

O2A specification for Mapping Files (.sdi.mapping.tab)

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Preface

In context of MareHUB and the Viewer on marine-data.org data from different sources gets processed and provided as OGC Web Services. Mapping incoming data to unified names (target vocabulary) is part of this process. This page offers *technical file specifications* used during this process. It is not about the *process* (however, if in special cases there is process information, it is marked as such). For general information on *processes*, see the page on [Standard Operating Procedures](#).

Most important related reading might be [this page about Data Harmonization and the Mapping Principle](#).

Tables are color-coded. **Input** for the Mapping Algorithm has a light yellow, **output** a light blue background.

Version 0.1

There are two "types" of files. Those adding **mapping rules** and those introducing **target vocabulary** data can be mapped to. Mapping rules do not work without the according target vocabulary. Both are tab-separated files, only differing in column names.

Base specs as follows

- tab-separated text file
- UTF-8-encoding
- file extension: .sdi.mapping.tab
- order of columns matter
- columns without values (e.g. sphere_name) can be dropped
- custom columns can be appended but will get ignored (might be useful for future verification, for example)

Target Vocabulary Files

Units

column order	column header	value is mandatory	description	example values (all valid)
1	unit_name	yes	name of unit	degree Celsius Kelvin meter per second
2	unit_symbol	yes	symbol of unit	°C K m/s
3+	<whatever_you_like>	no	can be used for comments or notes/reminders – will get ignored technically	

Examples

unit_vocabulary_example.sdi.mapping.tab	
unit_name	unit_symbol
meter	m
square meter	m ²
degree	°
degree Celsius	°C
meter per second	m/s
centimeter per second	cm/s

Parameters

Column header for parameter vocabulary is parameter_**group** because currently it is used as rough grouping instead of precise mapping. However, both would be possible.

column order	column header	value is mandatory	description	example values (all valid)
1	parameter_group	yes	name of parameter or parameter group	Temperature Total Organic Carbon
2	parameter_sdn	no	SDN of parameter	
3	parameter_nerc_uri	no	NERC URI of parameter	
2+	<whatever_you_like>	no	can be used for comments or notes/reminders – will get ignored technically	

Examples

parameter_vocabulary_example.sdi.mapping.tab	
parameter_group	
Chlorophyll	
Salinity	
Sample ID	
Temperature	

Methods

Column header for method vocabulary is method_**group** because currently it is used as rough grouping instead of precise mapping. However, both would be possible.

column order	column header	value is mandatory	description	example values (all valid)
1	method_group	yes	name of method or method group	direct count electric
2+	<whatever_you_like>	no	can be used for comments or notes/reminders – will get ignored technically	

Examples

method_vocabulary_example.sdi.mapping.tab	
method_group	
ungrouped	
unspecified	
direct	
indirect	
count	
electric	

Spheres

Process information: Status Quo is [NERC spheres](#). Please consult AG Ocean Obs ([Norbert Anselm](#)) and AG Viewer ([Peter Konopatzky](#)) before introducing other sphere vocabulary.

column order	column header	value is mandatory	description	example values (all valid)
1	sphere_name	yes	name of sphere	atmosphere water body
2	sphere_sdn	no	SDN of sphere	
3	sphere_nerc_uri	no	NERC URI of sphere	
4+	<whatever_you_like>	no	can be used for comments or notes/reminders – will get ignored technically	

Status Quo

sphere_name	sphere_sdn	sphere_nerc_uri
atmosphere	SDN:S21::S21S001	http://vocab.nerc.ac.uk/collection/S21/current/S21S001/1/ 
water body	SDN:S21::S21S027	http://vocab.nerc.ac.uk/collection/S21/current/S21S027/1/ 
surface ice	SDN:S21::S21S009	http://vocab.nerc.ac.uk/collection/S21/current/S21S009/1/ 
rock	SDN:S21::S21S038	http://vocab.nerc.ac.uk/collection/S21/current/S21S038/1/ 
biota	SDN:S21::S21S037	http://vocab.nerc.ac.uk/collection/S21/current/S21S037/2/ 
not applicable	SDN:S21::S21S017	http://vocab.nerc.ac.uk/collection/S21/current/S21S017/1/ 
Earth	SDN:S21::S21S006	http://vocab.nerc.ac.uk/collection/S21/current/S21S006/1/ 
bed	SDN:S21::S21S003	http://vocab.nerc.ac.uk/collection/S21/current/S21S003/1/ 
cave atmosphere	SDN:S21::S21S033	http://vocab.nerc.ac.uk/collection/S21/current/S21S033/1/ 
experiment water sample	SDN:S21::S21S011	http://vocab.nerc.ac.uk/collection/S21/current/S21S011/2/ 
geological sample	SDN:S21::S21S039	http://vocab.nerc.ac.uk/collection/S21/current/S21S039/1/ 
groundwater	SDN:S21::S21S005	http://vocab.nerc.ac.uk/collection/S21/current/S21S005/1/ 
peat	SDN:S21::S21S019	http://vocab.nerc.ac.uk/collection/S21/current/S21S019/1/ 
rainwater	SDN:S21::S21S020	http://vocab.nerc.ac.uk/collection/S21/current/S21S020/1/ 
sediment	SDN:S21::S21S022	http://vocab.nerc.ac.uk/collection/S21/current/S21S022/2/ 
sediment pore water	SDN:S21::S21S023	http://vocab.nerc.ac.uk/collection/S21/current/S21S023/1/ 
snow	SDN:S21::S21S024	http://vocab.nerc.ac.uk/collection/S21/current/S21S024/1/ 
stalactite	SDN:S21::S21S034	http://vocab.nerc.ac.uk/collection/S21/current/S21S034/2/ 
stalagmite	SDN:S21::S21S025	http://vocab.nerc.ac.uk/collection/S21/current/S21S025/1/ 
suspended particulate material	SDN:S21::S21S026	http://vocab.nerc.ac.uk/collection/S21/current/S21S026/1/ 
water body plus atmosphere	SDN:S21::S21S028	http://vocab.nerc.ac.uk/collection/S21/current/S21S028/1/ 
wet sediment	SDN:S21::S21S031	http://vocab.nerc.ac.uk/collection/S21/current/S21S031/1/ 

