



Water quality and micro-algae in a connected river, lake and estuarine system

Rod Oliver | CSIRO Land and Water Flagship

WATER FOR A HEALTHY COUNTRY FLAGSHIP

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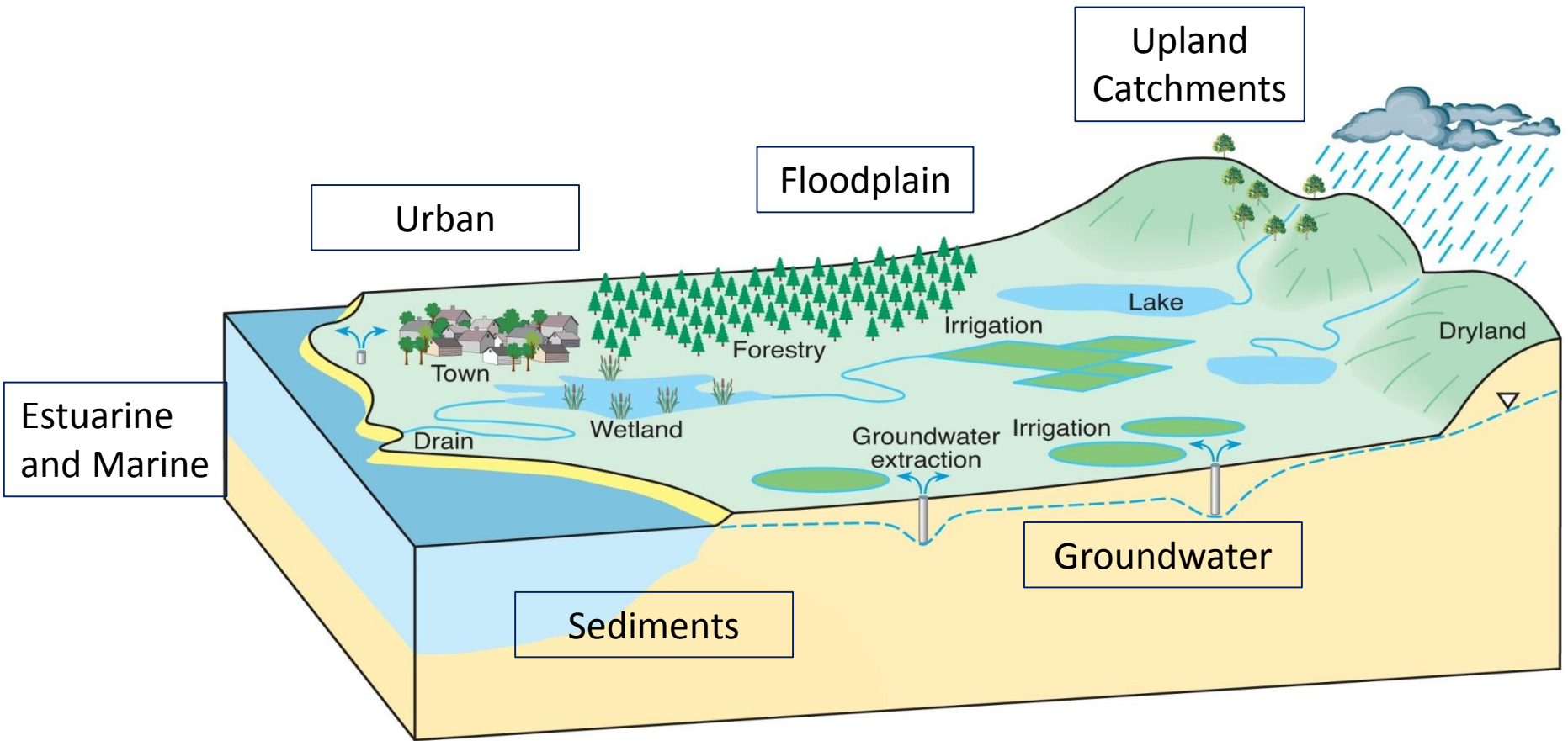
Government of South Australia
Department of Environment,
Water and Natural Resources



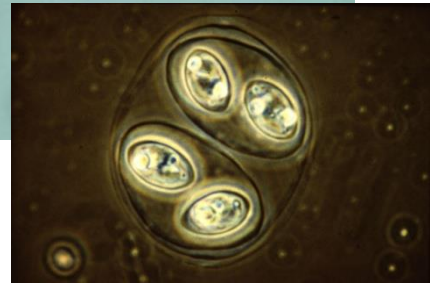
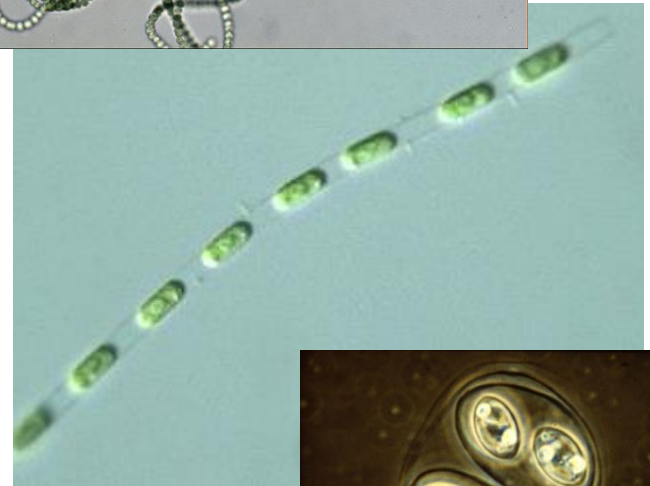
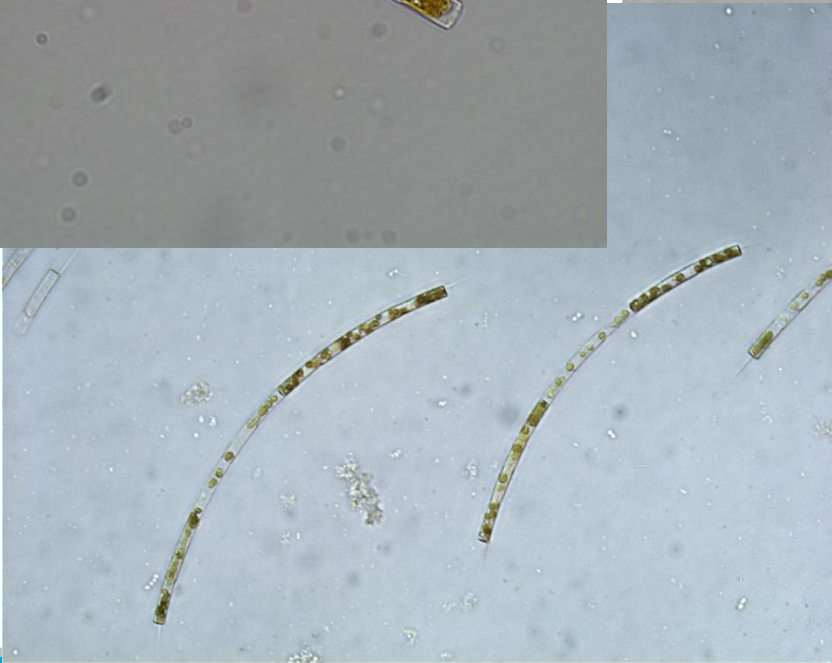
Australian Government



