CGSN Dashboard (OMS++ and ERDDAP) Updated CGSN/EA Marine Operator Interface

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What is the CGSN Dashboard?

- Next iteration on the current <u>OMS</u> mooring user interface
 - Used to monitor the Pioneer, Endurance, and Global Surface & Profiler moorings
- CGSN Dashboard (OMS++):
 - Improve and expand upon OMS functionality
 - Add more features to reduce the operators' status reporting and monitoring loads
 - Include Subsurface mooring, Glider/AUV, & Coastal Surface Piercing Profiler status displays (future)



Capabilities

- Automated parsing & processing of raw mooring data, including
 - Automated calibration lookup
 - Back-processing capability
- Parsed & processed data available to mooring operators for monitoring & analysis via:
 - Direct access to files via web page
 - ERDDAP
 - Plot creation and display (OMS++)
 - Calculation and display of L3 variables (OMS++)
- Configurable automated alerts & alarms and notification system
- Alert trigger, plot, & L3 variable cloning
- Support for multiple deployments of a mooring
- Uses Yaml files for simplified configuration of mooring deployments and specific asset metadata
- System overview & status pages



Capabilities (cont.)

- Access to external tools
 - Redmine
 - Roundabout Database (asset tracking system, in development)
- Links to Glider & AUV monitoring & status (in development)
- Uses up-to-date software and operating systems
- Uses open source tools to provide:
 - Visibility into data provenance
 - Ability to reproduce system
- Future: Offline laptop deployment capability for shipboard use
- Future: Status & monitoring tools for Subsurface Moorings & Surface Piercing Profilers



System Architecture Diagram





CGSN-PARSERS: Logs \rightarrow JSON

- Python modules & shell scripts
- Parse the raw log files to create commonly formatted, human & machine readable JSON data files
- Puts raw data into a common format for further work
 - No unit conversions, no calculation of new, derived variables, no QA/QC, etc.
- Parsers exist for all Surface, Profiler, & CSPP Mooring instruments & engineering sensors
- Code publically available and hosted on BitBucket (conda-forge): (<u>https://bitbucket.org/ooicgsn/cgsn-parsers</u>)



CGSN-PROCESSING: JSON \rightarrow NetCDF

- Python modules and shell scripts
- Converts JSON formatted raw data files created via cgsn-parsers into NetCDF4 datasets, served via ERDDAP
- Utilizes pre-existing ion-functions code forked to more simplified, generic code base
 - Convert values (e.g. counts to mg/L)
 - Derive new values (e.g. practical salinity, pH, OPTAA spectra)
 - <u>https://bitbucket.org/ooicgsn/pyseas</u>
- Utilizes dictionaries of NetCDF attributes to set common metadata for data set variables
 - Tedious to create, but one-and-done operation under version control
- Processors exist for all Surface, Profiler, & CSPP Mooring instruments & engineering sensors, except:
 - VEL3D (need to correct instrument clock)
 - Inductive: CTDBP & CTDMO (in progress), PHSEN & PCO2W (may only need to tweak non-inductive processor)
- Code publically available and hosted on BitBucket: (<u>https://bitbucket.org/ooicgsn/cgsn-processing</u>)



PYSEAS: Data Product Algorithms

- Fork of current <u>ion-functions</u> code used in OOI production system
 - Converted to python 3.
 - Removing CI customizations (e.g. wrapper functions), creating more generic code that can serve as python toolbox for processing data from oceanographic sensors.
 - Removed use of OS dependent code and adopted packages that are OS independent (GSW, IGRF12).
 - Removed older QA/QC code in favor of adopting IOOS QARTOD code.
 - Code publically available and hosted on BitBucket:

(<u>https://bitbucket.org/ooicgsn/pyseas</u>)



System Architecture Diagram





ERDDAP Demo

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System Architecture Diagram



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SQL Database Schema (Original)





OOIFB and DDCI Committee Meeting May 2019

CGSN Dashboard Demo





Questions?



