

COAWST: A Coupled-Ocean-Atmosphere-Wave- Sediment Transport Modeling System

COAWST Modeling System

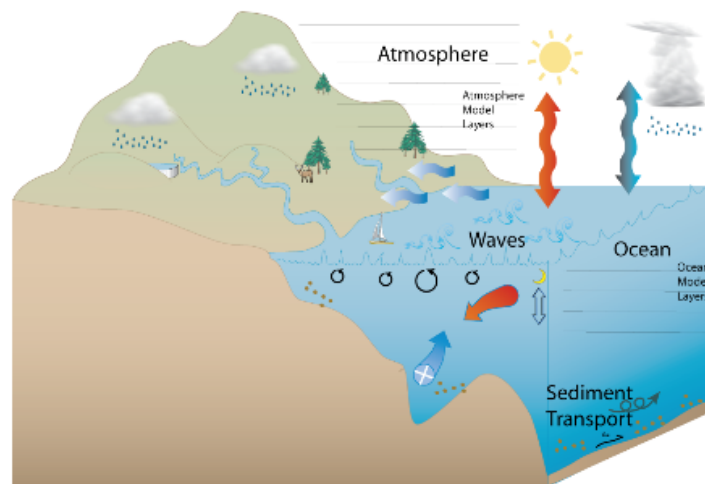


Figure 1. The COAWST Modeling System that joins an Ocean model, an Atmosphere model, a Waves model, and a Sediment Transport Model for studies of coastal change.

To better identify the significant processes affecting our coastlines and how those processes create coastal change we have developed a Coupled Ocean – Atmosphere – Wave – Sediment Transport (COAWST) Modeling System, which is integrated by the Model Coupling Toolkit to exchange data fields between the ocean model ROMS, the atmosphere model WRF, the wave model SWAN, and the sediment capabilities developed as part of the [Community Sediment Transport Modeling Project](#).

