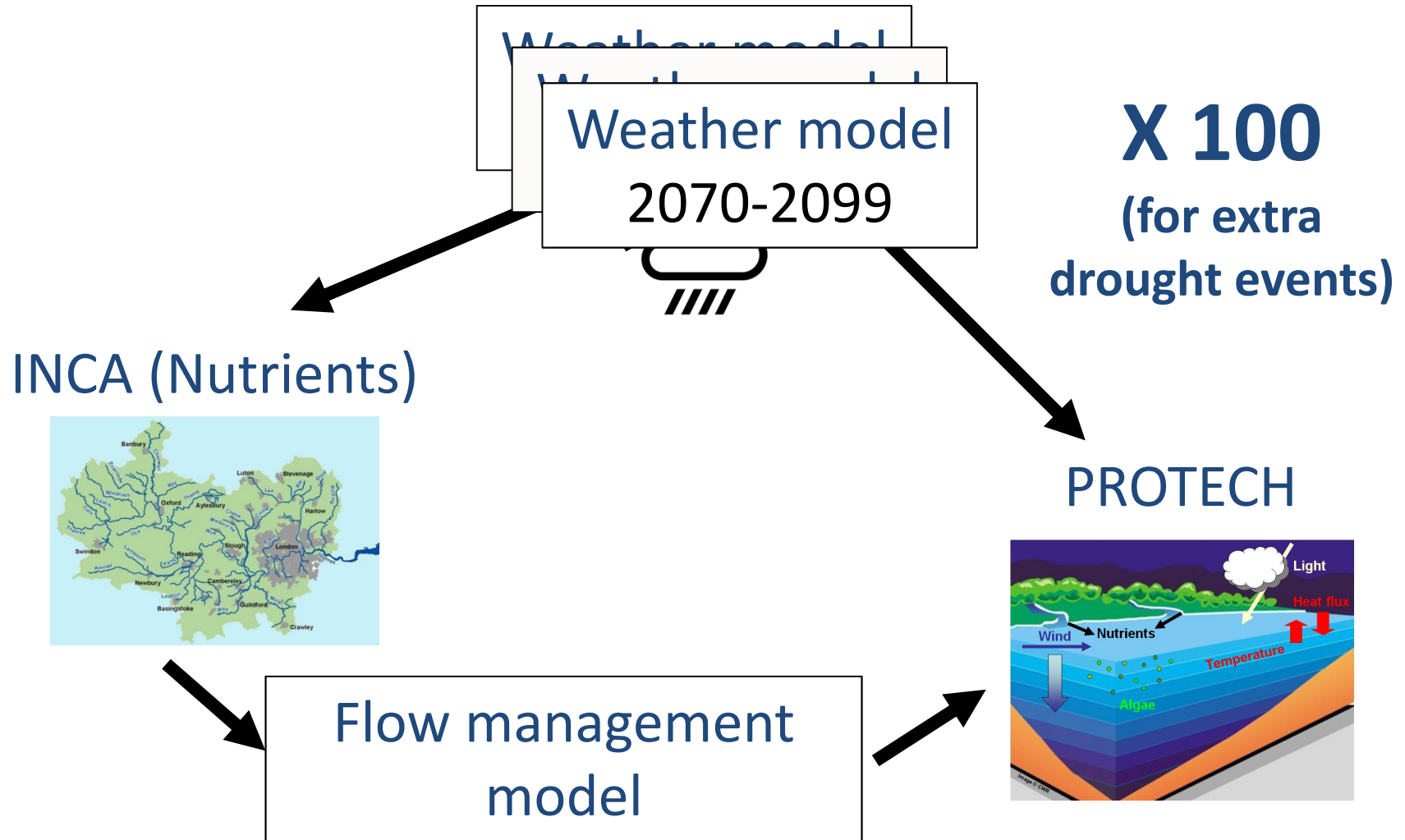


- Up to 8-10 phytoplankton species
 - 1 zooplankton group
- Model eutrophic reservoir
13 m deep





