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

COAWST Modeling System

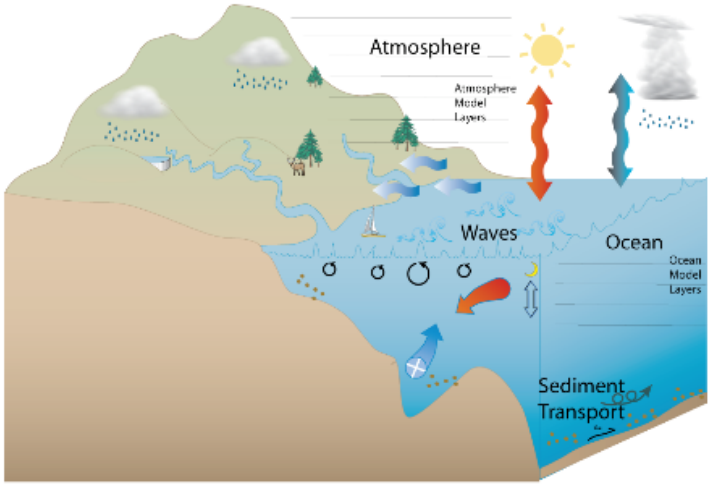


Figure 1. The COAWST Modeling System that joins an Ocean model, an Atmosphere model, a Waves model, and a Sediment Transport Model for studies of coastal change.