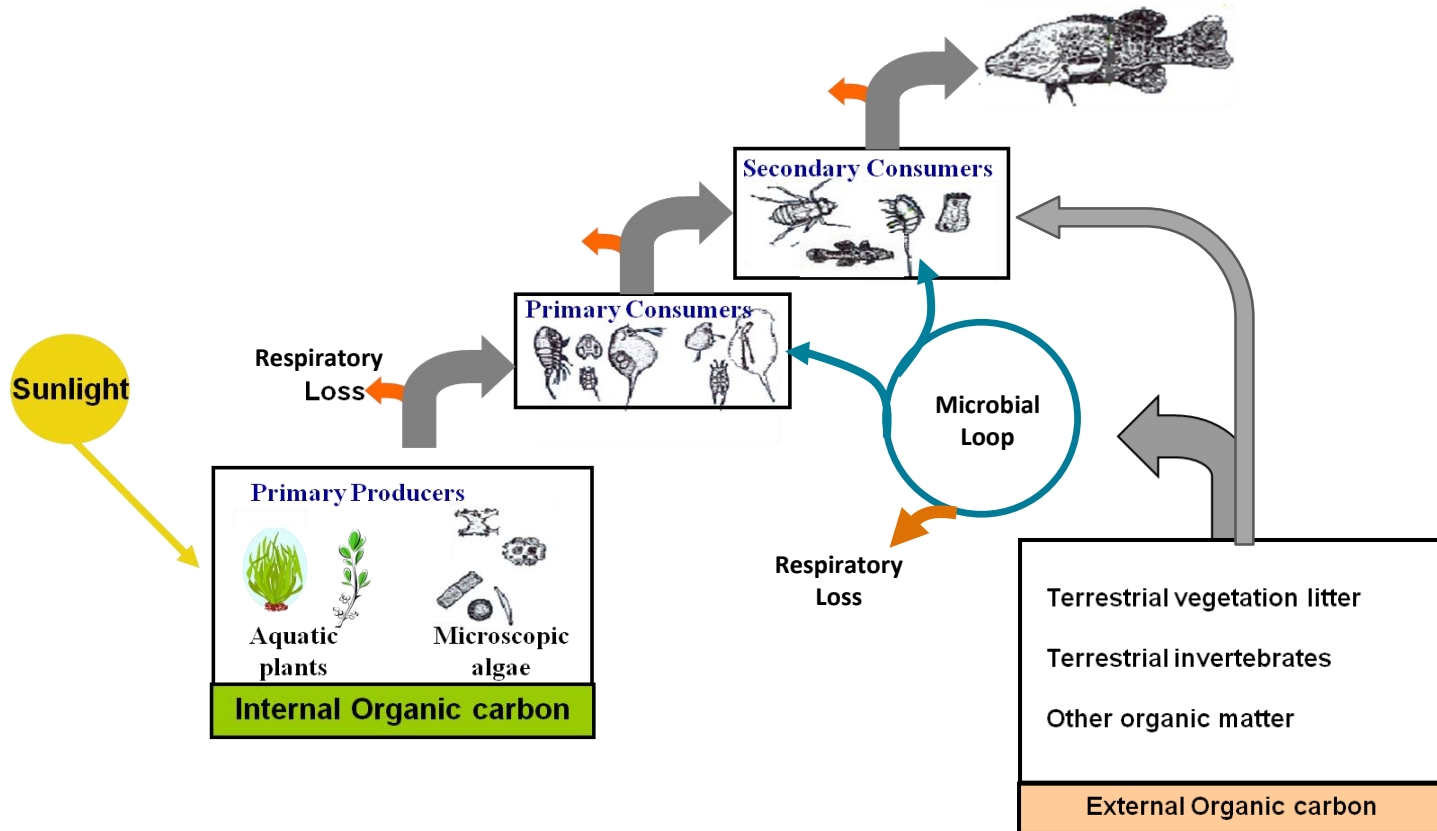
Water Quality



Micro-algae

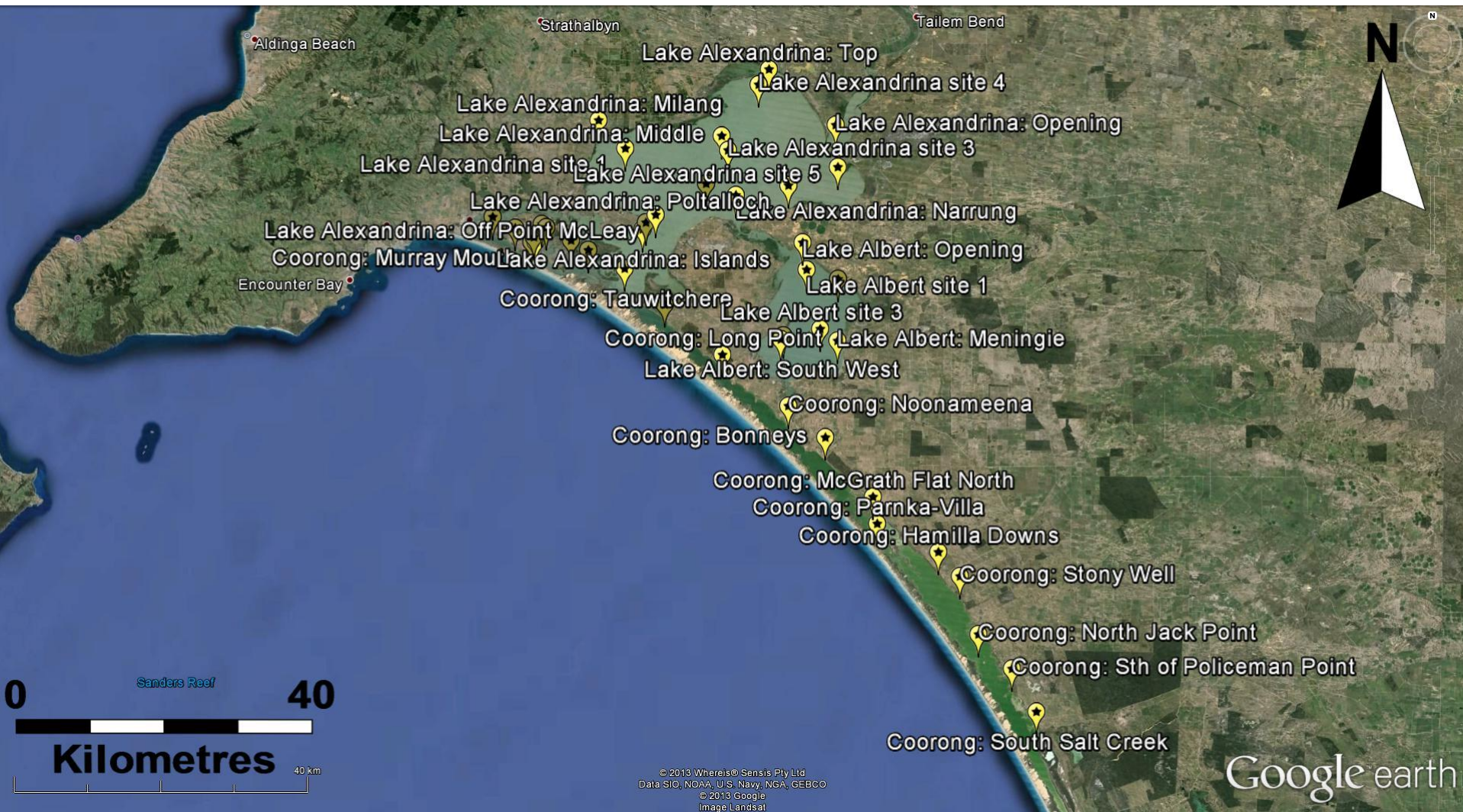


Simplified aquatic food web



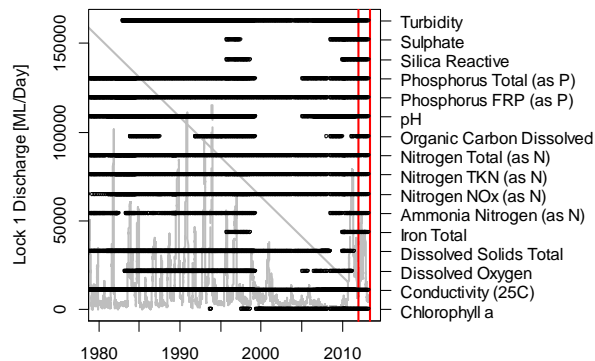
Internal material : External material
balance