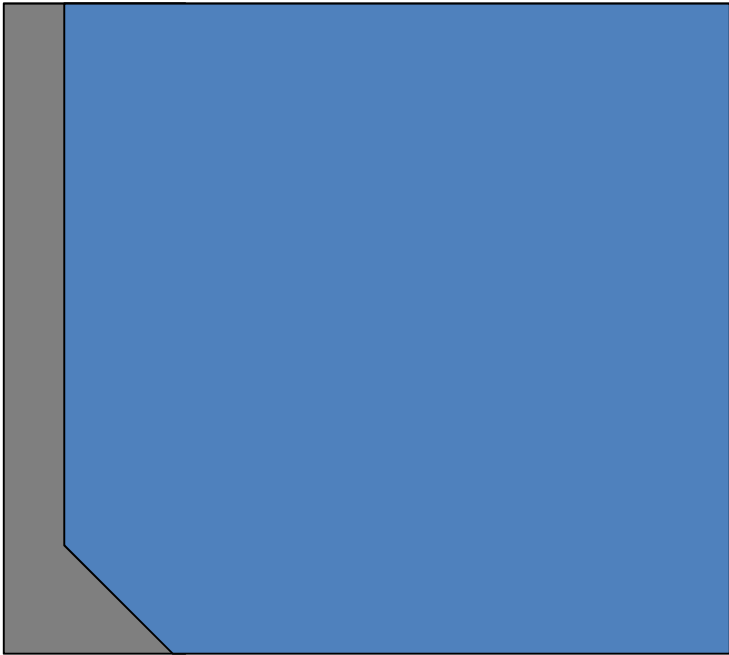
The modelling method



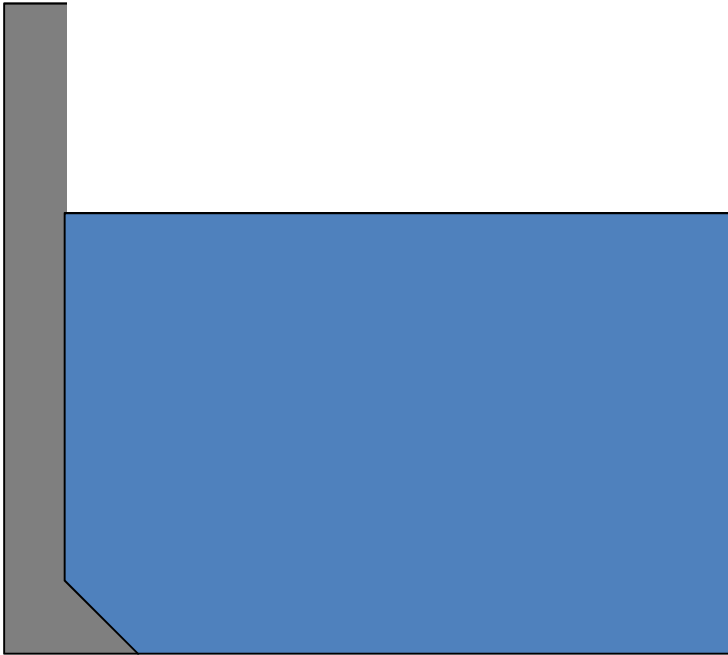
Plus: With drawdown & no drawdown
18,000 years of data