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

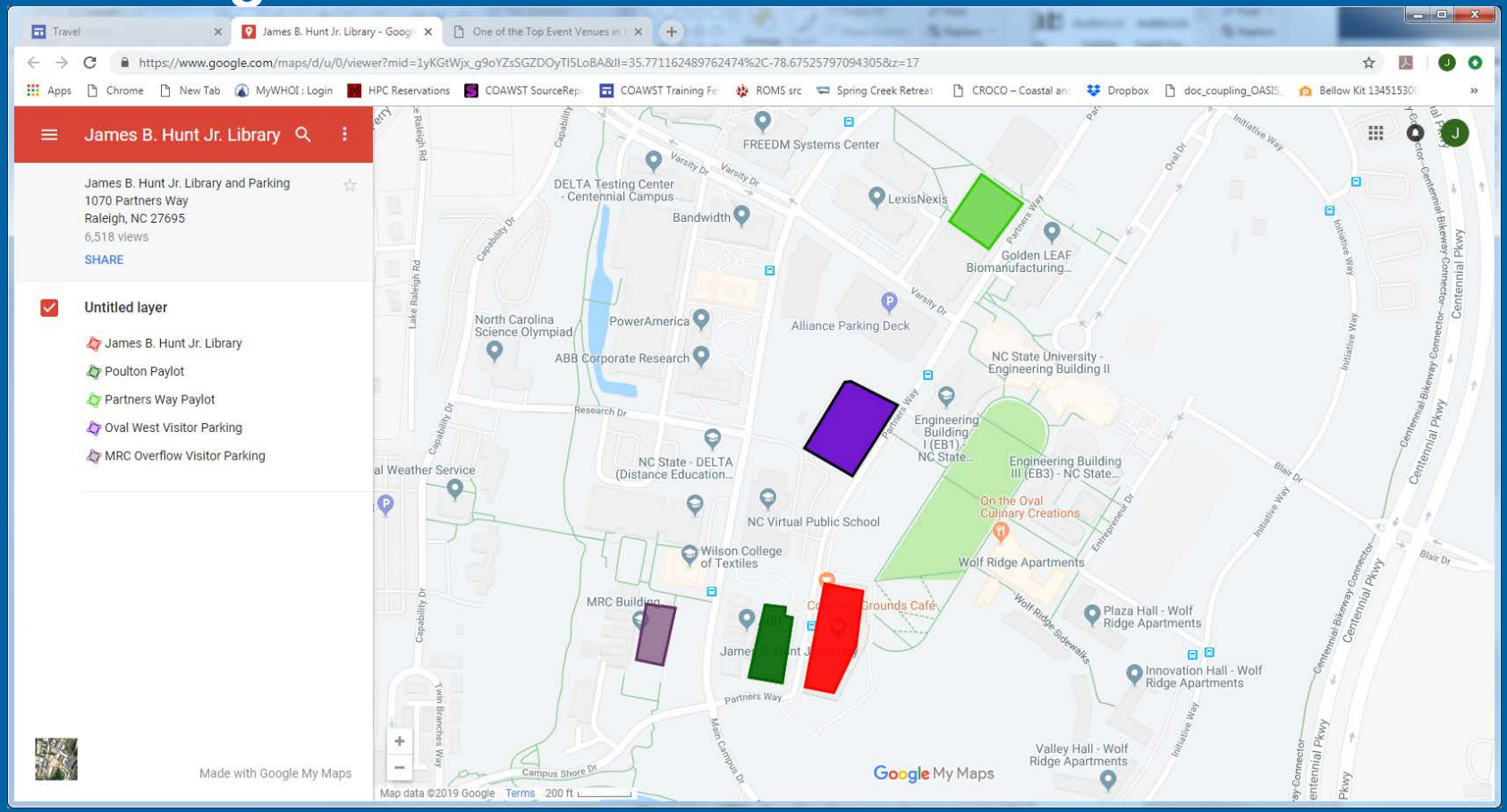
US Geological Survey, Woods Hole, MA

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

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

Pleasantries

- Parking



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Pleasantries

- Parking
- Bathrooms
- Agenda

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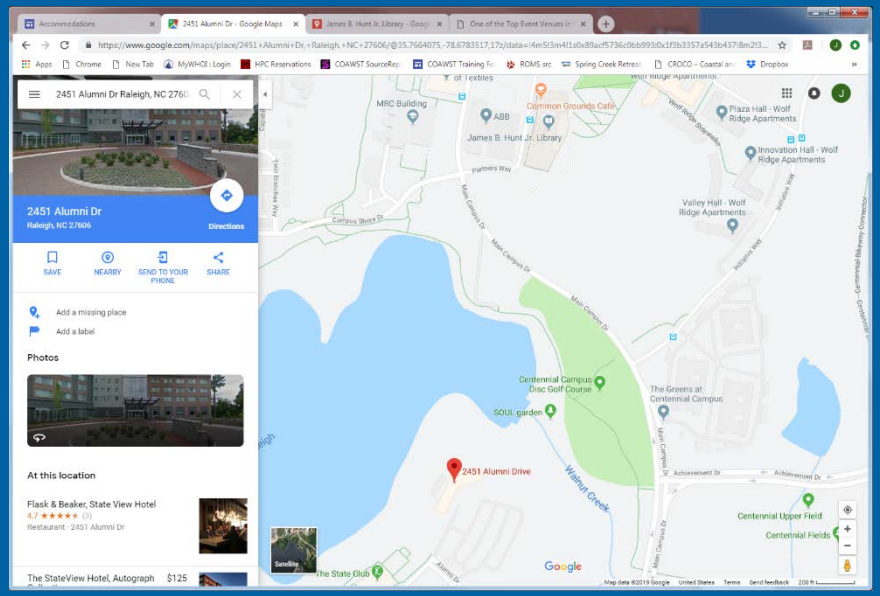
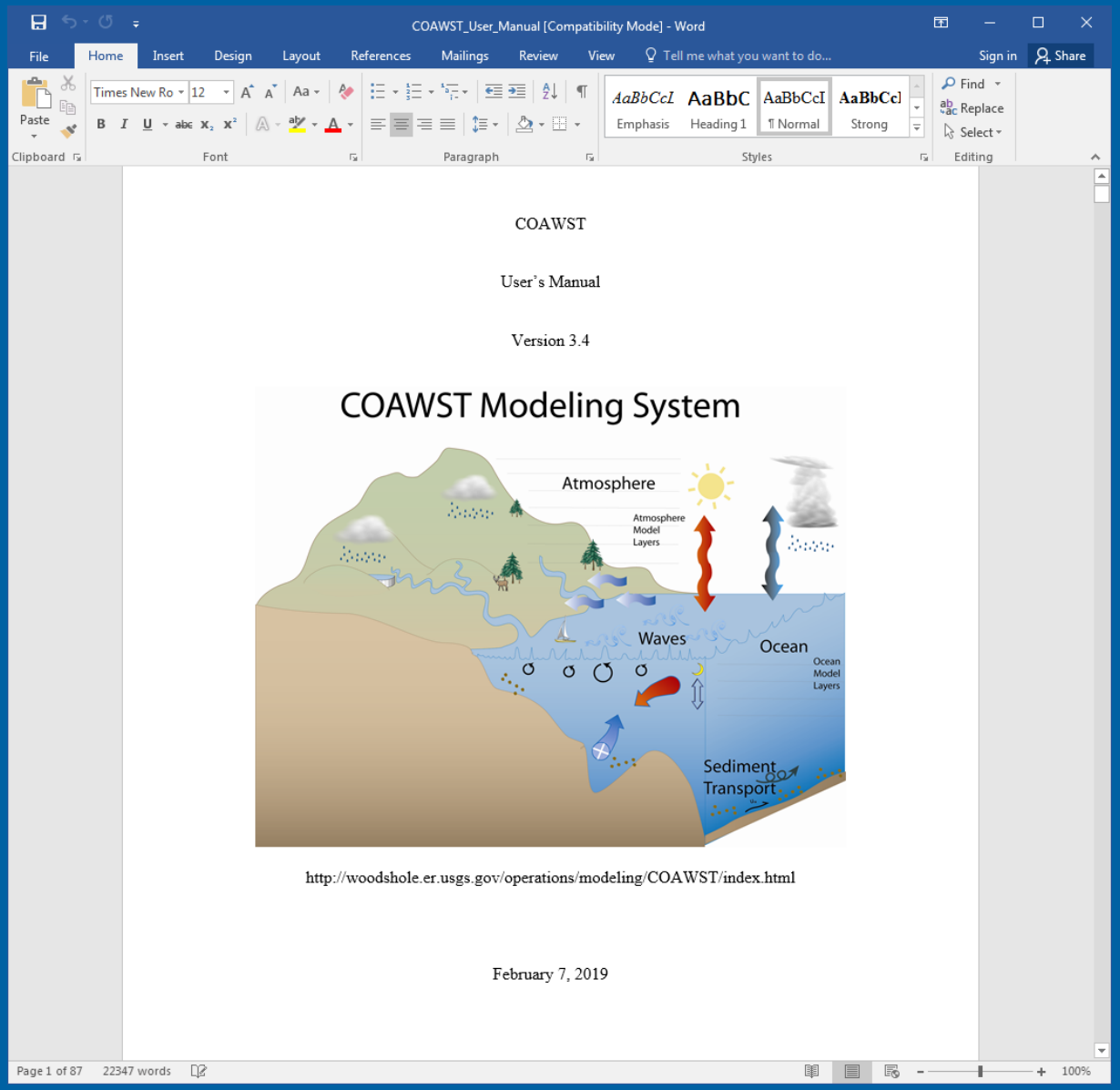
Pleasantries

