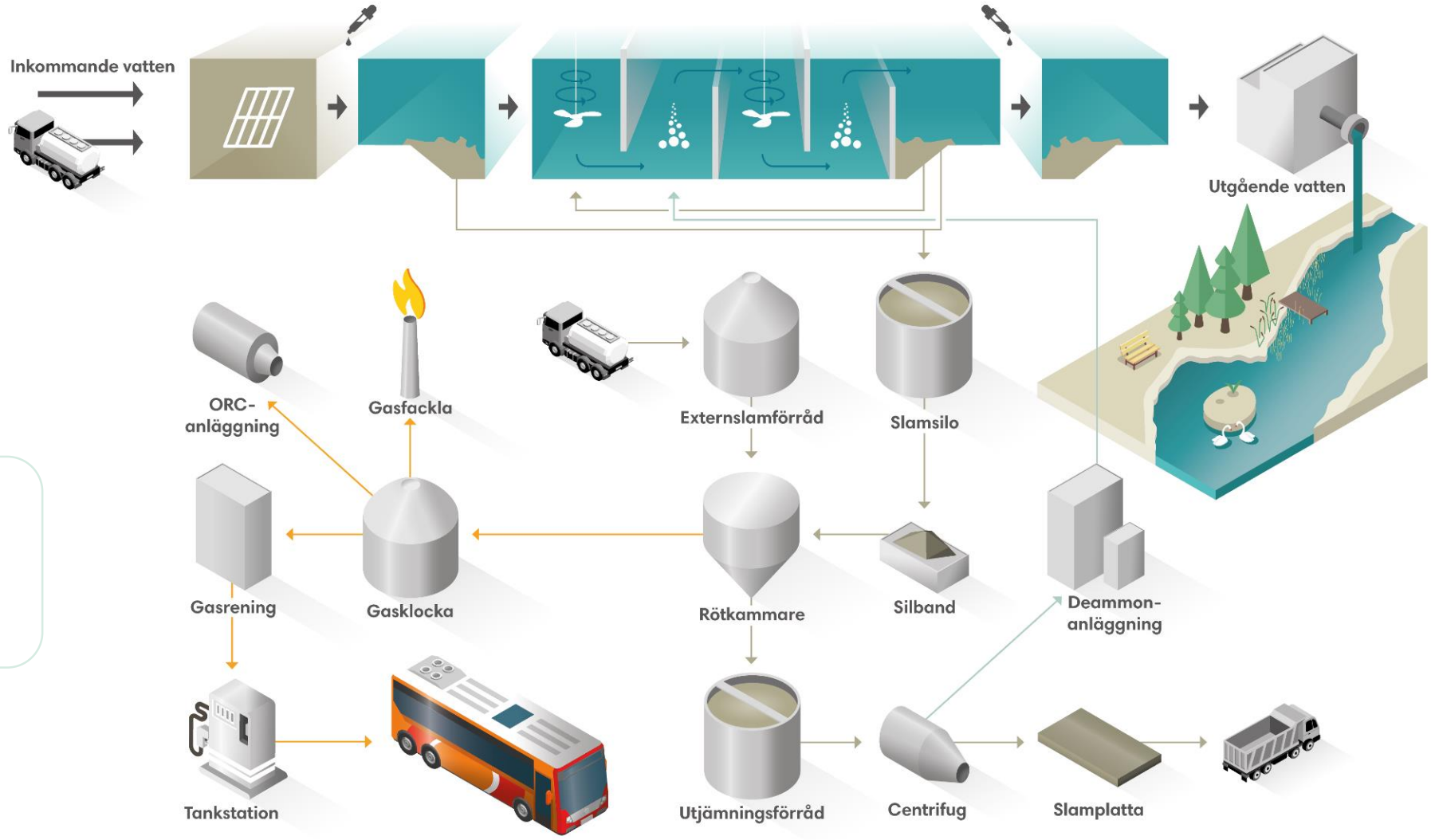
NODRA

Slottshagen WWTP

200 000 pe
2021: 166 000 pe
Future: 250 000 pe

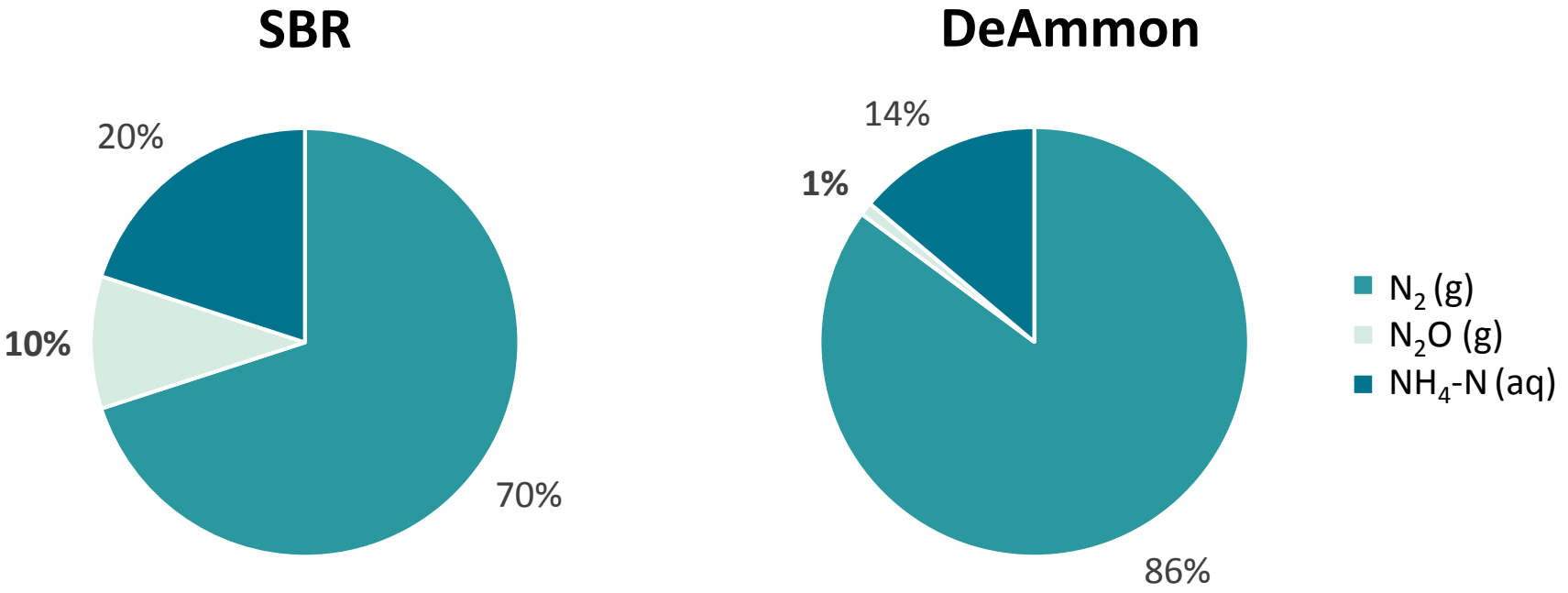
Effluent requirements
Tot-P: 0.3 mg/L
Tot-N: 10 mg/L
BOD_7: 10 mg/L