Water quality monitoring sampling locations

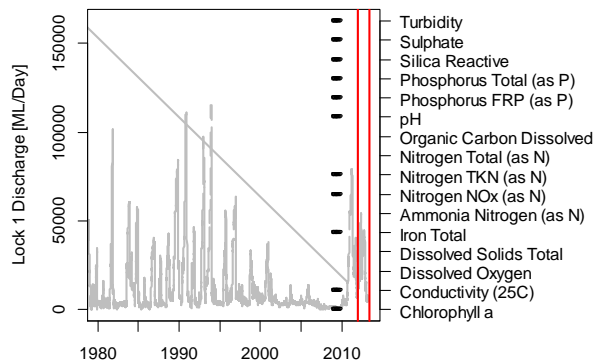


Water Quality Sampling Dates at different sites

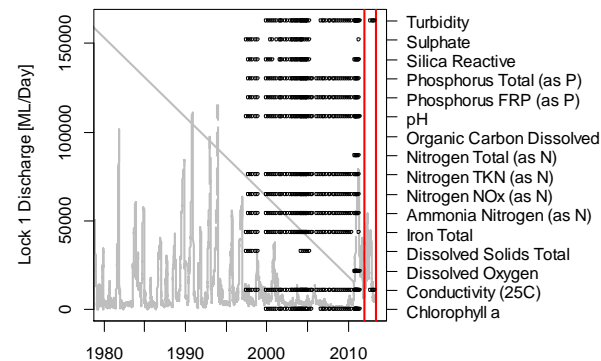
Lake Alexandrina: Milang - Dates



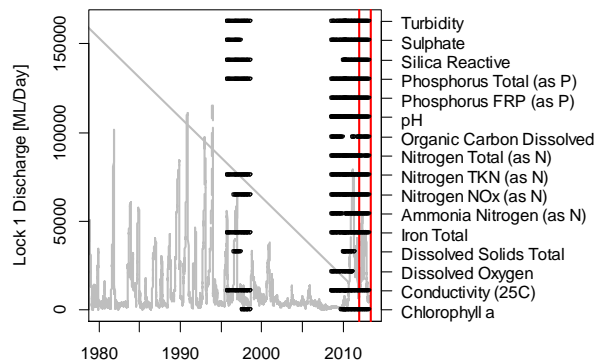
Lake Alexandrina: Beacon 90=97 - Dates



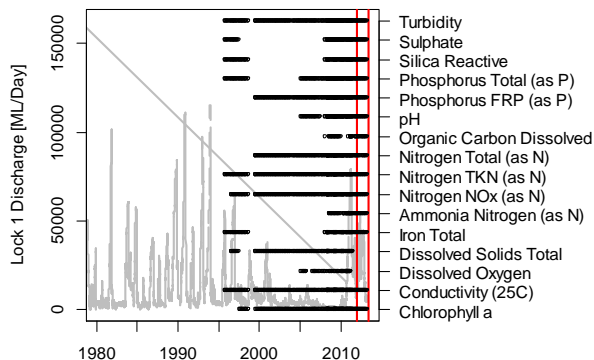
Coorong: Tauwitschere - Dates



