Panel Information Pack

Woods Lake Scientific Panel

20231201

PHYTOPLANKTON COMMUNITY

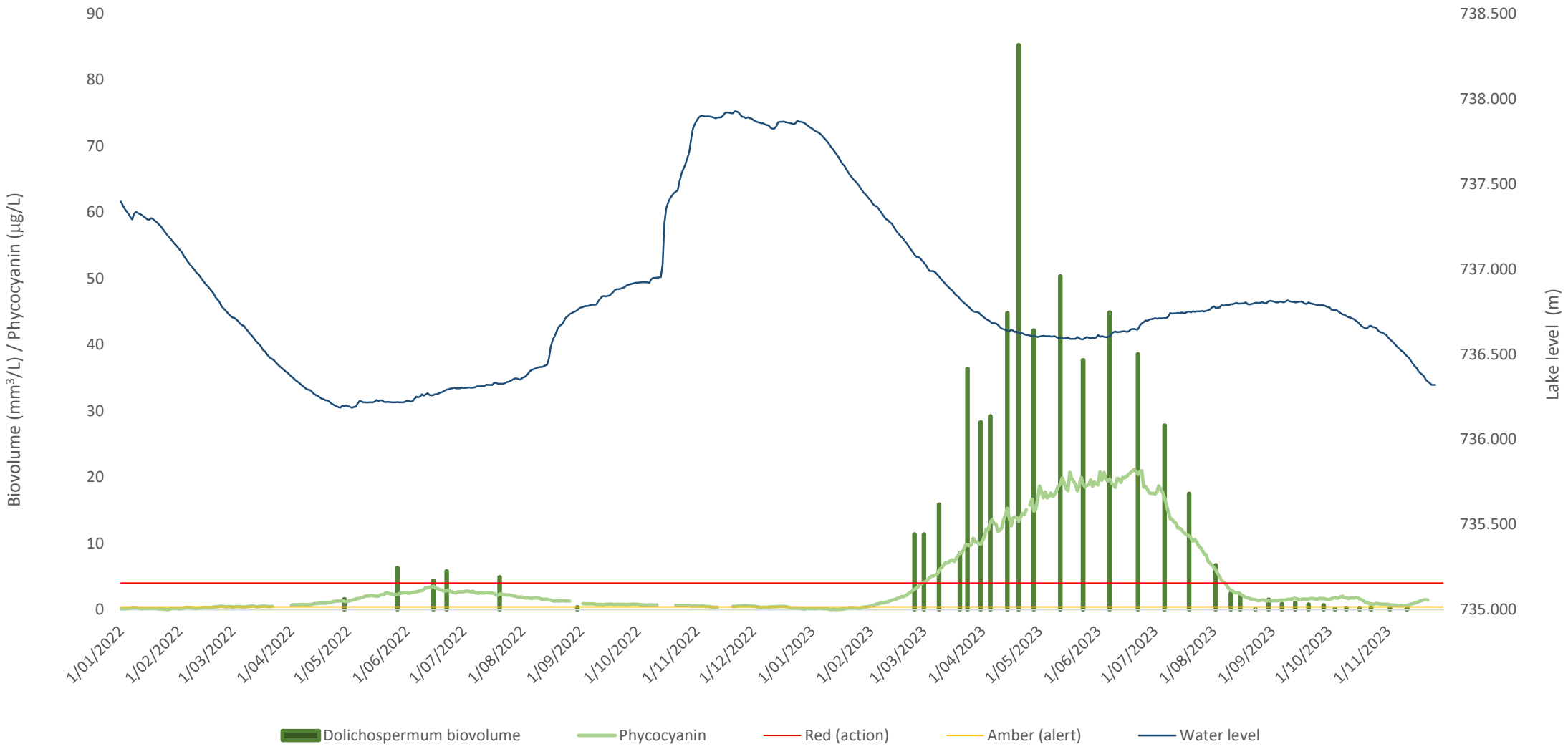
Species	Calculated biovolume (mm3/L
Aphanocapsa sp	0.0004
Dolichospermum sp	0.4503