Reject water treatment - DeAmmon

- Operational from 2018
- Deammonification process with MBBR
- Intermittent aeration
- Reactor volume 1 000 m^3

From SBR to DeAmmon: Minimizing Nitous oxide (N_2O) emissions



Measurements from 2018

Reject water treatment - DeAmmon

- Operational from 2018
- Deammonification process with MBBR
- Intermittent aeration
- Reactor volume 1 000 m^3

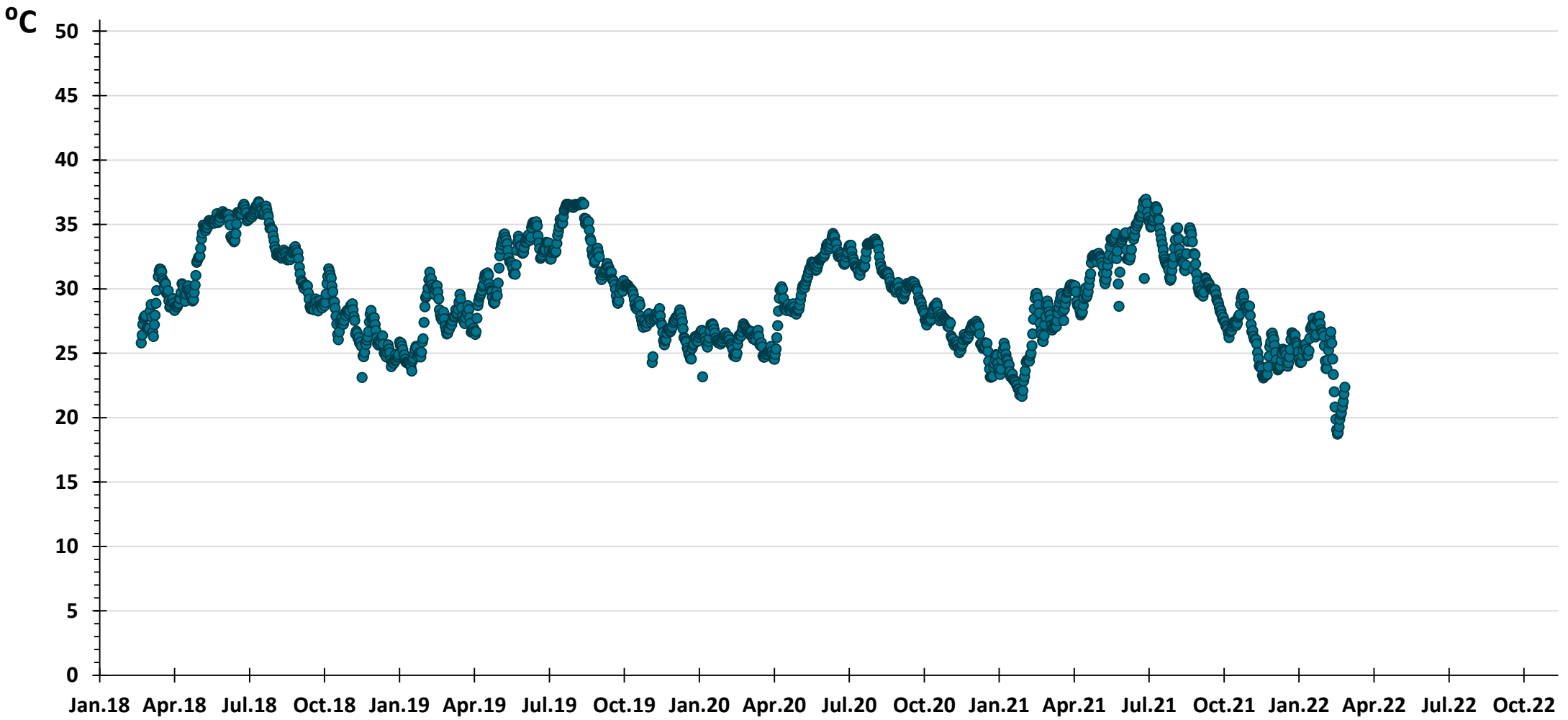
Operational goals

NH_4-N reduction: > 70%

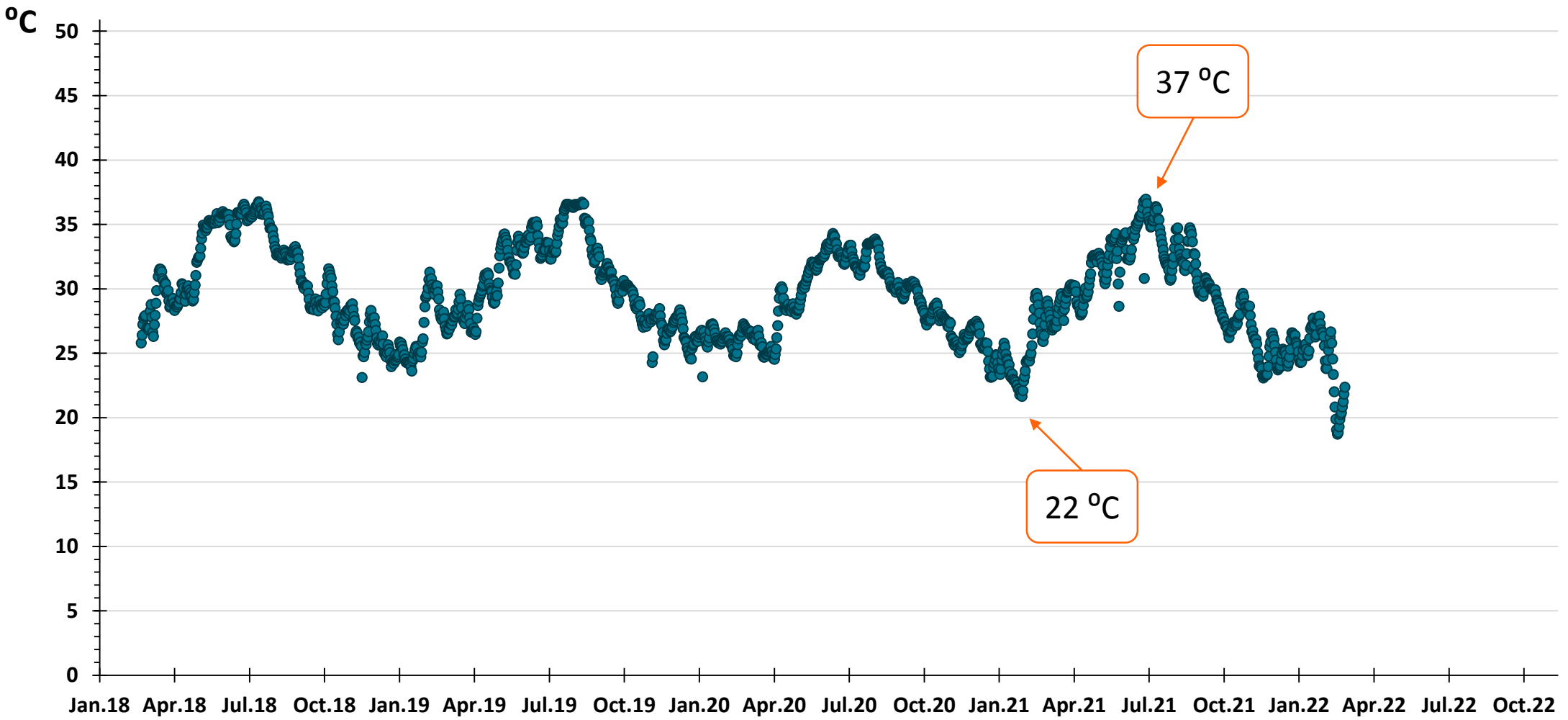
Energy: < 2.5 kWh/m^3

How did it go?...