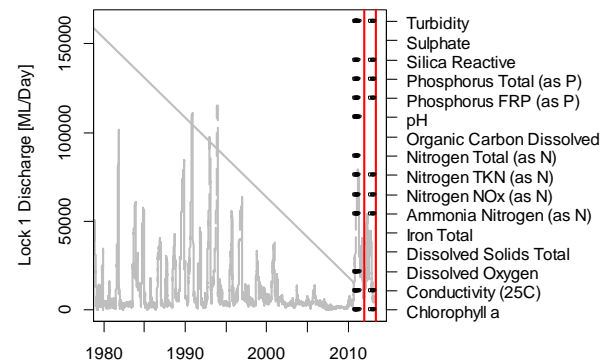
Lake Alexandrina: Middle - Dates



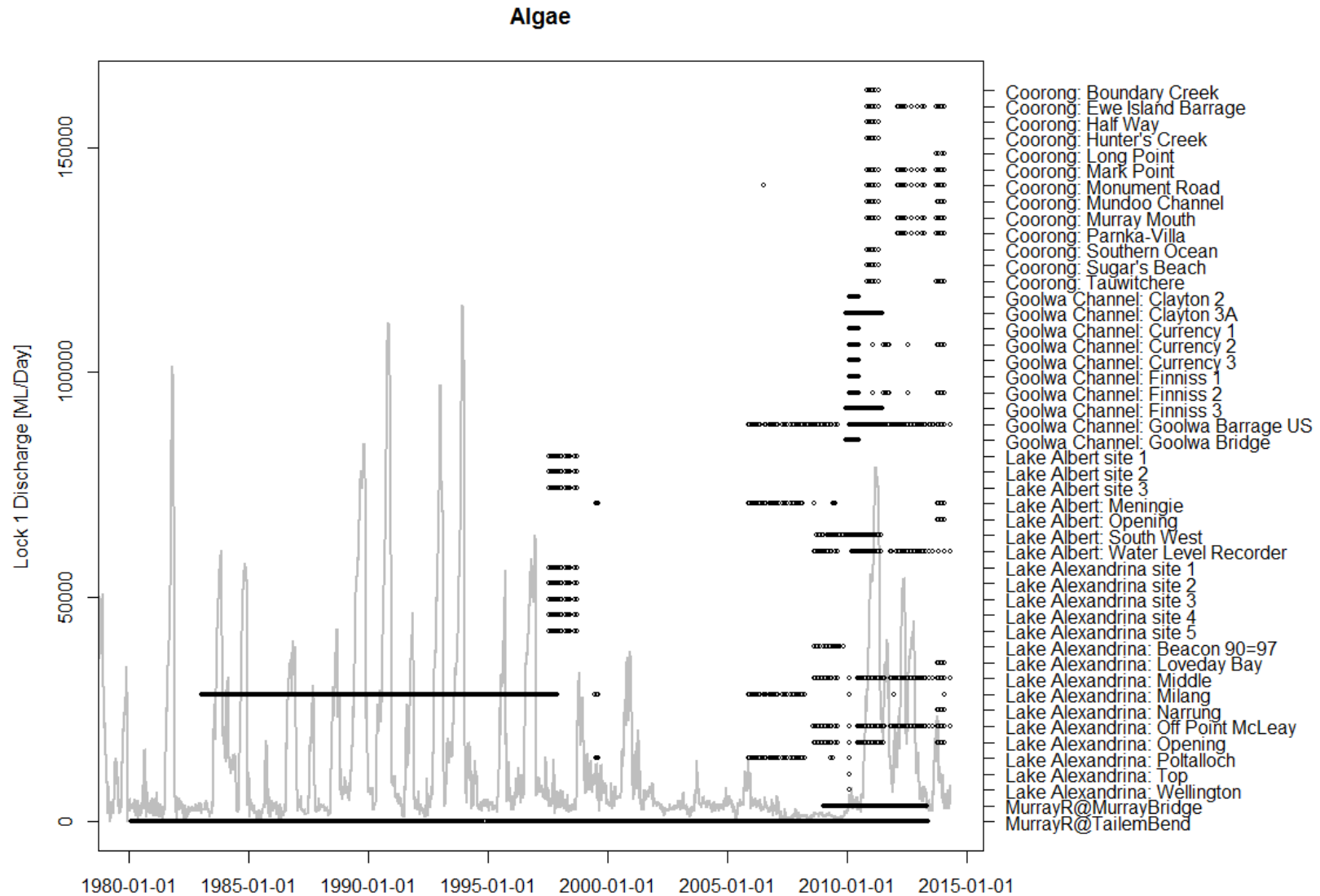
Lake Albert: Meningie - Dates



Coorong: Murray Mouth - Dates

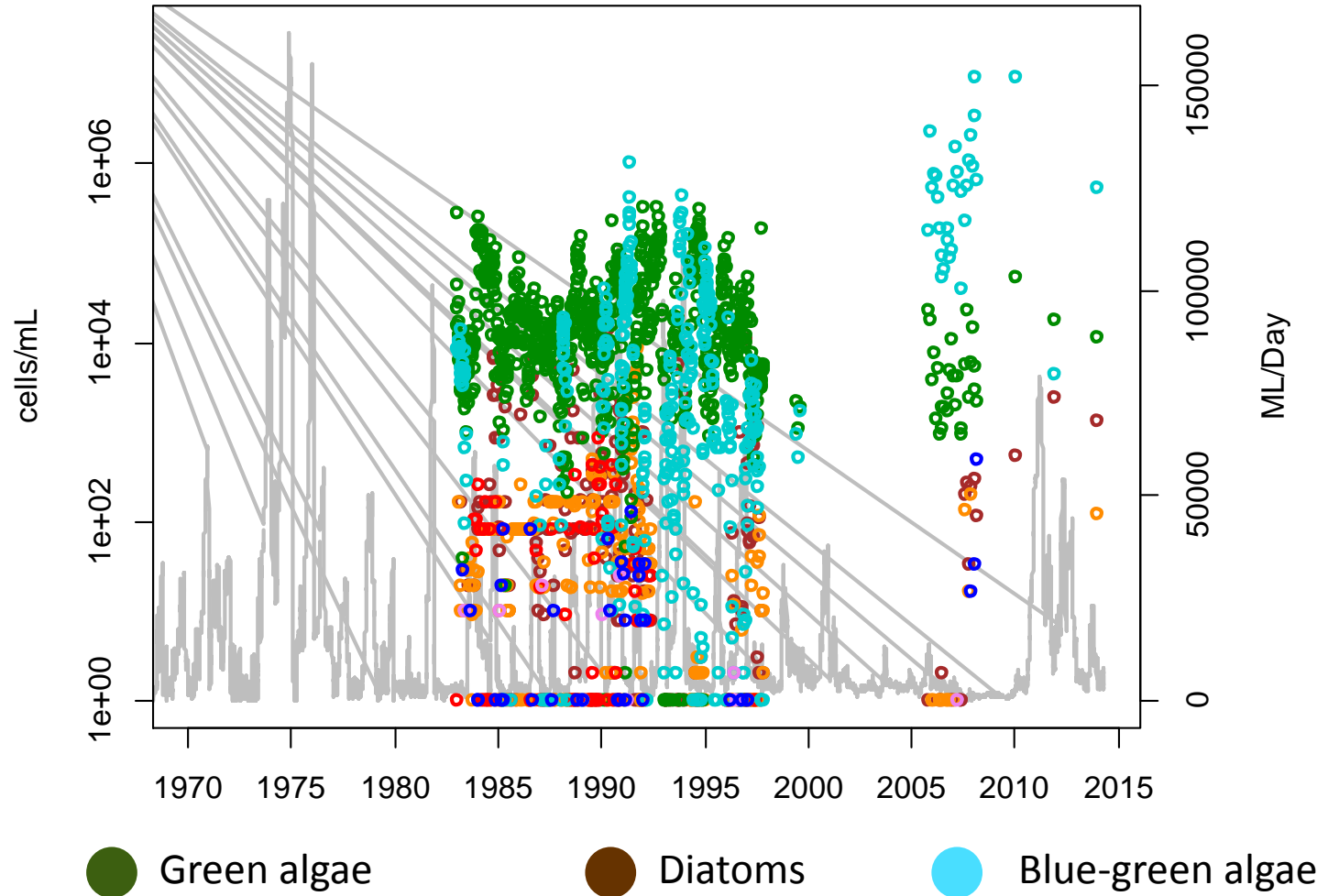


Microalgae Sampling Sites and Times



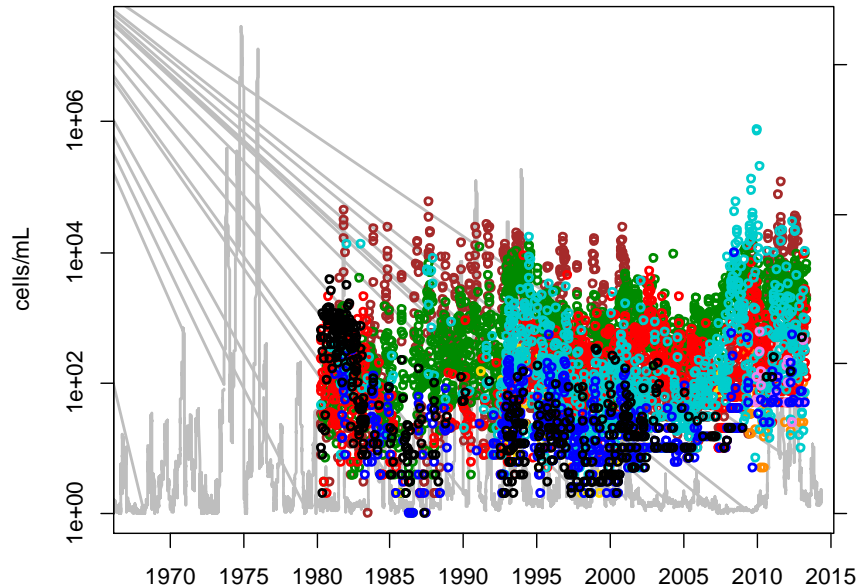
Microalgae time series for Lake Alexandrina