10 Nov @16:55

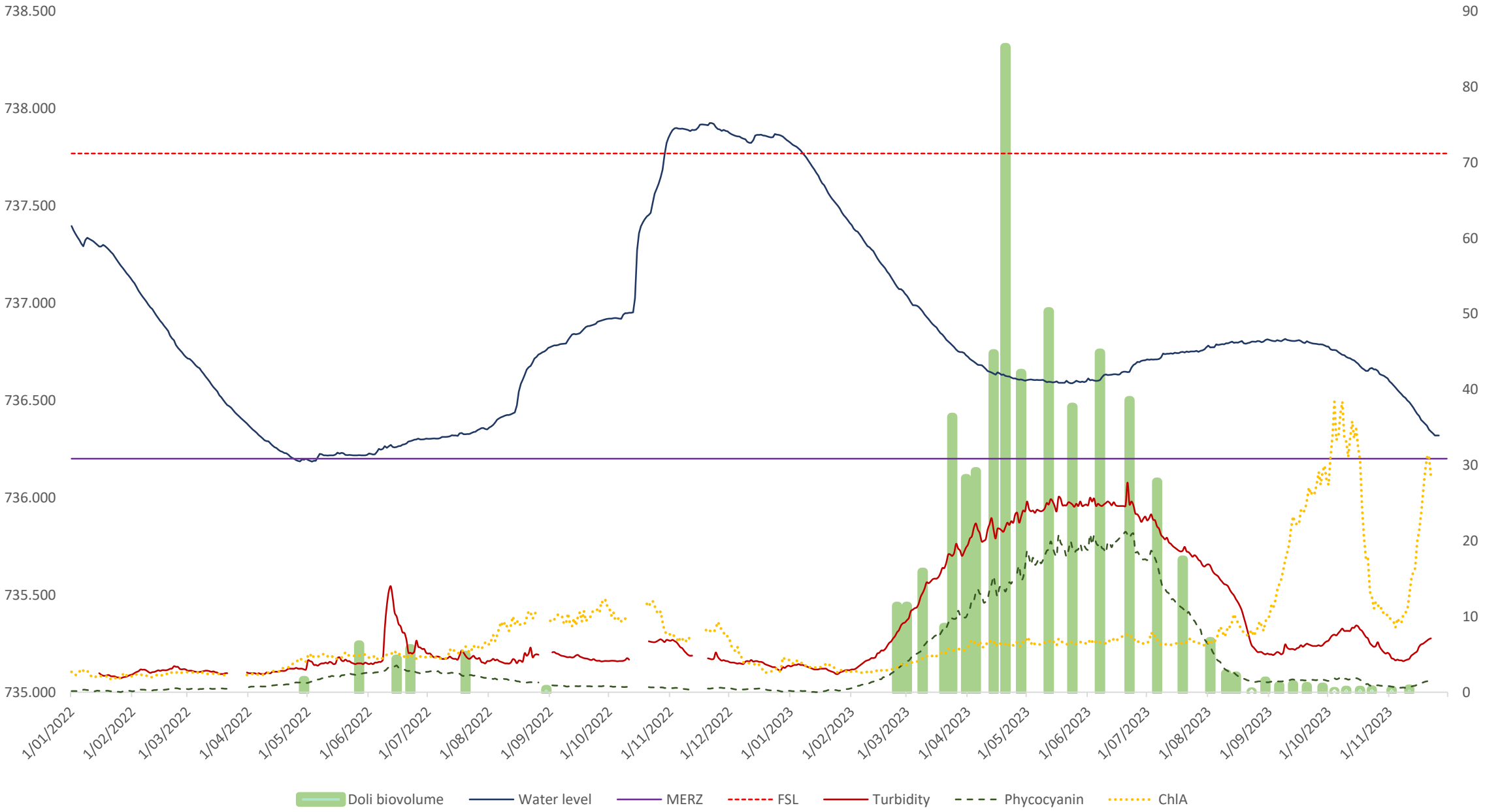
Parameter	Measure
Silica (mg/L)	11.3 (10 Nov)

Heterocytes present at very low levels in dolichospermum filaments - not present in cell count

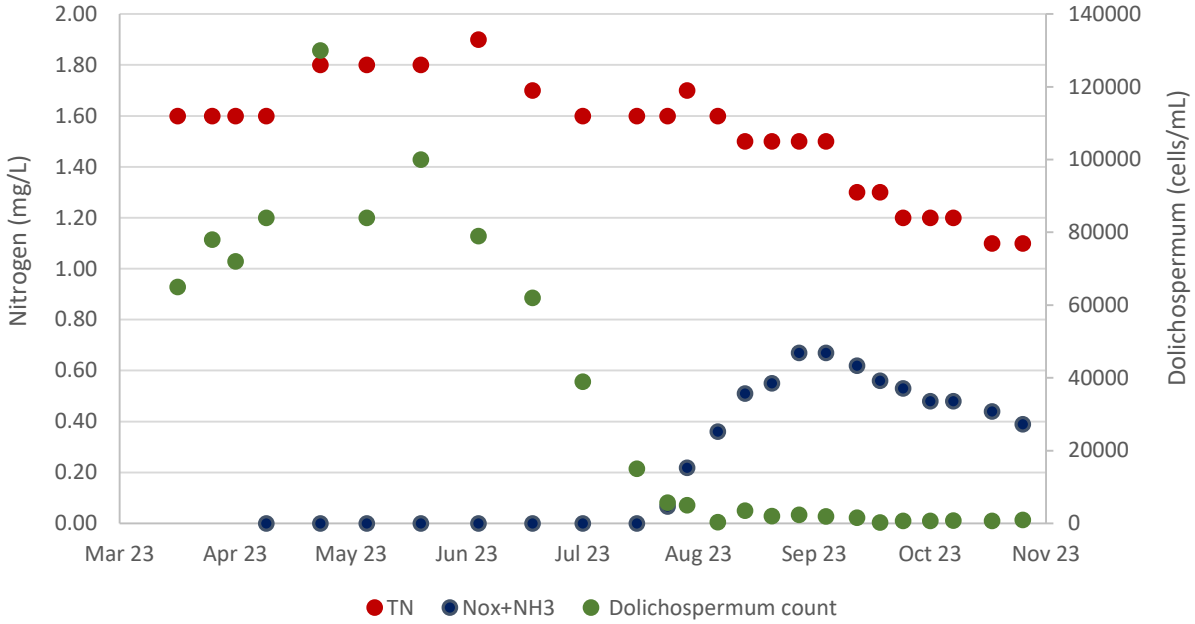
Akinetes not present in Dolichospermum filaments