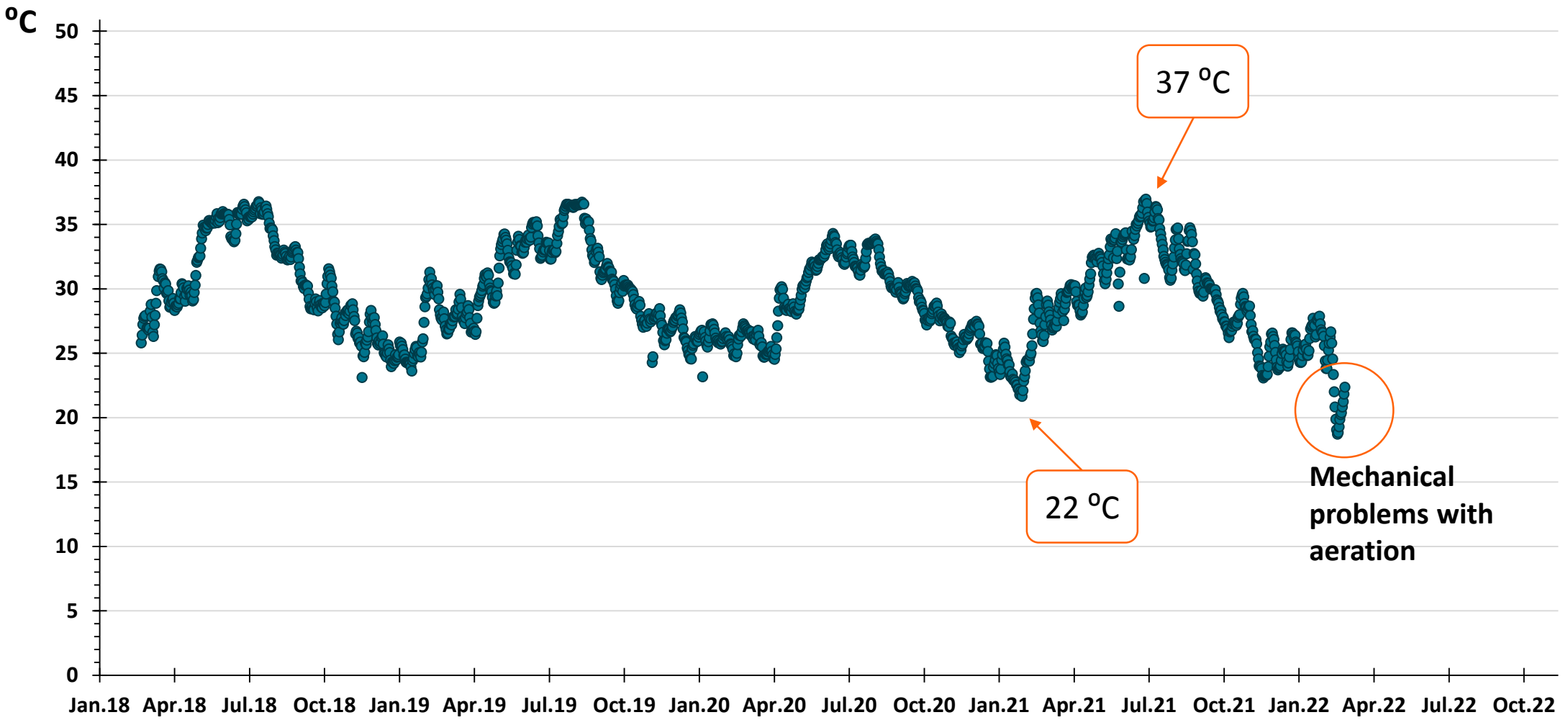
Temperature in reactor



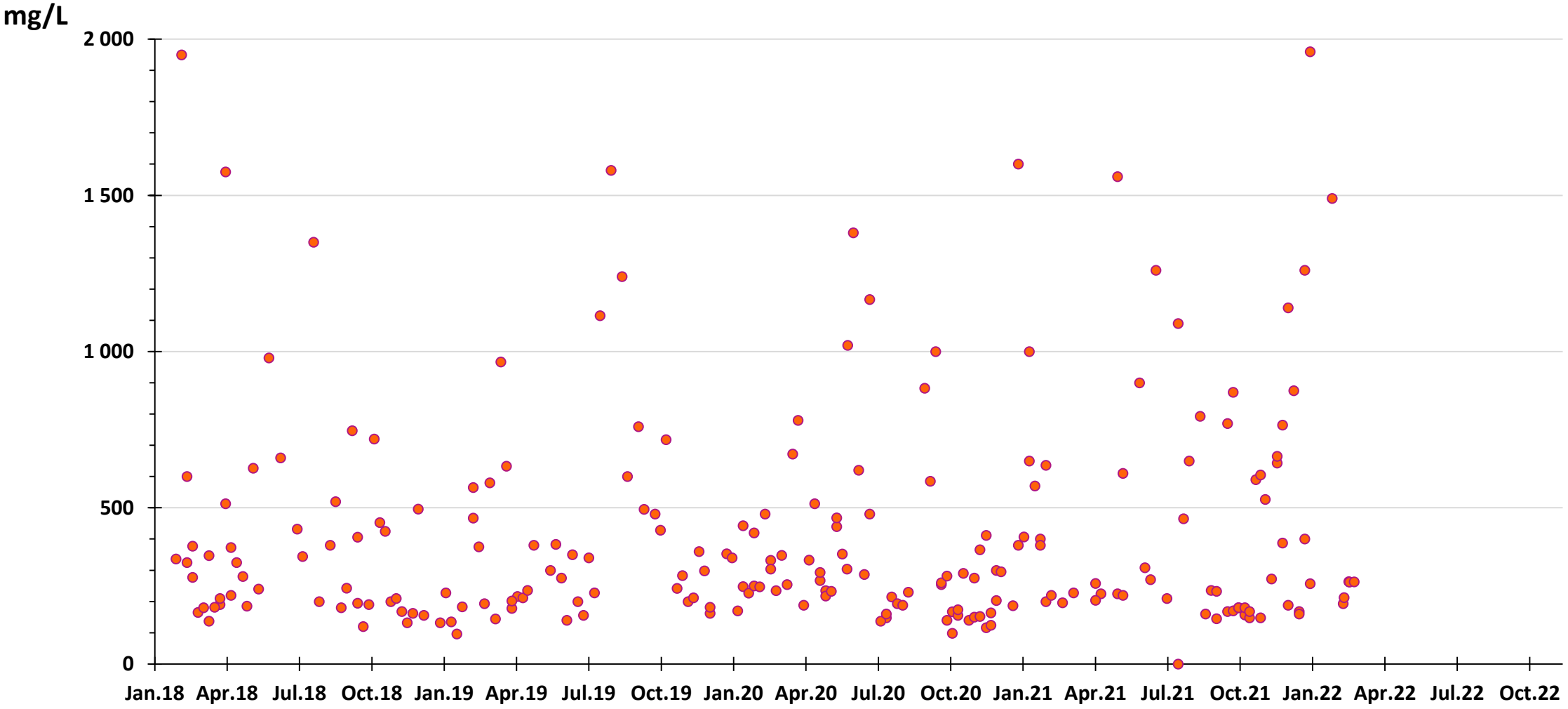
