

SIDSSE UURS Spectral Data

Processed data products for SIDSSE (Sanya Institute of Deep-Sea Science and Engineering) Underwater Ultraviolet Raman Spectrometers (UURS) are described here. Raw data is acquired directly from the instrument, stored normally as [raw log files](#). The data products described here are simple presentations of the spectral data reported by the instrument. The **MAT** and **CSV** file products contains the spectral data as a single vector/array, while the **PNG/PDF** plot products are simple plots of those spectral counts versus pixel number. Conversion of counts and pixel units to physical units requires calibration. One method has been suggested by the P.I.'s:

The horizontal axis, in the current form, is in pixels, not yet in Raman shift. This requires a linear conversion.
 In the attached plot, the small peak in the middle (~425th pixel) belongs to water, which has a Raman shift of 1600cm⁻¹.
 Another small peak on the left (around the 215th pixel) belongs to the olivinite, which has a Raman shift of 550cm⁻¹.
 Raman shift of the other points can be deduced using linear interpolation.

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

Revision History:

- 2019024: initial release

Formats

CSV file UURS Spectral Data

This is very simple comma separated text file with some header lines. The first column is the pixel index, the second column is the spectral counts. Here is an example:

```
# Ocean Networks Canada Comma Separated Variables data file for SIDSSE Underwater Ultraviolet Raman Spectrometer
# Spectrum scan time: 07-Jan-2019 00:04:05
# Device Name: SIDSSE Underwater Ultraviolet Raman Spectrometer (UURS) SN 01
# Device Code: SIDSSEUURS01
# Pixels, Counts
1,2098
2,2097
3,2110
4,2091
5,2086
6,2104
7,2092
8,2089
9,2100
10,2093
11,2095
12,2095
13,2091
```

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

MAT file UURS Spectral Data

MAT files contain the spectral data:

UURSdata: a structure containing the following data fields:

- data: vector / array of the spectral counts. Pixel index is simply 1:length(UURSdata.data).
- scanDate: matlab datenum format date of the scan / spectral data acquisition
- units: text field for the units of data

Variables - UURSdata						
UURSdata						
1x1 struct with 3 fields						
Field	Value	Size	Class	Min	Max	Mean
data	1024x1 double	1024x1	double	2090	54358	1.2806e+04
scanDate	7.3743e+05	1x1	double	7.3743e+05	7.3743e+05	7.3743e+05
units	'Counts'	1x6	char			

Meta: a structure array containing the following metadata fields:









Variables - meta	
meta	
1x1 struct with 26 fields	
Field	Value
deviceId	20020
creationDate	'20230209T050118Z in QA'
deviceName	'BioSonics DT-Xu Scientific Echosounder'
deviceCode	'BIOSONICSSTXU08003'
deviceCategory	'Echosounder, Bioacoustic'
deviceCategoryCode	'ECHOSOUNDERBIOA'
lat	48.8138
lon	-125.2810
depth	94
deviceHeading	NaN
devicePitch	NaN
deviceRoll	NaN
siteName	'Deep_IP_2012-06'
locationName	'Folger Passage'
stationCode	'FGPD'
dataQualityComments	''
MobilePositionSensor	1x1 struct
deploymentDateFrom	7.3503e+05
deploymentDateTo	7.3537e+05
samplePeriod	1
samplePeriodDateFrom	7.3503e+05
samplePeriodDateTo	7.3537e+05
sampleSize	1
SamplePeriodSensor	1x1 struct
citation	'Ocean Networks Canada Society. 2012. Folger Deep Echosounder...
Attribution	1x1 struct

- deviceId: A unique identifier to represent the instrument within the Ocean Networks Canada data management and archiving system.
- 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.
- deviceName: A name given to the instrument.
- deviceCode: A unique string for the instrument which is used to generate data product filenames.
- deviceCategory: Device category to list under data search ('Echosounder').
- deviceCategoryCode: Code representing the device category. Used for accessing webservices, as described here: [API / webservice documentation](#) (log in to see this link).
- lat: Fixed value obtained at time of deployment. Will be NaN if mobile or if both site latitude and device offset are null. If mobile, sensor information will be available in mobilePositionSensor structure..
- lon: Fixed value obtained at time of deployment. Will be NaN if mobile or if both site longitude and device offset are null. If mobile, sensor information will be available in mobilePositionSensor structure.
- depth: Fixed value obtained at time of deployment. Will be NaN if mobile or if both site depth and device offset are null. If mobile, sensor information will be available in mobilePositionSensor structure.