Examples

sphere_vocabulary_example.sdi.mapping.tab

sphere_name	sphere_sdn	sphere_nerc_uri
atmosphere	SDN:S21::S21S001	http://vocab.nerc.ac.uk/collection/S21/current/S21S001/1/
water body	SDN:S21::S21S027	http://vocab.nerc.ac.uk/collection/S21/current/S21S027/1/
surface ice	SDN:S21::S21S009	http://vocab.nerc.ac.uk/collection/S21/current/S21S009/1/
rock	SDN:S21::S21S038	http://vocab.nerc.ac.uk/collection/S21/current/S21S038/1/
biota	SDN:S21::S21S037	http://vocab.nerc.ac.uk/collection/S21/current/S21S037/2/
not applicable	SDN:S21::S21S017	http://vocab.nerc.ac.uk/collection/S21/current/S21S017/1/
Earth	SDN:S21::S21S006	http://vocab.nerc.ac.uk/collection/S21/current/S21S006/1/
bed	SDN:S21::S21S003	http://vocab.nerc.ac.uk/collection/S21/current/S21S003/1/
cave atmosphere	SDN:S21::S21S033	http://vocab.nerc.ac.uk/collection/S21/current/S21S033/1/
experiment water sample	SDN:S21::S21S011	http://vocab.nerc.ac.uk/collection/S21/current/S21S011/2/
geological sample	SDN:S21::S21S039	http://vocab.nerc.ac.uk/collection/S21/current/S21S039/1/
groundwater	SDN:S21::S21S005	http://vocab.nerc.ac.uk/collection/S21/current/S21S005/1/
peat	SDN:S21::S21S019	http://vocab.nerc.ac.uk/collection/S21/current/S21S019/1/
rainwater	SDN:S21::S21S020	http://vocab.nerc.ac.uk/collection/S21/current/S21S020/1/
sediment	SDN:S21::S21S022	http://vocab.nerc.ac.uk/collection/S21/current/S21S022/2/
sediment pore water	SDN:S21::S21S023	http://vocab.nerc.ac.uk/collection/S21/current/S21S023/1/
snow	SDN:S21::S21S024	http://vocab.nerc.ac.uk/collection/S21/current/S21S024/1/
stalactite	SDN:S21::S21S034	http://vocab.nerc.ac.uk/collection/S21/current/S21S034/2/
stalagmite	SDN:S21::S21S025	http://vocab.nerc.ac.uk/collection/S21/current/S21S025/1/
suspended particulate material	SDN:S21::S21S026	http://vocab.nerc.ac.uk/collection/S21/current/S21S026/1/
water body plus atmosphere	SDN:S21::S21S028	http://vocab.nerc.ac.uk/collection/S21/current/S21S028/1/
wet sediment	SDN:S21::S21S031	http://vocab.nerc.ac.uk/collection/S21/current/S21S031/1/

Mapping Rules Files

Output columns (light blue) need to hold target vocabulary established via [target vocabulary files](#).

Unit Mapping

column order	column header	value is mandatory	description	example values (all valid)
1	unit_string	yes	mapping input , any string that should get mapped	°C C degC
2	unit_name	yes	mapping output : unit name (see Unit Vocabulary)	degree Celsius
3+	<whatever_you_like>	no	can be used for comments or notes/reminders – will get ignored technically	

Examples

unit_mapping_example.sdi.mapping.tab

unit_string	unit_name	comment
°C	degree Celsius	
C	degree Celsius	weird alternative degree character, found in GLODAP
?C	degree Celsius	broken encoding, found in COSYNA SOS
degC	degree Celsius	
cm/s	centimeter per second	

Parameter Mapping

column order	column header	value is mandatory	description	example values (all valid)
1	parameter_string	yes	mapping input , any string that should get mapped	Temperature Temperature_air WaterTemp_FSI