John Warner

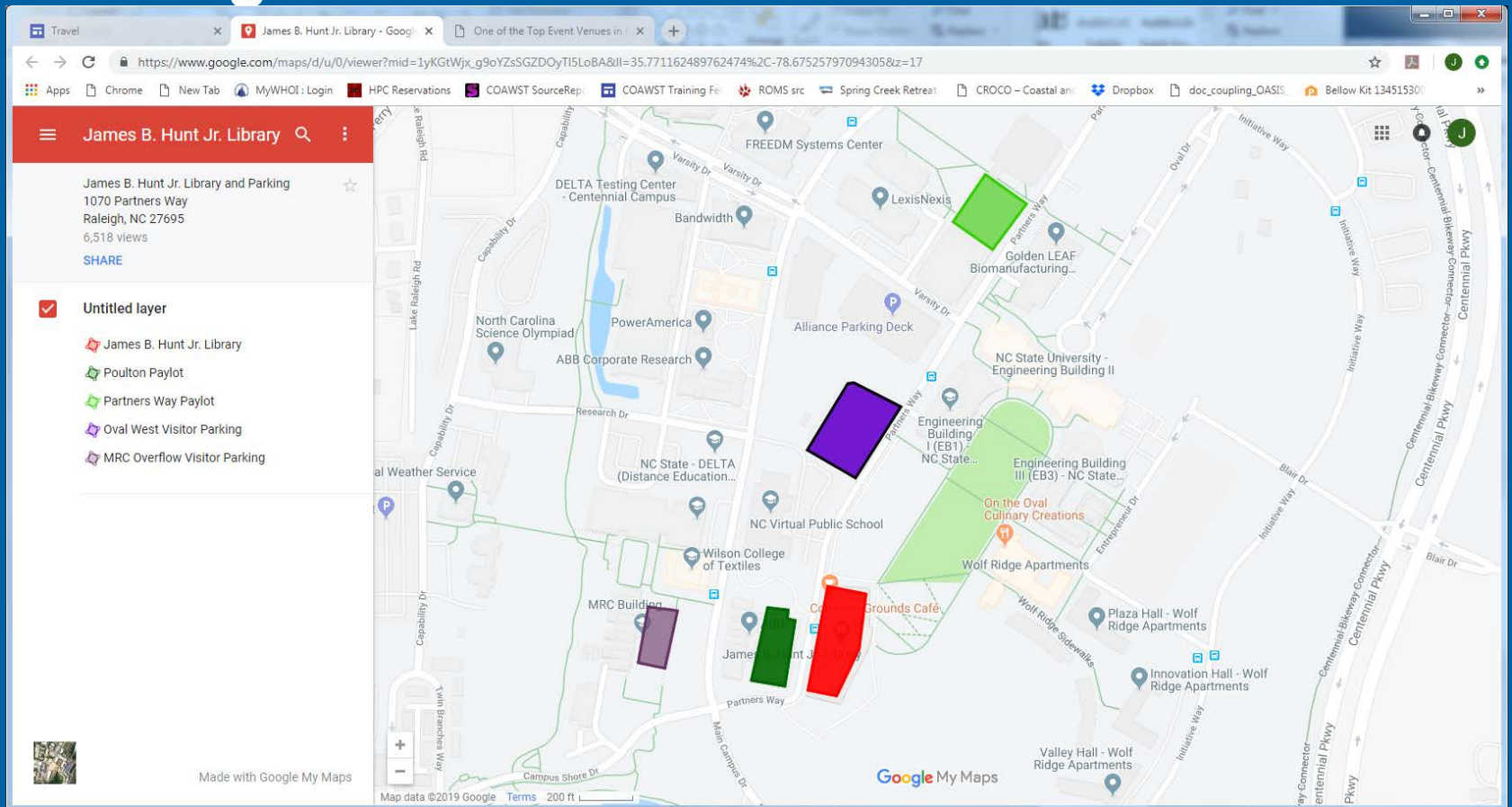
US Geological Survey, Woods Hole, MA

U.S. Department of the Interior
U.S. Geological Survey

<http://woodshole.er.usgs.gov/operations/modeling/COAWST/index.html>

Pleasantries

■ Parking

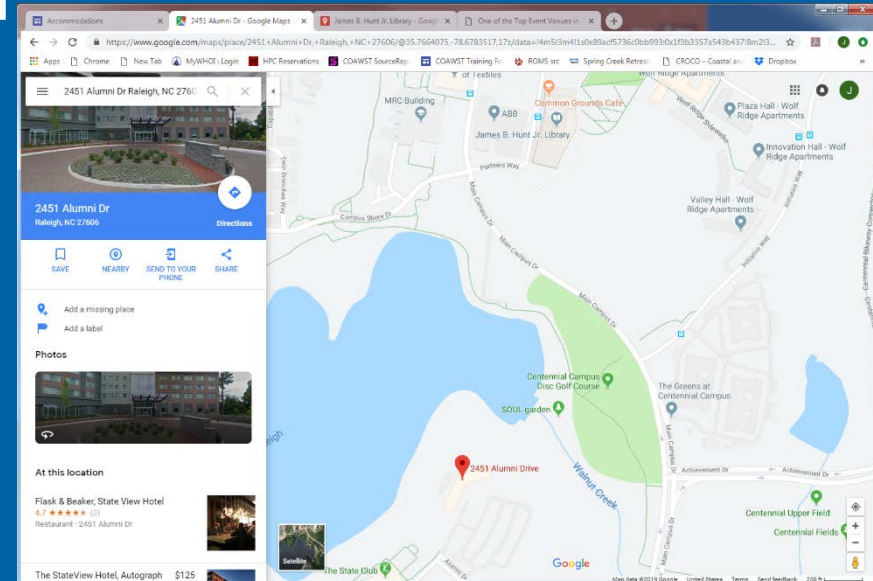


Pleasantries

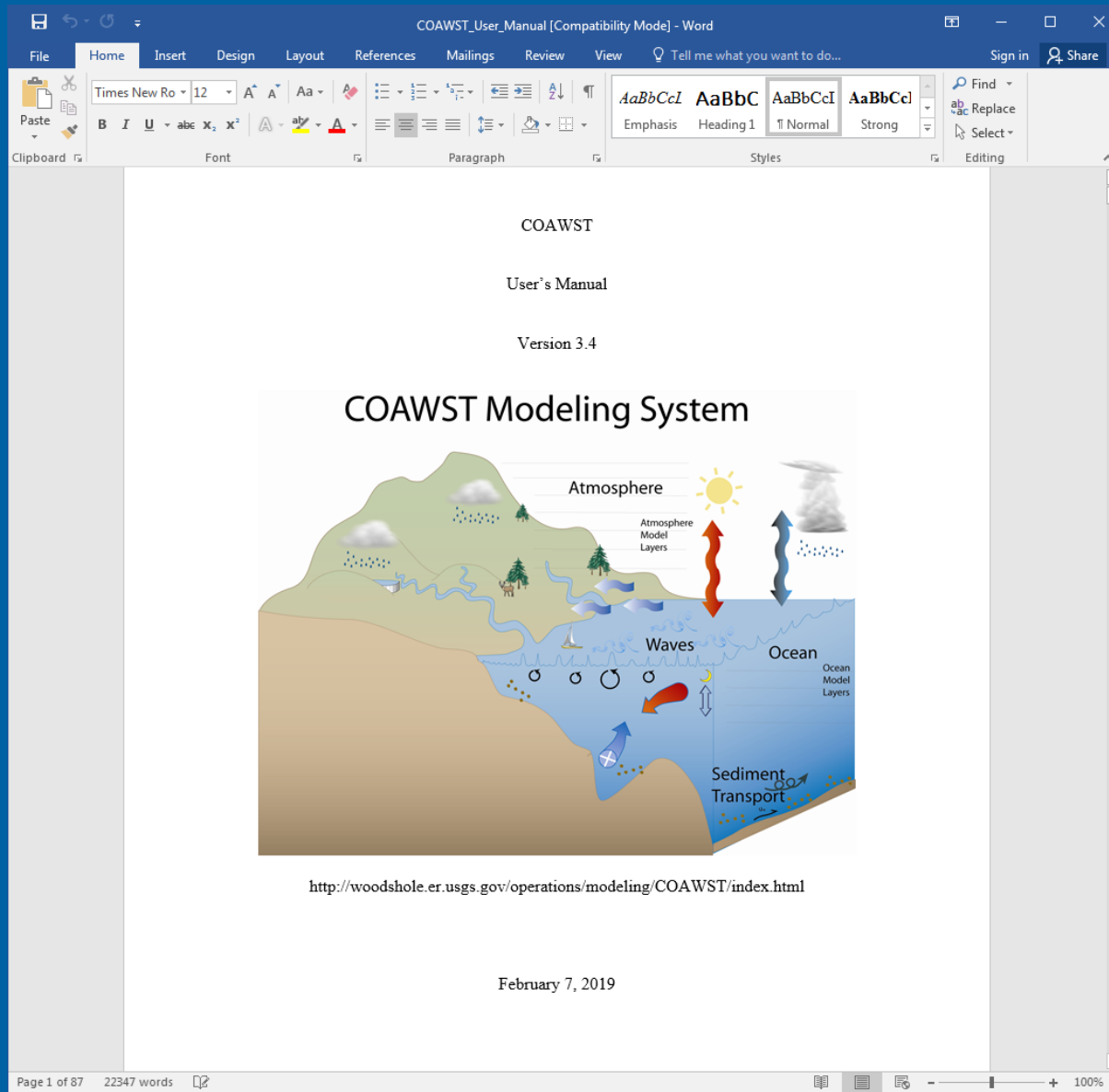
- Parking
- Bathrooms
- Agenda

Pleasantries

- Parking
- Bathrooms
- Agenda
- 6:30 - 9:30 Reception with heavy appetizers and beverages at The StateView Hotel Synergy Ballroom



User's Manual



COAWST Modeling System

COAWST

Coupled Ocean – Atmosphere – Wave – Sediment Transport

C = Coupled

O = Ocean

A = Atmosphere

W = Wave

ST = Sediment Transport

MCT v 2.6.0

<http://www-unix.mcs.anl.gov/mct/>

ROMS svn 934

<http://www.myroms.org/>

WRF v 4.0.3

<https://github.com/wrf-model/>

SWAN v 41.20

<http://vlm089.citg.tudelft.nl/swan>

WaveWatchIII v 5.16

<https://polar.ncep.noaa.gov/waves/wavewatch/>

CSTMS

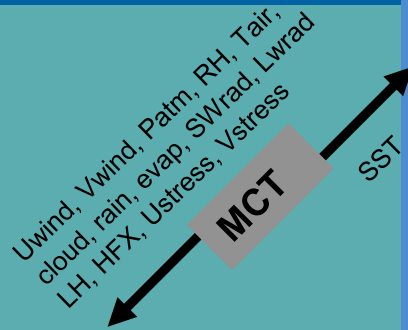
<http://woodshole.er.usgs.gov/project-pages/sediment-transport/>

