

file name : IMOS_DWM-SOTS_KF_20230529_SAZ47_FV01_SAZ47-25-2023-McLane-PARFLUX-Mark78H-21-1000m_END-20240324_C-20251017.nc

Dimensions:

TIME (21)
bnds (2)

Variables:

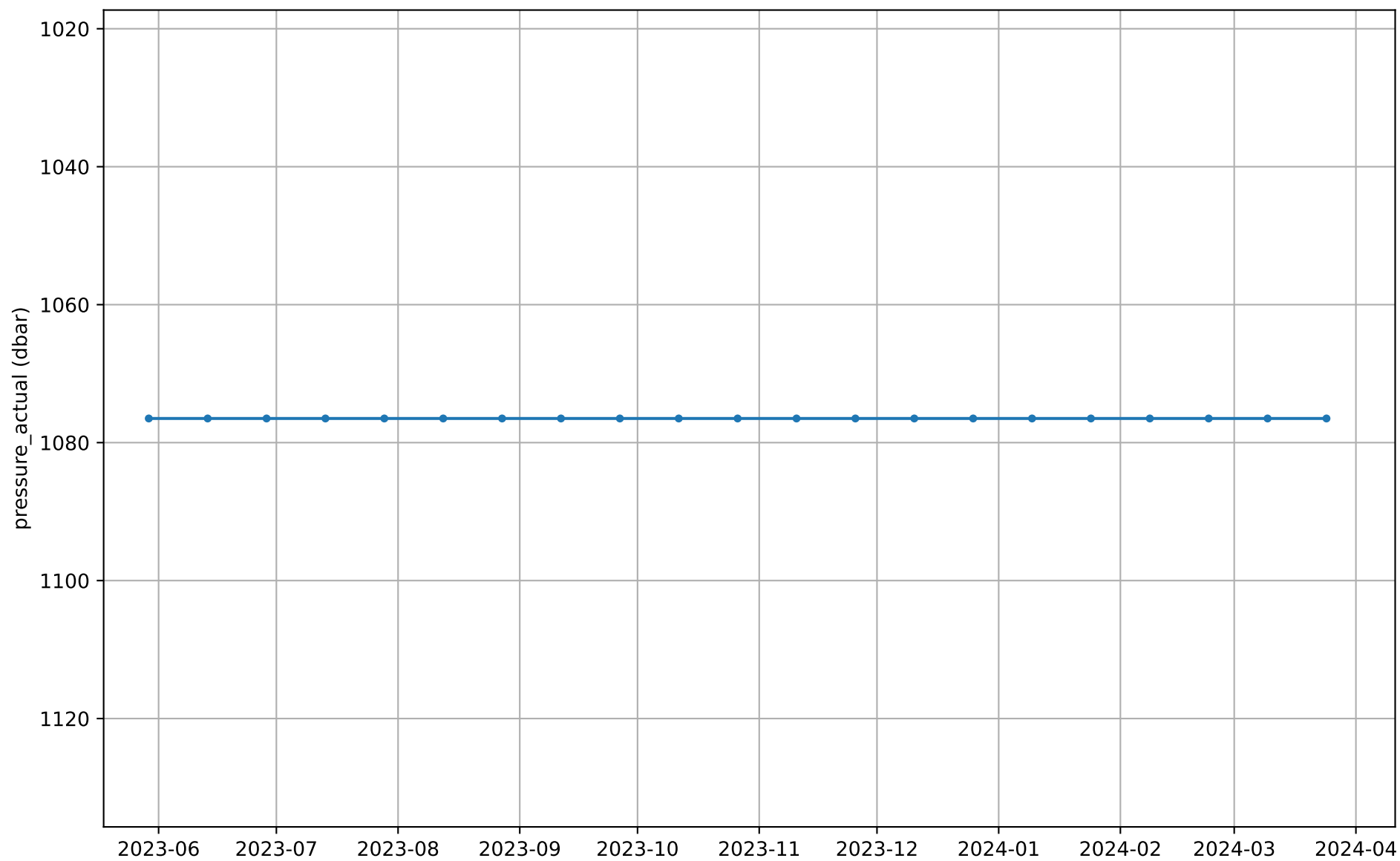
TIME ('TIME',) : long_name = time of sample midpoint (days since 1950-01-01T00:00:00 UTC) : type float64
TIME_bnds ('TIME', 'bnds') : long_name = time sample open, closed (days since 1950-01-01T00:00:00 UTC) : type float64
NOMINAL_DEPTH () : long_name = nominal depth (m) : type float64
LATITUDE () : long_name = latitude of anchor (degrees north) : type float64
LONGITUDE () : long_name = longitude of anchor (degrees east) : type float64
pressure_actual ('TIME',) : long_name = actual pressure (dbar) : type float32
sample ('TIME',) : long_name = sample number (1) : type float32
sample_quality_control ('TIME',) : long_name = quality flag for sample number : type int8
mass_flux ('TIME',) : long_name = particulate total mass flux (mg m-2 d-1) : type float32
mass_flux_uncertainty ('TIME',) : long_name = uncertainty for particulate total mass flux (mg m-2 d-1) : type float32
mass_flux_quality_control ('TIME',) : long_name = quality flag for particulate total mass flux : type int8
SAL_BRINE ('TIME',) : long_name = sample supernatant practical salinity (1) : type float32
SAL_BRINE_uncertainty ('TIME',) : long_name = uncertainty for sample supernatant practical salinity (1) : type float32
SAL_BRINE_quality_control ('TIME',) : long_name = quality flag for sample supernatant practical salinity : type int8
pH_BRINE ('TIME',) : long_name = sample supernatant pH NBS scale (1) : type float32
pH_BRINE_uncertainty ('TIME',) : long_name = uncertainty for sample supernatant pH NBS scale (1) : type float32
pH_BRINE_quality_control ('TIME',) : long_name = quality flag for sample supernatant pH NBS scale : type int8
PC_mass_flux ('TIME',) : long_name = particulate total carbon mass flux (mg m-2 d-1) : type float32
PC_mass_flux_uncertainty ('TIME',) : long_name = uncertainty for particulate total carbon mass flux (mg m-2 d-1) : type float32
PC_mass_flux_quality_control ('TIME',) : long_name = quality flag for particulate total carbon mass flux : type int8
PN_mass_flux ('TIME',) : long_name = particulate total nitrogen mass flux (mg m-2 d-1) : type float32
PN_mass_flux_uncertainty ('TIME',) : long_name = uncertainty for particulate total nitrogen mass flux (mg m-2 d-1) : type float32
PN_mass_flux_quality_control ('TIME',) : long_name = quality flag for particulate total nitrogen mass flux : type int8
POC_mass_flux ('TIME',) : long_name = particulate organic carbon mass flux (mg m-2 d-1) : type float32
POC_mass_flux_uncertainty ('TIME',) : long_name = uncertainty for particulate organic carbon mass flux (mg m-2 d-1) : type float32
POC_mass_flux_quality_control ('TIME',) : long_name = quality flag for particulate organic carbon mass flux : type int8
PIC_mass_flux ('TIME',) : long_name = particulate inorganic carbon mass flux (mg m-2 d-1) : type float32
PIC_mass_flux_uncertainty ('TIME',) : long_name = uncertainty for particulate inorganic carbon mass flux (mg m-2 d-1) : type float32
PIC_mass_flux_quality_control ('TIME',) : long_name = quality flag for particulate inorganic carbon mass flux : type int8
BSi_mass_flux ('TIME',) : long_name = particulate biogenic silicon mass flux (mg m-2 d-1) : type float32
BSi_mass_flux_uncertainty ('TIME',) : long_name = uncertainty for particulate biogenic silicon mass flux (mg m-2 d-1) : type float32
BSi_mass_flux_quality_control ('TIME',) : long_name = quality flag for particulate biogenic silicon mass flux : type int8