Temperature in reactor



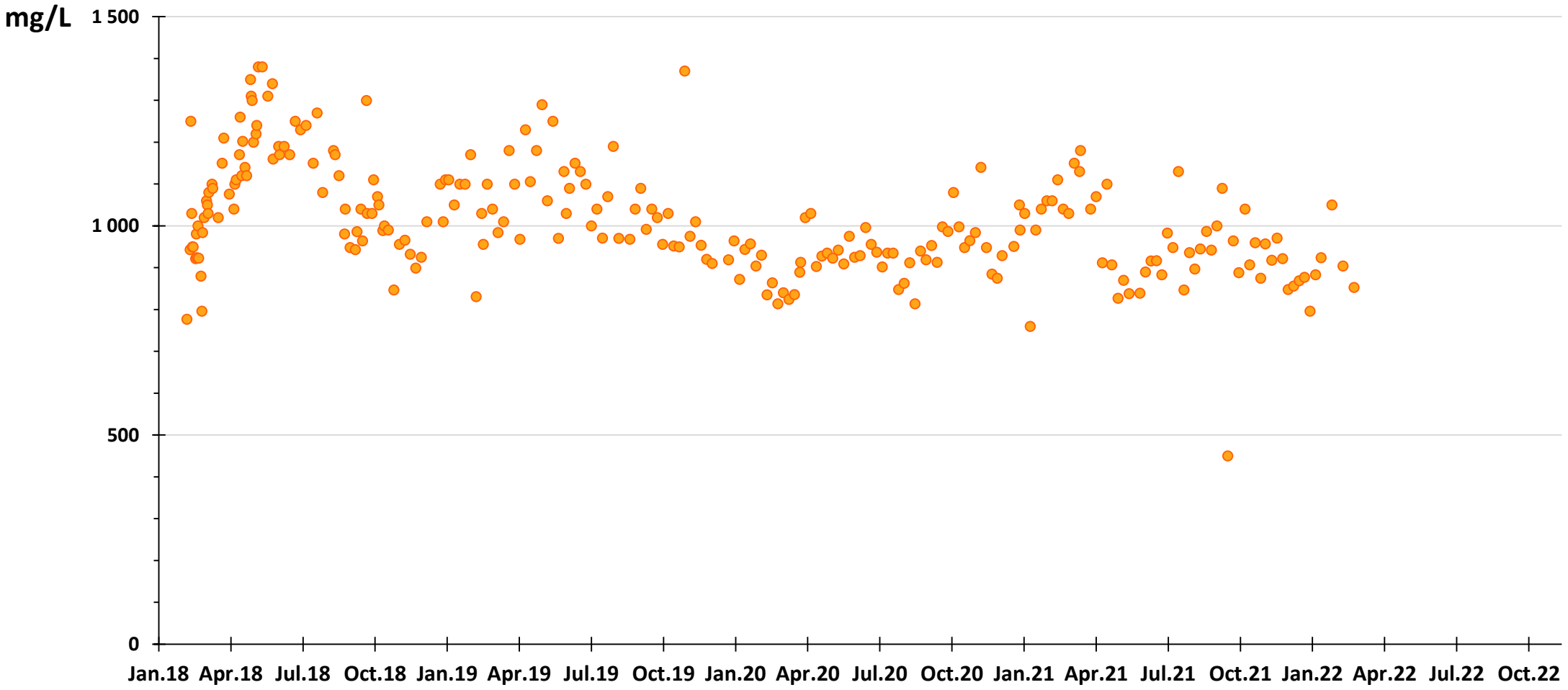
Temperature in reactor



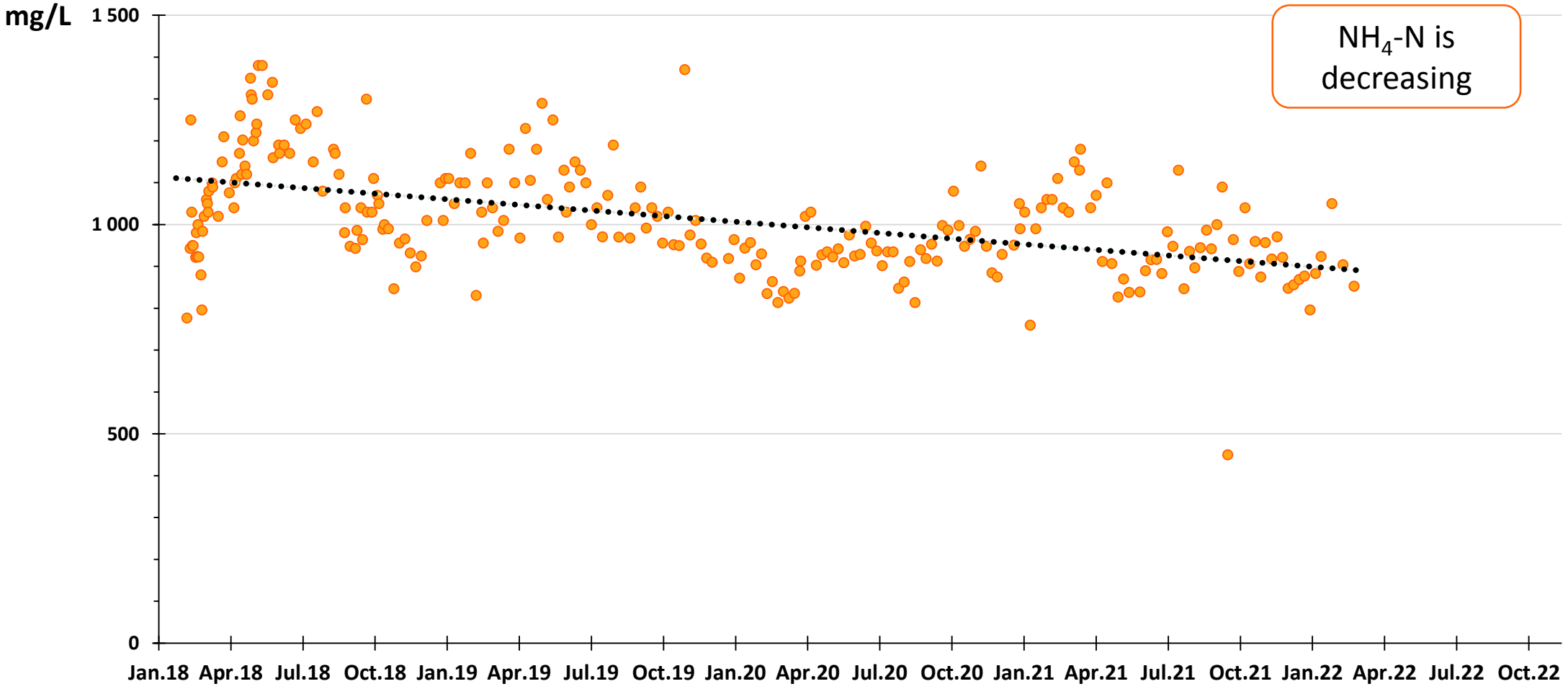