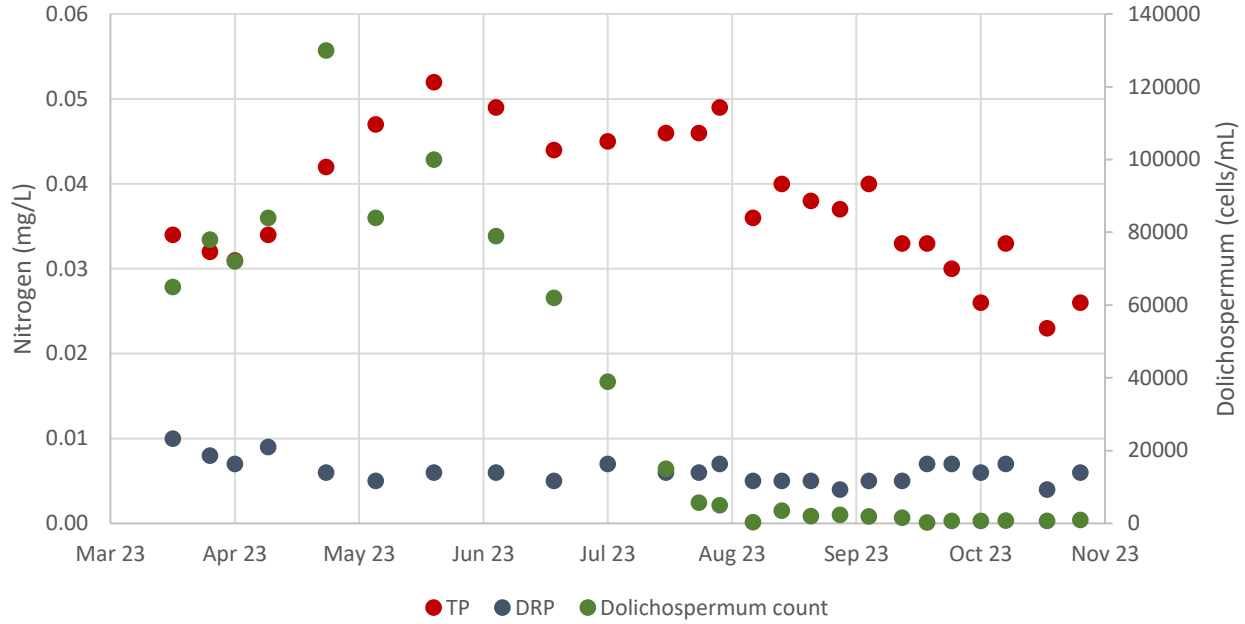
Red (action) and Amber (alert) are the levels of cyanobacteria at which responses are required. *Guidelines for managing risks in recreational water.*

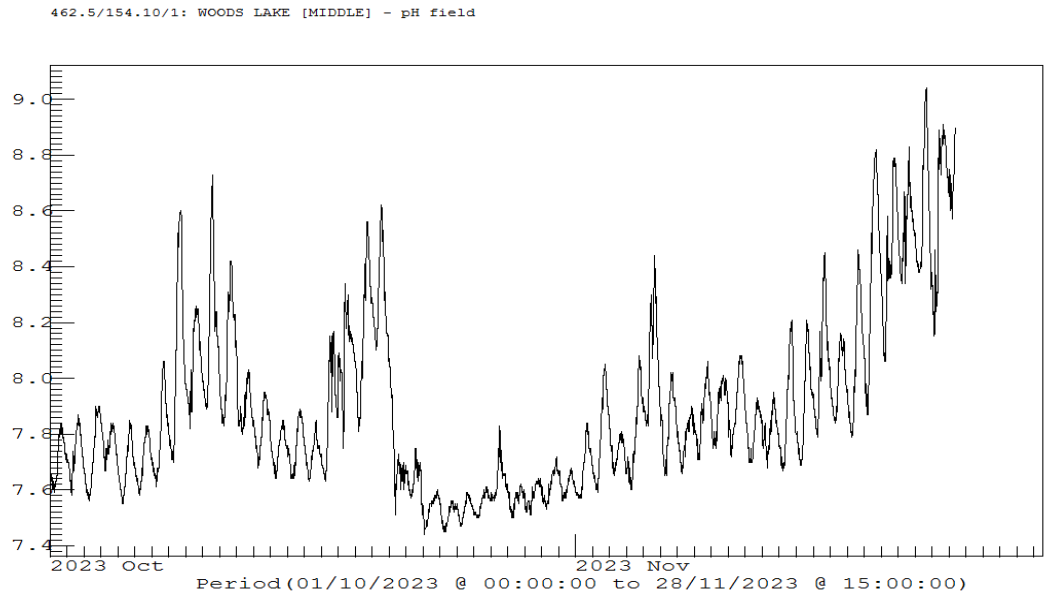

738.500
738.000
737.500
737.000
736.500
736.000
735.500
735.000
90
80
70
60
50
40
30
20
10
0
1/01/2022
1/02/2022
1/03/2022
1/04/2022
1/05/2022
1/06/2022
1/07/2022
1/08/2022
1/09/2022
1/10/2022
1/11/2022
1/12/2022
1/01/2023
1/02/2023
1/03/2023
1/04/2023
1/05/2023
1/06/2023
1/07/2023
1/08/2023
1/09/2023
1/10/2023
1/11/2023
Doli biovolume
Water level
MERZ
FSL
Turbidity
Phycocyanin
ChlA