abstract : Oceanographic and meteorological data from the Southern Ocean Time Series observatory in the Southern Ocean southwest of Tasmania.
acknowledgement : Any users of IMOS data are required to clearly acknowledge the source of the material derived from IMOS in the format: "Data was sourced from the Integrated Marine Observing System (IMOS) - IMOS is a national collaborative research infrastructure, supported by the Australian Government."
author : Cathryn Wynn-Edwards
author_email : cathryn.wynn-edwards@csiro.au
cdm_data_type : Station
citation : Integrated Marine Observing System. [year-of-data-download], [Title], [Data access URL], accessed [date- of-access]
comment_archive : zooplankton > lmm archived, photos available on request, 3/10 of sample archived
comment_data_qc_report : Wynn-Edwards, CA, Davies, DM, Shadwick, EH, Trull, TW (2020) Southern Ocean Time Series. SOTS Quality assessment and control report. Sediment trap particle fluxes Version 1.0. CSIRO, Australia. DOI: 10.26198/5dfad21358a8d (<http://dx.doi.org/10.26198/5dfad21358a8d>)
comment_generating_script : SAZxls2trapNetCDF
comment_instrument : trap area, PARFLUX = 0.5 m², IRS = 0.16 m²
comment_time : time is sample mid point
comment_uncertainty : Mass flux uncertainty estimates are based on weighing errors only (uniformly 0.06%), and do not include sample splitting errors (~3%) or trap collection efficiency variations. Chemical component flux uncertainty estimates combine the mass flux uncertainty and the analytical uncertainty for the component, based on variations in working standards and duplicate samples over long periods. These are uniformly 1.9% for PIC, 2.8% for POC, 2.1% for PC, 3.8% for PN, and 4.9% for BSi. All uncertainty estimates are 95% confidence intervals (1.96 standard deviations). Further details are available in Wynn-Edwards et al., 2020
contributor_name : Gemma Woodward
contributor_role : sample processing
Conventions : CF-1.6,IMOS-1.4
data_centre : Australian Ocean Data Network (AODN)
data_centre_email : info@aodn.org.au
data_mode : D
date_created : 2025-10-17T03:52:06Z
deployment_code : SAZ47-25-2023
disclaimer : Data, products and services from IMOS are provided "as is" without any warranty as to fitness for a particular purpose.
distribution_statement : Data may be re-used, provided that related metadata explaining the data has been reviewed by the user, and the data is appropriately acknowledged.
Data, products and services from IMOS are provided as is without any warranty as to fitness for a particular purpose.
featureType : timeSeries
file_version : Level 1 - Quality Controlled Data
geospatial_lat_max : -46.90882
geospatial_lat_min : -46.90882
geospatial_lat_units : degrees_north
geospatial_lon_max : 141.69232
geospatial_lon_min : 141.69232
geospatial_lon_units : degrees_east
geospatial_vertical_max : 1000.0
geospatial_vertical_min : 1000.0
geospatial_vertical_positive : down
geospatial_vertical_units : metres
history : 2025-10-17 03:52:06 : created from : 2023_saz25_47_sed.xlsx datestamp : 2025-10-17 14:16:58
institution : CSIRO; Australian Antarctic Program Partnership
institution_address : CSIRO Marine Laboratories, Castray Esp, Hobart, Tasmania 7001, Australia; 20 Castray Esplanade, Hobart Tasmania 7000, Australia
instrument : McLane-PARFLUX-Mark78H-21
instrument_serial_number : frame# 2241, controller# 11640-01 and Motor # 11640-01 Cup set Dx21
keywords : Oceans->Ocean Chemistry->Biogeochemical Cycles; mass_flux; SAL_BRINE; pH_BRINE; PC_mass_flux; PN_mass_flux; POC_mass_flux; PIC_mass_flux; BSi_mass_flux
license : <http://creativecommons.org/licenses/by/4.0/>
Metadata_Conventions : Unidata Dataset Discovery v1.0
Mooring : SAZ mooring
naming_authority : IMOS
platform_code : SAZ
platform_deployment_cruise_ExpoCode : 096U20230510
platform_deployment_cruise_name : IN2023_V03

platform_deployment_ship_ICES : 096U
platform_deployment_ship_name : RV Investigator
platform_recovery_cruise_ExpoCode : 096U20240330
platform_recovery_cruise_name : IN2024_V02
platform_recovery_ship_ICES : 096U
platform_recovery_ship_name : RV Investigator
principal_investigator : Elizabeth Shadwick
principal_investigator_email : Elizabeth.Shadwick@csiro.au
project : Integrated Marine Observing System (IMOS)
references : Particle flux QC report: <http://www.imos.org.au> <http://dx.doi.org/10.26198/5dfad21358a8d>; SOTS annual reports: <https://catalogue-imos.aodn.org.au/geonetwork/srv/eng/catalog.search#/metadata/afcl66ce-6b34-44d9-b64c-8bb10fd43a07>
site_code : SOTS
source : Moorings
standard_name_vocabulary : NetCDF Climate and Forecast (CF) Metadata Convention Standard Name Table 67
time_coverage_end : 2024-03-24T12:00:00Z
time_coverage_start : 2023-05-29T12:00:00Z
time_deployment_end : 2024-04-11T00:00:00Z
time_deployment_start : 2023-05-18T00:00:00Z
title : Oceanographic and meteorological data from the Southern Ocean Time Series observatory in the Southern Ocean southwest of Tasmania.
voyage_deployment : https://www.cmar.csiro.au/data/trawler/survey_details.cfm?survey=IN2023_V03
voyage_deployment_start_date : 10-May-2023
voyage_recovery : https://www.cmar.csiro.au/data/trawler/survey_details.cfm?survey=IN2024_V02
voyage_recovery_start_date : 30-Mar-2024

Variable : pressure_actual('TIME',)
_FillValue : nan
long_name : actual pressure
units : dbar
uncertainty : 3
comment : actual
comment_method : pressure from nearest instrument on mooring, extrapolated to trap position
valid_min : -2.0
valid_max : 12000.0
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH

SAZ47-25-2023

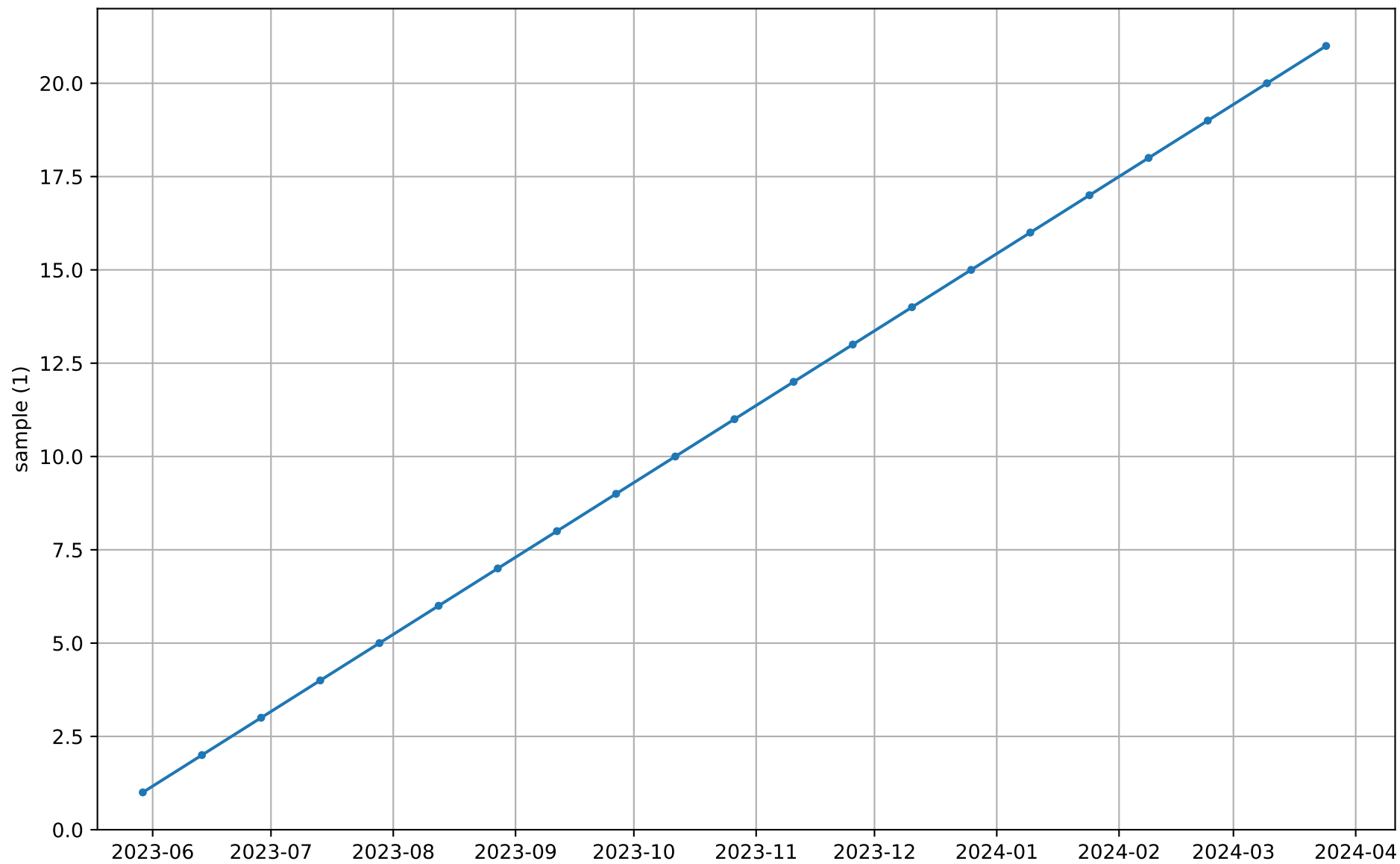


n (u m)

```
Variable : sample('TIME',)
_FillValue : nan
_long_name : sample number
units : 1
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH
ancillary_variables : sample_quality_control

AUX : sample_quality_control('TIME',)
_FillValue : 127
_long_name : quality flag for sample number
quality_control_conventions : IMOS standard flags
valid_min : 0
valid_max : 9
flag_values : [0 1 2 3 4 9]
flag_meanings : unknown good_data probably_good_data probably_bad_data bad_data missing_value
```

SAZ47-25-2023



cyan: QC=2 (pgood); yellow : QC=3 (pbad); red : QC=4 (bad); QC=4,6,9 no line

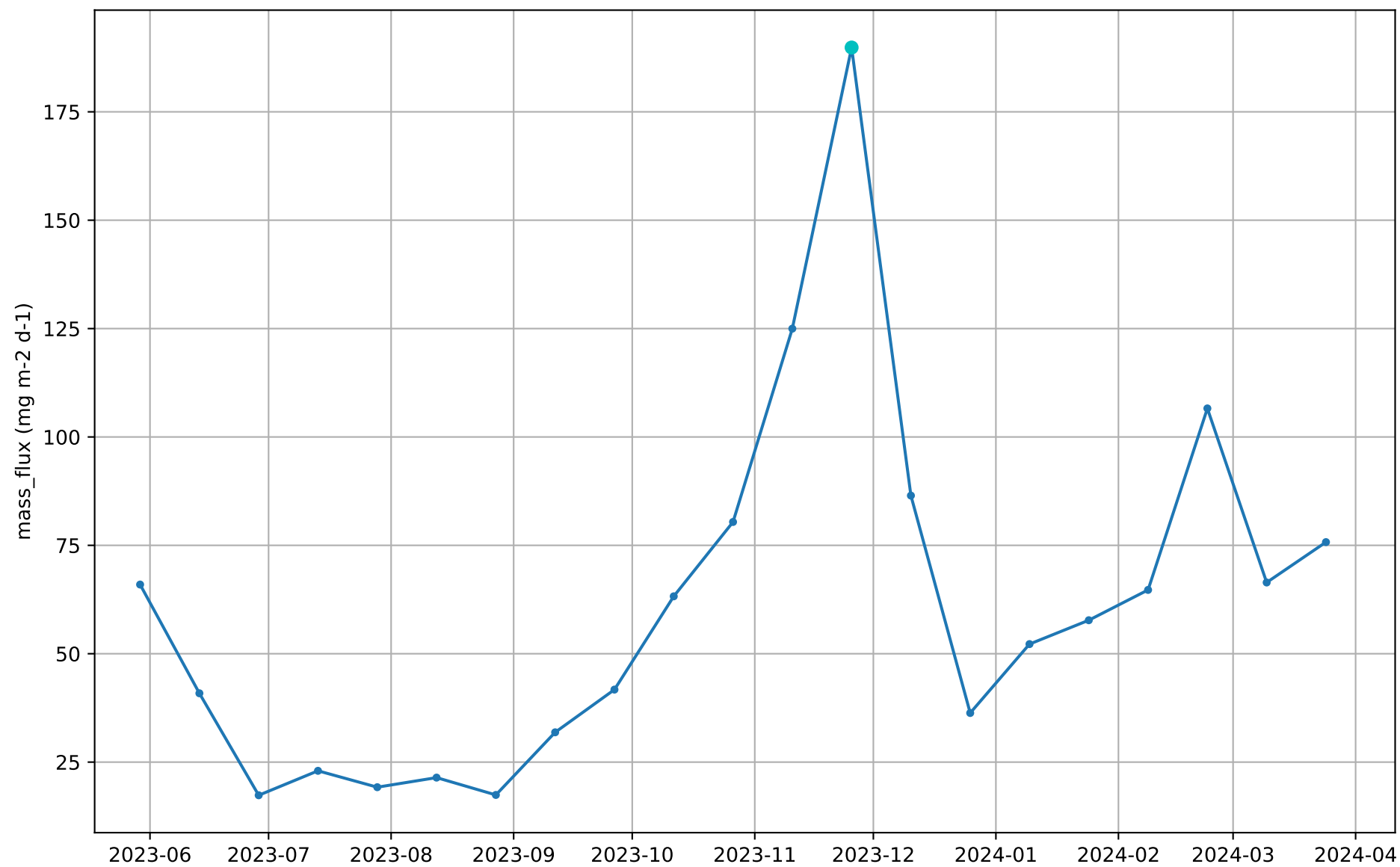
—●— n (u m)

```
Variable : mass_flux('TIME',)
_FillValue : nan
Long_name : particulate total mass flux
units : mg m-2 d-1
relative_uncertainty : 0.0006
comment : <1mm
comment_method : dry wt 60C
valid_min : -10.0
valid_max : 1000.0
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH
ancillary_variables : mass_flux_uncertainty mass_flux_quality_control

AUX : mass_flux_uncertainty('TIME',)
_FillValue : nan
units : mg m-2 d-1
long_name : uncertainty for particulate total mass flux

AUX : mass_flux_quality_control('TIME',)
_FillValue : 127
Long_name : quality flag for particulate total mass flux
quality_control_conventions : IMOS standard flags
valid_min : 0
valid_max : 9
flag_values : [0 1 2 3 4 9]
flag_meanings : unknown good_data probably_good_data probably_bad_data bad_data missing_value
```


