IMOS NETCDF FILE NAMING CONVENTION

Version 1.5.2
January, 2021

Table of contents

PREFACE to version 1.5.2

The eMII acronym has been replaced by AODN.

Timestamps (start-date, end-date, and creation-date) are now allowed to be given as date-only (YYYYMMDD) in addition to the previously allowed date and time (YYYYMMDDThhmmssZ).

The list of **platforms** and **platform codes** included in previous versions has been removed. The updated platform codes can be found in the AODN Platform Vocabulary at https://vocabs.ardc.edu.au/viewById/25.

Prefaces to previous versions of this document have been removed.

1 - FILE NAMING CONVENTION

For many data types, **IMOS** uses the netCDF (network Common Data Form) system, a set of software libraries and machine-independent data formats that support the creation, access, and sharing of array-oriented scientific data.

The main purpose of this document is to specify the format of filenames that will be used to distribute **IMOS** data in netCDF format.

1.1 - Data file naming convention

The file name extension of each **netCDF file** must be **".nc".**

Filenames can be up to 255 characters in length and are composed of up to 10 fields separated by **'_'** (underscore) characters.

Characters which can be used within fields are letters (A to Z, lower or upper case) and whole numbers (0 to 9). The hyphen character (-) may also be used within fields.

The NetCDF file name format is:

IMOS_<Facility-Code>_<Data-Code>_<Start-date>_<Platform-Code>_FV<File-Version>_

<Product-Type>_<End-date>_<Creation-date>_<PARTX>.nc

The first 6 fields are mandatory and must conform to the following content guidelines:

1.   IMOS: Name of the project[1]

2.   <Facility-Code>: code representing a facility (and a sub-facility if applicable) (see 1.1.1 - Reference Table 1: Facility Codes).

3.   <Data-Code>: list of data codes in alphabetical order from reference table 2. The data codes are descriptors of the primary parameters measured. Data codes do not list secondary parameters (see 1.1.2 - Reference Table 2: Data Codes).

---

[1] Any data produced by the IMOS project should be instantly identifiable as 'IMOS' data

4. <Start-date>: start date (and time) of the measurements. The date and time are formatted to international standard ISO8601. AODN requests that the time be in UTC.

    The format can be either YYYYMMDD or YYYYMMDDThhmmssZ, where YYYY = 4-digit year, MM = month, DD = day, hh = hour, mm = minute, ss = second, 'T' is the delimiter between date and time, and 'Z' indicates that time is in UTC. If time is not in UTC, local time must be shown as hours plus or minus from the longitudinal meridian. Z is not appended when local time is used. Examples of the time format are below.

    -   20081024

    -   20081024T080000Z (UTC)

    -   20081024T180000+10 (Local)

    -   20081024T020000-06 (Local)

    Note that different IMOS facilities may interpret "start of measurements" in different ways, e.g. when instrument was turned on, entered the water, or time of first good data[2].

5. <Platform-Code>: code representing the platform[3] (see the AODN Platform Vocabulary at https://vocabs.ardc.edu.au/viewById/25; the "alt label" found in this vocabulary is the platform code).

6. <File-Version>: value representing the version of the file (see 1.1.3 - Reference Table 4: File Version Codes).

---

[2] **Notes on Start-date:** Files from the ANMN facility may possess different meanings for <Start-date>:

    a. The time of the *first good data* (after quality-control).

    b. The time the instrument *was at a specific position*.

    c. The time when the instrument was *in the water.*

    d. The time when the instrument was *turned on.*

Since Nov/2019 the default behaviour for <Start-date> in ANMN files is to use the time of the *first good data (a).*

[3] **Notes on Platform-code:** The platform codes for data file naming conventions found in the AODN Platform Vocabulary are unique and if any is missing please contact info@aodn.org.au.

Platform codes must be unique within an **IMOS** facility and must apply to either one particular unit of equipment or to one particular location.

To finalise Platform-code, AODN needs more information about the formats of different 'platform' codes that are currently used by each facility. AODN anticipate that the codes already in use within many facilities will be suitable.

Characters which can be used are letters (A to Z, lower or upper case) and digits (0 to 9). The hyphen character (-) may also be used.