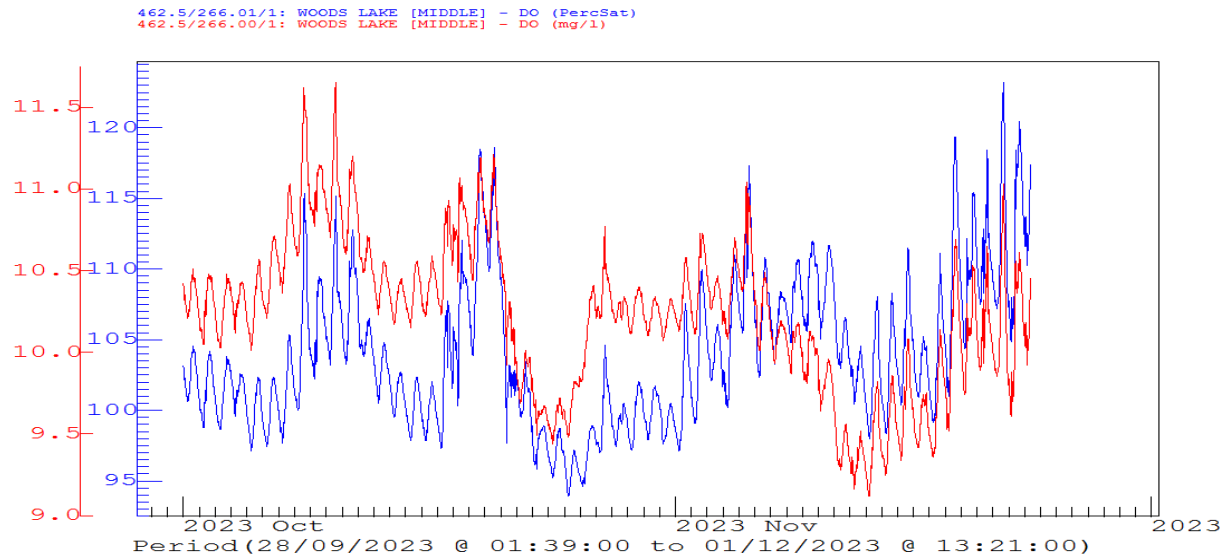
Nitrogen



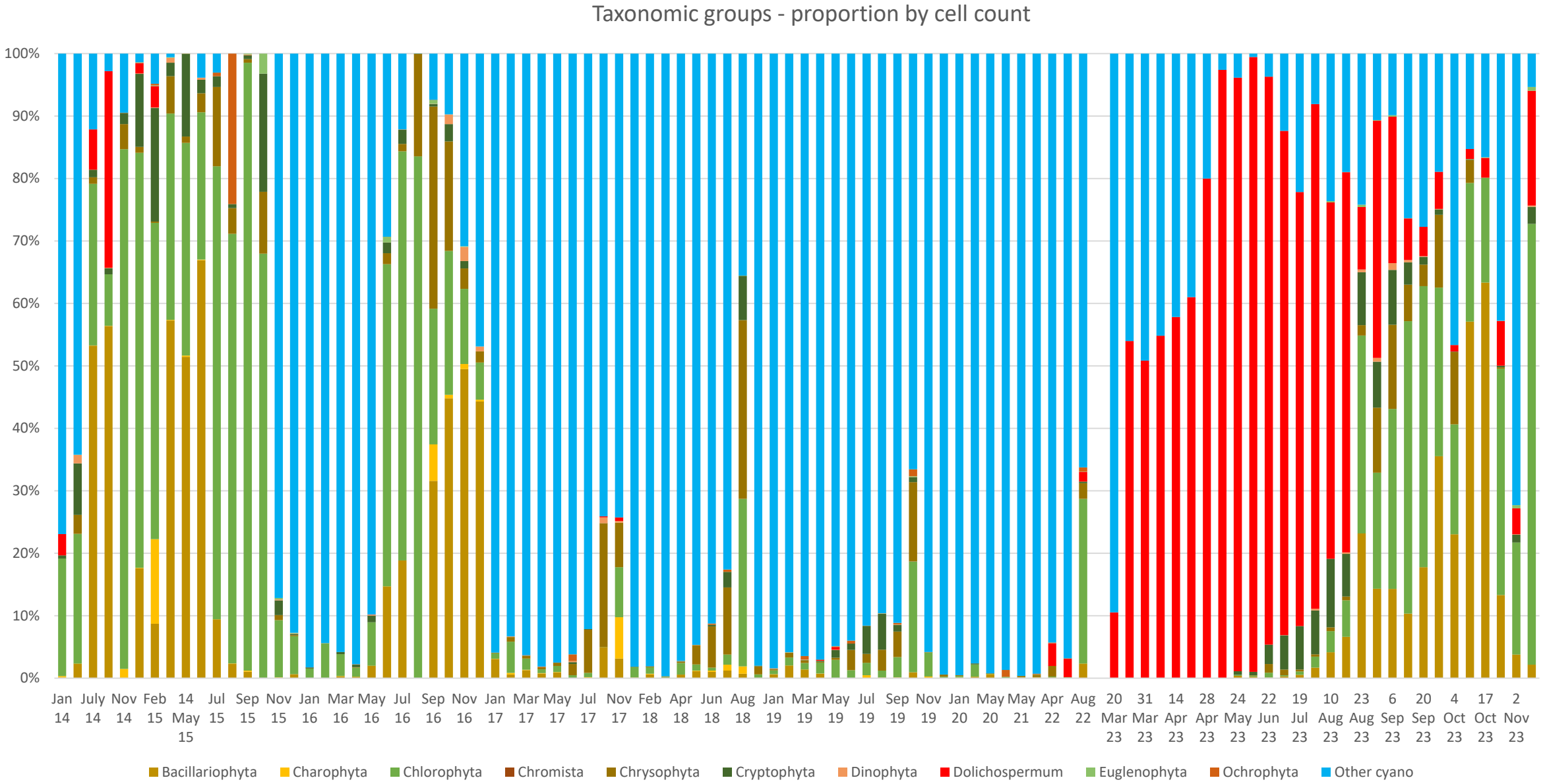
Phosphorus

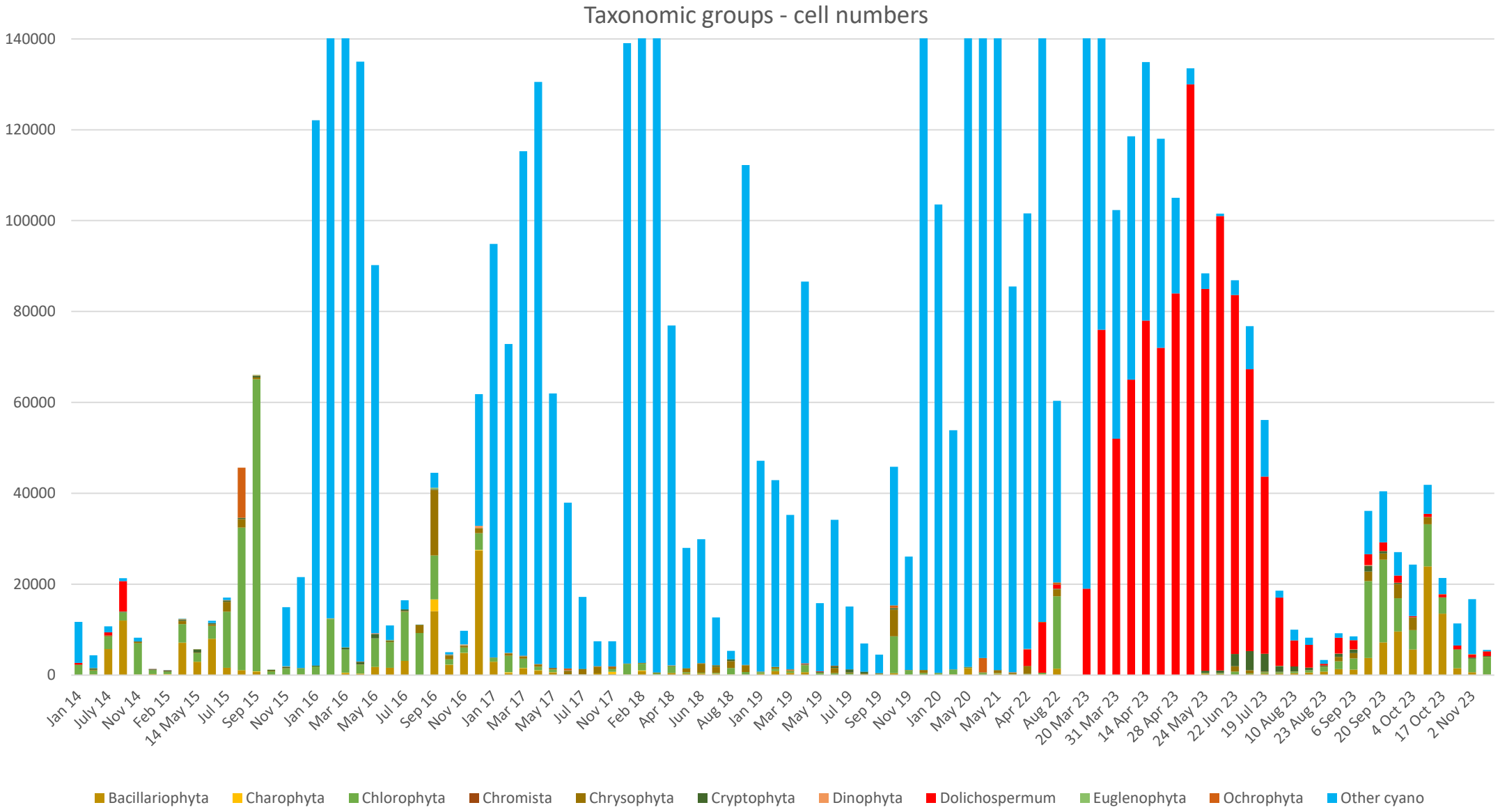







28-11-2023 09:08:09
Remote Monitoring
28-11-2023 09:08:54
Remote Monitoring


Taxonomic groups - proportion by cell count
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan 14
July 14
Nov 14
Feb 15
14 May 15
Jul 15
Sep 15
Nov 15
Jan 16
Mar 16
May 16
Jul 16
Sep 16
Nov 16
Jan 17
Mar 17
May 17
Jul 17
Nov 17
Feb 18
Apr 18
Jun 18
Aug 18
Jan 19
Mar 19
May 19
Jul 19
Sep 19
Nov 19
Jan 20
May 20
May 21
Apr 22
Aug 22
20 Mar 23
31 Mar 23
14 Apr 23
28 Apr 23
24 May 23
22 Jun 23
19 Jul 23
10 Aug 23
23 Aug 23
6 Sep 23
20 Sep 23
4 Oct 23
17 Oct 23
2 Nov 23
Bacillariophyta
Charophyta
Chlorophyta
Chromista
Chrysophyta
Cryptophyta
Dinophyta
Dolichospermum
Euglenophyta
Ochrophyta
Other cyano

