

# Mesocosm Taste and Odour experiment

Feuchtmayr et al (see later)

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# Taste and Odour mesocosm experiment



EU network of mesocosms facilities for research on marine and freshwater ecosystems open for global collaboration.



Advisor:



Roo Perkins

# What is Taste and Odour?

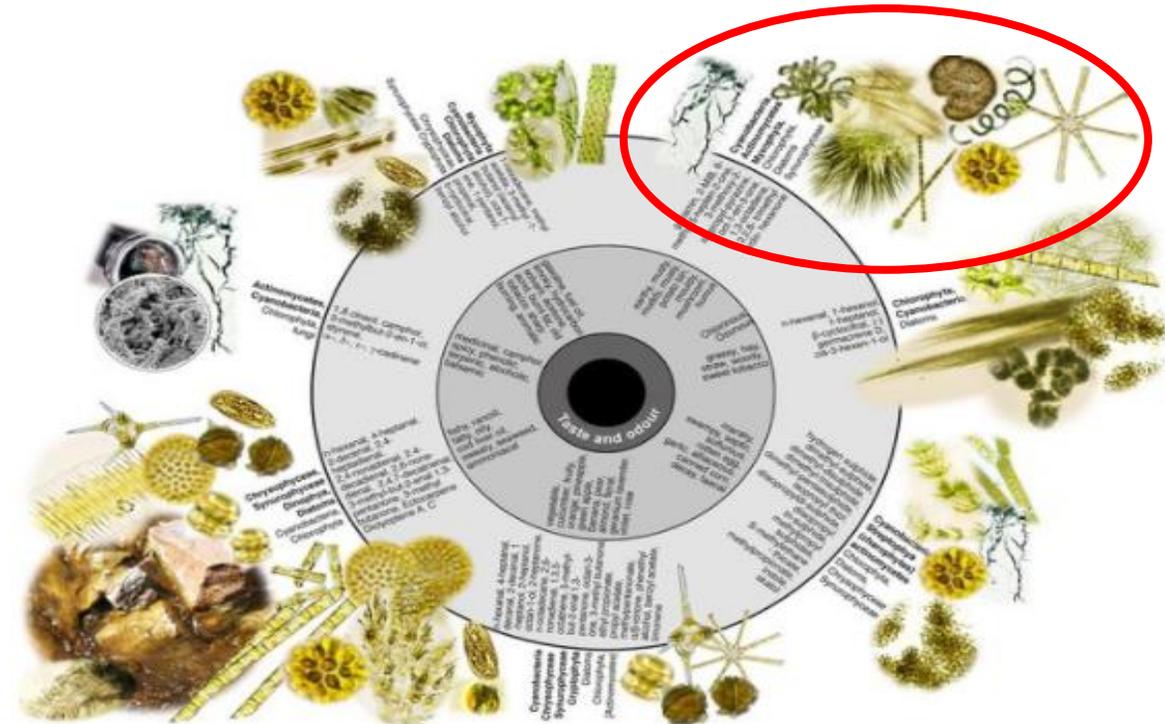
**Geosmin and 2-Methylisoborneol (MIB):** Musty and earthy T&O;  
Humans can detect at very low concentrations (5-10 ng/l) ;  
Costly treatment