The following 4 fields are optional:

7. <Product-Type>: This code will give information about the product included in the dataset.

8. <End-date>: end date (and time) of the measurements. The format is the same as the start date, except the timestamp is preceded by the characters "END-", for example "END-20081112T231255Z" or "END-20081112". For some facilities the "end of measurement" may also contain multiple meanings, as in <Start-Date>[4].

9. <PARTX>: when an IMOS data file size becomes excessive (e.g.: >100Mb), it can be split in smaller parts: PART1, PART2, … PARTN.

---

[4] **Notes on End-date:** For ANMN the <End-date> has the timestamp relative to the end of the respective data:

    a. The time of the *last* good data (after quality-control).

    b. The *last* time the instrument was at a *specific position.*

    c. The time when the instrument was *recovered and out of the water (on deck).*

    d. The time when the instrument was turned *off.*

As well, the default behaviour since Nov/2019 is to use the *time of the last good data (a).*

1.1.1 - Reference Table 1: Facility Codes

Facility	Sub-Facility (if applicable)	Code
Argo		ARGO
SOOP	Multi-disciplinary Underway Network XBT	SOOP-XBT
	Multi-disciplinary Underway Network CO2	SOOP-CO2
	Multi-disciplinary Underway Network CPR	SOOP-CPR
	Sensors on Tropical Research Vessels	SOOP-TRV
	Sea Surface Temperature Sensors	SOOP-SST
	Research Vessel Real Time Air-Sea Fluxes	SOOP-ASF
	Bio-Acoustic	SOOP-BA
	Sensors on Temperate Merchant Vessels	SOOP-TMV
DWM	Southern Ocean Time Series	DWM-SOTS
	Deepwater Arrays	DWM-DA
ANFOG		ANFOG
AUV		AUV
ANMN	Queensland and Northern Australia	ANMN-QLD
	New South Wales	ANMN-NSW
	Southern Australia	ANMN-SA
	Western Australia	ANMN-WA
	Passive Acoustic Observatories	ANMN-PA
	National Reference Stations Analysis and Coordination	ANMN-NRS
	Acidification Moorings	ANMN-AM
ACORN		ACORN
AATAMS		AATAMS
FAIMMS		FAIMMS
SRS	Australian Satellite SST L2P Products	SRS-A
	Australian Ocean Distributed Archive and Access Centre	SRS-B
	Satellite Altimetry Calibration and Validation	SRS-Altimetry

	Bio-Optical database of Australian waters	SRS-OC-BODBAW
	Lucinda Jetty Coastal Observatory	SRS-OC-LJCO

1.1.2 - Reference Table 2: Data Codes

Data Code	Meaning
A	Acoustic measurements
B	Biology (plankton, fluorescence)
C	Conductivity (electrical conductivity of sea water)
E	Engineering or technical parameters
F	Fluxes (e.g. radiation, latent heat, sensible heat)
G	Gas (measurement and fluxes)
I	Images
K	Chemistry (nutrients, trace metals)
M	Meteorological parameters (e.g. wind, air pressure, air temperature)
O	Oxygen concentration (in sea water)
R	Raw data
S	Salinity (of sea water)
T	Temperature (of sea water)
U	Turbidity (of sea water)
V	Velocity (of sea water)
W	Wave parameters (significant wave height, peak period, peak direction …)
Z	Vertical reference parameters (pressure, depth, height_above_sensor, …)

1.1.3 - Reference Table 3: File Version Codes

The File Version code will enable a file creator to specify the processing version of the file.