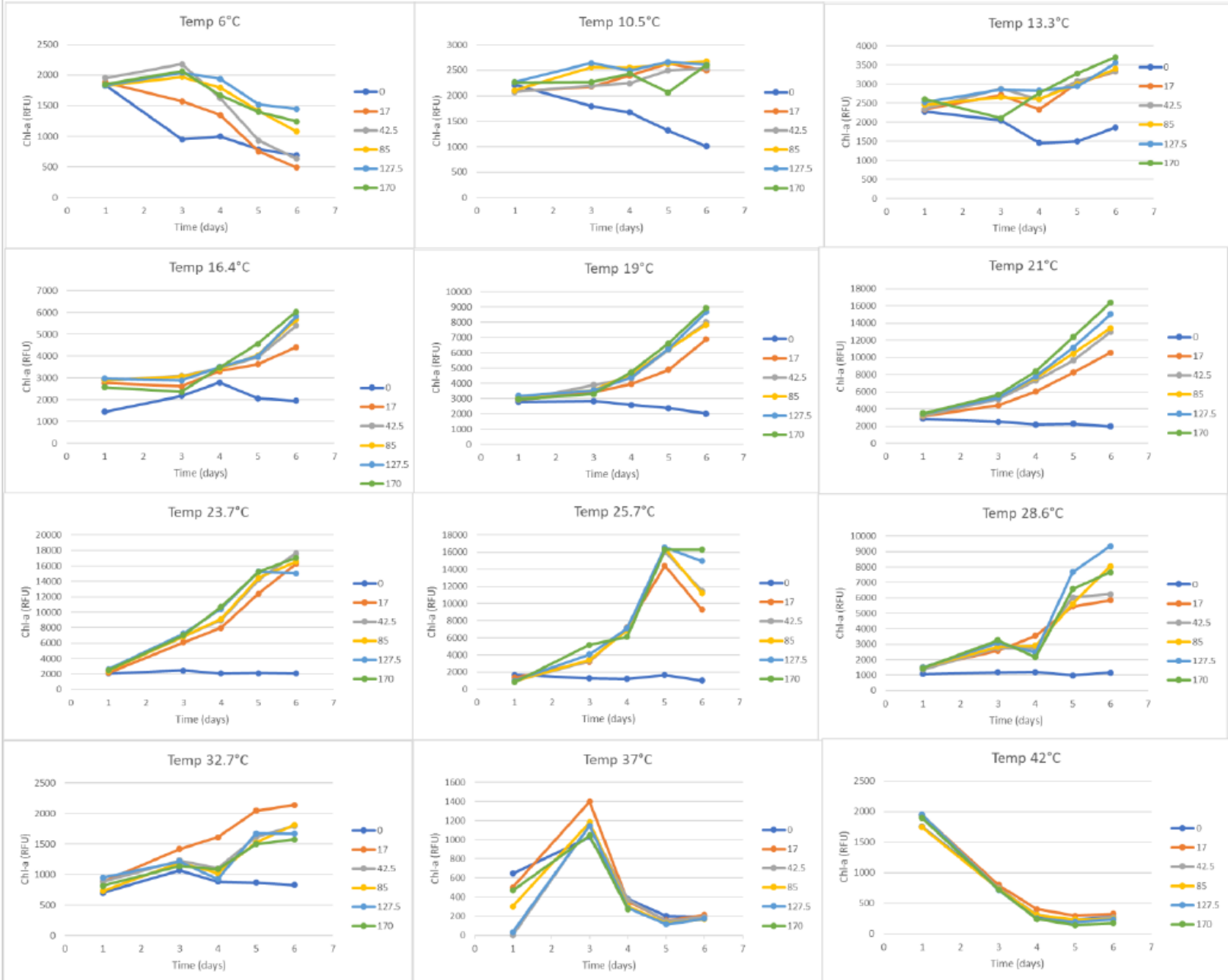

Taxonomic groups - cell numbers
140000
120000
100000
80000
60000
40000
20000
0
Jan 14
July 14
Nov 14
Feb 15
14 May 15
Jul 15
Sep 15
Nov 15
Jan 16
Mar 16
May 16
Jul 16
Sep 16
Nov 16
Jan 17
Mar 17
May 17
Jul 17
Nov 17
Feb 18
Apr 18
Jun 18
Aug 18
Jan 19
Mar 19
May 19
Jul 19
Sep 19
Nov 19
Jan 20
May 20
May 21
Apr 22
Aug 22
20 Mar 23
31 Mar 23
14 Apr 23
28 Apr 23
24 May 23
22 Jun 23
19 Jul 23
10 Aug 23
23 Aug 23
6 Sep 23
20 Sep 23
4 Oct 23
17 Oct 23
2 Nov 23
Bacillariophyta
Charophyta
Chlorophyta
Chromista
Chrysophyta
Cryptophyta
Dinophyta
Dolichospermum
Euglenophyta
Ochrophyta
Other cyano

