Ocean Sensor Data

Managing, Visualizing, and Understanding data using STOQS

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Environmental Disasters Data Management Workshop

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Oceanographic Observations
Long Range AUV

- Mobile platform measures properties while moving through the water
- Seabird CTD, Wetlabs ECO, ISUS, Optode, ESP, …
- T, S, optical backscatter, chlorophyll, fluorescence, DO, nitrate, genetics, …
- realtime and delayed mode
Workflow

1. Install STOQS from stoqs.googlecode.com
2. Conduct missions that collect data
3. Create CF-NetCDF 1.6 files of the data
4. Construct STOQS load script
5. Create PostgreSQL database and run script
6. Explore, visualize, and understand data
STOQS Architecture

All free and open source components

Server:
- Python with pydap, numpy, ...
- Minnesota Mapserver
- GeoDjango ORM & web framework

Client:
- HTML5
- jQuery & AJAX
- Flot
- OpenLayers
- X3DOM
- Twitter Bootstrap

PostgreSQL + PostGIS
Relational Database

**Measurement**
- id: AutoField
- depth: FloatField
- bottomdepth: FloatField
- geom: PointField

**MeasuredParameter**
- id: AutoField
- datavalue: FloatField

**SampledParameter**
- id: AutoField
- uuid: UUIDField
- datavalue: DecimalField

**Parameter**
- id: AutoField
- uuid: UUIDField
- name: CharField
- type: CharField
- description: CharField
- standard_name: CharField
- long_name: CharField
- units: CharField
- origin: CharField
- volume: FloatField
- filterdiameter: FloatField
- filterporesize: FloatField
- laboratory: CharField
- researcher: CharField

**Sample**
- id: AutoField
- uuid: UUIDField
- depth: DecimalField
- geom: PointField
- name: CharField
- volume: FloatField
- filterdiameter: FloatField
- filterporesize: FloatField
- laboratory: CharField
- researcher: CharField

**InstantPoint**
- id: AutoField
- timevalue: DateTimeField

**Instantpoint (measurement)**
- id: AutoField
- timevalue: DateTimeField

**Instantpoint (sample)**
- id: AutoField
- timevalue: DateTimeField
See video at stoqs.googlecode.com
Live Demo
Extra Slides
Tables to support machine learning
Labeled Data to support machine learning