

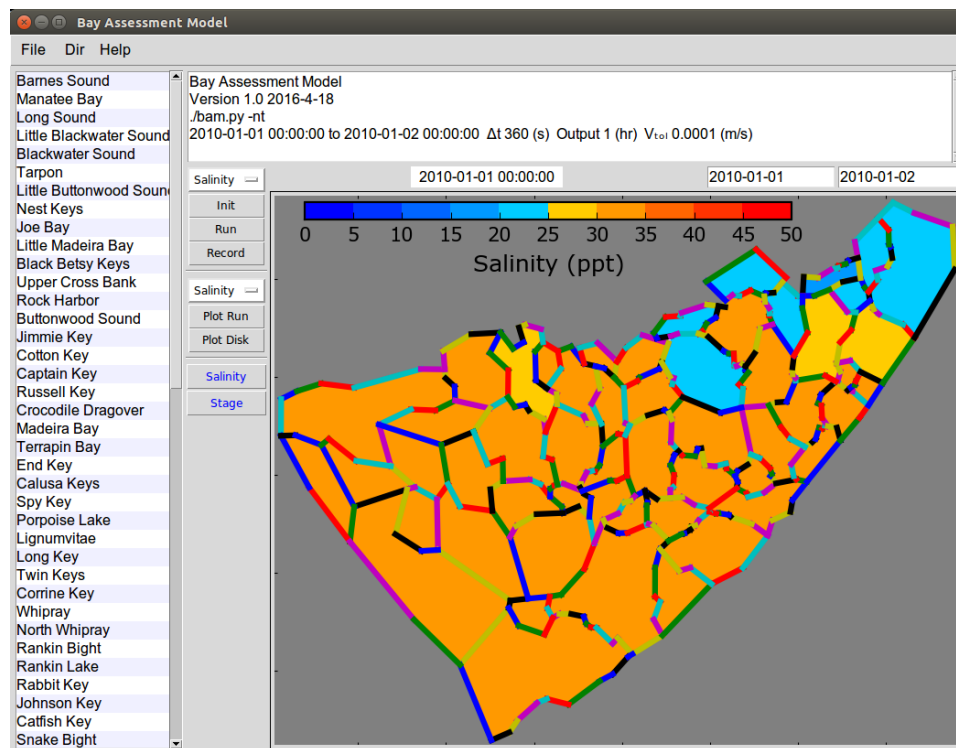


## Florida Bay Assessment Model Environmental Data Sources

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The Florida Bay Assessment Model (BAM) is a hydrological and salinity model representing 54 idealized basins of Florida Bay with frictional flow hydraulics and conservation of mass. The simplified physical representation can obscure relevant system dynamics, particularly when attempting to comprehend complexity as abounds in coastal basins. BAM attempts to balance the dimensional reduction of the physical description with fidelity to the underlying complexities by use of the best available observational data describing the environment. BAM leverages a rich set of observational data within Florida Bay from the Marine Monitoring Network administered by Everglades National Park, from the United States Geological Survey (USGS) Everglades Depth Estimation Network (EDEN)<sup>1</sup>, from USGS derived potential evapotranspiration<sup>2</sup> based on National Oceanic and Atmospheric Administration (NOAA) Geostationary Operational Environmental Satellite (GOES) observations, and from the NOAA Center for Operational Oceanographic Products and Services (CO-OPS)<sup>3</sup> tidal harmonic constituents.

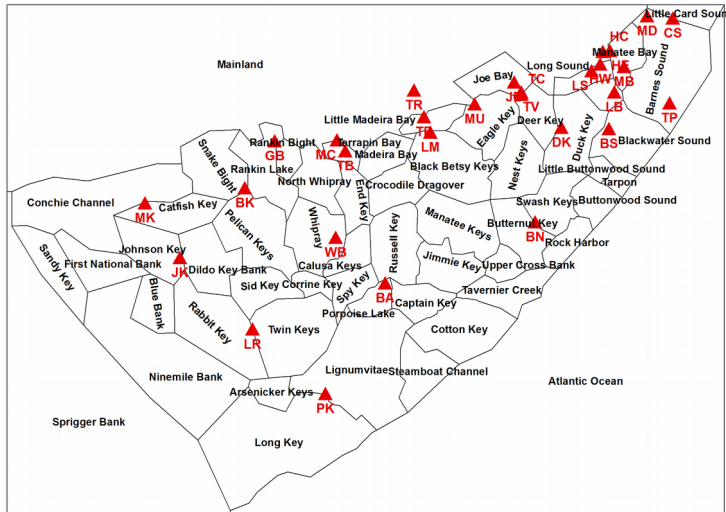
This document provides a brief overview of BAM data sources.



