

CSEM Receiver Time Series

Data files for the [Controlled-Source Electromagnetic System \(CSEM\)](#) Receiver are described here.

[Oceans 3.0 API filter](#): `dataProductCode=CSEME`

Revision History

1. 20110803: MAT data product released
2. 20110302: Binary .raw data files released

Formats

This data is available in binary .raw and .mat formats. A new file is created for each numbered experiment that is downloaded from the CSEM Receiver. The filename is appended with the experiment start time and the experiment number (e.g., UOT_CSEM_20110315T212751Z-20110303T025924_11.raw, where 11 is the experiment number). If the date and time limits of your search criteria are mid-experiment, the full experiment is still returned.

Content descriptions and example files are provided below.

RAW Binary file

The format of these binary files is described by the BinaryDataFormat.pdf document listed within the [CSEM Receiver documentation](#).

[Oceans 3.0 API filter](#): `extension=raw`

Example: [UOT_CSEM_20110315T212751Z-20110303T025924_11.raw](#)

MAT

MAT files (v7) can be opened using MathWorks MATLAB 7.0 or later. The file contains four structures: meta, adcp, config, and units.

meta: structure containing the following metadata fields.

- deviceID: A unique identifier to represent the instrument within the NEPTUNE Canada observatory.
- creationDate: Date and time (using ISO8601 format) that the data product was produced. This is a valuable indicator for comparing to other revisions of the same data product.
- deviceHeading: Obtained at time of deployment.
- siteName: Name corresponding to its latitude, longitude, depth position.
- deviceName: A name given to the instrument.
- deviceCode: A unique string for the instrument which is used to generate data product filenames.
- locationName: The node of the NEPTUNE Canada observatory. Each location contains many sites.
- samplingPeriod: Sampling rate of the instrument in seconds.
- depth: Obtained at time of deployment.
- lat: Obtained at time of deployment.
- lon: Obtained at time of deployment.

data:

- namesRX: vector of receiver designations
- time: matrix (numRX X nSamples), timestamp in datenum format for each receiver
- tCount: vector of internal timing counter values used as a diagnostic of the program
- voltage: matrix (numRX X nSamples) of voltage readings for each receiver
- errorCount: vector containing number of erroneous voltage readings per receiver

config:

- numRX: number of receivers
- gainTX: corrects for voltage divider in front of RC circuit
- gainRX: corrects for voltage divider in front of RXs circuits
- gain: vector of receiver programmable amplifier setting
- sampleRate: vector of receiver sample rates
- ADC_Registers: matrix (numRX X nRegisters) of status registers. For details of the status registers, refer to p. 30 of the Analog-to-Digital Converter Specification ([ads1256.pdf](#))

units: structure containing unit of measure for fields in structures above. For instance, units.voltage='V'.

[Oceans 3.0 API filter](#): `extension=mat`

Example: [UOT_CSEM_20110603T015123Z-20110602T210530Z_02.mat](#)

Discussion

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