Modeling System

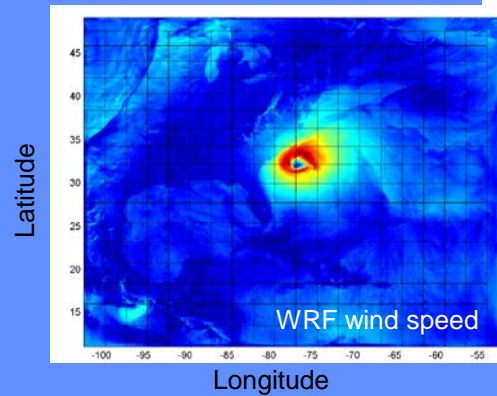


Many other capabilities exist such as InWave, Sea Ice, Vegetation, Biogeochemistry, ...

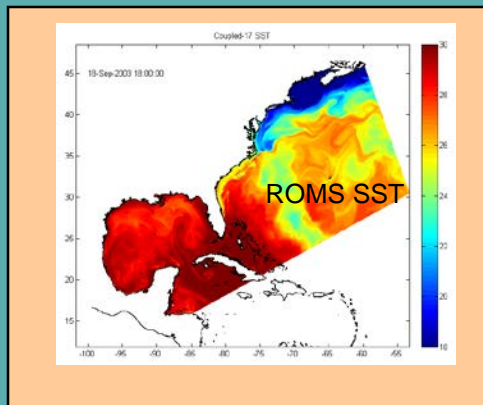
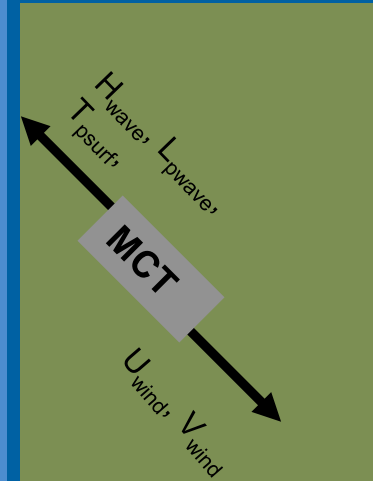
Agenda



ATMOSPHERE



Monday

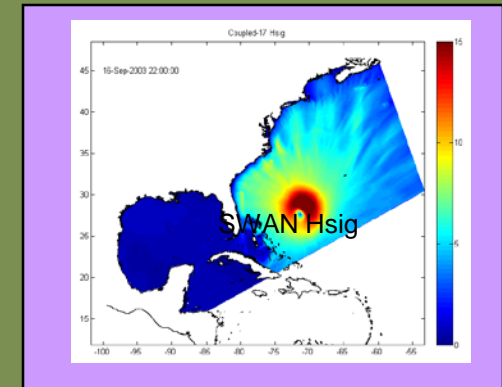
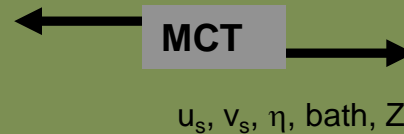


Tuesday

OCEAN



$H_{wave}, L_{mwave}, L_{pwave}, D_{wave},$
 $D_{wavep}, T_{psurf}, T_{mbott}, Q_b,$
 $Diss_{bot}, Diss_{surf}, Diss_{wcap},$
 U_{bot}



Wednesday

WAVE

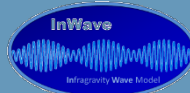
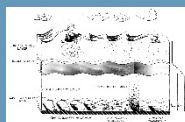