SAZ47-25-2023



cyan: QC=2 (pgood); yellow : QC=3 (pbad); red : QC=4 (bad); QC=4,6,9 no line

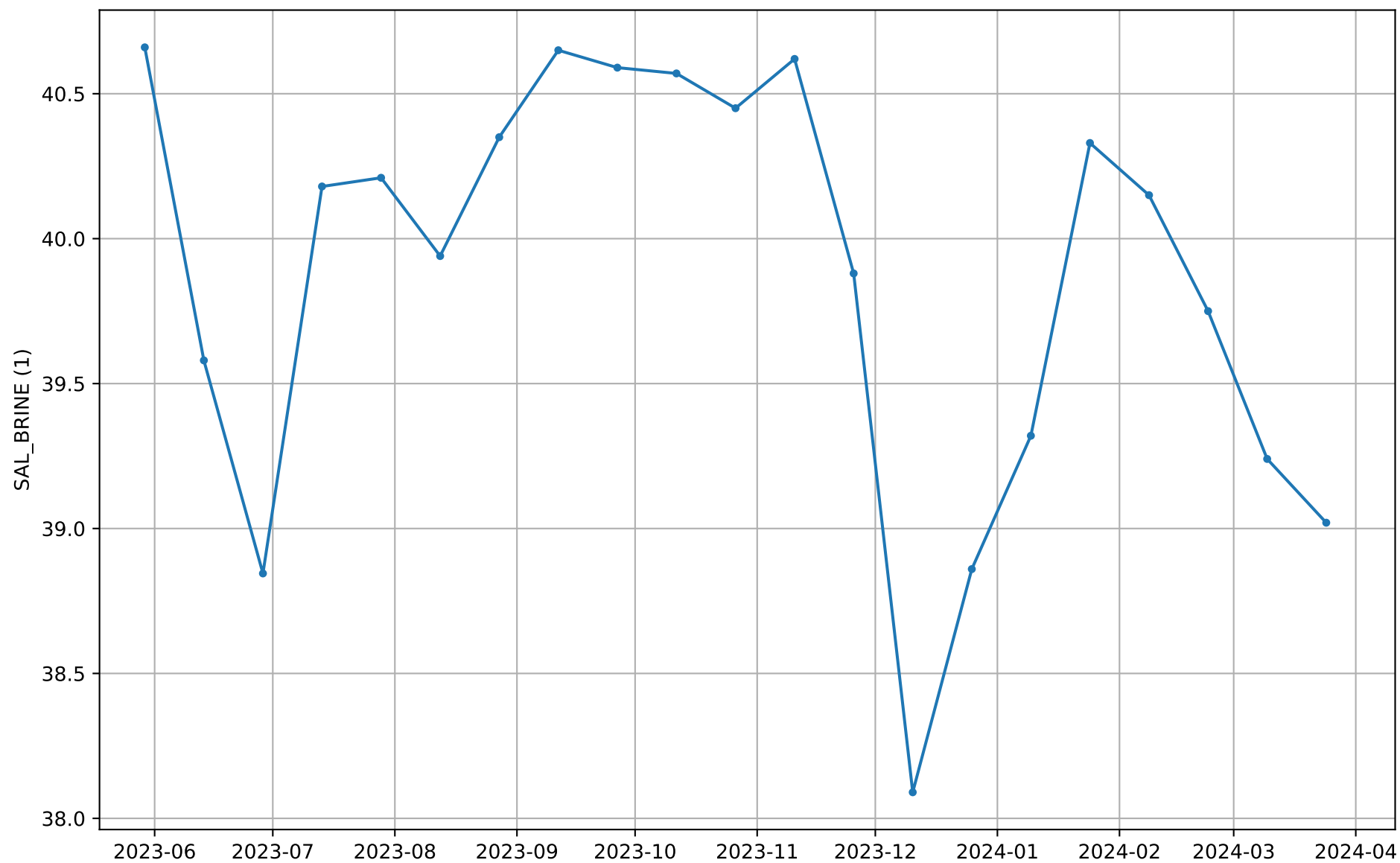
—●— n (u m)

Variable : SAL_BRINE('TIME',)
_FillValue : nan
long_name : sample supernatant practical salinity
units : 1
relative_uncertainty : 0.022
comment : supernatant
comment_method : Supernatant salinity measured as conductivity on recovery as indicator of brine washout
valid_min : 20.0
valid_max : 60.0
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH
ancillary_variables : SAL_BRINE_uncertainty SAL_BRINE_quality_control

AUX : SAL_BRINE_uncertainty('TIME',)
_FillValue : nan
units : 1
long_name : uncertainty for sample supernatant practical salinity

AUX : SAL_BRINE_quality_control('TIME',)
_FillValue : 127
long_name : quality flag for sample supernatant practical salinity
quality_control_conventions : IMOS standard flags
valid_min : 0
valid_max : 9
flag_values : [0 1 2 3 4 9]
flag_meanings : unknown good_data probably_good_data probably_bad_data bad_data missing_value