Lake Alexandrina: Milang

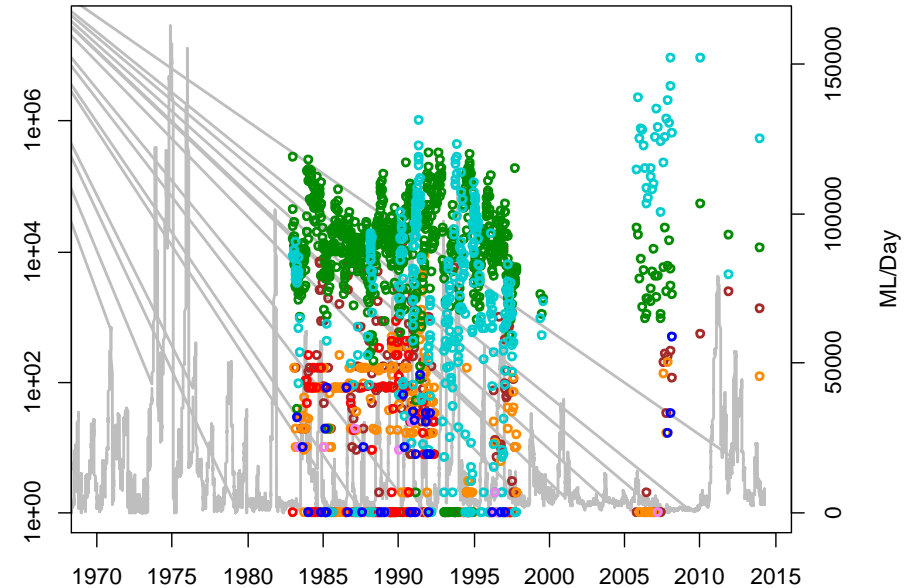


Murray River and Lake Alexandrina micro-algae

MurrayR@TailemBend



Lake Alexandrina: Milang



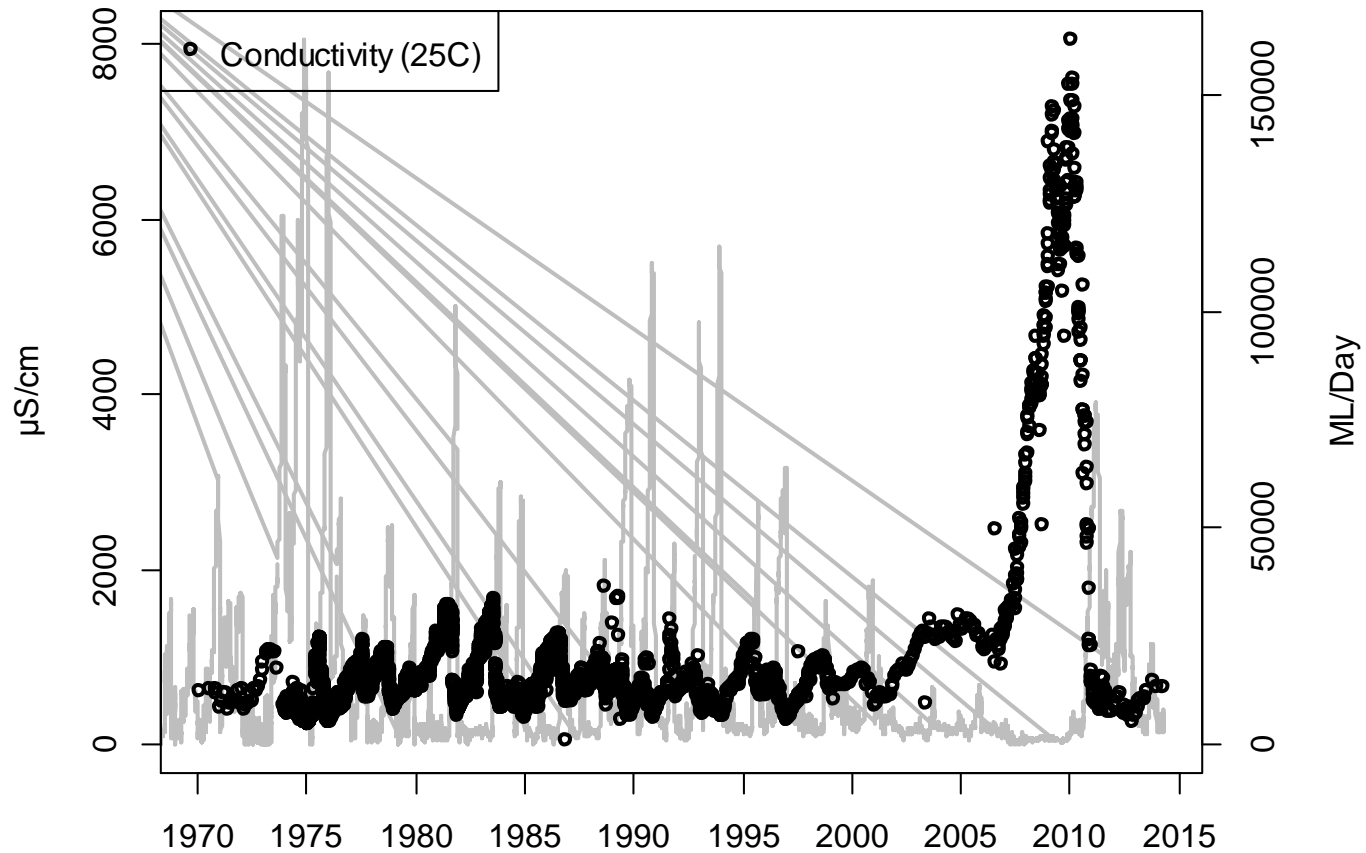