Sediment, InWave,

Sealce,

Tools,

Vegetation



Thursday

Obtaining the code

- Source Repo

`svn checkout --username myusrname`

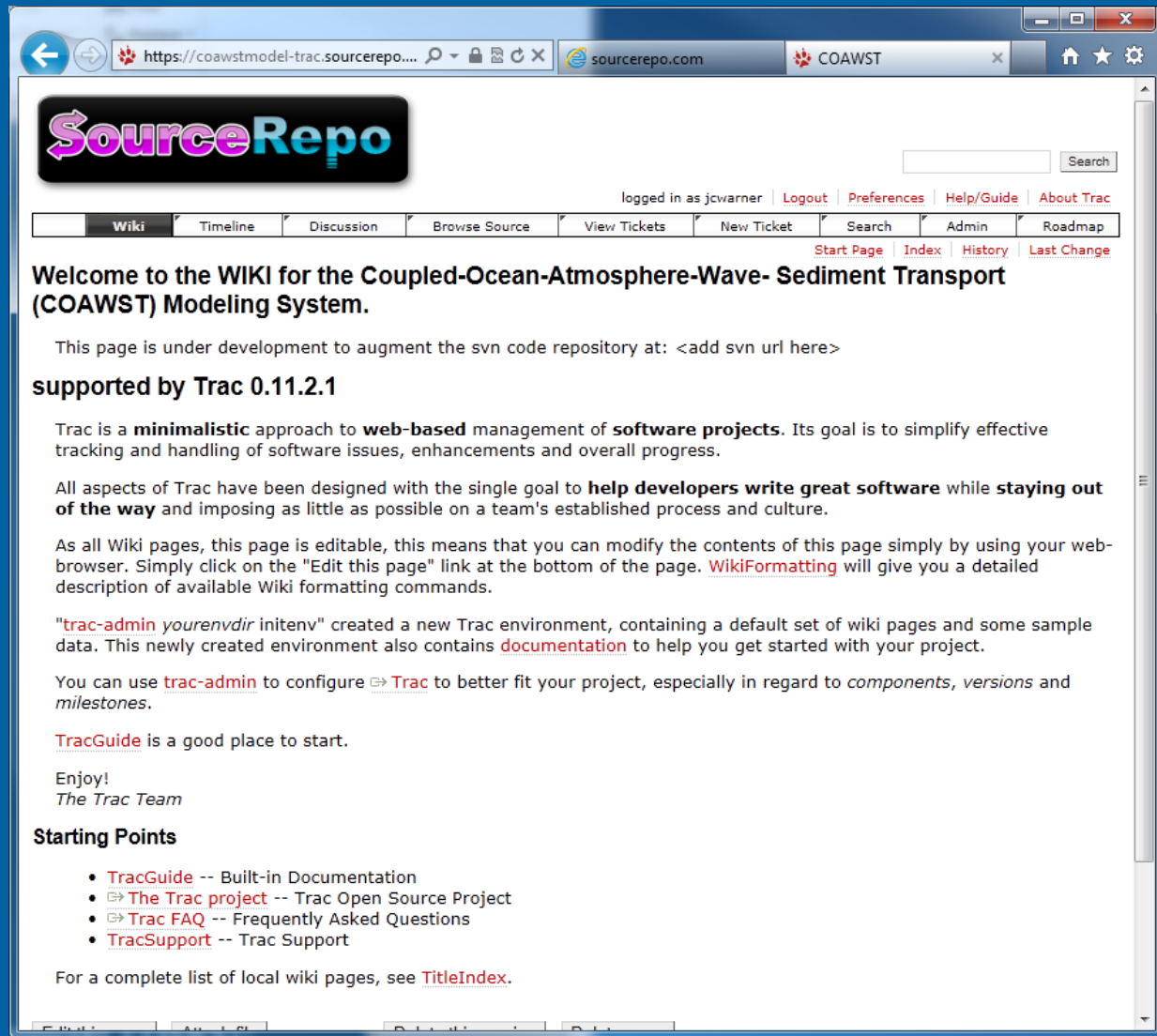
`https://coawstmodel.sourcerepo.com/coawstmodel/COAWST .`