2	parameter_group	yes	mapping output : any known method name/group (see Parameter Vocabulary)	Temperature
3	sphere_name	no	mapping output : any known sphere name (see Sphere Vocabulary)	atmosphere water body
4+	<whatever_you_like>	no	can be used for comments or notes/reminders – will get ignored technically	

Examples

parameter_mapping_example.sdi.mapping.tab				
parameter_string	parameter_group	sphere_name		
AirTemperature	Temperature	atmosphere		
SeaSurfaceTemperature	Temperature			
TEMP_13.0	Temperature			
Temperature	Temperature			

Method Mapping

column order	column header	value is mandatory	description	example values
1	parameter_group	yes	mapping input : any known parameter name (see Mapping Names)	valid : Temperature invalid : WaterTemp_FSI
2	method_string	yes	mapping input : any string that should get mapped	valid : Mercury thermometer valid : Temperature logger, UTBI-001 TidbiT V2
3	method_group	yes	mapping output : any known method name/group (see Method Vocabulary)	valid : direct valid : unspecified valid : electrical
4	sphere_name	no	mapping output : any known sphere name (see Sphere Vocabulary)	valid : atmosphere valid : water body valid : sediment
5+	<whatever_you_like>	no	can be used for comments or notes/reminders – will get ignored technically	

Examples

method_mapping_example.sdi.mapping.tab				
parameter_group	method_string	method_group	sphere_name	
Chlorophyll	High Performance Liquid Chromatography	direct		
Chlorophyll	Fluorometry	indirect		
Chlorophyll	Acetone extraction (Turner Designs)	indirect		

Combined Example

Imagine you have the following data you want to have integrated into our SDI. It already comes in handy [O2A GeoCSV format](#), including metadata files. Two data files (and two metadata files) with comparable data using different vocabulary, and almost none of them using the vocabulary you want.

Example Data Files

```

#####
# kono.sdi.meta.json
#####

{
  "version": "2.0",
  "events": [
    {
      "name": "Kono's Trip"
    }
  ]
  "parameters": [
    {
      "name": "Caffeine Level",
      "unit": "clicks/minute"
    },
    {
      "name": "Blutalkoholkonzentration",
      "unit": "Promille",
      "method": "ACE Breathalyser AF - 33"
    }
  ]
}

#####
# kono.sdi.tab
#####

date_time_start      event_name      Caffeine Level [clicks/minute]      Blutalkoholkonzentration
[Promille]      geometry
1982-12-29T11:02:00      Kono's Trip      200      0.20      POINT(-4.3 49.6)
1982-12-29T11:45:00      Kono's Trip      121      1.10      POINT(-4.3 49.6)
1982-12-29T13:21:00      Kono's Trip      84      0.40      POINT(-4.3 49.6)

#####
# andreas.sdi.meta.json
#####

{
  "version": "2.0",
  "events": [
    {
      "name": "Andreas' Adventure"
    }
  ]
  "parameters": [
    {
      "name": "caffeine level",
      "unit": "clicks/min"
    },
    {
      "name": "alcohol concentration",
      "unit": "%",
      "method": "YOMA Alcohol Tester"
    }
  ]
}

#####
# andreas.sdi.tab
#####

date_time_start      event_name      caffeine level [clicks/min]      alcohol concentration [%]
geometry
1982-12-30T11:02:00      Andreas' Adventure      156      0.40      POINT(-1.3 50.6)
1982-12-30T11:45:00      Andreas' Adventure      144      1.00      POINT(-1.3 50.6)
1982-12-30T13:21:00      Andreas' Adventure      112      0.50      POINT(-1.3 50.6)

```

The following Mapping Files would be good solution to properly add above data to our SDI and have it integrated into VEF-based viewers. The most important part is the parameter mapping. Without this, data cannot be integrated into our parameter measurement layers. Unit and method mapping are recommended for proper filtering but can be left out. In any case both source strings/names and mapping results will be shown/accessible in viewers.

Example Mapping Files

```
# #####
# my_units.sdi.mapping.tab
# #####

unit_name      unit_symbol
permille      %
clicks per minute      cpm

# #####
# myparameters.sdi.mapping.tab
# #####

parameter_group
caffeine level
blood alcohol content

# #####
# mymethods.sdi.mapping.tab
# #####

method_group
breathalyzer

# #####
# myunitmapping.sdi.mapping.tab
# #####

unit_string      unit_name      comment
clicks/minute      clicks per minute
clicks/minC      clicks per minute
Promille      permille
%      permille

# #####
# myparametermapping.sdi.mapping.tab
# #####

parameter_string      parameter_group sphere_name
Caffeine Level      caffeine level
caffeine level      caffeine level
Blutalkoholkonzentration      blood alcohol content
alcohol concentration      blood alcohol content

# #####
# mymethodmapping.sdi.mapping.tab
# #####

parameter_group      method_string      method_group
blood alcohol content      ACE Breathalyzer AF - 33      breathalyzer
blood alcohol content      YOMA Alcohol Tester      breathalyzer
```