Suspended solids (SS) in reject water



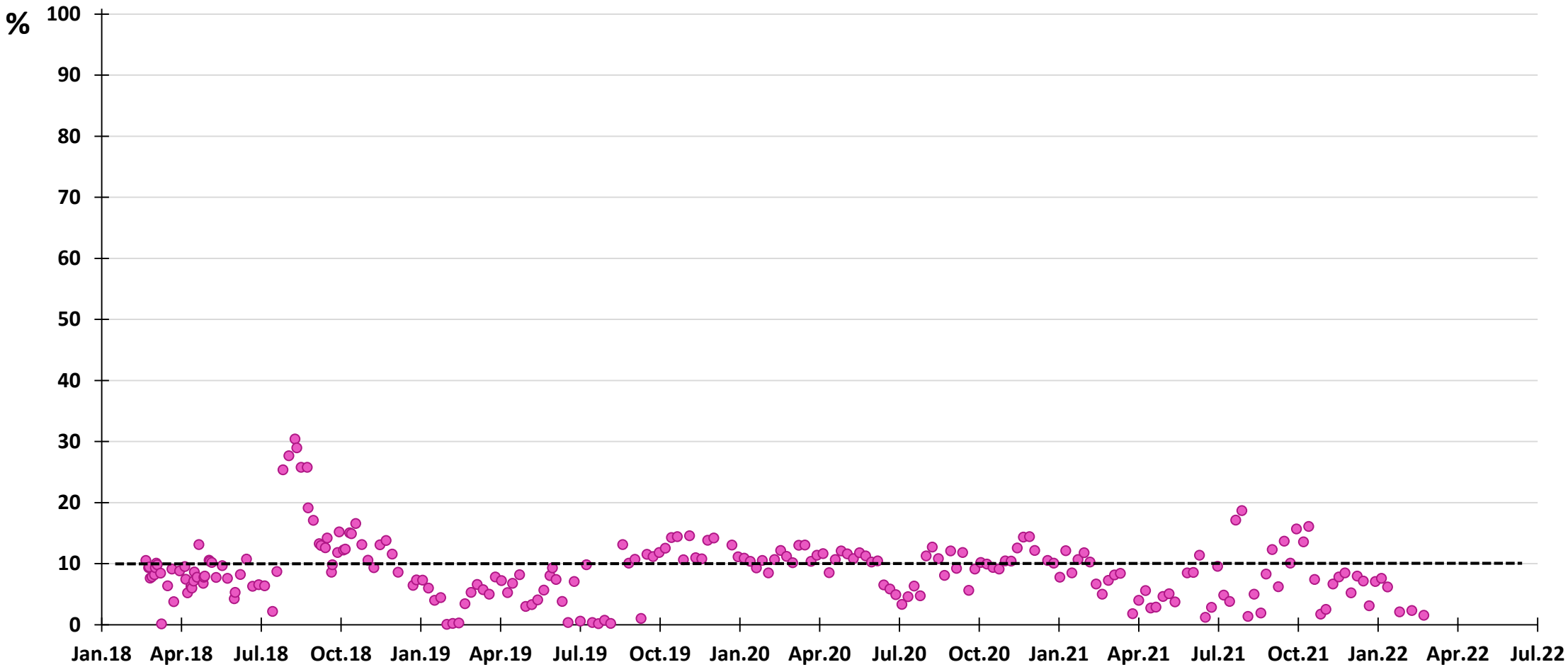
Ammonium in reject water (NH_4-N)