- `svn update`

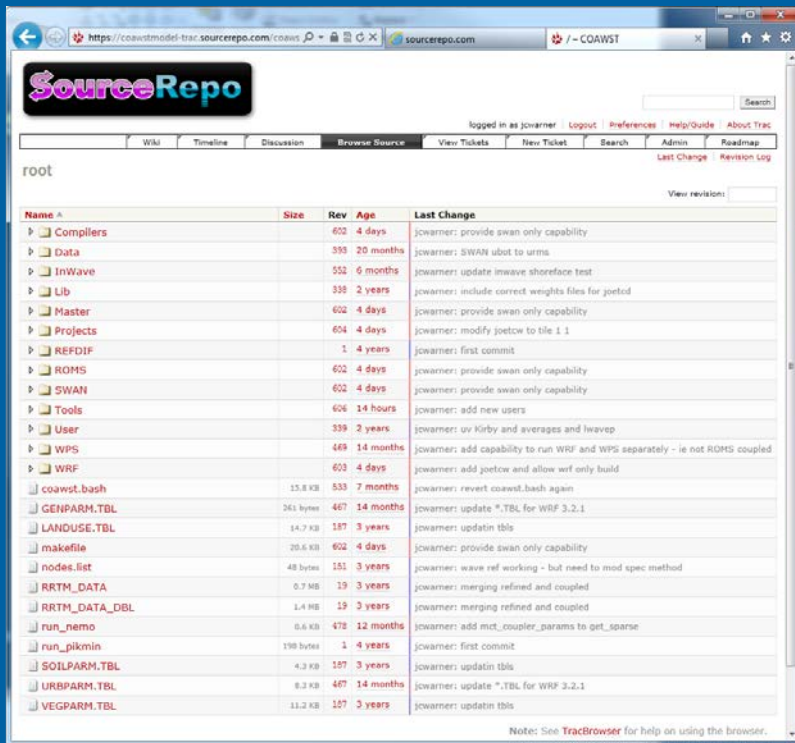
- `svn checkout`

`https://coawstmodel.sourcerepo.com/coawstmodel/data/training_24feb2019/presentations .`