SAZ47-25-2023



cyan: QC=2 (pgood); yellow : QC=3 (pbad); red : QC=4 (bad); QC=4,6,9 no line

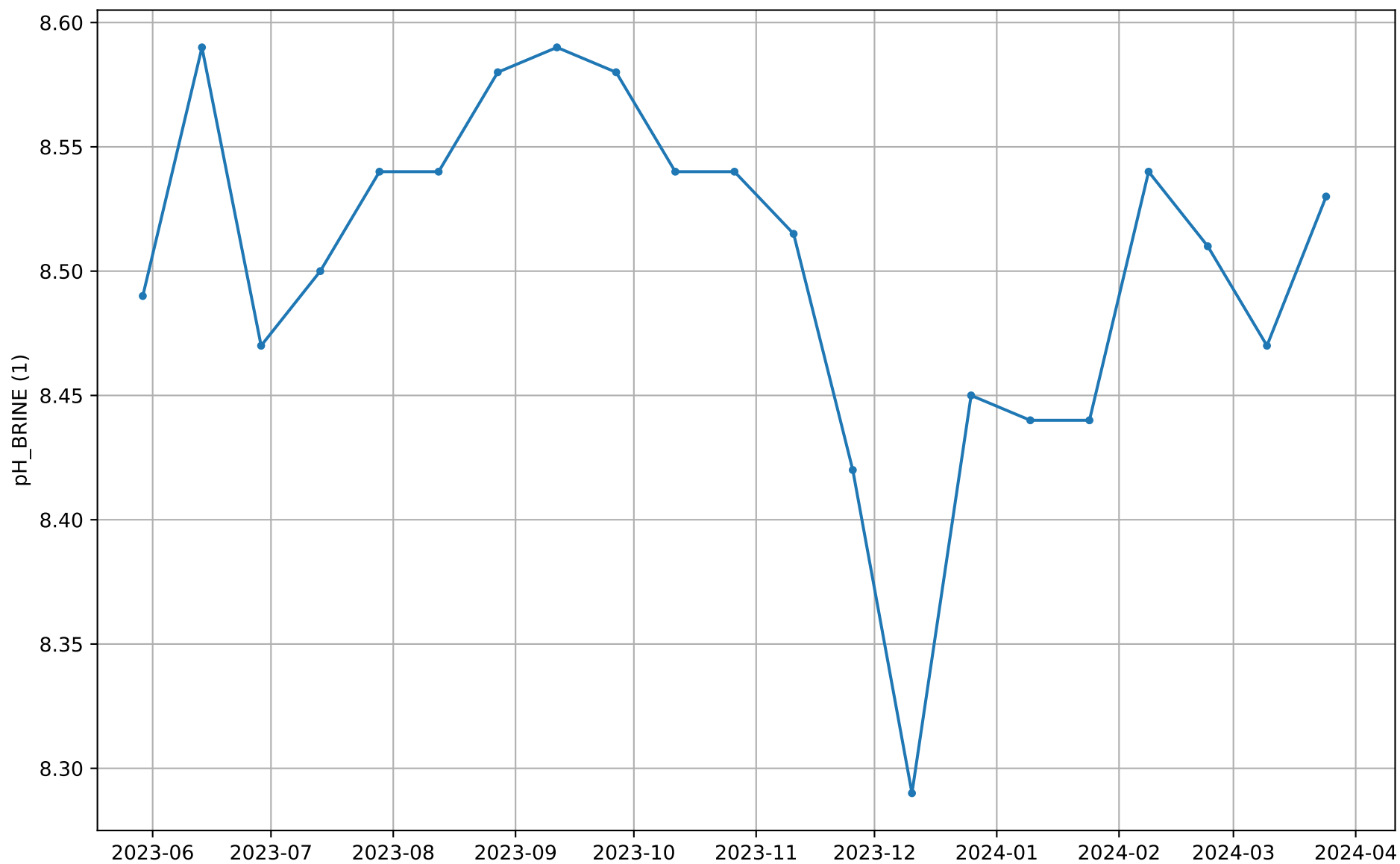
—●— n (u m)

Variable : pH_BRINE('TIME',)
_FillValue : nan
long_name : sample supernatant pH NBS scale
units : 1
relative_uncertainty : 0.029
comment : supernatant
comment_method : Supernatant pH measured potentiometrically on recovery as indicator of brine washout
valid_min : 2.0
valid_max : 12.0
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH
ancillary_variables : pH_BRINE_uncertainty pH_BRINE_quality_control

AUX : pH_BRINE_uncertainty('TIME',)
_FillValue : nan
units : 1
long_name : uncertainty for sample supernatant pH NBS scale

AUX : pH_BRINE_quality_control('TIME',)
_FillValue : 127
long_name : quality flag for sample supernatant pH NBS scale
quality_control_conventions : IMOS standard flags
valid_min : 0
valid_max : 9
flag_values : [0 1 2 3 4 9]
flag_meanings : unknown good_data probably_good_data probably_bad_data bad_data missing_value

SAZ47-25-2023



cyan: QC=2 (pgood); yellow : QC=3 (pbad); red : QC=4 (bad); QC=4,6,9 no line

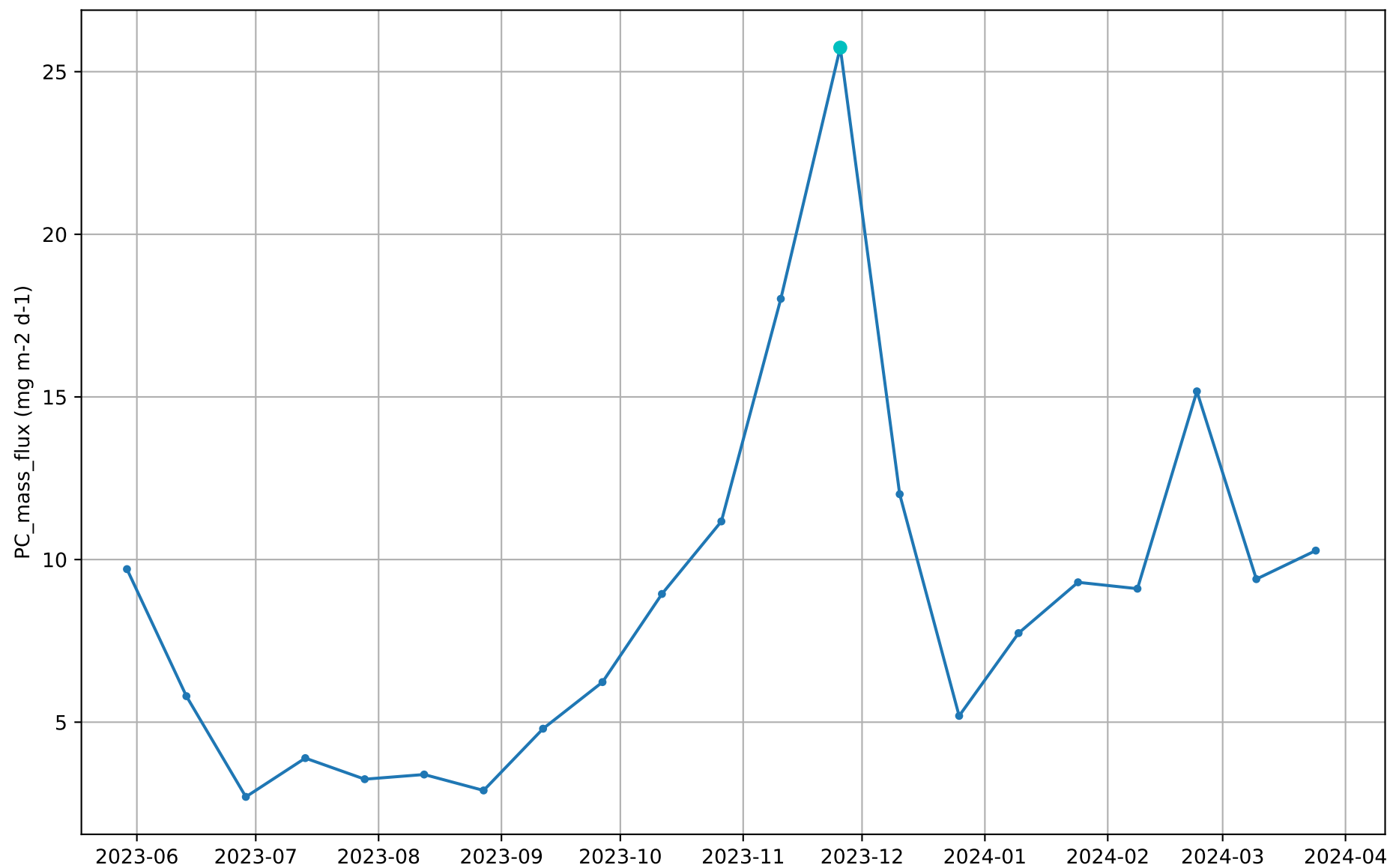
—●— n (u m)

