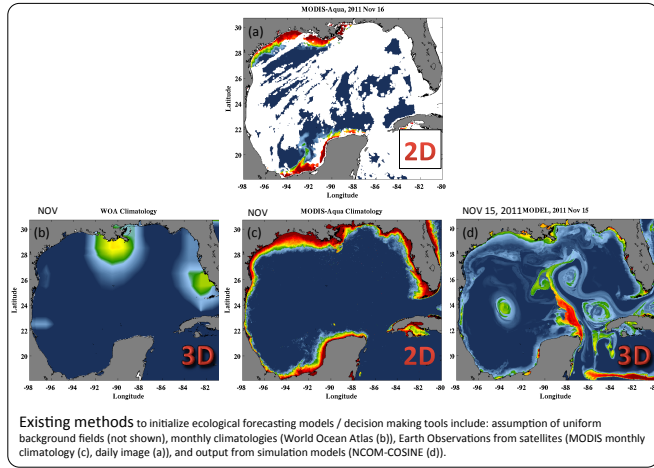


ADAPTIVE ECOSYSTEM CLIMATOLOGY (AEC)

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Partner Organizations



Adaptive Ecosystem Climatology (AEC)

Components:

- Earth Observations (EO) from satellites
- in-situ data (from archives)
- observations collected by amateur observers (crowdsourcing)
- output from a data assimilative, coupled bio-optical-physical ocean model system

The AEC mitigates the shortcomings of the components and combines their strengths to enhance decision-making activities of our end-user, partner organizations (NOAA, BOEM, and EPA)

Products:

- three-dimensional, dynamically balanced, gridded, climatology for each calendar day
 - temperature
 - salinity
 - sea surface height
 - currents
 - nitrate
 - ammonium
 - silicate
 - phosphate
 - oxygen
 - zooplankton (2)
 - phytoplankton (2)
 - chlorophyll
 - detritus
 - PAR
- a flexible, on-line tool (hosted by NOAA) so the resultant AEC fields can be
 - interpolated
 - sub-sampled
 - averaged
 - downloaded in a variety of formats
- analysis tools
 - time series
 - virtual buoys
 - visualization of satellite, model, and AEC fields
 - animations
 - Google Earth .kmz
 - estimates of uncertainty and sensitivity

Ecoforecasting applications:

- management/analysis models
- inputs
- initial and/or boundary conditions

(a) AEC Test Data (NOV 2011) - Overview of the tool interface showing map and data options.

(b) Zoomed-in portion of the Gulf of Mexico showing available options for downloading data.

(c) HTML table of available options for downloading the chunk of data displayed on the map image.

Time	Depth	Latitude	Longitude	Salinity
2011-11-15T00:00:00	0	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	10	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	20	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	30	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	40	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	50	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	60	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	70	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	80	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	90	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	100	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	110	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	120	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	130	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	140	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	150	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	160	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	170	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	180	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	190	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	200	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	210	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	220	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	230	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	240	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	250	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	260	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	270	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	280	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	290	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	300	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	310	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	320	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	330	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	340	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	350	27.000000	-89.000000	35.000000
2011-11-15T00:00:00	360	27.000000	-89.000000	35.000000

AEC visualization and data distribution. An overall view of the Gulf of Mexico for an individual test file of the salinity product (a). A zoomed-in portion of the Gulf of Mexico (b) displaying the list of available options for downloading the chunk of data displayed on the map image. An html table (c) generated by the ".htmlTable" file type selection.

AEC crowdsourcing: A mobile web site is in development for submitting and viewing science data collected by students and the general public. Ocean sampling kits (OSKs) are being prototyped with a local (Mississippi coast) secondary school.

The Adaptive Ecosystem Climatology uses a 'first guess' (a) provided by a 'static climatology' constructed from a multi-decadal simulation run of the NCOM-COSINE model system. This provides representative historical mean conditions for a given calendar day (for this example, Nov 16). Upon AEC insertion into the climatology of available (satellite and/or in-situ (incl. crowdsourced)) Earth Observations (for this example, five daily (Nov 11-15, 2011) MODIS-Aqua OCM3 chlorophyll images), AEC rapidly derives an analysis field (c) with the added value of providing subsurface prediction, as shown in (d) a N-S vertical illustrating the depth of the chlorophyll maxima across the basin (transsect location indicated by the vertical black line in (c)). NOTE: example file only, temporal-spatial weighting functions not yet determined.

The AEC Webtool Prototype is in development through close collaboration with NCDDC. NOTE: example files only - 9 days of NCOM-COSINE model output (1-9 Nov, 2011)

Temperature **Salinity** **Small Phytoplankton** **Diatoms** **Sea Surface Height** **Currents**

Profiles

- Profile of sea water temperature at 93.2632814794922, Lat: 23.705782499999998
- Profile of sea water salinity at 93.2632814794922, Lat: 23.9023114375
- Profile of Small Phytoplankton at 93.2632814794922, Lat: 23.78641325
- Profile of Diatoms at 93.2632814794922, Lat: 23.78641325
- Profile of sea water velocity at 93.2632814794922, Lat: 23.66547575

Timeseries

- Temperature (Celsius) vs Date / Time
- Salinity vs Date / Time
- Small Phytoplankton (N) vs Date / Time
- Diatoms (N) vs Date / Time
- Sea Surface Height (m) vs Date / Time
- Currents (m/s) vs Date / Time