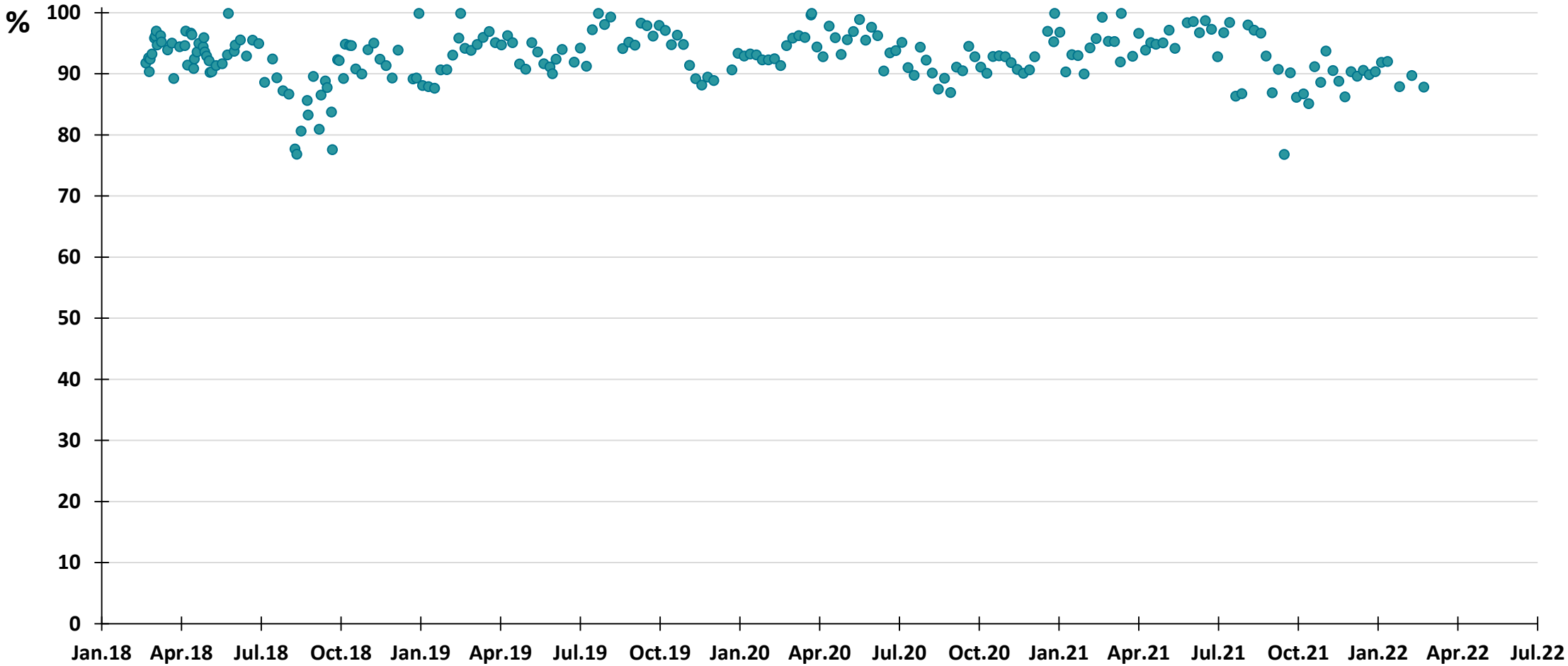
Ammonium in reject water (NH_4-N)



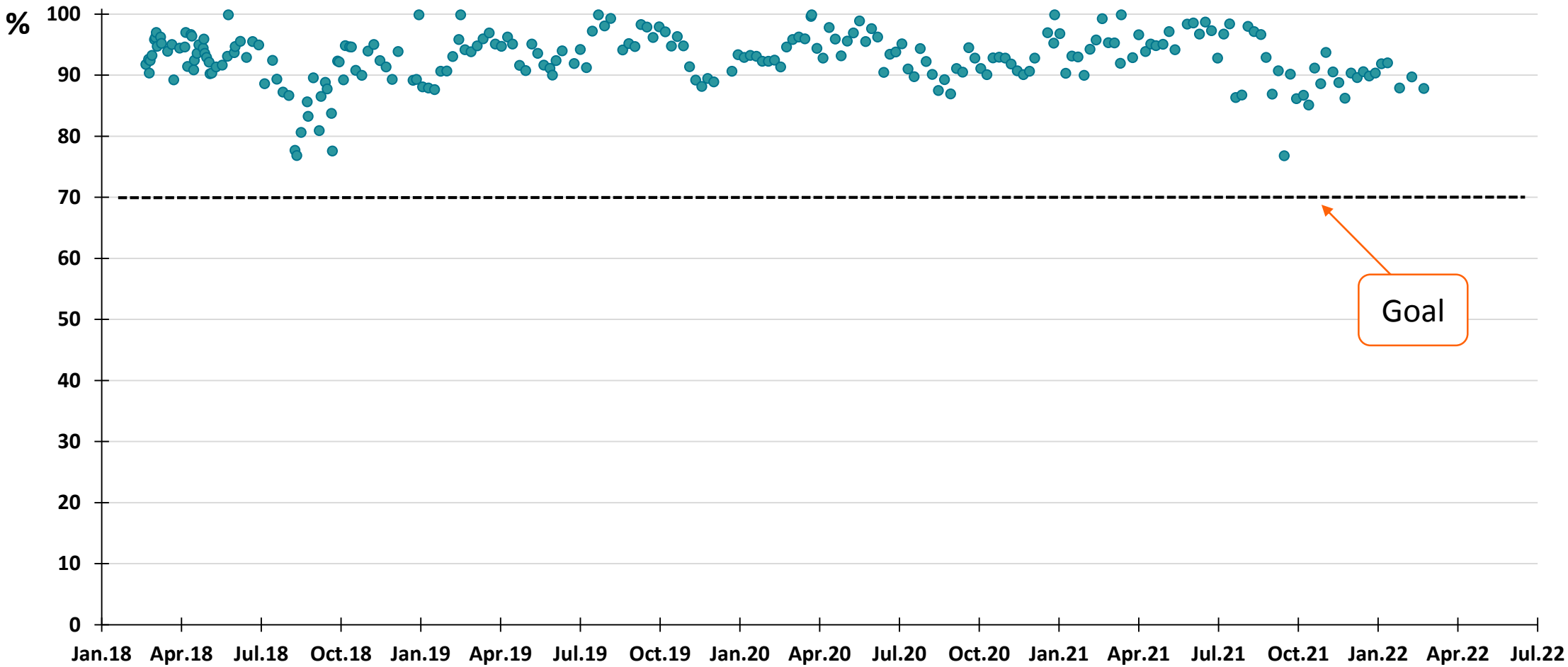
Nitrate formation (NO_3-N_{out}/NH_4-N_{in})