Variable : PC_mass_flux('TIME',)
_FillValue : nan
long_name : particulate total carbon mass flux
units : mg m-2 d-1
relative_uncertainty : 0.021
comment : <1mm
comment_method : elemental analyser total carbon
valid_min : -1.0
valid_max : 100.0
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH
ancillary_variables : PC_mass_flux_uncertainty PC_mass_flux_quality_control

AUX : PC_mass_flux_uncertainty('TIME',)
_FillValue : nan
units : mg m-2 d-1
long_name : uncertainty for particulate total carbon mass flux

AUX : PC_mass_flux_quality_control('TIME',)
_FillValue : 127
long_name : quality flag for particulate total carbon mass flux
quality_control_conventions : IMOS standard flags
valid_min : 0
valid_max : 9
flag_values : [0 1 2 3 4 9]
flag_meanings : unknown good_data probably_good_data probably_bad_data bad_data missing_value

SAZ47-25-2023



cyan: QC=2 (pgood); yellow : QC=3 (pbad); red : QC=4 (bad); QC=4,6,9 no line

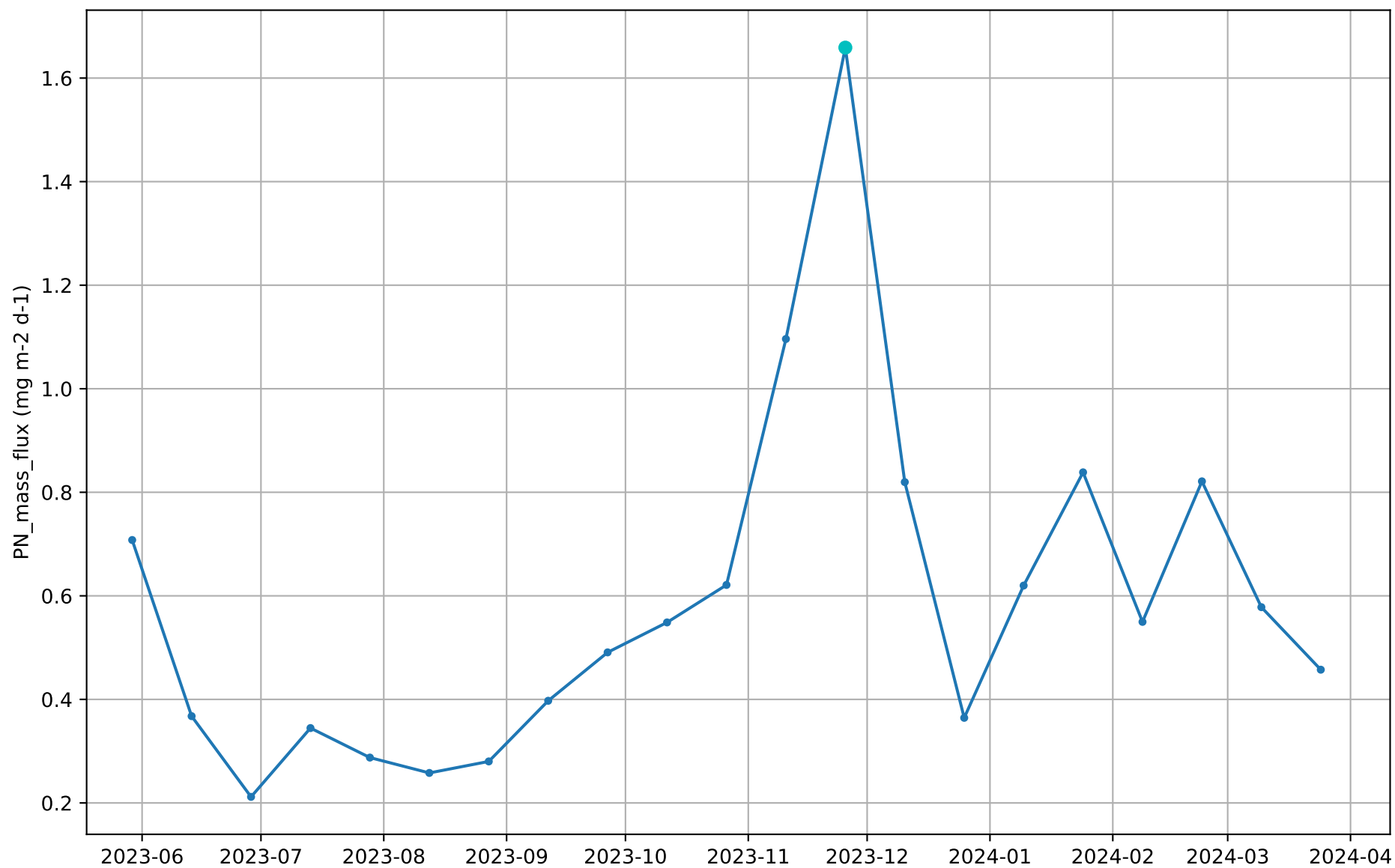
—●— n (u m)

Variable : PN_mass_flux('TIME',)
_FillValue : nan
long_name : particulate total nitrogen mass flux
units : mg m-2 d-1
relative_uncertainty : 0.038
comment : <1mm
comment_method : elemental analyser total nitrogen
valid_min : -1.0
valid_max : 100.0
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH
ancillary_variables : PN_mass_flux_uncertainty PN_mass_flux_quality_control

AUX : PN_mass_flux_uncertainty('TIME',)
_FillValue : nan
units : mg m-2 d-1
long_name : uncertainty for particulate total nitrogen mass flux

AUX : PN_mass_flux_quality_control('TIME',)
_FillValue : 127
long_name : quality flag for particulate total nitrogen mass flux
quality_control_conventions : IMOS standard flags
valid_min : 0
valid_max : 9
flag_values : [0 1 2 3 4 9]
flag_meanings : unknown good_data probably_good_data probably_bad_data bad_data missing_value