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



User's Manual



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COAWST Modeling System

COAWST

Coupled Ocean – Atmosphere – Wave – Sediment Transport

C = Coupled

O = Ocean

A = Atmosphere

W = Wave

ST = Sediment Transport

Modeling System

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/

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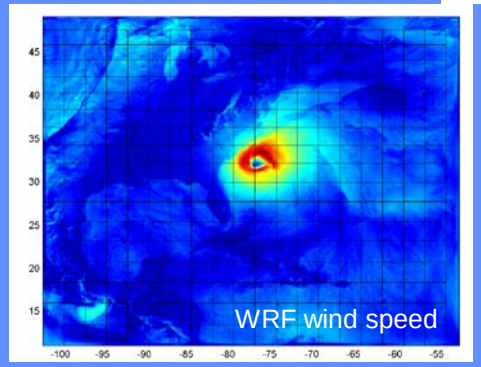
Many other capabilities exist such as InWave, Sea Ice, Vegetation, Biogeochemistry, …

Agenda

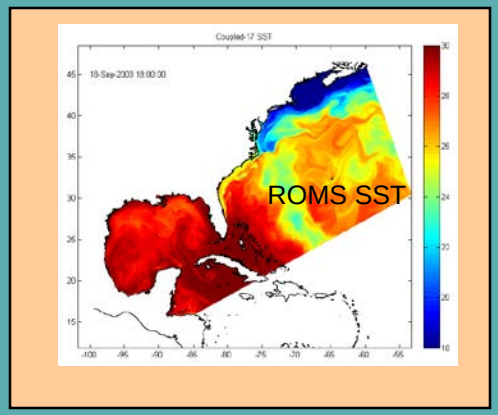
ATMOSPHERE



Monday

Uwind, Vwind, Patm, RH, Tair, cloud, rain, evap, SWrad, Lwrad LH, HFX, Ustress, Vstress → MCT → SST