Degree of reduction NH_4-N

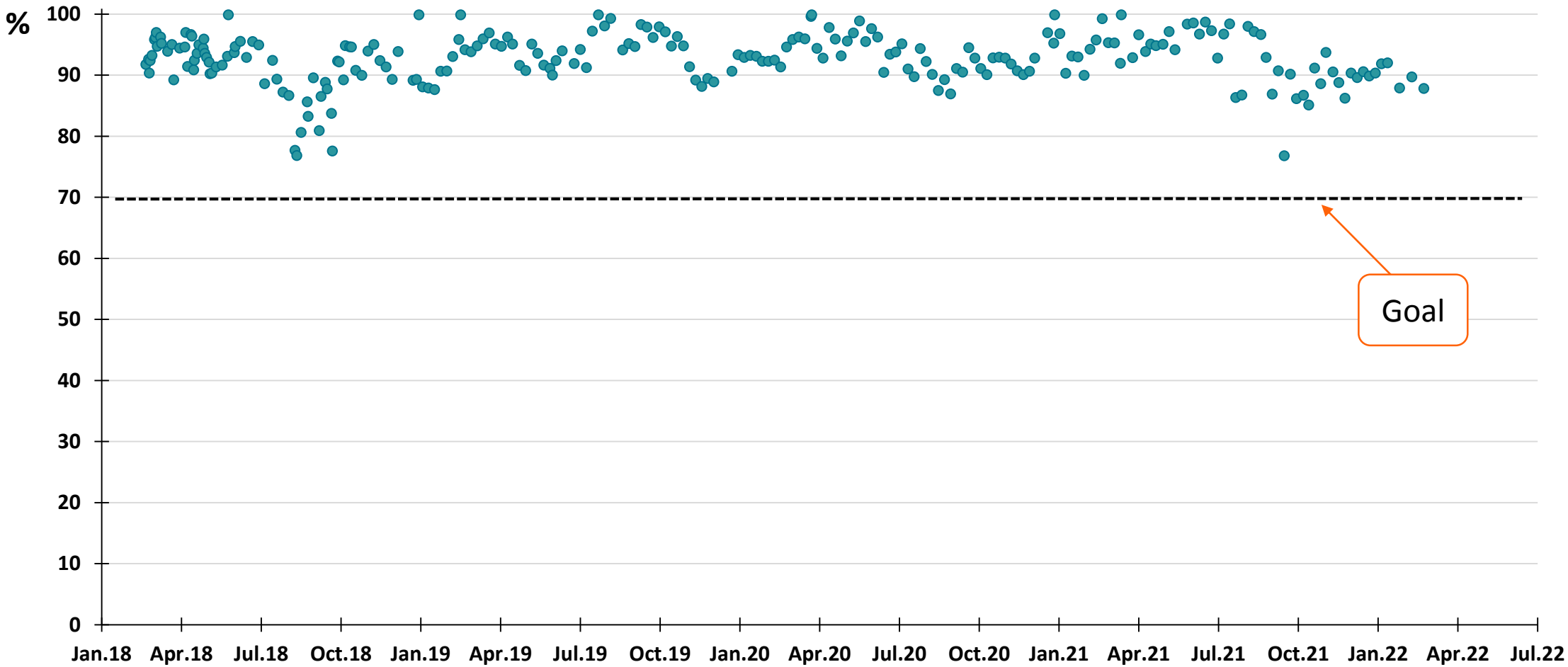


Degree of reduction NH4-N



Degree of reduction NH4-N

Year	Reduction NH4_N [%]
2018	91
2019	94
2020	93
2021	93
2022	89



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Energy

Year	Energy [kWh/NH_4-N_{red}]	Energy [kWh/m^3]
2018	1.7	1.8
2019	1.6	1.7
2020	1.7	1.6
2021	2.1	2.0

Energy

Goal < 2.5 kWh/m^3

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Summary

- Operationally stable
  - variations in reject water
  - nitrate formation

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- Operationally stable
  - variations in reject water
  - nitrate formation