Source: <https://www.waterlogic.com/en-us/resources/water-problems/>

**BUT: we do not know what factors cause T&O events**

-> understand the role of N and P in algal community structure and T&O formation

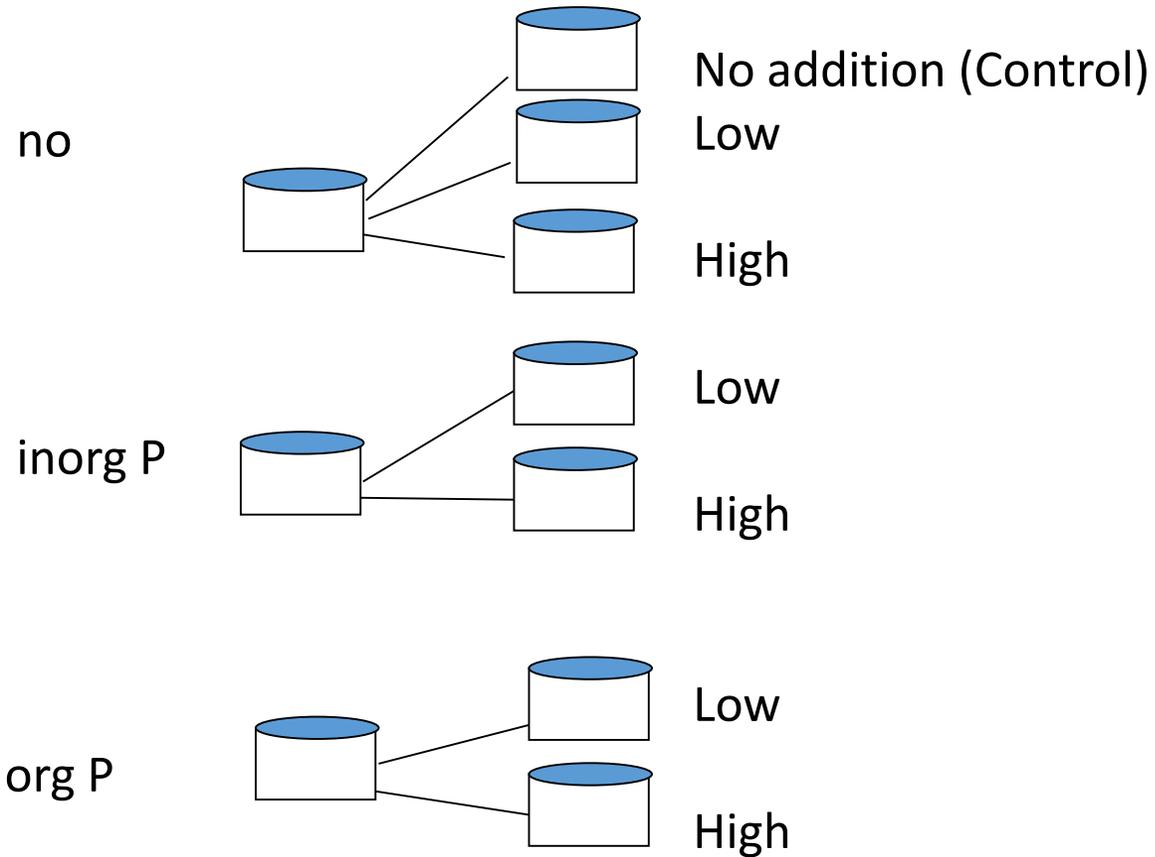


Source: Lin T-F, Watson S, Dietrich AM, Suffet M (2019) Taste and Odour in Source and Drinking Water: Causes, Controls and Consequences. <https://doi.org/10.2166/9781780406664>

# Treatments

P additions (weekly)

Ammonium/nitrate ratio



4 replicates -> 28 tanks

# How does AQUACOSM-plus work?

- An infrastructure project: partners (UKCEH) provide the mesocosm infrastructure
- International researchers can apply for TA (Transnational Access) and work on the experiment



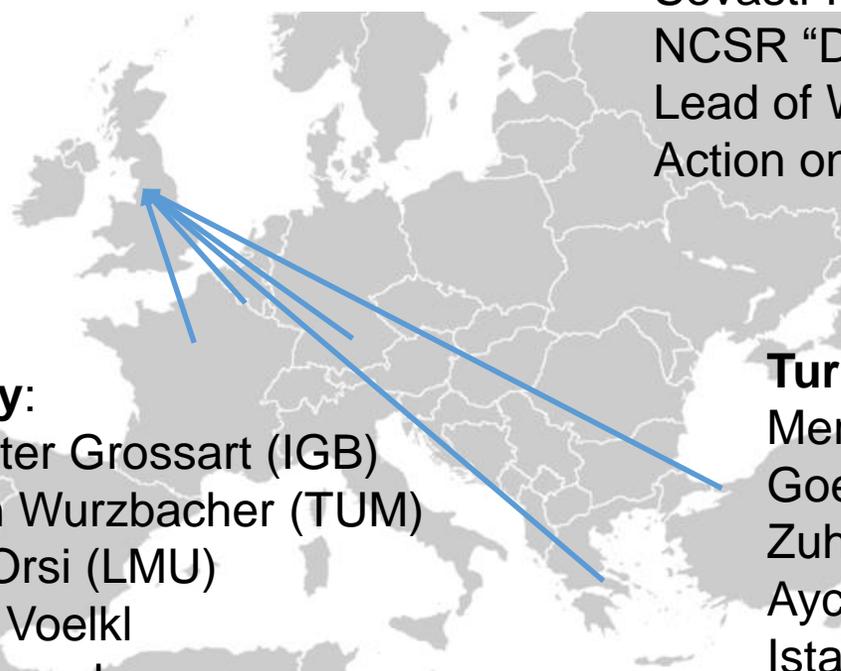
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### Water taste and odor (T&O): Challenges, gaps and solutions from a perspective of the WaterTOP network

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# Sampling during the experiment

## TA researchers

1. Belgium: zooplankton abundance and microbiome
2. Germany: oxic methane measurements
3. Greece/France/Turkey: quantification of Geosmin and MIB, bacteria, actinobacteria and cyanobacteria; cyanobacteria toxins, algal ID



## UKCEH

Water temperature, solar radiation, pH, O<sub>2</sub>, TP, TN, TON, ammonia, SRP, viruses (analysed by Jozef Nissimov, University of Waterloo), chlorophyll a, cyanobacteria chlorophyll, and more.

## Cardiff

eDNA, metagenomics

# How did it go?

- First sampling beginning of July – weekly sampling until end of September
- P and N treatments well established
- Algal growth variable, Geosmin and 2MIB detected



# What next?

- Analysis of samples and data ongoing over the next months
- Regular meetings with TA users and water companies
- Report for Water companies
- Scientific papers
- TA call for 2023

# Thanks to

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- Dan Harvey



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