File Version	Definition	Description
FV00	Level 0 – Raw data	Raw data is defined as unprocessed data and data products that have not undergone quality control. The data may be in engineering or physical units, time and location details can be in relative units and values can be pre-calibration measurements. Level 0 data is not suitable for public access within IMOS.
FV01	Level 1 – Quality Controlled data	Quality controlled data have passed quality assurance procedures such as automated routines and sensor calibration or visual inspection and removal of obvious errors. The data are in physical units using standard SI metric units with calibration and other pre-processing routines applied, all time and location values are in absolute coordinates to comply with standards and datum. Data includes flags for each measurement to indicate the estimated quality of the measurement. Metadata exists for the data or for the higher level dataset that the data belongs to. This is the standard IMOS data level and is what should be made available to AODN and to the IMOS community.
FV02	Level 2 – Derived Products	Derived products require scientific and technical interpretation. Normally these will be defined by the community that collects or utilises the data.
FV03	Level 3 – Interpreted Products	These products require researcher driven analysis and interpretation, model based interpretation using other data and / or strong prior assumptions.
FV04	Level 4 – Knowledge Products	These products require researcher driven scientific interpretation and multidisciplinary data integration and include model-base interpretation using other data and/or strong prior assumptions.

1.2 - Examples

Example data file names for each **IMOS** facility can be found in this section. These examples are suggestions only.

Please provide AODN with feedback on this discussion document if you believe that these suggestions will not work for your facility.

1.2.1 - Facility 1: ARGO

AODN intend to use the internationally accepted Argo netCDF conventions for GDAC data file naming, ie:

<FloatID>_prof.nc, <FloatID>_traj.nc, <FloatID>_meta.nc, <FloatID>_tech.nc

1.2.2 - Facility 2: SOOP

Multidisciplinary Underway Network

XBT

IMOS_SOOP-XBT_T_20091223T140300Z_PX2_FV01_ID-134215.nc

This file would contain quality controlled Temperature data starting from the 23rd of December 2009 at 14:03 UTC and collected along XBT line PX2 by the XBT group in the **IMOS** SOOP Multidisciplinary Underway Network sub-facility.

CO2

IMOS_SOOP-CO2_GST_20080901T120000Z_VLHJ_FV01.nc

This file would contain quality controlled Gas, Salinity and Temperature data starting from the 1st September 2008 at 12:00 UTC and collected with the CO2 system (and associated underway systems) on the Southern Surveyor by the CO2 group in the **IMOS** SOOP Multidisciplinary Underway Network sub-facility.

Bio-acoustic

IMOS_SOOP-BA_AE_20130623T065936Z_VLHJ_FV02_Southern-Surveyor-EK60-38-120_END-20130625T002210Z_C-20140815T061308Z.nc

This file would contain a product of quality controlled acoustic and engineering parameters collected on RV Southern Surveyor (callsign VLHJ) from an EK60 acoustic transducer operating at 38kHz and sampling 120 vertical cells during a cruise between the 23rd of July 2013 to the 25th of July 2013 created by the **IMOS** SOOP Bio-acoustic sub-facility on the 15th of August 2014.

Temperate Merchant Vessel

IMOS_SOOP-TMV_TSB_20120131T084302Z_VLST_FV02_transect-D2M_END-20120131T184852Z.nc

This file would contain a product of quality controlled temperature, salinity and biology parameters collected on MV Spirit of Tasmania I (callsign VLST) during transect Devonport to Melbourne between the 31st of January 2012 to the 31st of January 2012 by the **IMOS** SOOP TMV sub-facility.

Sensors on Tropical Research Vessels

IMOS_SOOP-TRV_T_20080930T002727Z_VNCF_FV01_END-20081013T093401Z.nc

This file would contain quality controlled temperature data collected on RV Cape Ferguson during a cruise between the 30th of September 2008 to the 13th of October 2008 by the **IMOS** SOOP Sensors on Tropical Research Vessels sub-facility.

SST

IMOS_SOOP-SST_T_20081030T122500Z_VHW5167_FV01_C-20140815T061308Z.nc

This file would contain quality controlled Temperature data starting from the 30th of October 2008 at 12:25 UTC, collected from the Rottnest Island Ferry (callsign VHW5167) created by the **IMOS** SOOP SST sub-facility on the 15th of August 2014.

Air-Sea Flux

IMOS_SOOP-ASF_MT_20080204T100000Z_VLHJ_FV01_C-20140815T061308Z.nc

This file would contain quality controlled Meteorological and Temperature data starting from the 4th of February 2008 at 10:00 UTC, collected from the Southern Surveyor (callsign VLHJ) created by the **IMOS** SOOP Air-Sea Flux sub-facility on the 15th of August 2014.