- deviceHeading: Fixed value obtained at time of deployment. Will be NaN if mobile or if both site heading and device offset are null. If mobile, sensor information will be available in mobilePositionSensor structure.
- devicePitch: Fixed value obtained at time of deployment. Will be NaN if mobile or if both site pitch and device offset are null. If mobile, sensor information will be available in mobilePositionSensor structure.
- deviceRoll: Fixed value obtained at time of deployment. Will be NaN if mobile or if both site roll and device offset are null. If mobile, sensor information will be available in mobilePositionSensor structure.
- siteName: Name corresponding to its latitude, longitude, depth position.
- locationName: The node of the Ocean Networks Canada observatory. Each location contains many sites.
- stationCode: Code representing the station or site. Used for accessing webservices, as described here: [API / webservice documentation](#) (log in to see this link).
- dataQualityComments: In some cases, there are particular quality-related issues that are mentioned here.
- MobilePositionSensor: A structure with information about sensors that provide additional scalar data on positioning and attitude (latitude, longitude, depth below sea surface, heading, pitch, yaw, etc).

meta	
meta.MobilePositionSensor	
Field	Value
name	1x1 cell
sensorID	NaN
deviceID	NaN
dateFrom	NaN
dateTo	NaN
typeName	1x1 cell
offset	NaN
units	1x1 cell
sensorTypeID	NaN
correctedSensorID	NaN

- name: A cell array of sensor names for mobile position sensors. If not a mobile device, this will be an empty cell string.
- sensorID: An array of unique identifiers of sensors that provide position data for mobile devices - this data may be used in this data product.
- deviceID: An array of unique identifiers of devices that provide position data for mobile devices - this data may be used in this data product.
- dateFrom: An array of datenums denoting the range of applicability of each mobile position sensor - this data may be used in this data product.
- dateTo: An array of datenums denoting the range of applicability of each mobile position sensor - this data may be used in this data product.
- typeName: A cell array of sensor names for mobile position sensors. If not a mobile device, this will be an empty cell string. One of: Latitude, Longitude, Depth, COMPASS_SENSOR, Pitch, Roll.
- offset: An array of offsets between the mobile position sensors' values and the position of the device (for instance, if cabled profiler has a depth sensor that is 1.2 m above the device, the offset will be -1.2m).
- sensorTypeID: An array of unique identifiers for the sensor type.
- correctedSensorID: An array of unique identifiers of sensors that provide corrected mobile positioning data. This is generally used for profiling deployments where the latency is corrected for: CTD casts primarily.
- deploymentDateFrom: The date of the deployment on which the data was acquired.
- deploymentDateTo: The date of the end of the deployment on which the data was acquired (will be NaN if still deployed).
- samplingPeriod: Sample period / data rating of the device in seconds, this is the sample period that controls the polling or reporting rate of the device (some parsed scalar sensors may report faster, some devices report in bursts) (may be omitted for some data products).
- samplingPeriodDateFrom: matlab datenum of the start of the corresponding sample period (may be omitted for some data products).
- samplingPeriodDateTo: matlab datenum of the end of the corresponding sample period (may be omitted for some data products).
- sampleSize: the number of readings per sample period, normally 1, except for instruments that report in bursts. Will be zero for intermittent devices (may be omitted for some data products).
- SamplePeriodSensor: A structure array with an entry for each scalar sensor on the device (even though this metadata is for complex data products that don't use scalar sensors).

meta										meta.MobilePositionSensor										meta.Attribution										meta.SamplePeriodSensor									
meta.SamplePeriodSensor																																							
Fields		sp		dateFrom		dateTo		sampleSize		deviceID		sensorID		isDeviceLevel		sensorName																							
1		1		7.3695e+05		7.3727e+05		1		20001		8214				1	'Sound Speed'																						
2			1	7.3695e+05		7.3727e+05		1		20001		8215				1	'Magnetic Com...																						
3			1	7.3695e+05		7.3727e+05		1		20001		8216				1	'Pitch'																						
4			1	7.3695e+05		7.3727e+05		1		20001		8219				1	'Pressure'																						
5			1	7.3695e+05		7.3727e+05		1		20001		8217				1	'Roll'																						
6			1	7.3695e+05		7.3727e+05		1		20001		8218				1	'Temperature'																						
7																																							

- sp: sample period in seconds (array), unless sensorid is NaN then this is the device sample period
- dateFrom: array of date from / start date (inclusive) for each sample period in MATLAB datenum format.
- dateTo: array of date to / end date (exclusive) for each sample period in MATLAB datenum format.
- sampleSize: the number of readings per sample period (array). Normally 1, except for instruments that report in bursts. Will be zero for intermittent devices.
- deviceID: array of unique identifiers of devices (should all be the same).
- sensorID: array of unique identifiers of sensors on this device.