No drawdown



Drawdown



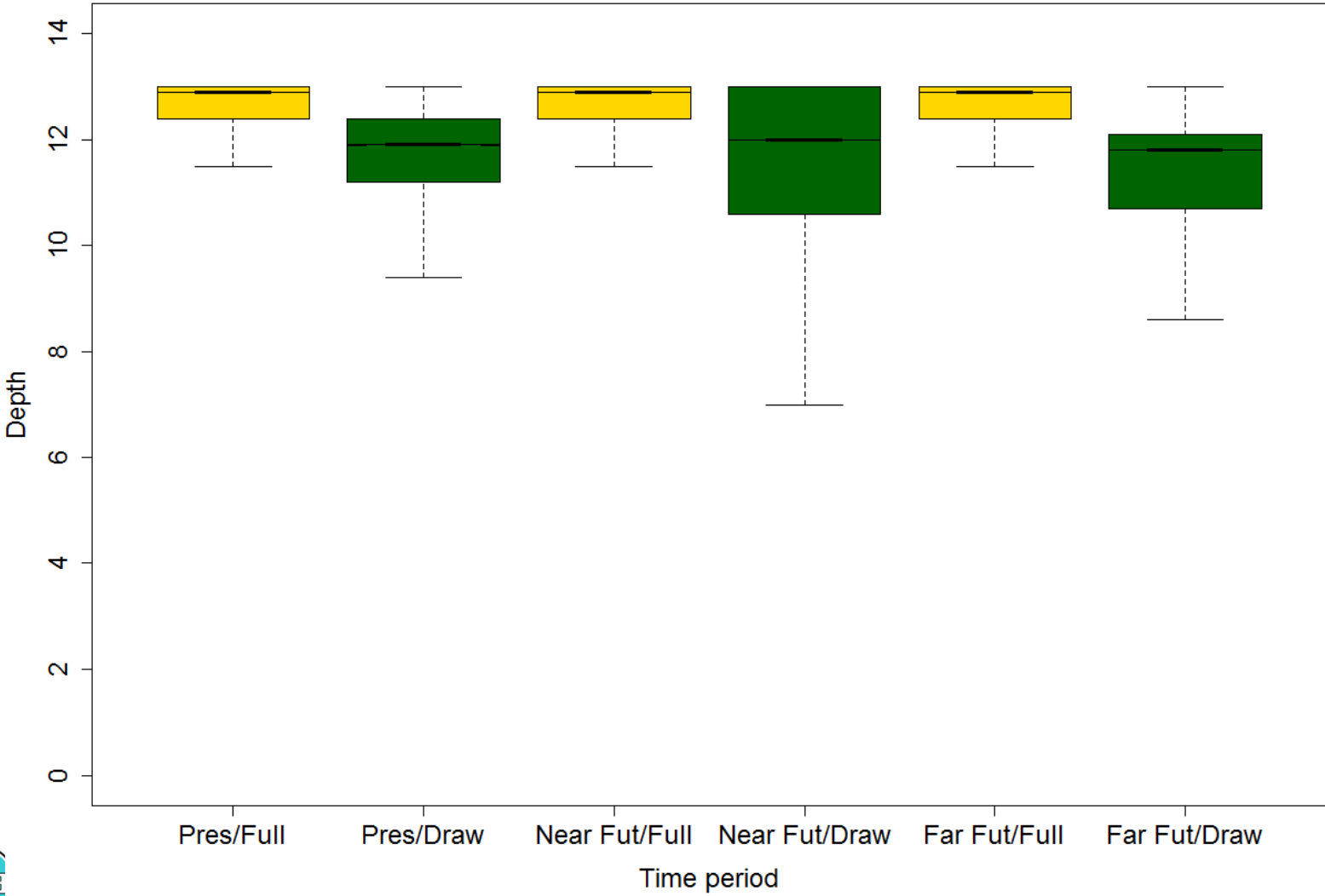


Results: Reservoir depth

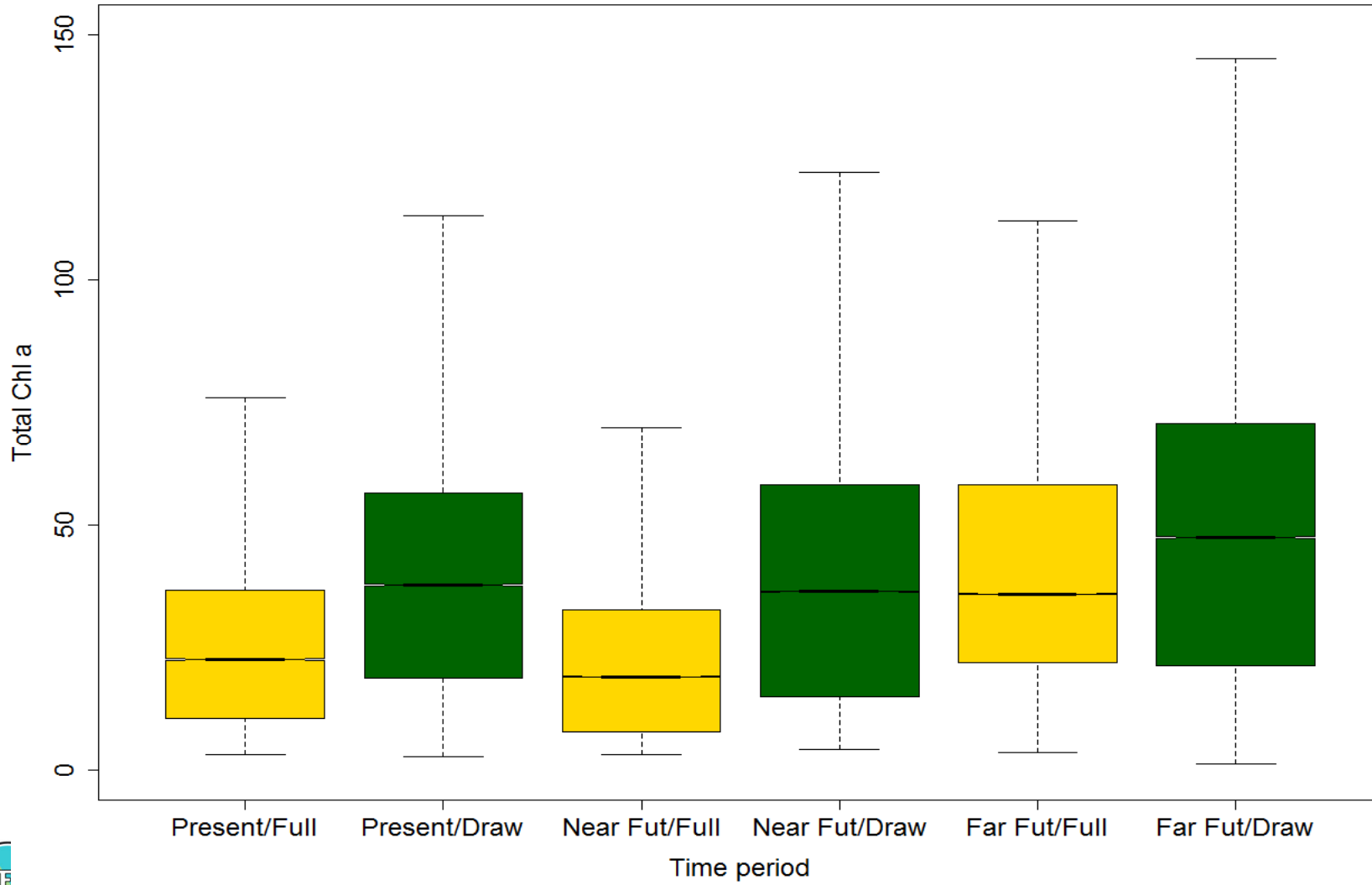
Drawdown (<10m): 4.2%

21.0%

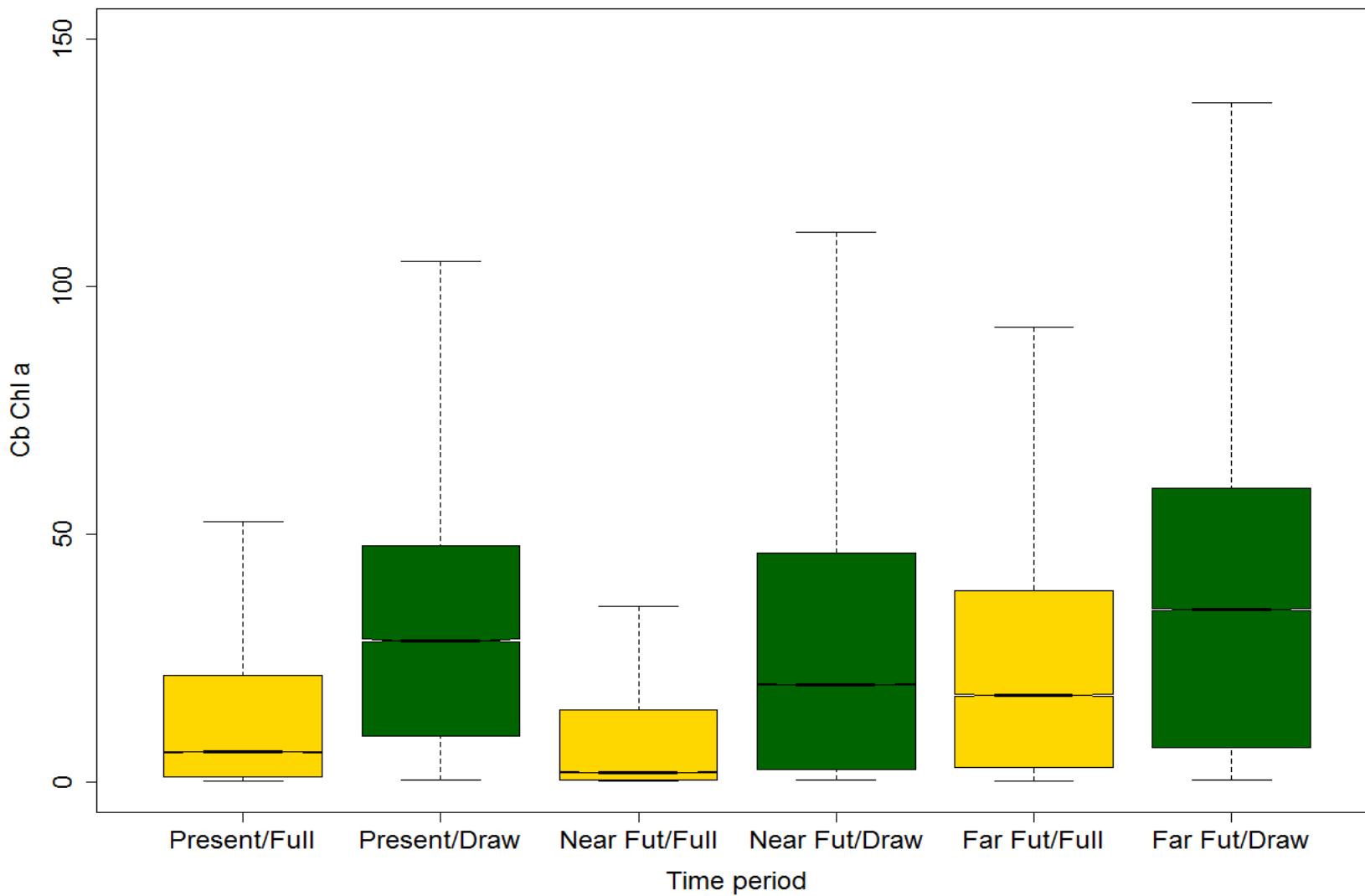
