

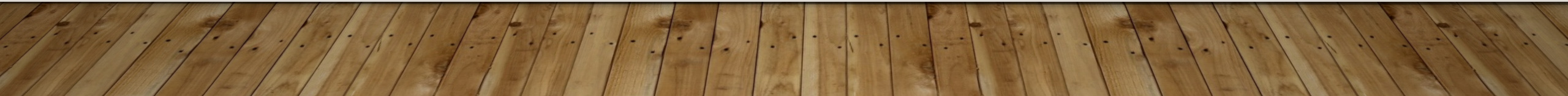


ADOPTION OF A GEOCSV FORMAT FOR RAPIDLY CHANGING PARAMETERS NOT HANDLED WELL IN SEED

A PROPOSED ACTIVITY FOR THE FDSN WG V

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2 2019 MONTREAL WGV MEETING

- In 2019 a GeoCSV solution was described to allow data providers a way to capture the position of moving stations
 - Focused primarily on positional data
- Targeted to moving stations such as
 - portable deployments on glaciers and ice flows
 - MERMAID acquisition systems deployed in oceans is the focus of the EarthScope-Oceans effort
 - It could capture rapidly changing azimuths for stations such as at the South Pole
- Since 2019 EarthScope-Oceans has fully implemented a solution that solves metadata capture for moving stations and some other problems as well

3 EXPANSION BEYOND “MOVING STATIONS”

- Examples of changing values not easily accommodated in SEED
 - Moving stations (latitude, longitude, elevation, depth) changing rapidly (i.e. MH)
 - Variable sample rates
 - Changing gains frequently (i.e. H2O Observatory)
- Flexible enough to allow capture of any useful information

4 THE PROPOSED FORMAT ELEMENTS

- Initial Header Rows
 - #dataset: GeoCSV 2.0
 - #created: 2021-07-28T23:25:20Z
 - #automaids: v3.4.2 (<https://github.com/earthscopeoceans/automaids> (doi: 10.5281/zenodo.5057096))
 - #delimiter: ','
 - #lineterminator: '\n'

Sensor orientation could go here

5 POSSIBLE ELEMENTS – ESO EXAMPLE

Type	Time and SNCL					Position				Sensor				Timing		
#field_unit	ISO_8601	unitless	unitless	unitless	unitless	degrees_nort	degrees_east	meters	meters	unitless	factor	hertz	unitless	hertz	seconds	seconds
#field_type	datetime	string	string	string	string	float	float	float	float	string	float	float	string	float	float	float
MethodId	StartTime	Network	Station	Location	Channel	Latitude	Longitude	Elevation	Depth	SensorDescri	Scale	ScaleFrequer	ScaleUnits	SampleRate	TimeDelay	TimeCorrection
Measurement	2018-08-05T	MH	P0008		nan	-12.008233	-172.0231	0	0	MERMAIDHy	nan	nan		nan	0.00003	nan
Measurement	2018-08-05T	MH	P0008		nan	-12.006967	-172.01872	0	0	MERMAIDHy	nan	nan		nan	-0.000062	nan
Measurement	2018-08-06T	MH	P0008		nan	-12.0477	-172.01357	0	0	MERMAIDHy	nan	nan		nan	0.437377	nan
Measurement	2018-08-06T	MH	P0008		nan	-12.047684	-172.01369	0	0	MERMAIDHy	nan	nan		nan	0	nan
Measurement	2018-08-06T	MH	P0008		nan	-12.047584	-172.01425	0	0	MERMAIDHy	nan	nan		nan	0	nan
Algorithm:au	2018-08-08T	MH	P0008		0 BDH	-12.074427	-171.99651	0	1531	MERMAIDHy	-149400		1 Pa	20	nan	-0.29087
Measurement	2018-08-15T	MH	P0008		nan	-12.205566	-171.90376	0	0	MERMAIDHy	nan	nan		nan	1.643707	nan
Measurement	2018-08-15T	MH	P0008		nan	-12.2059	-171.90405	0	0	MERMAIDHy	nan	nan		nan	0	nan
Measurement	2018-08-15T	MH	P0008		nan	-12.207367	-171.9055	0	0	MERMAIDHy	nan	nan		nan	-0.000184	nan
Measurement	2018-08-15T	MH	P0008		nan	-12.207784	-171.90599	0	0	MERMAIDHy	nan	nan		nan	0	nan
Algorithm:au	2018-08-16T	MH	P0008		0 BDH	-12.231257	-171.89015	0	1527	MERMAIDHy	-149400		1 Pa	20	nan	-0.242693
Algorithm:au	2018-08-17T	MH	P0008		0 BDH	-12.255579	-171.86842	0	1521	MERMAIDHy	-149400		1 Pa	20	nan	-0.523292
Measurement	2018-08-17T	MH	P0008		nan	-12.2612	-171.86581	0	0	MERMAIDHy	nan	nan		nan	0.569366	nan

6 WHAT IS BEING PROPOSED

- A method for equipment operators to capture important metadata
- Not intended as a final solution for incorporating this information into StationXML
- We think, if approved, a logical next step is to engage WGII in defining the modifications to StationXML
- Until this is done, the GeoCSV files are made available in another way
 - IRIS is making the file available through MDA
 - <http://ds.iris.edu/data/reports/MH/>

7 THIS APPROACH

- It is a straightforward method for instrument operators to capture data that is easily lost without some standard capture format
- Easy way to store information in a usable format
- Data collectors would not have to get into the intricacies of StationXML
 - FDSN data centers could assume the responsibility of XML conversion

8 POSSIBLE ELEMENTS AND TAGS

- Time and SNCL
- Position
 - Latitude
 - Longitude
 - Elevation
 - Depth
- Sensor
- Timing and Gain
- Anything else as needed

9 FRAMEWORK PROPOSAL WILL BE MADE AVAILABLE

4 pages

**FDSN Framework Proposal for a
GeoCSV format for rapidly changing parameters not handled well in SEED
20 August 2021**

Proposal Phase – Community Consensus Phase Type B: new FDSN standard
Submitted by EarthScope-Oceans (ESO)
Tim Ahern, IRIS Emeritus and Joel Simon, Princeton

Background: As we all know, SEED and current StationXML, do not handle metadata that changes often in a compact manner. We propose a GeoCSV format to allow data producing centers to easily produce a CSV formatted file that captures most rapidly changing parameters. This model can be extended to accommodate additional rapidly changing parameters that may be specific to a given project.

This proposal is in support of a flexible and generalized approach that in theory can accommodate most if not all such parameters.