SAZ47-25-2023



cyan: QC=2 (pgood); yellow : QC=3 (pbad); red : QC=4 (bad); QC=4,6,9 no line

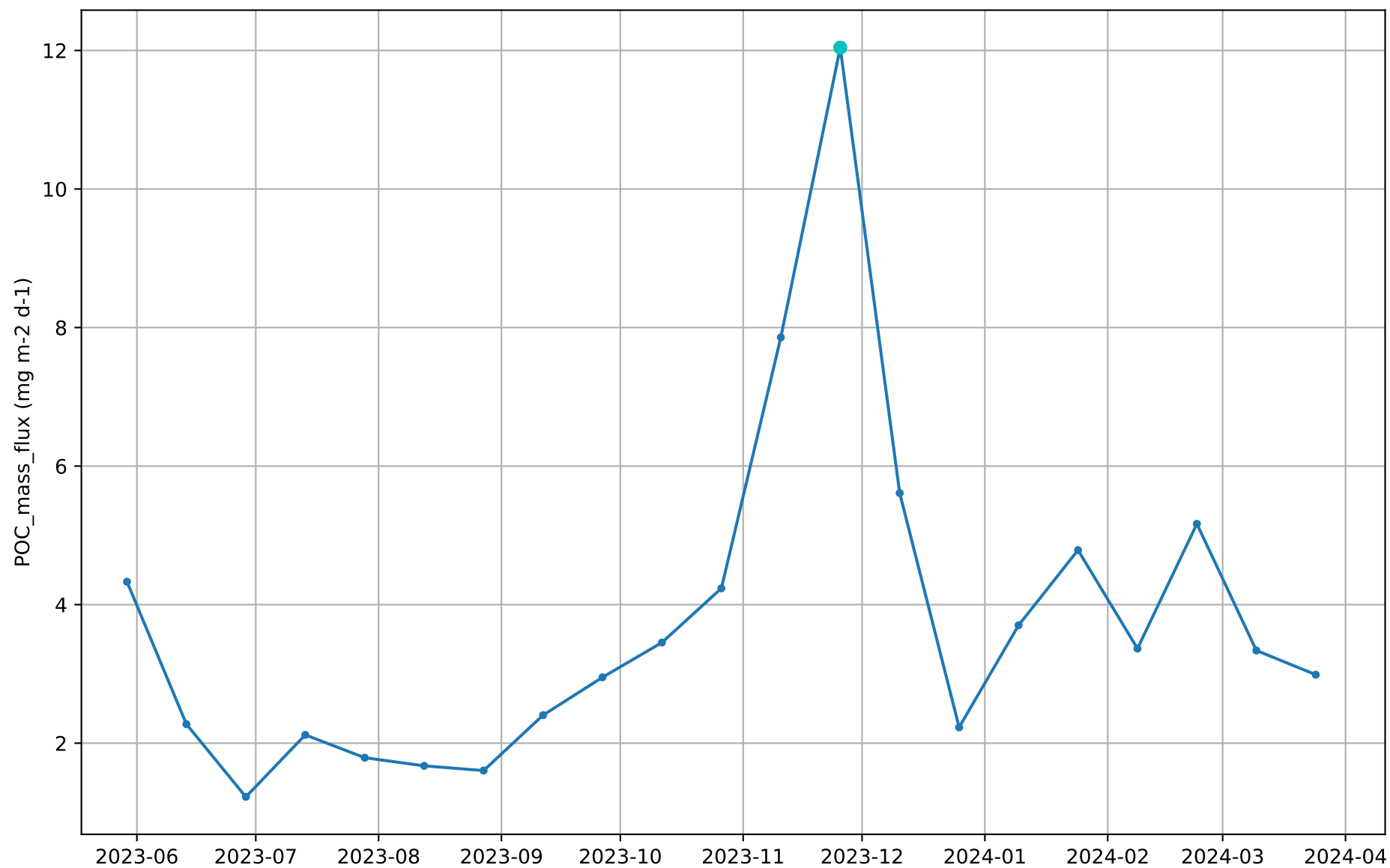
—●— n (u m)

Variable : POC_mass_flux('TIME',)
_FillValue : nan
long_name : particulate organic carbon mass flux
units : mg m-2 d-1
relative_uncertainty : 0.028
comment : <1mm
comment_method : particulate total carbon minus particulate inorganic carbon
valid_min : -1.0
valid_max : 100.0
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH
ancillary_variables : POC_mass_flux_uncertainty POC_mass_flux_quality_control

AUX : POC_mass_flux_uncertainty('TIME',)
_FillValue : nan
units : mg m-2 d-1
long_name : uncertainty for particulate organic carbon mass flux

AUX : POC_mass_flux_quality_control('TIME',)
_FillValue : 127
long_name : quality flag for particulate organic carbon mass flux
quality_control_conventions : IMOS standard flags
valid_min : 0
valid_max : 9
flag_values : [0 1 2 3 4 9]
flag_meanings : unknown good_data probably_good_data probably_bad_data bad_data missing_value

SAZ47-25-2023



cyan: QC=2 (pgood); yellow : QC=3 (pbad); red : QC=4 (bad); QC=4,6,9 no line

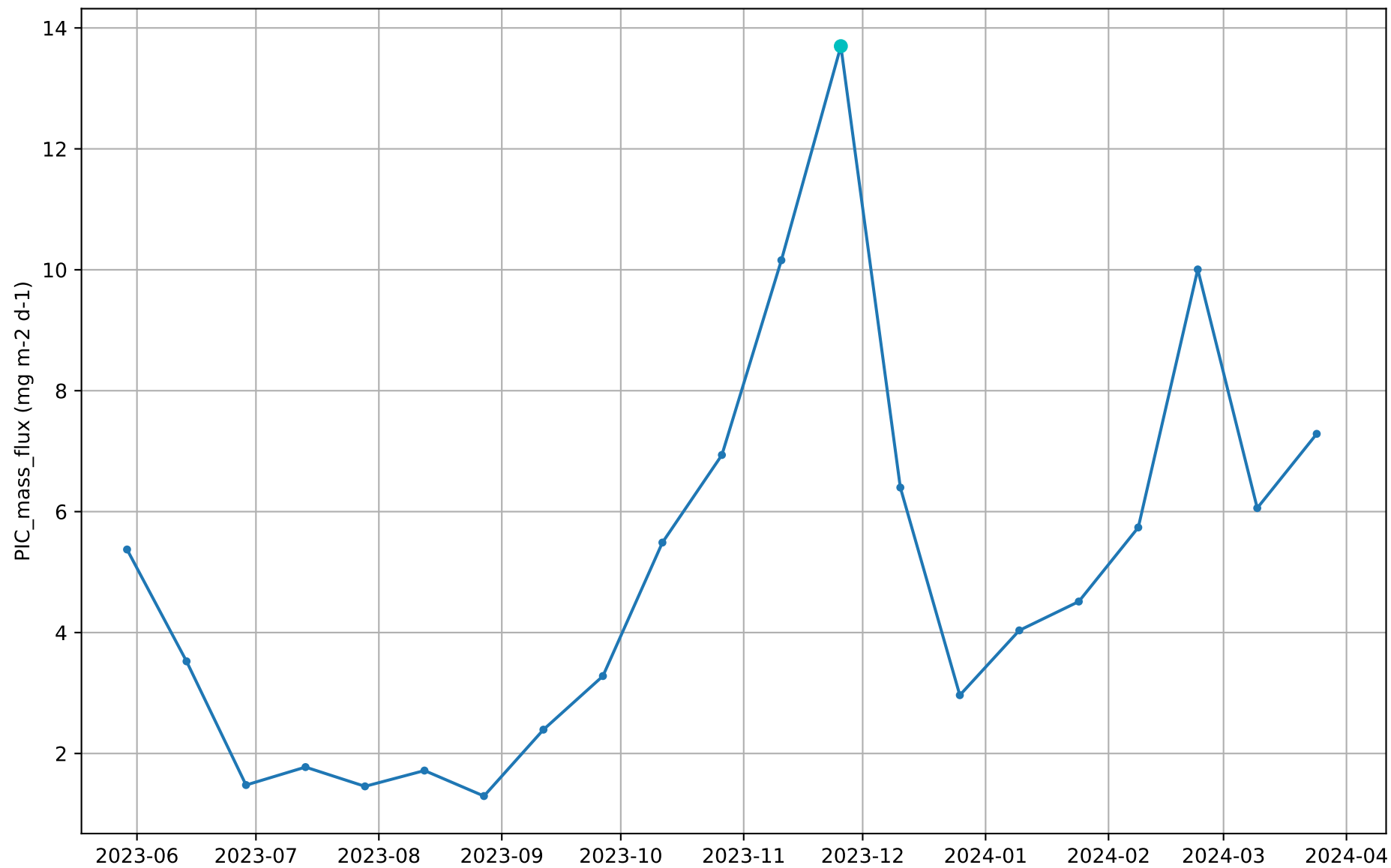
—●— n (u m)