20.0%



Drawdown focus: all phytoplankton



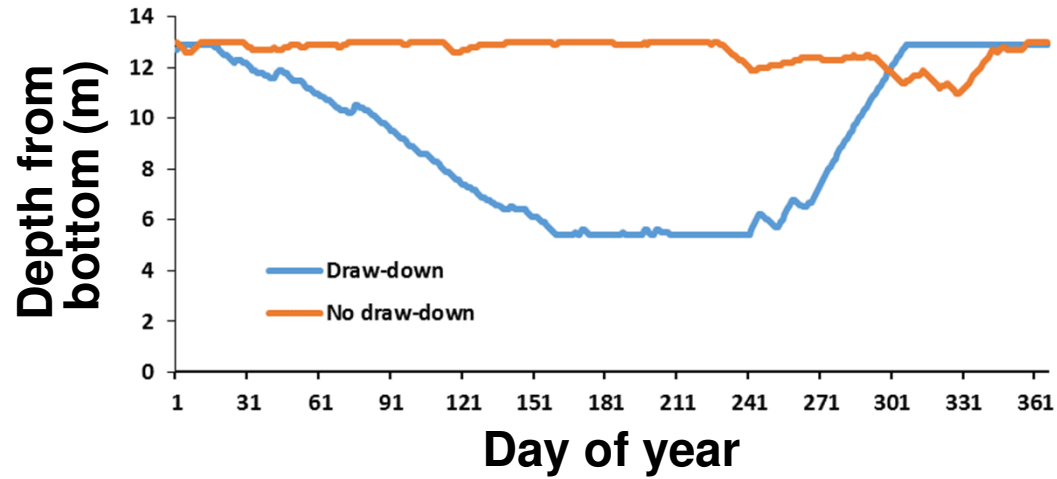
Drawdown focus: Cyanobacteria



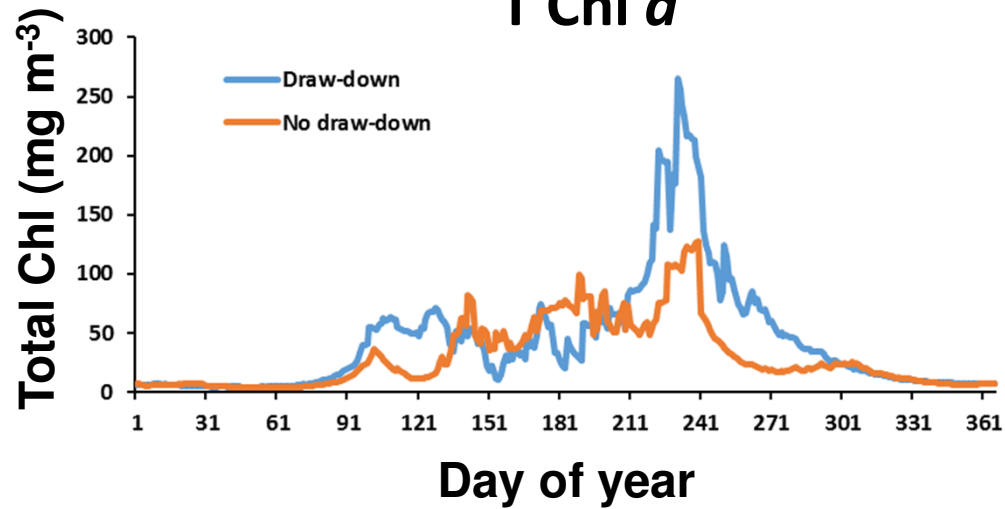


Drawdown impact

Reservoir depth



T Chl *a*





- Droughts will be more frequent in the future
- Reservoir water quality deteriorates more during droughts
- Drawdown of the reservoir increases this effect



- Thank you! Any questions? (alexe@ceh.ac.uk)