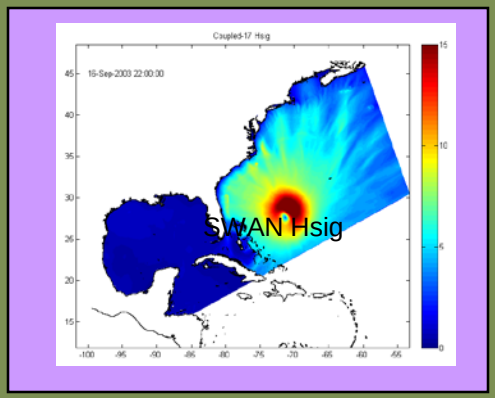
H_{wave}, L_{pwave}, T_{psurf}, → MCT → U_{wind}, V_{wind}



OCEAN

Tuesday

H_{wave}, L_{mwave}, L_{pwave}, D_{wave}, D_{wavep}, T_{psurf}, T_{mbott}, Q_b, $Diss_{bot}$, $Diss_{surf}$, $Diss_{wcap}$, U_{bot} → MCT → u_s, v_s, η, bath, Z_0



WAVE

Wednesday

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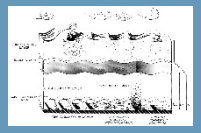
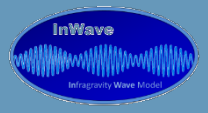
Sediment, InWave, Sealce, Tools, Vegetation





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 .***

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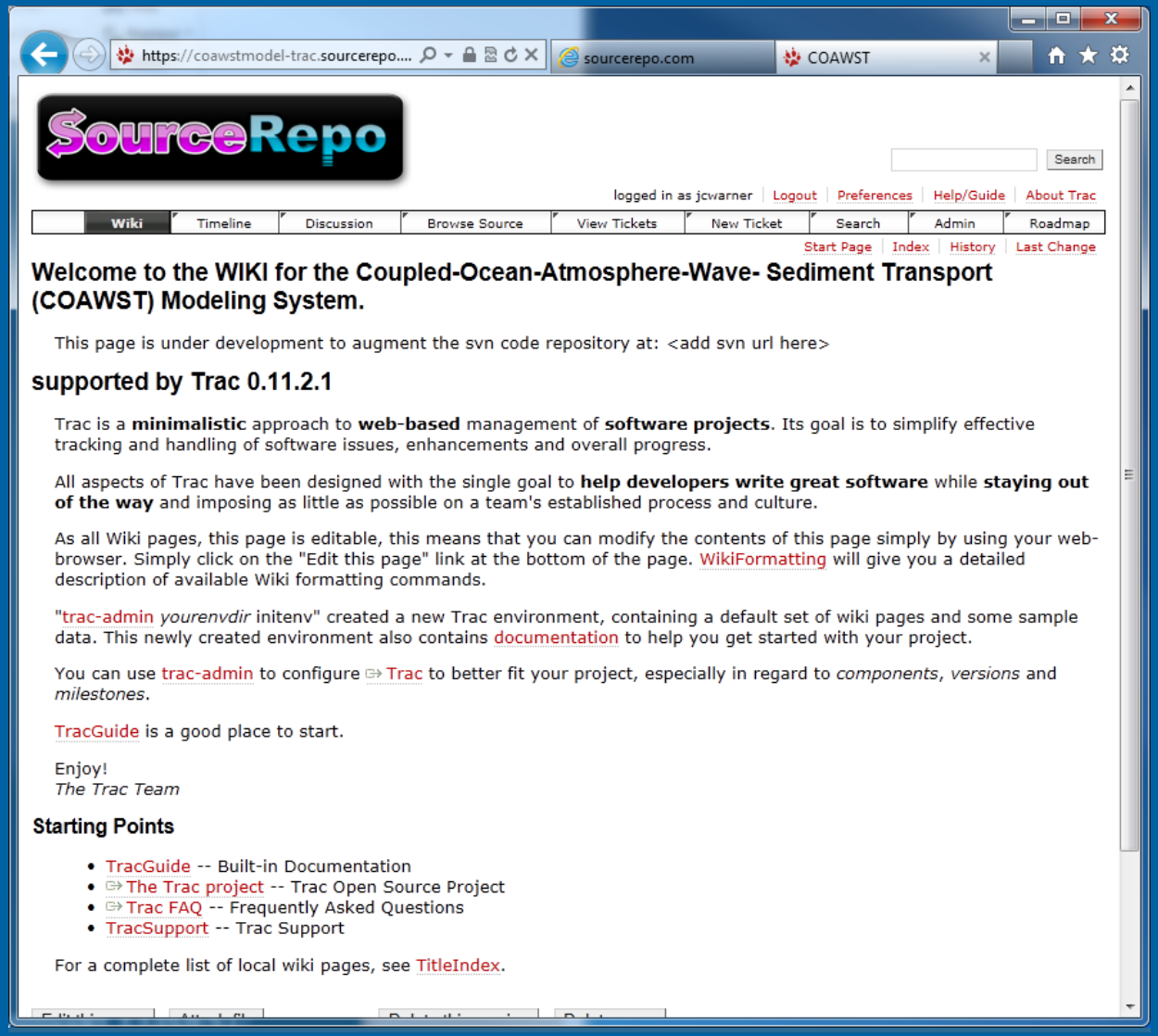
Trac site: help manage the code



