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COVIS Plume Imaging Raw Files

This is a description of this raw IMAGING mode data from COVIS. Documentation for the processed data is also available.

Oceans 3.0 API filter: `dataProductCode=CPIRF`

Revision History

- 20111123: Initial product released

Formats

TAR

The TAR.GZ files contain the raw data and the metadata needed to process and interpret in files of CSV, JSON and BIN formats. The following table lists the types of files and the information each contains. All of the JSON files are ascii text and human readable (with some effort). Similarly the CSV files can be read directly as ascii or loaded into a spreadsheet program like Excel. The BIN files are binary. Further details are supplied within the examples below.

File Type	Contents
sweep.json	Main metadata including timestamp, acquisition mode (“imaging”), and various sonar parameters (transmit pulse length, frequency, etc.). Some parameters can be set by direct interaction with the sonar and some are fixed.
attitude.csv	This contains data from the attitude sensor (time, pitch, roll, heading). All measurements are in degrees. Pitch and Roll are gravity referenced. Heading is magnetic. There is one record per rotator stop.
rotator.csv	This file contains data from the rotator motors (pitch, roll, yaw). All measurements are in degrees relative to an arbitrary reference. There is one record per rotator stop.
index.csv	This file is derived from the above two files but contains one record per sonar ping. It lists the pings (numbering from 1 up) and gives the time (seconds, microseconds), rotator data (pitch, roll, yaw), and attitude data (pitch, roll, heading) for each ping.
rec_7000_xxxxxx.json	These are the metadata for each ping. Some of this information may overlap with sweep.json and some of it is set by the experimenter.
rec_7038_xxxxxx.bin	These are the actual data files ping-by-ping. They are in binary format. There should be one rec_7038_x.bin for every rec_7000_x.json.

Oceans 3.0 API filter: `extension=tar`

Examples:

The examples are from APLUWCOVISMBSONAR001_20101002T060525.939Z-IMAGING.tar.gz.

attitude.csv – This the first three lines of a particular file.

```
time        kPAngle        kRAngle        kHeading
05:26.2        -0.43         -0.05        212.24
05:29.0         0.14         -0.05        212.33
```

where

- time is the minutes:seconds at which the data is measured.
- kPAngle is the pitch in degrees
- kR Angle is the roll in degrees
- kHeading is the magnetic direction (in degrees) the sonar is pointing

index.csv – This the first three lines of a particular file.

```
ping        seconds        microseconds        pitch        roll        yaw        kPAngle
kRAngle        kHeading
1        1.29E+09        486103        221.5        225.5        131.6        -0.4        0        212.2
2        1.29E+09        691525        221.5        225.5        131.6        -0.4        0        212.2
```

where

- Ping is the ping number, which always starts at 1.
- Seconds
- Microseconds
- Pitch is from the same data as in *rotator.csv*
- Roll is from the same data as in *rotator.csv*
- Yaw is from the same data as in *rotator.csv*
- kPAngle is from the same data as in *attitude.csv*
- kRAngle is from the same data as in *attitude.csv*
- kHeading is from the same data as in *attitude.csv*

Note that the attitude and rotator data should be consistent but may disagree since they are independently measured.

rotator.csv

```
time        pitch        roll        yaw
05:26.2        221.5        225.5        131.6
05:29.0        220        225.5        131.6
```

where

- Time in minutes:seconds.deciseconds
- Pitch in degrees
- Roll in degrees
- Yaw in degrees

rec_7000_xxxxxx.json – Reson format for ascii metadata file documented in rec7000.pdf

rec_7038_xxxxxx.bin – Reson format for binary data documented in rec7008.pdf

Discussion

Refer to the Discussion on the COVIS Doppler page for more information.

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