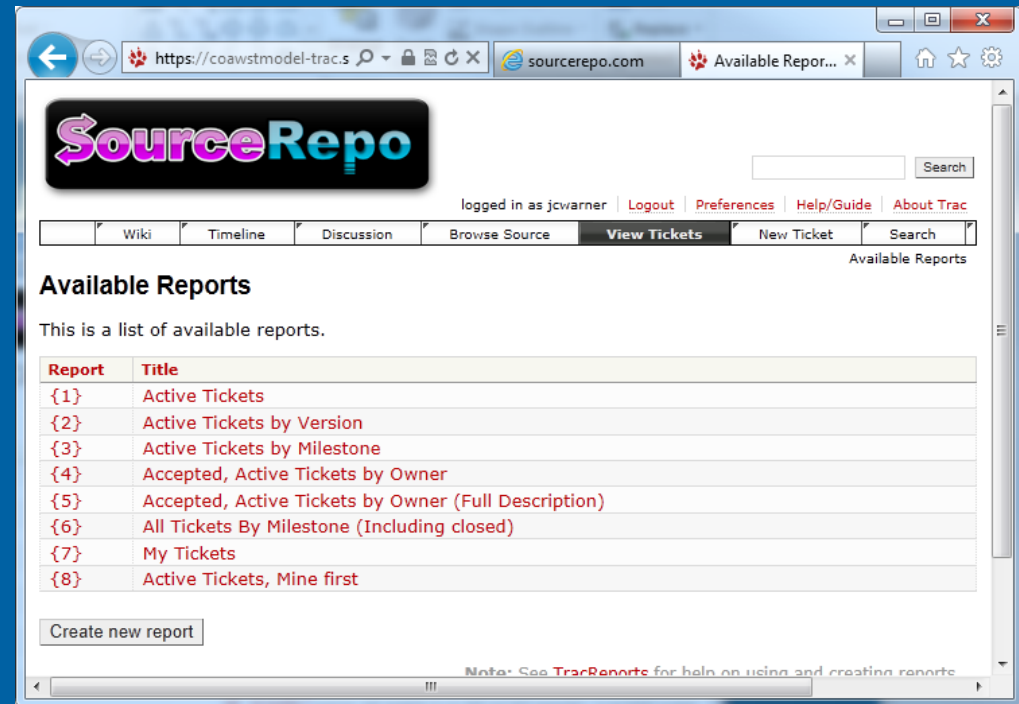
Trac site: help manage the code



Trac - source files + tickets



The screenshot shows the SourceRepo web interface for the COAWST project. The browser address bar displays <https://coawstmodel-trac.sourcerepo.com/coawst>. The page features a navigation bar with links for Wiki, Timeline, Discussion, Browse Source, View Tickets, New Ticket, Search, Admin, and Roadmap. A search bar is located in the top right. The main content area displays a file browser for the 'root' directory, showing a list of files and directories with columns for Name, Size, Rev, Age, and Last Change. The files listed include Compilers, Data, InWave, Lib, Master, Projects, REFDIF, ROMS, SWAN, Tools, User, WPS, WRF, coawst.bash, GENPARM.TBL, LANDUSE.TBL, makefile, nodes.list, RRTH_DATA, RRTH_DATA_DBL, run_nemo, run_pikmin, SOILPARM.TBL, URBPARM.TBL, and VEGPARM.TBL. A note at the bottom states: "Note: See TracBrowser for help on using the browser."



The screenshot shows the SourceRepo web interface for the COAWST project, specifically the 'Available Reports' section. The browser address bar displays <https://coawstmodel-trac.sourcerepo.com>. The page features a navigation bar with links for Wiki, Timeline, Discussion, Browse Source, View Tickets, New Ticket, Search, Admin, and Roadmap. A search bar is located in the top right. The main content area displays the 'Available Reports' section, which includes a list of reports with columns for Report and Title. The reports listed are: {1} Active Tickets, {2} Active Tickets by Version, {3} Active Tickets by Milestone, {4} Accepted, Active Tickets by Owner, {5} Accepted, Active Tickets by Owner (Full Description), {6} All Tickets By Milestone (Including closed), {7} My Tickets, and {8} Active Tickets, Mine first. A 'Create new report' button is located below the list. A note at the bottom states: "Note: See TracReports for help on using and creating reports."