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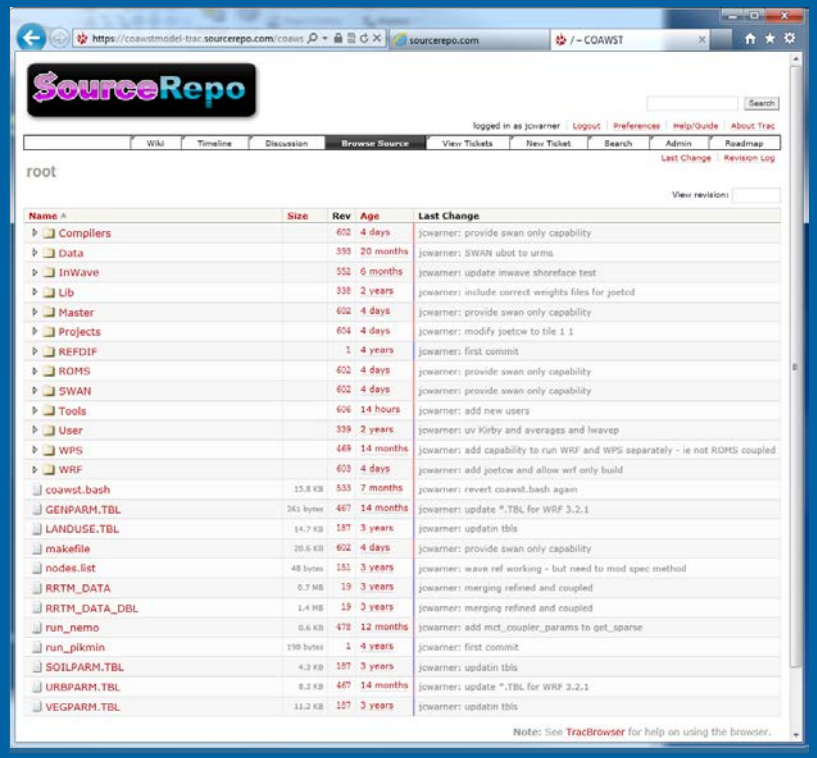
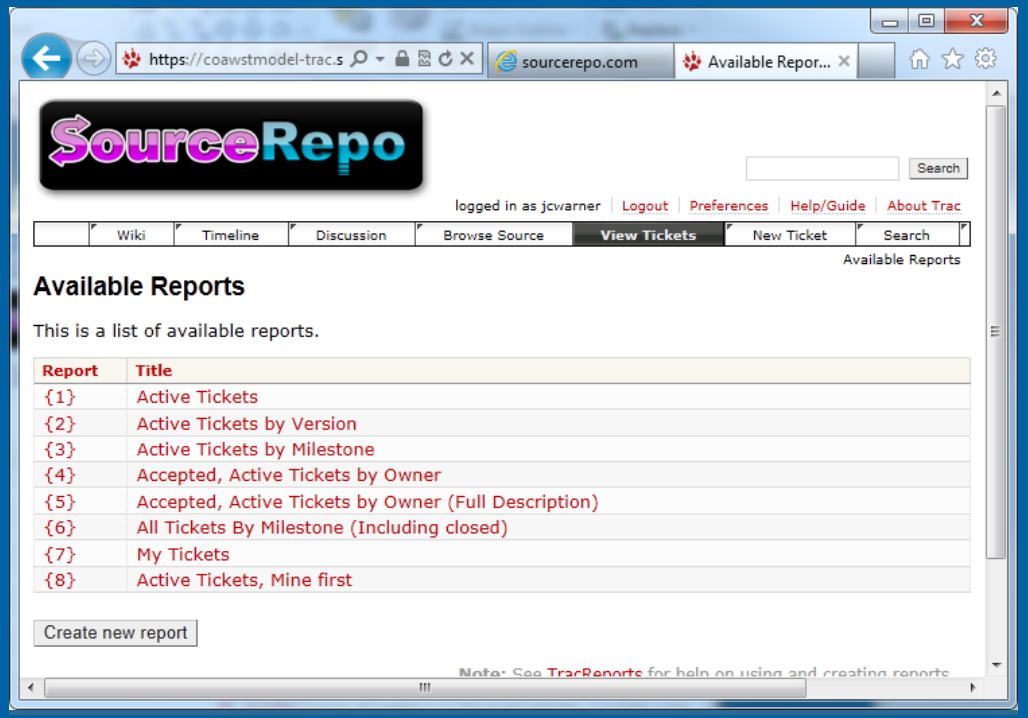
https://coawstmodel-trac.sourcerepo.com/coawstmodel_COAWST/