- isDeviceLevel: flag (logical) that indicates, when true or 1, if the corresponding sample period/size is from the device-level information (i.e. applies to all sensors and the device driver's poll rate).
- sensorName: the name of the sensor for which the sample period/size applies (much more user friendly than a sensorID).
- citation: a char array containing the DOI citation text as it appears on the [Dataset Landing Page](#). The citation text is formatted as follows: <Author(s) in alphabetical order>. <Publication Year>. <Title, consisting of Location Name (from searchTreeNodeName or siteName in ONC database) Deployed <Deployment Date (sitedevicetimestamp in ONC database)>. <Repository>. <Persistent Identifier, which is either a DOI URL or the queryPID (search_dtlid in ONC database)>. Accessed Date <query creation date (search.datecreated in ONC database)>
- Attribution: A structure array with information on any contributors, ordered by importance and date. If an organization has more than one role it will be collated. If there are gaps in the date ranges, they are filled in with the default Ocean Networks Canada citation. If the "Attribution Required?" field is set to "No" on the [Network Console](#) then the citation will not appear. Here are the fields:

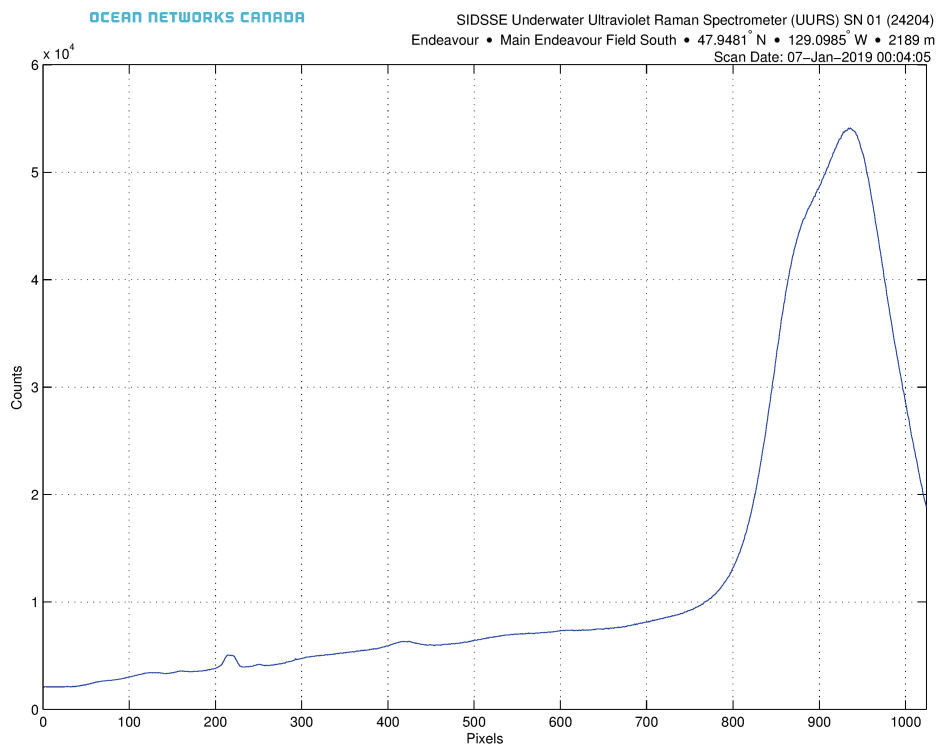
Field	Value
acknowledgement	'Ocean Networks Canada Data Archive, http://www.oceannetworks.ca, University of Victoria, Canada'
startDate	[]
endDate	[]
organizationName	'Ocean Networks Canada'
organizationRole	'Owner'
roleComment	''

- acknowledgement: the acknowledgement text, usually formatted as "<organizationName> (<organizationRole>)", except for when there are no attributions and the default is used (as shown above).
- startDate: datenum format
- endDate: datenum format
- organizationName
- organizationRole: comma separated list of roles
- roleComment: primarily for internal use, usually used to reference relevant parts of the data agreement (may not appear)

Oceans 3.0 API filter: extension=mat

PNG/PDF UURS Spectral Data

Spectral UURS data are provided in **PNG/PDF** format as a simple line plot of Count versus Pixel. As previously noted, the spectrum isn't calibrated. Standard ONC metadata is display. PDF data products are collated into in a single file. See examples below:



Plot generated 23-Jan-2019 23:46:18 UTC

SIDSSEUURS01_20190107T000405.900Z_20190107T120406.213Z-UURSSpect.pdf

Oceans 3.0 API filter: extension={png,pdf}

Discussion

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