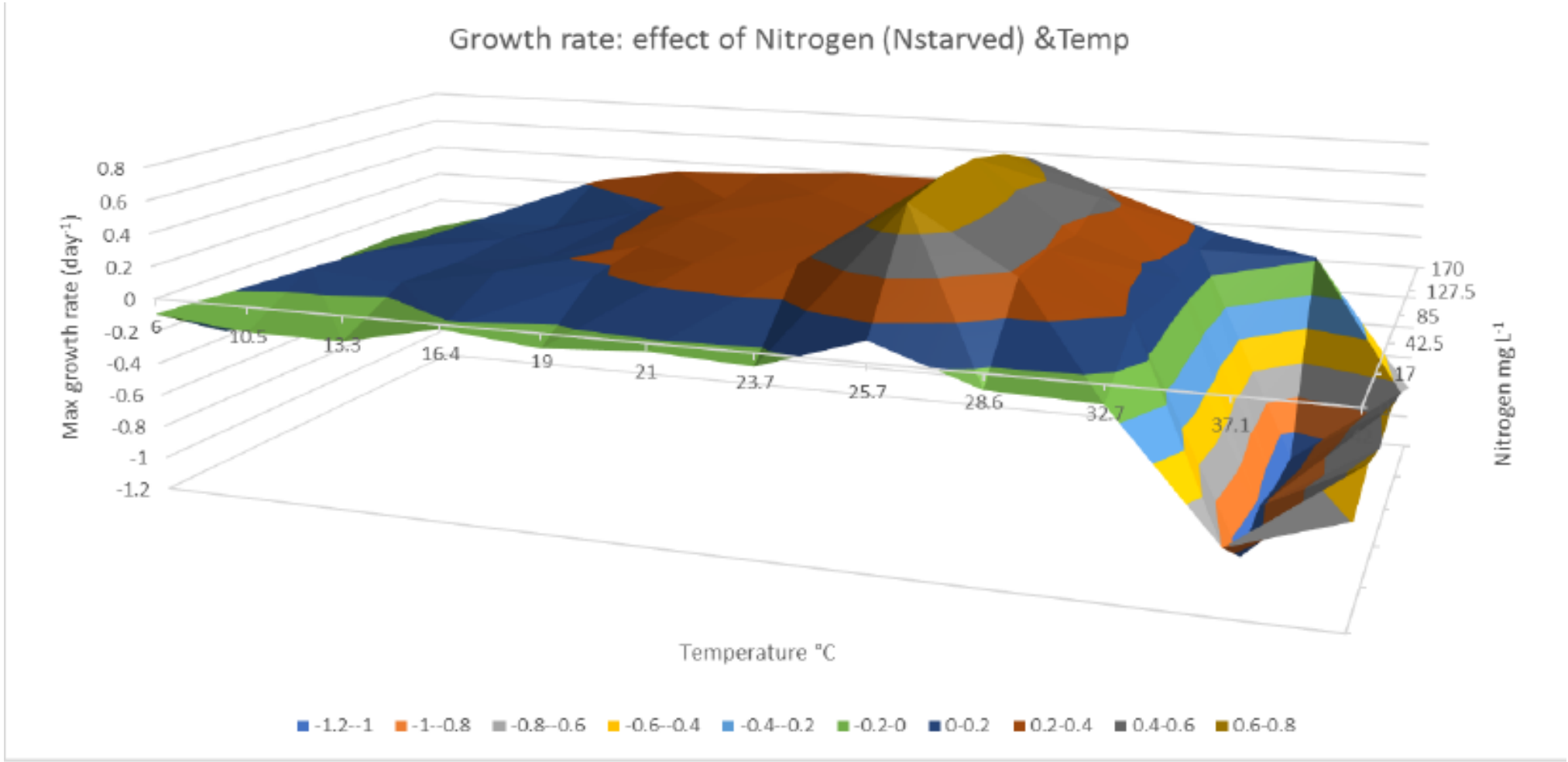
MIDDLE SITE cells/mL	
Aphanocapsa sp.	290
Botryococcus sp.	0
Chlamydomonas sp.	36
Chroomonas sp.	39
Closterium sp.	30
Coelastrum sp.	49
Cosmarium sp.	59
Cosmocladium sp	39
Crucigenia sp.	79
Cryptomonas sp.	110
Dictyosphaerium sp.	1000
Dinobryon sp.	100
Dolichospermum sp	1000
Euastrum sp.	66
Eudorina sp.	98
Euglena sp.	16
Gymnodinium sp.	10
Lepocinclis	10
Mesotaenium sp.	150
Nodularia spumigena	0
Oocystis sp.	410
Pediastrum sp.	150
Pennate diatoms	7
Planktosphaeria	49
Scenedesmus sp.	510
Sphaerocystis sp.	220
Spondylosium sp.	59
Staurodesmus sp.	26
Total BGA	0
Trachelomonas sp.	7
Unidentified centric diatom	110
Unidentified round green cells	890

DAM SITE cells/mL	
Aphanocapsa sp.	3700
Aulacoseira sp.	99
Botryococcus sp.	0
Chlamydomonas sp.	36
Chodatella sp.	7
Chroomonas sp.	89
Closterium sp.	20
Coelastrum sp.	20
Cosmarium sp.	99
Cosmocladium sp	49
Cryptomonas sp.	190
Dictyosphaerium sp.	910
Dinobryon sp.	59
Dolichospermum sp	1200
Elakatothrix sp.	10
Euastrum sp.	10
Eudorina sp.	330
Euglena sp.	20
Fragilaria sp.	200
Gloeocystis sp.	10
Gymnodinium sp.	10
Haematococcus sp.	30
Mallomonas sp.	10
Nephrocytium sp.	10
Oocystis sp.	700
Pennate diatoms	16
Peridinium sp.	10
Planktolyngbya sp.	33
Planktosphaeria	740
Scenedesmus sp.	630
Sphaerocystis sp.	270
Staurastrum sp.	7
Staurodesmus sp.	30
Total BGA	33
Trachelomonas sp.	30
Unidentified centric diatom	100
Unidentified round green cells	640

CSIRO laboratory growth trials (Dr Anusuya Willis)