Trac - source files + tickets



https://coawstmodel-trac.sourcerepo.com/coawstmodel_COAWST/browser



Tickets

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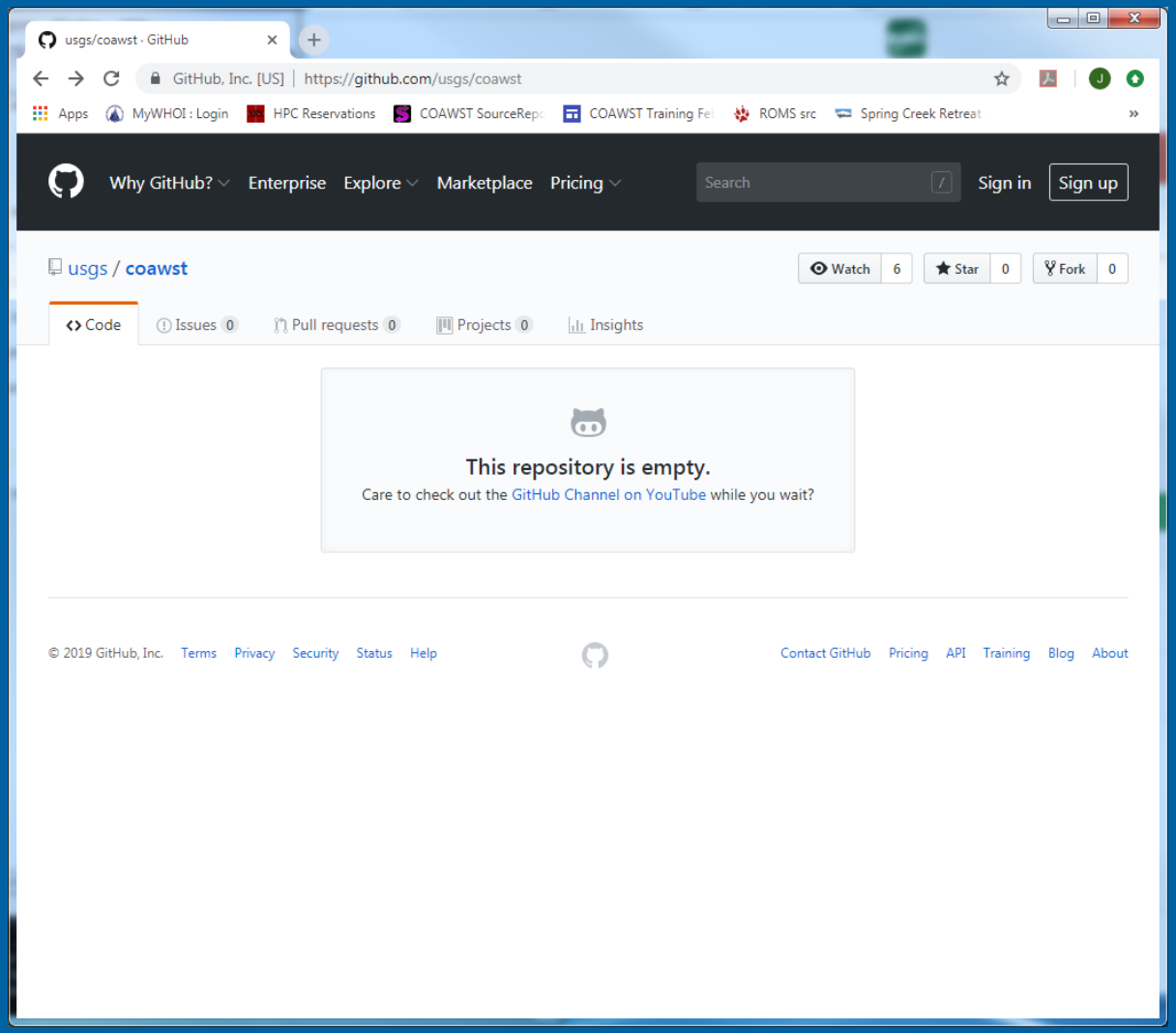
COAWST on github

