Products available for this survey area

* Sidescan sonar imagery (GeoTIFF) \*poor quality\*
  + The noise in this imagery makes the image quality extremely poor. Large regions of the survey area are comprised of a noise signal only, where the benthic habitat is not discernable. It is NOT suggested for use in interpreting habitats or any analysis, but the product is available for qualitative purposes. The sidescan range violated the 1:10 depth: range ratio rule-of-thumb, as range was to 50x water depth.
* Bathymetric point data from Singlebeam Echosounder (ArcGIS Shapefile and CSV)
* Bottom features including Maximum SV, First echo, second echo, kurtosis, skew, rise, hardness, and roughness (see EchoView support for description of these features)
  + Caution should be used when interpreting all bottom features *other than depth* (bathymetric data are acceptable). Poor weather and resulting heave affected the signal for some survey days. In general, the singlebeam data in the southwest portion of the bay is reliable. The use of the features to automate a habitat classification is not suggested.
* Interpolated DEM from bathymetric point data (Raster)

Field Data Collection

* Data were collected from 11 September 2014 to 21 September 2016
* Sidescan = Teledyne Benthos C3D
  + Bow-mounted
  + 200 kHz frequency
  + Range of 100 meters
  + 12% Overlap between transect
  + Transect spacing of 185 meters
  + Data collected in WGS 84
  + Projected to UTM 15N
  + Location Data: Ashtec dGPS receiver with Communication System International MBX-3 Differential
* Singlebeam = Biosonics DTX
  + 120 kHz frequency
  + Collected in Visual Acquisition
  + Beam width = 8.1o
  + Pulse rate = 5
  + Pulse duration = 0.1
  + Power Reduction = -9.2
  + Transducer depth = 0.61 m
    - With the exception of all lines that were re-surveyed in 2016 due to shallower habitat depths, transducer was moved up to 0.495 m depth
    - Depth information in bathy file has been corrected for transducer offset
  + Location Data = Garmin GA 29 GPS
  + Projection: WGS84 UTM Zone 15 N
* Survey planning in Hypack

Data Post Processing

* Sidescan
  + Chesapeake SonarWiz V6
  + Bottom track
  + Empirical Gain Normalization
  + Mosaic and output as 8-bit GeoTiff with 0.5 m-resolution
  + WGS84 UTM 15N
* Singlebeam
  + Processed in EchoView
  + Bottom Line Selection
    - Min SV for pick = -9
    - Backstep @ -15 discrimination level
    - Peak threshold = -13
  + Bottom Classification (to pull features)
    - Distance between intervals = 5 m
    - Background noise = -999
    - Bottom echo threshold @ 1 m = ranges from -60 to -40
  + Final SingleBeam file
    - “Dep\_Orig” = raw depth values that were all calculated using a 0.495 m transducer offset, have not been corrected for transducer offset error in 2014/2015. If you want to use these, then:
      * Data from 2016 is correct
      * Data from 2014-2015 needs to have 0.15 m ADDED to it
    - “Depth” = depths that have been corrected for transducer offset
    - “Dep\_TidCor” = Transducer-corrected depths that have been corrected for tide
      * Tide corrections in 1-hour intervals from Pier 21
    - All depths are in meters

DEM Creation

* Empirical Bayesian kriging
  + Output cell size 50
  + Logempirical transformation
  + Exponential semivariogram
  + 500 points in each local model
  + Local model overlap 3
  + 50 simulated semivariograms
  + Standard circular search pattern
    - Radius of 100 m
    - Maximum neighbors = 500
    - Minimum neighbors = 100
    - Angle 45
    - Sector Type – 4

Thematic Classification

* “Oyster habitat” vs non-oyster habitat
* MMU of 2500 m2
* Classified using proprietary algorithm in addition to manual editing

Thematic Accuracy Assessment

* 297 ground-truthing points collected
* Overall accuracy 88.6%
* Producer Accuracy of Oyster habitat = 77.2%
* User accuracy for oyster habitat = 91.6 %
* Kappa = 0.752