Growth: effect of nitrate concentration and temperature



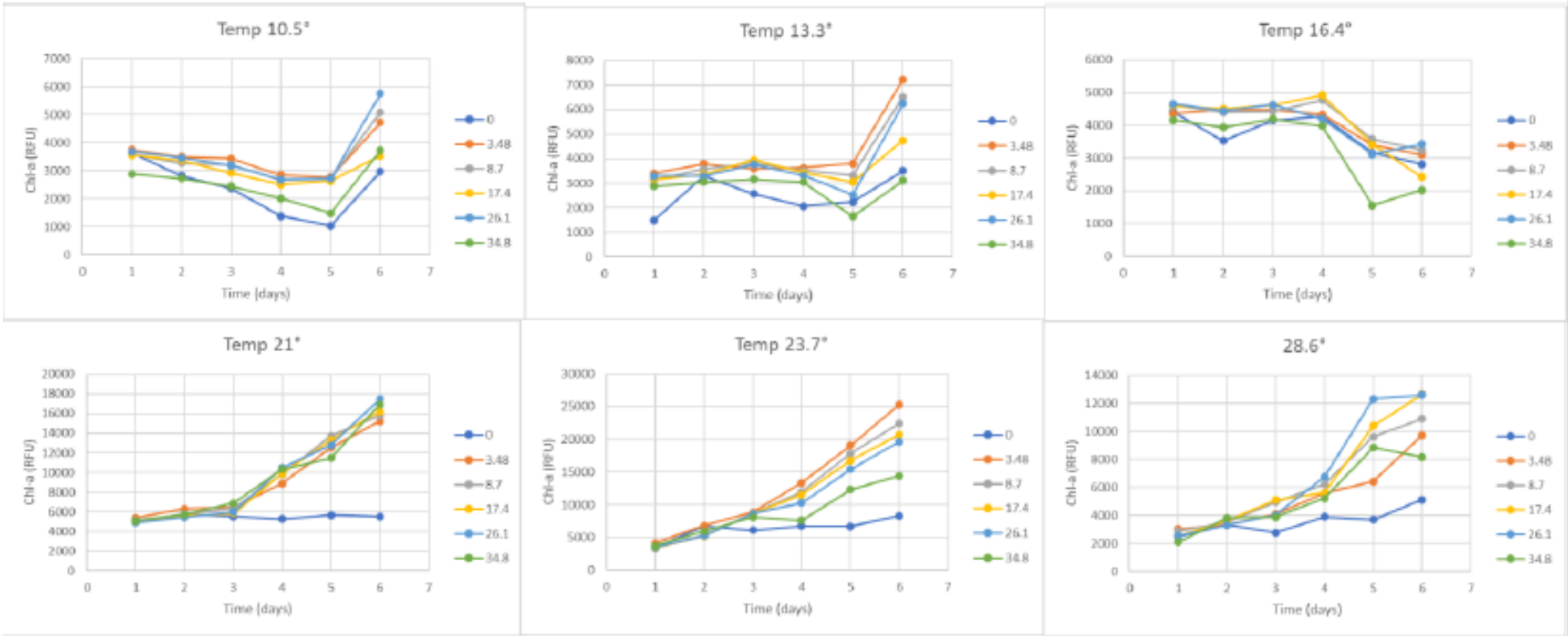


Nitrate = $NaNO_3$ (mg L^{-1})

Cells = Dolichospermum sp. #1

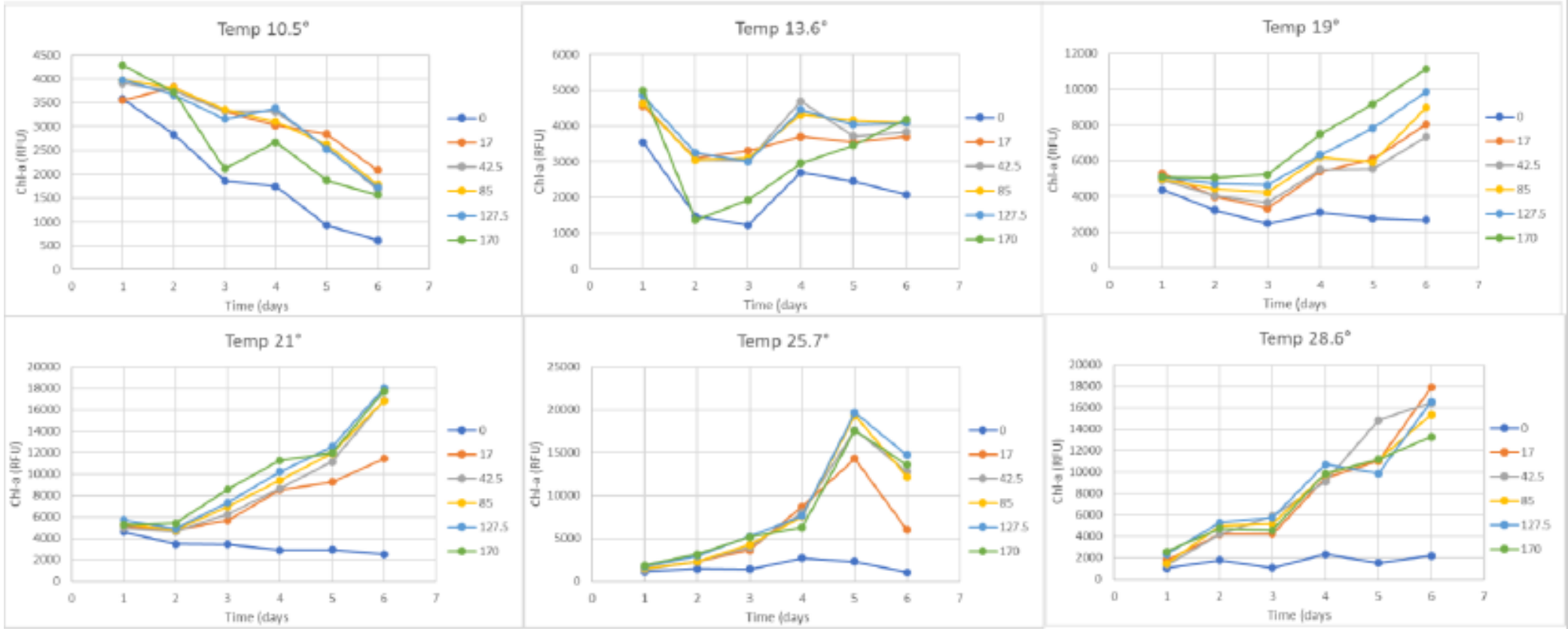
Nitrogen starved (heterocysts present)

Growth: effect of phosphate concentration and temperature



Phosphate = K_2HPO_4 (mg L^{-1})
Cells = Dolichospermum sp. #1
Not P starved

Growth: effect of nitrate concentration and temperature



Nitrate = $NaNO_3$ (mg L^{-1})

Cells = Dolichospermum sp. #1

Not nitrogen starved (heterocysts present)

- Preliminary growth results with temperature, nitrogen, and phosphorus gradients
- The pick-up in growth at day 6 at Temps 10 and 13 for the phosphate treatment is an artifact
- No growth with zero nitrogen, despite the presence of heterocysts
- Positive effect of nutrients on growth rate/biomass: more nutrients = more biomass / faster growth
- Optimal temperature/fastest growth rate = 25C
- Temperature tolerance range = 10 - 30C
- For comparison *Dolichospermum brachiatum* has a temperature tolerance range from 14 - 35C (optimum 25C)
- These are preliminary results, more data to be added from ongoing growth experiments
- Additional nitrogen growth curves to be conducted at lower concentrations (< 17 mg/L, 10% of normal growth medium)