→The capacity is 2x bigger than the load

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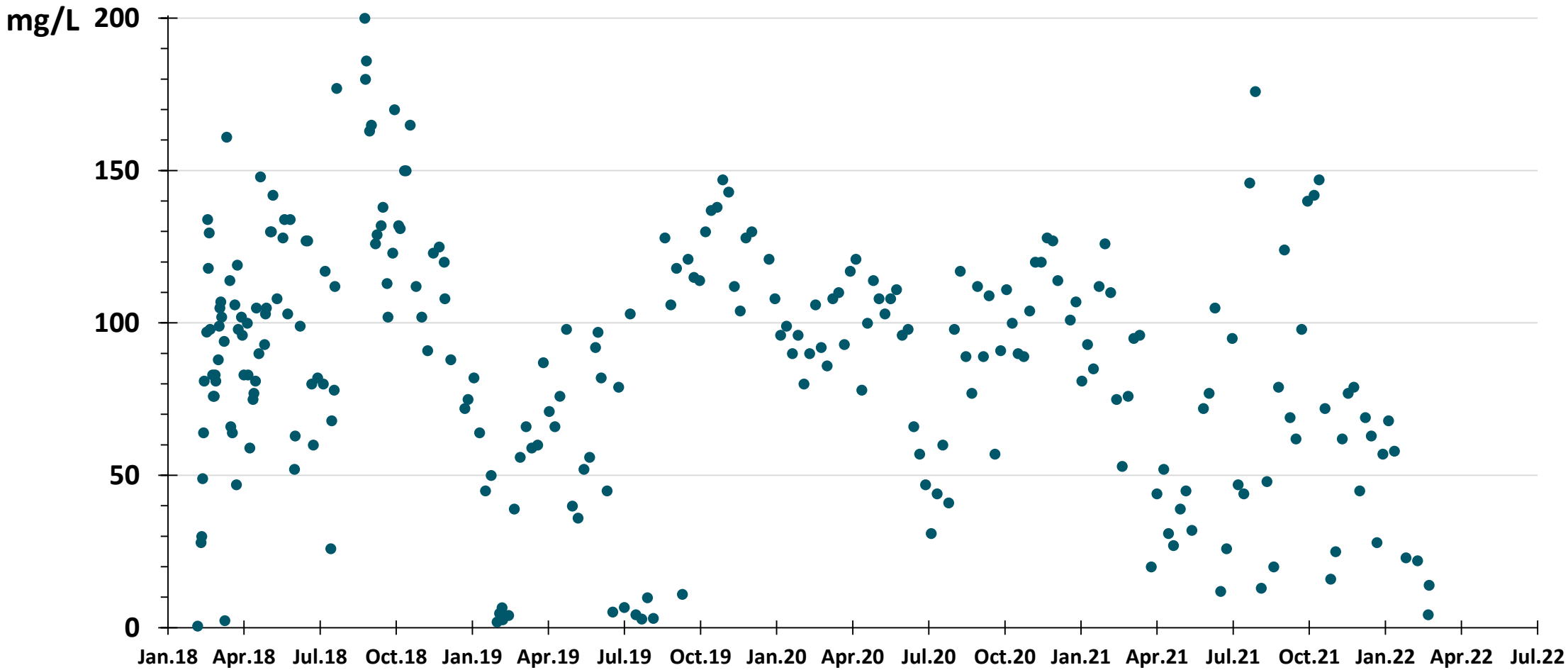
Nitrate NO_3-N mg/L



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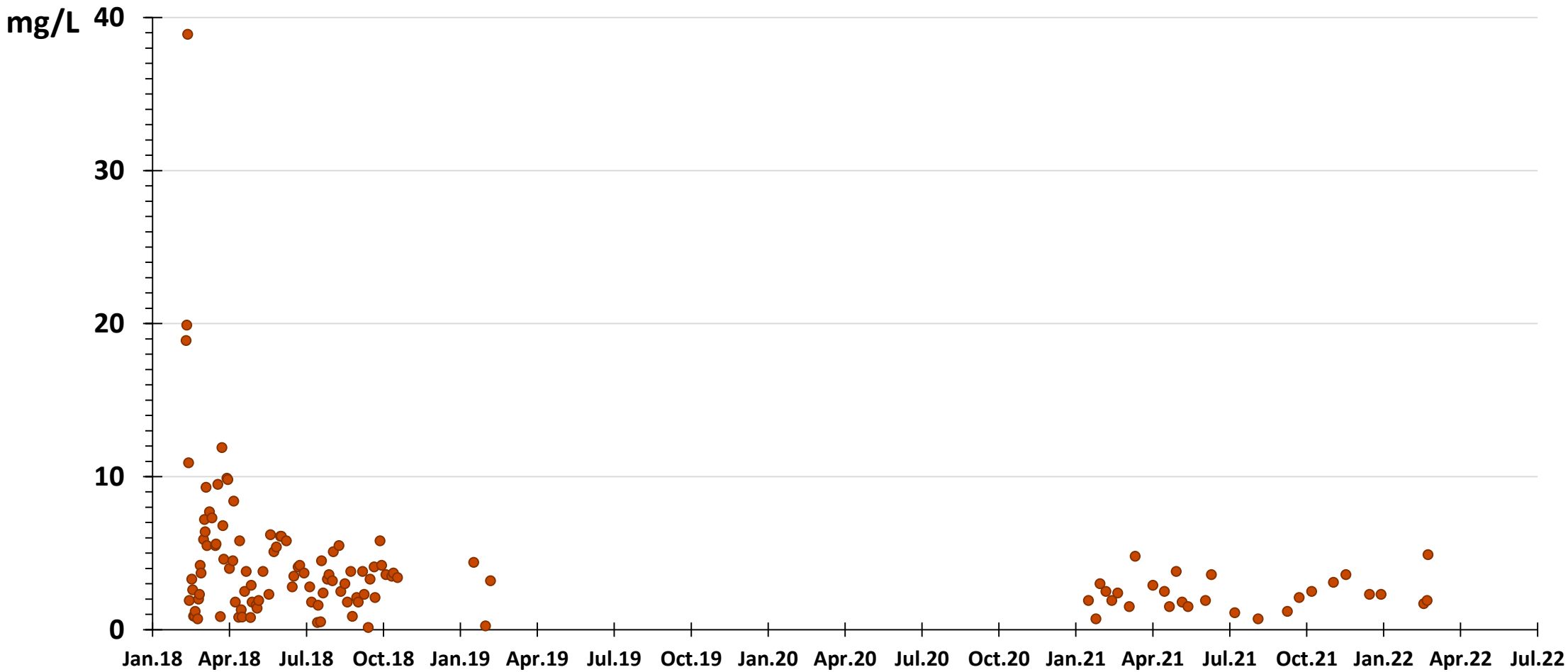
Nitrite NO_2-N mg/L



Load

Year	Load [kg NH4 /day]
2018	210
2019	220
2020	200
2021	180
Capacity	**520**

- pH: 7.1 – 7.2