Variable : PIC_mass_flux('TIME',)
_FillValue : nan
long_name : particulate inorganic carbon mass flux
units : mg m-2 d-1
relative_uncertainty : 0.019
comment : <1mm
comment_method : closed system acidification and coulometry of evolved carbon dioxide
valid_min : -1.0
valid_max : 100.0
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH
ancillary_variables : PIC_mass_flux_uncertainty PIC_mass_flux_quality_control

AUX : PIC_mass_flux_uncertainty('TIME',)
_FillValue : nan
units : mg m-2 d-1
long_name : uncertainty for particulate inorganic carbon mass flux

AUX : PIC_mass_flux_quality_control('TIME',)
_FillValue : 127
long_name : quality flag for particulate inorganic carbon mass flux
quality_control_conventions : IMOS standard flags
valid_min : 0
valid_max : 9
flag_values : [0 1 2 3 4 9]
flag_meanings : unknown good_data probably_good_data probably_bad_data bad_data missing_value

SAZ47-25-2023



cyan: QC=2 (pgood); yellow : QC=3 (pbad); red : QC=4 (bad); QC=4,6,9 no line

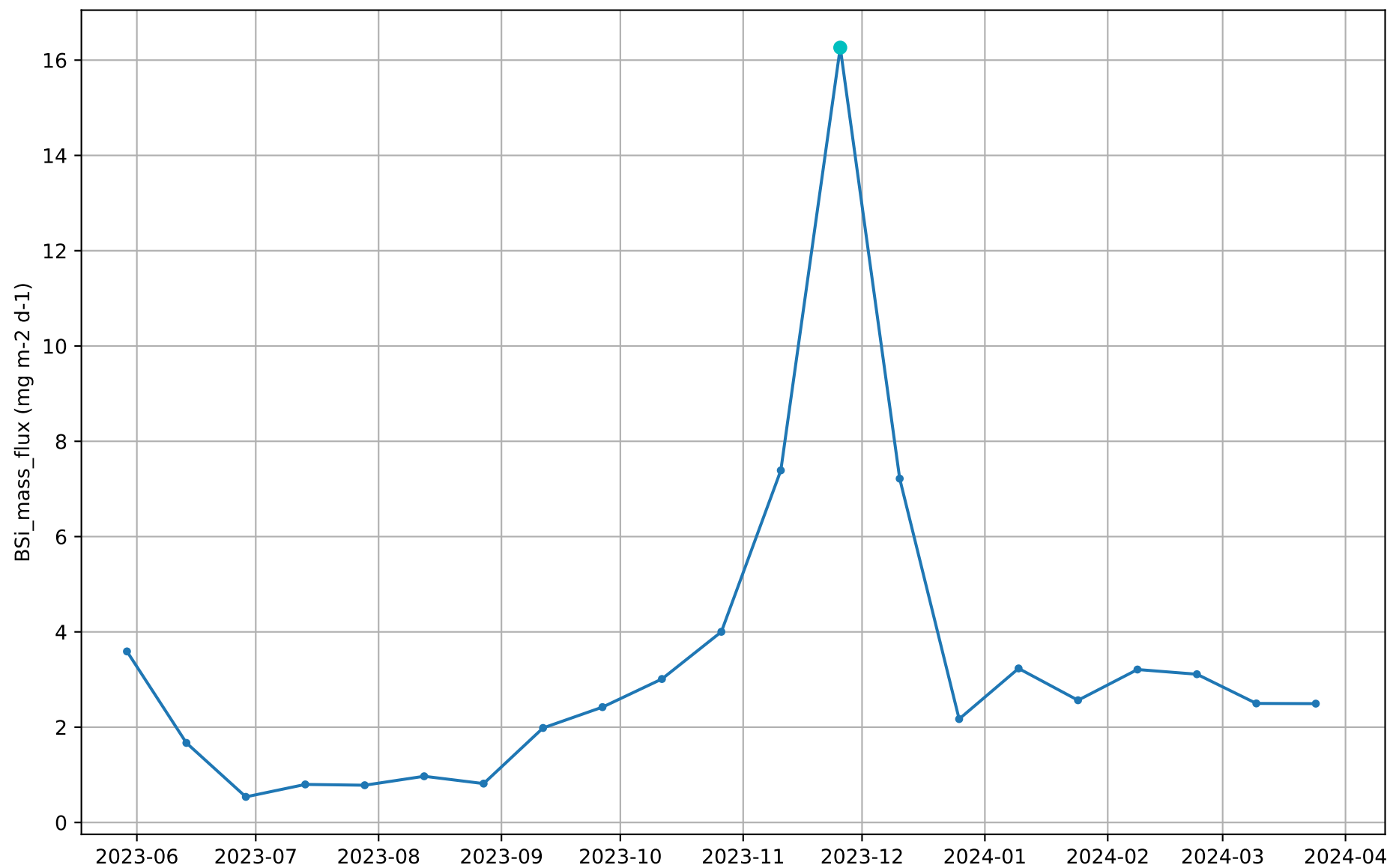
—●— n (u m)

Variable : BSi_mass_flux('TIME',)
_FillValue : nan
long_name : particulate biogenic silicon mass flux
units : mg m-2 d-1
relative_uncertainty : 0.049
comment : <1mm
comment_method : alkaline digest and segmented-flow spectrometry
valid_min : -1.0
valid_max : 100.0
coordinates : TIME LATITUDE LONGITUDE NOMINAL_DEPTH
ancillary_variables : BSi_mass_flux_uncertainty BSi_mass_flux_quality_control

AUX : BSi_mass_flux_uncertainty('TIME',)
_FillValue : nan
units : mg m-2 d-1
long_name : uncertainty for particulate biogenic silicon mass flux

AUX : BSi_mass_flux_quality_control('TIME',)
_FillValue : 127
long_name : quality flag for particulate biogenic silicon mass flux
quality_control_conventions : IMOS standard flags
valid_min : 0
valid_max : 9
flag_values : [0 1 2 3 4 9]
flag_meanings : unknown good_data probably_good_data probably_bad_data bad_data missing_value

SAZ47-25-2023



cyan: QC=2 (pgood); yellow : QC=3 (pbad); red : QC=4 (bad); QC=4,6,9 no line

—●— n (u m)