1.2.3 - Facility 3: SOTS

IMOS_DWM-SOTS_20090928T000000Z_PULSE_FV01_PULSE-6-2009_END-20100318T030000Z_C-20140603T061638Z.nc

This file would contain quality controlled data starting from the 28th September 2009 at 00:00 UTC to the 18th March 2010 at 03:00 UTC collected by the 6th deployment of the Pulse mooring and created by the **IMOS** DWM-SOTS facility on the 3rd June 2014.

1.2.4 - Facility 4: ANFOG

IMOS_ANFOG_BCEOPSTUV_20130530T233430Z_SG516_FV01_timeseries_END-20130721T161753Z.nc

This file would contain quality controlled Biology, Conductivity, Engineering, Oxygen, Pressure, Salinity, Temperature, Turbidity and Current Velocity data starting from the 30th May 2013 at 23:34:30 UTC to the 21st July 2013 at 16:18 UTC, collected by Seaglider Unit 516 of the **IMOS** ANFOG facility.

1.2.5 - Facility 5: AUV

IMOS_AUV_ST_20080812T122500Z_SIRIUS_FV00.nc

This file would contain raw Temperature and Salinity data starting from the 12th August 2008 at 12:25 UTC collected by AUV Sirius of the **IMOS** AUV facility.

1.2.6 - Facility 6: ANMN

6a Qld and Northern Aust

IMOS_ANMN-QLD_VATPE_20111017T062000Z_GBRMYR_FV01_GBRMYR-1110-Continental-194_END-20120412T221800Z_C-20121112T033900Z.nc This file would contain quality controlled Current Velocity, Acoustic, Temperature, Pressure and Engineering data starting from the 17th

October 2011 at 06:20 UTC to the 12th April 2012 at 22:18 UTC, collected at the Myrmidon mooring site during deployment 1110 by a Nortek Continental ADCP set at the nominal depth of 194 metres and created by the **IMOS** ANMN Queensland and Northern Australia sub-facility the 12th November 2012.

6b NSW

IMOS_ANMN-NSW_TZ_20140603T033500Z_PH100_FV01_PH100-1406-Aqualogger-520T-96_END-20140910T234500Z_C-20141028T023153Z.ncThis file would contain quality controlled Temperature and Depth data starting from the 3rd June 2014 at 03:35 UTC to the 10th September 2014 at 23:45 UTC, collected at the Port Hacking 100m mooring site during the deployment 1406 by an Aqualogger 520T set at the nominal depth of 96 metres and created by the **IMOS** ANMN NSW sub-facility the 28th October 2014.

1.2.7 -Facility 7: ACORN

IMOS_ACORN_RV_20150323T020000Z_NOCR_FV00_radial.nc

This file would contain raw Current Velocity radial data on 23rd of March 2015 at 02:00 UTC from the South Australia radar station Nora Creina, from the **IMOS** ACORN facility.

IMOS_ACORN_V_20140606T133000Z_ROT_FV01_1-hour-avg.nc

This file would contain quality controlled hourly averaged Current Velocity data on 6th of July 2014 at 13:30 UTC from the Western Australia radar site Rottnest Shelf, from the **IMOS** ACORN facility.

1.2.8 -Facility 8: AATAMS

IMOS_AATAMS-SATTAG_TSP_20110420T023000Z_Q9900434_END-20110422T230000Z_FV00.ncThis file would contain raw Temperature, Salinity and Pressure data starting from the 20th April 2011 at 02:30 UTC to 22nd April 2011 at 23:00 UTC transmitted by satellite tag transmitter WMO code Q9900434 the **IMOS** AATAMS-SATTAG facility.

1.2.9 - Facility 9: FAIMMS

IMOS_FAIMMS_T_20081201T015928Z_HIRP1_FV01_END-20090101T000000Z_C-20141107T163648Z.nc This file would contain quality controlled Temperature data from the 1st December 2008 at 01:59 UTC to the 1st of January 2009 at 00:00 UTC collected on Heron Island Relay Pole 1 and created by the **IMOS** FAIMMS facility on the 7th of November 2014.