https://github.com/usgs/coawst



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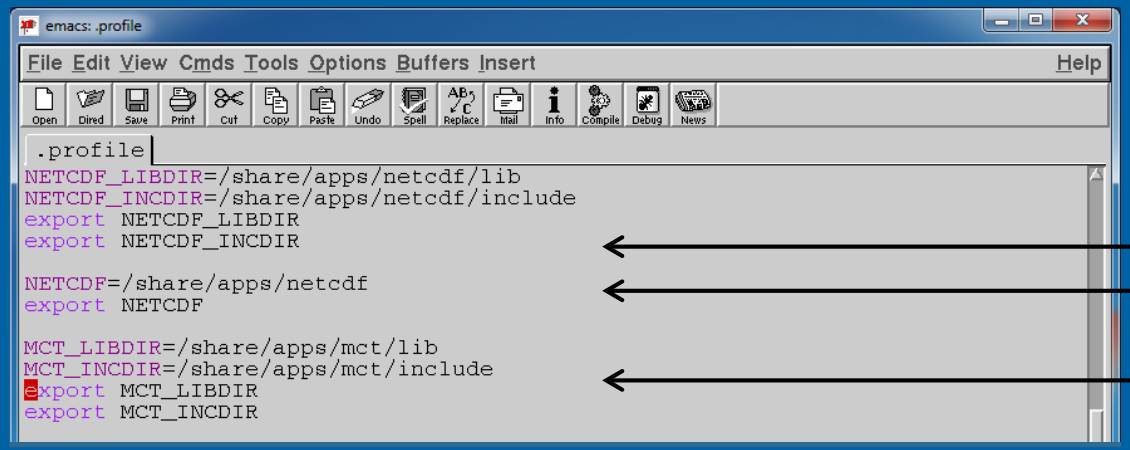
Libraries

- 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

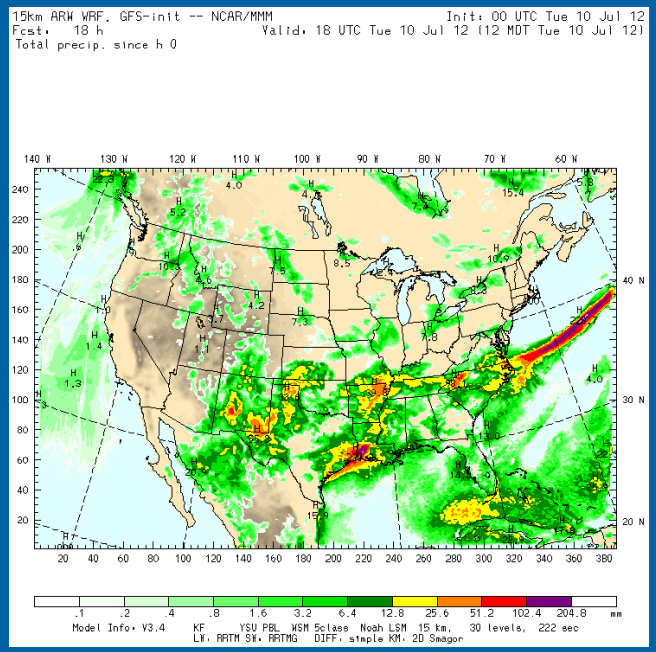
Set your environment



WRF Tutorial

THE WEATHER RESEARCH & FORECASTING MODEL

Thank you NCAR



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