● Green algae

● Diatoms

● Blue-green algae

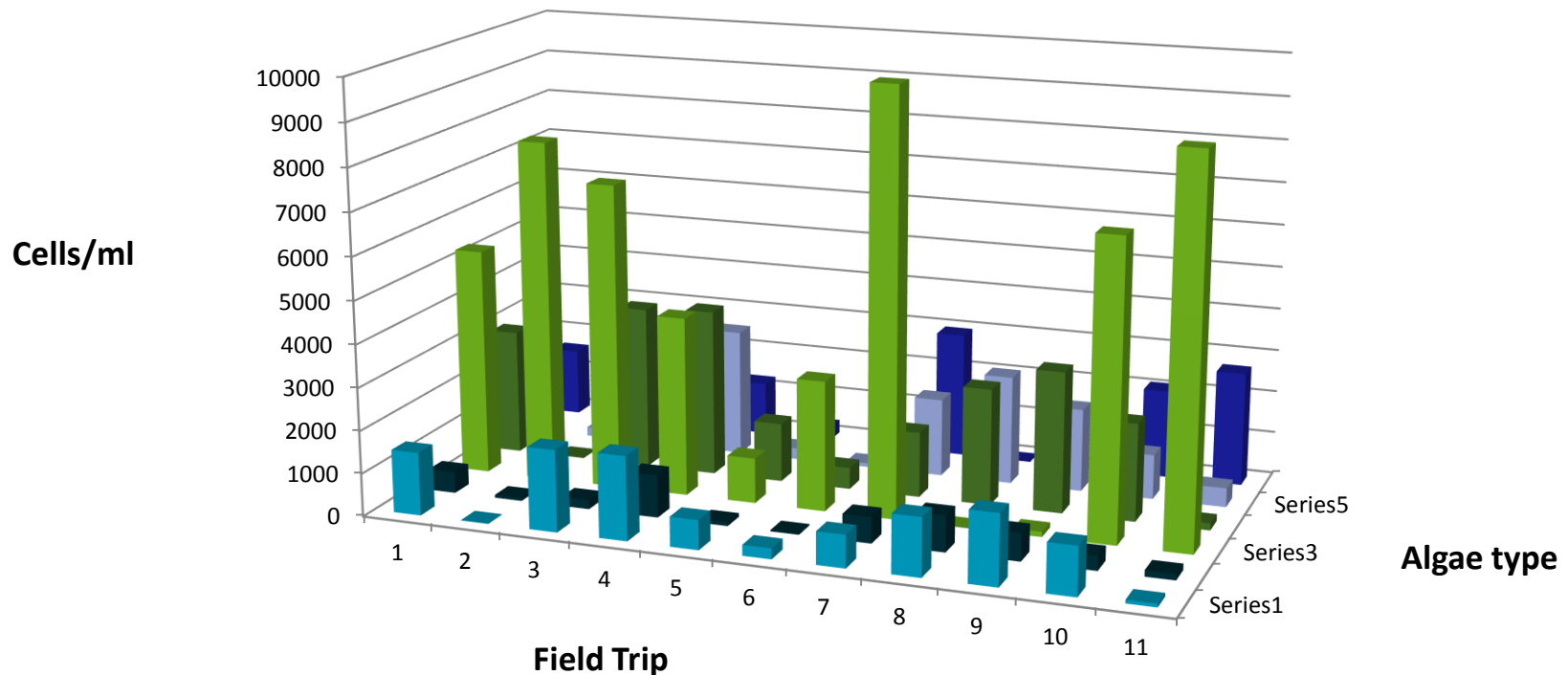
Salinity

Lake Alexandrina: Milang



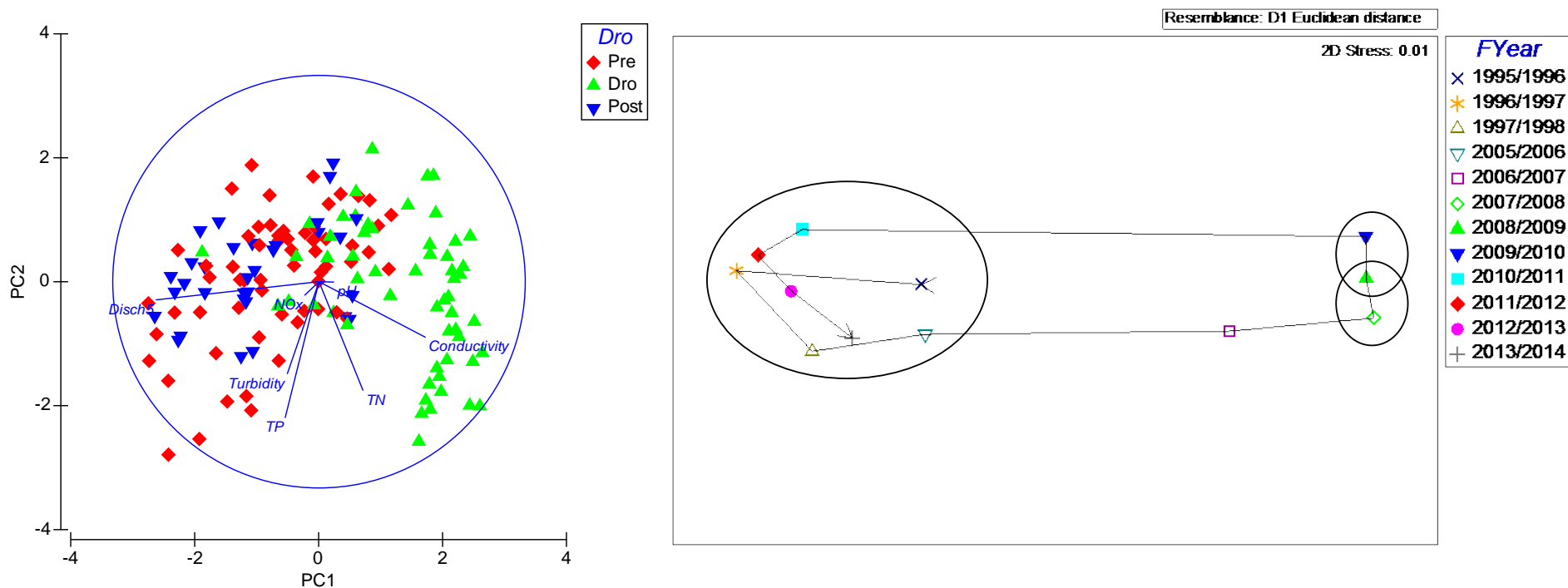
Time series:

Cell numbers of 6 micro-algae over 11 field trips



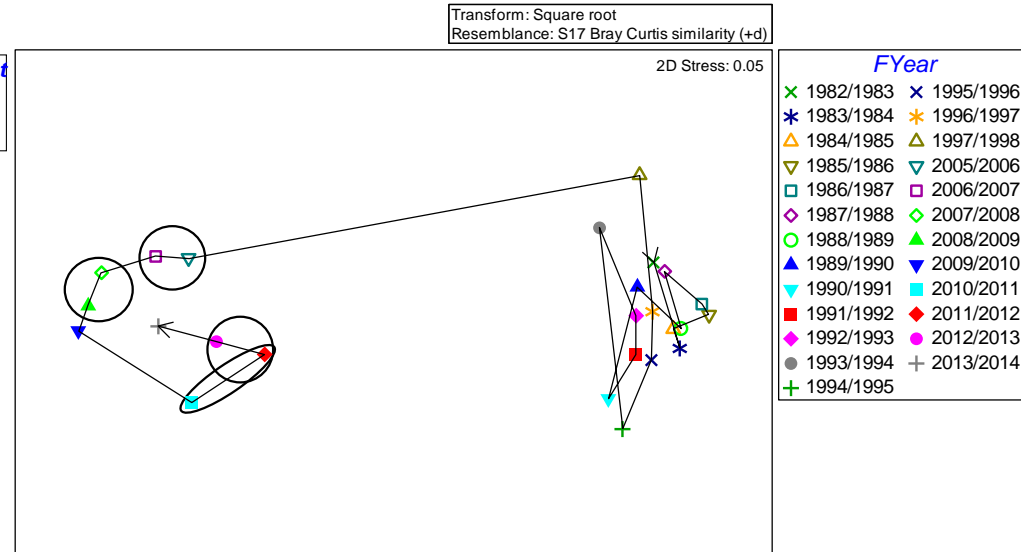
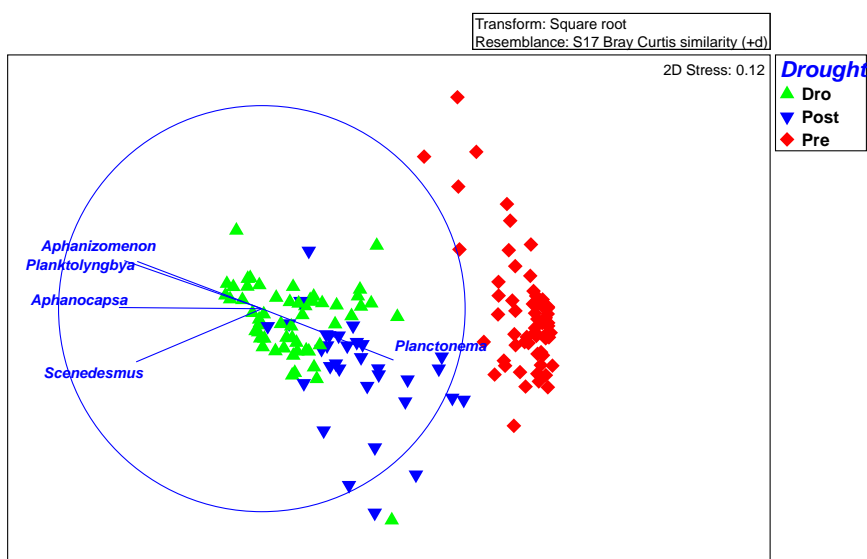
Water quality characteristics in Lake Alexandrina