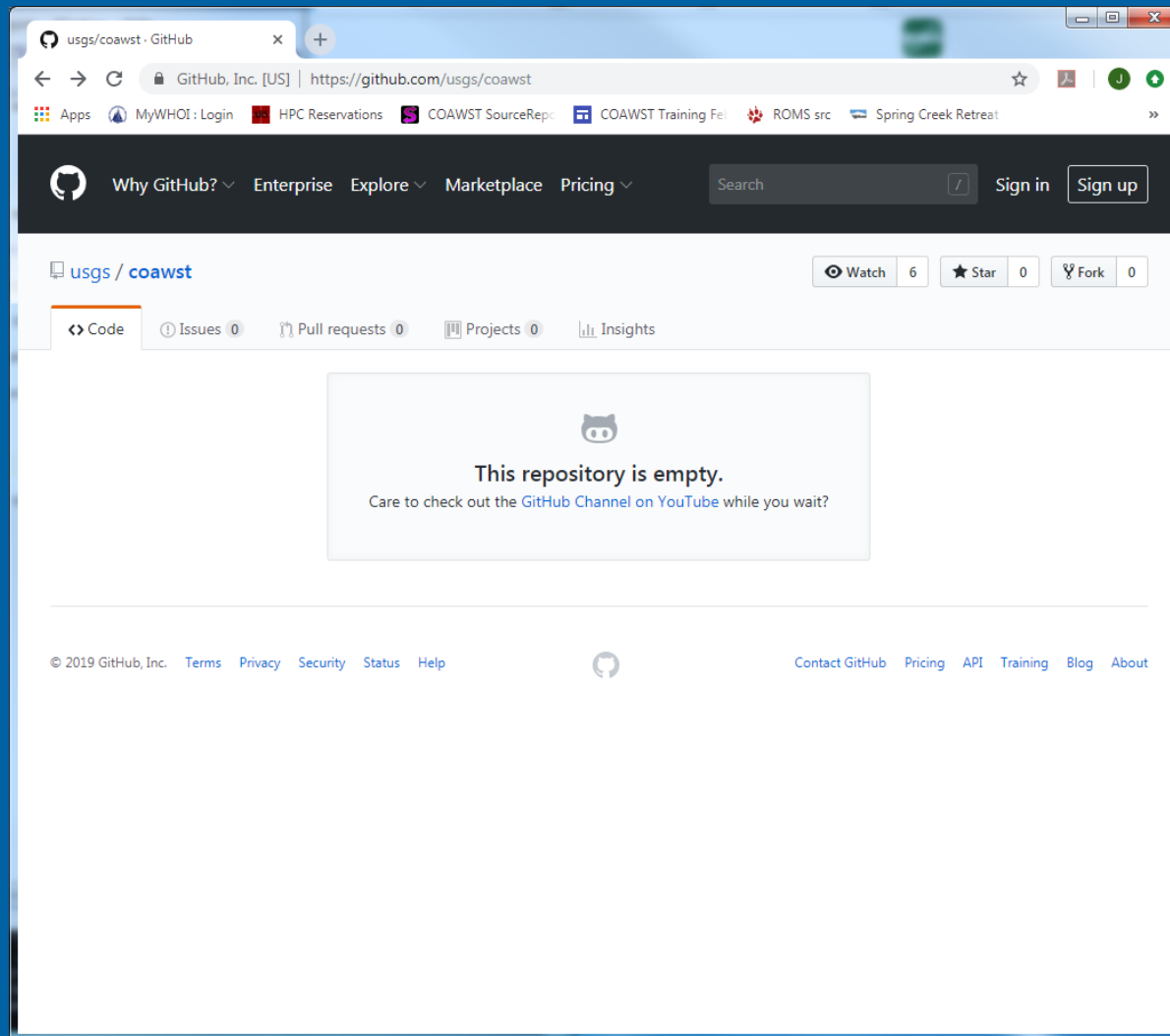
Tickets

[https://coawstmodel-trac.sourcerepo.com/
coawstmodel_COAWST/browser](https://coawstmodel-trac.sourcerepo.com/coawstmodel_COAWST/browser)



COAWST on github

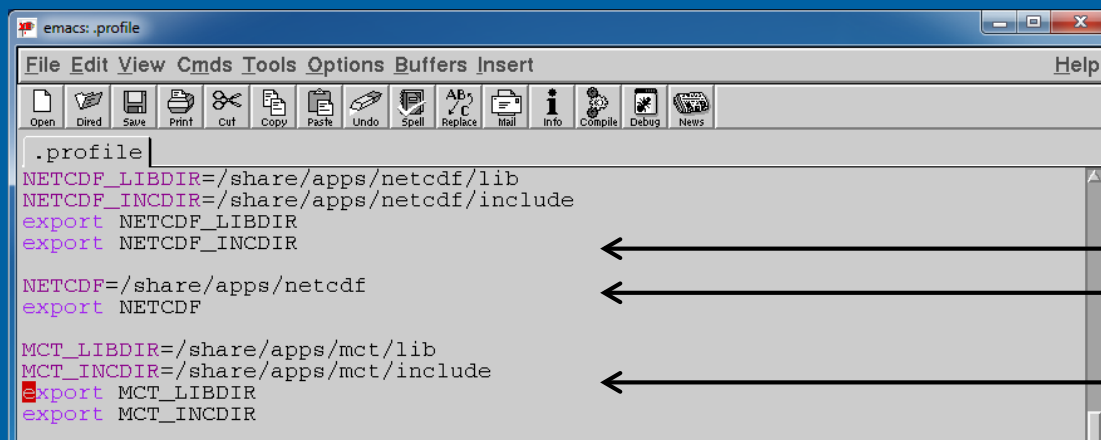
<https://github.com/usgs/coawst>



Libraries

- Matlab is heavily used.
- Another optional toolbox is nctoolbox:
<http://code.google.com/p/nctoolbox/>
- Fortran compiler - ifort, pgi, gfortran, ...
- MPI - mpich2, openmpi, mvapich, ...
- NetCDF - v4
- MCT

Set your environment



```
.profile
NETCDF_LIBDIR=/share/apps/netcdf/lib
NETCDF_INCDIR=/share/apps/netcdf/include
export NETCDF_LIBDIR
export NETCDF_INCDIR

NETCDF=/share/apps/netcdf
export NETCDF

MCT_LIBDIR=/share/apps/mct/lib
MCT_INCDIR=/share/apps/mct/include
export MCT_LIBDIR
export MCT_INCDIR
```

← for ROMS

← for WRF

← for MCT

WRF Tutorial



Thank you NCAR