Multivariate analyses



Microalgae communities in Lake Alexandrina:

Multivariate analyses



Pre-Drought: rank

- Planctonema* (green)
- Anabaena* (blue-green)
- Nodularia* (blue-green)
- Oocystis* (green)
- Dictyosphaerium* (green)

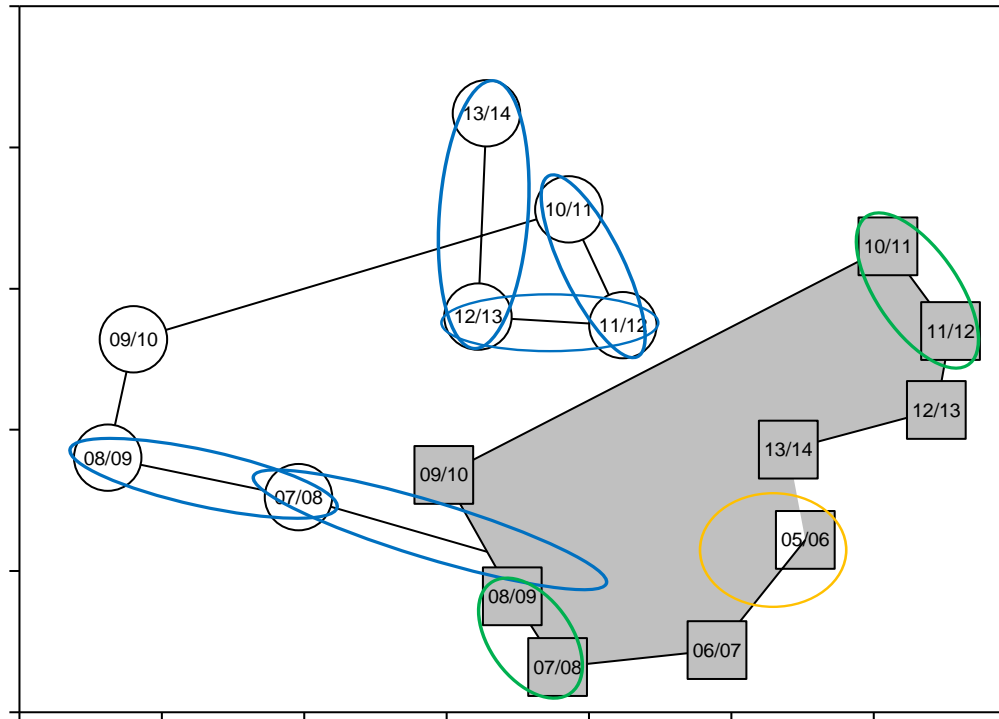
Drought: rank

- Planctolyngbya* (blue-green)
- Aphanocapsa* (blue-green)
- Aphanizomenon* (blue-green)
- Ankistrodesmus* (green)
- Pseudanabaena* (blue-green)

Post-Drought: rank

- Planctolyngbya* (blue-green)
- Aphanocapsa* (blue-green)
- Planctonema* (green)
- Crucigenia* (green)
- Oocystis* (green)

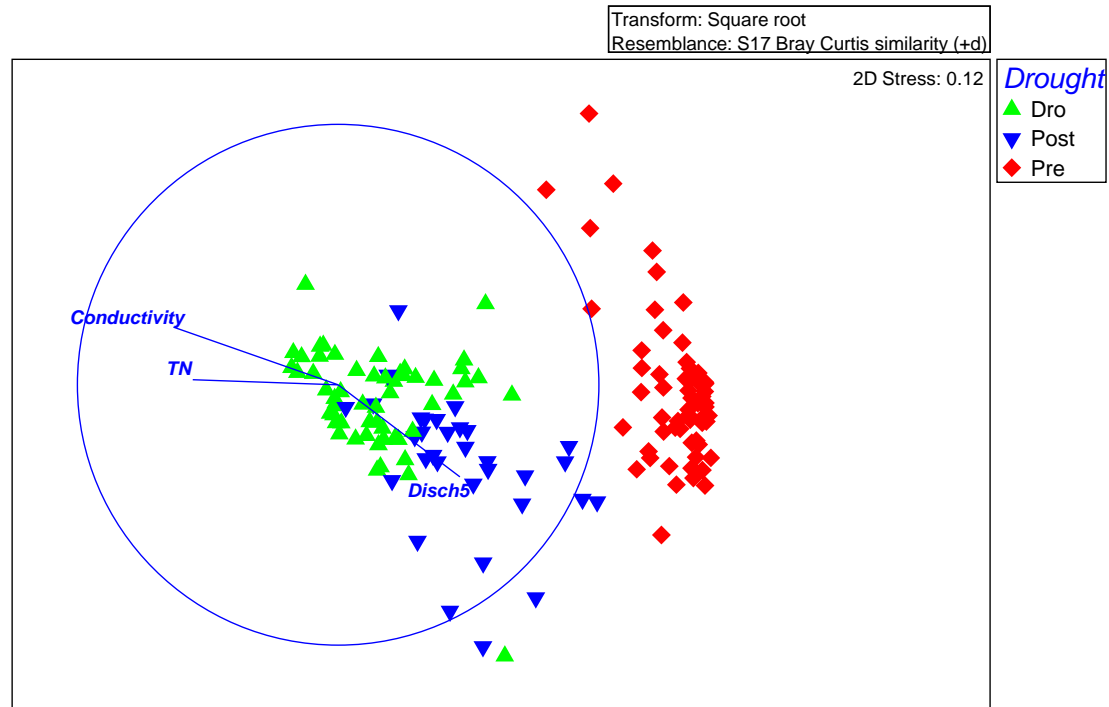
Time series comparing water quality characteristics in Lake Albert with Lake Alexandrina



Lake Albert : Circles:

Lake Alexandrina: Filled rectangles

WQ parameters correlated to microalgae changes



Environmental Limits for Management

- Multivariate analyses of the water quality and microalgae across CLLMM regions will improve our understanding of characteristic environmental conditions helping set management triggers and limits of acceptable change.

Thank you

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