Florida Bay Assessment Model (BAM)

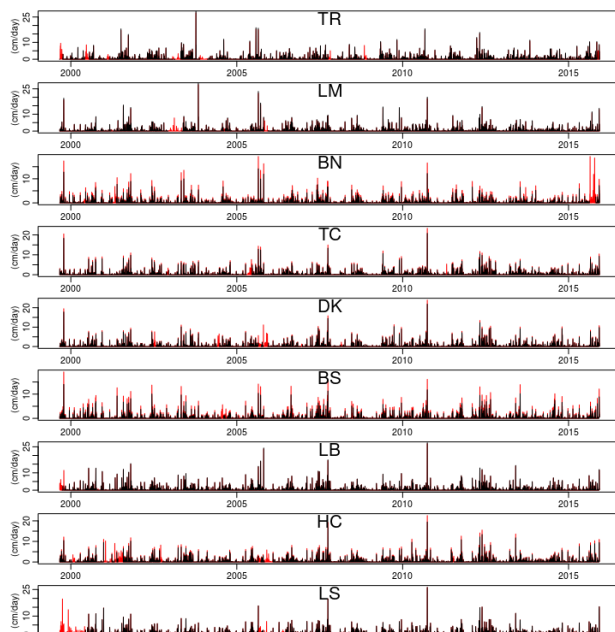


## Everglades National Park Marine Monitoring Network

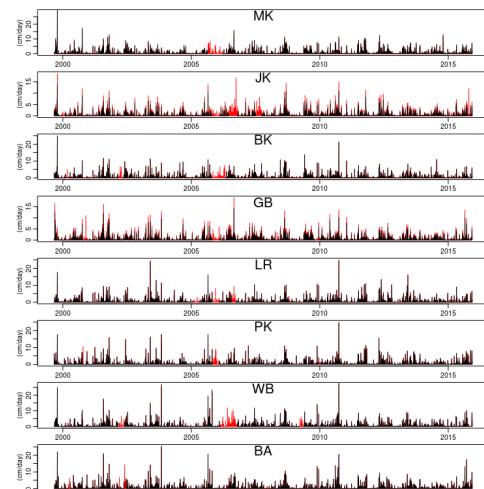


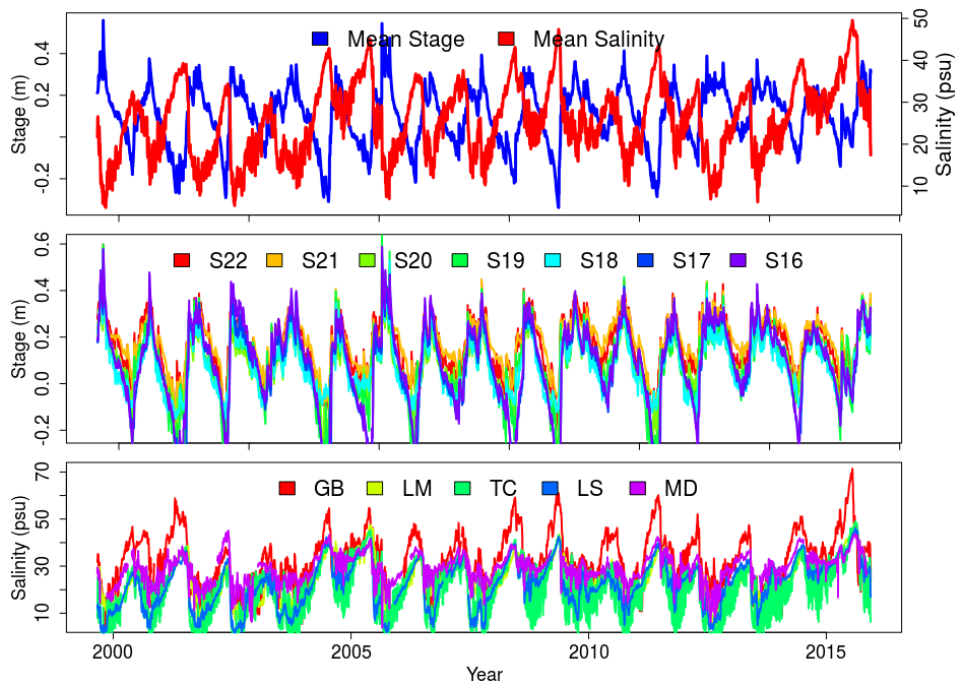
The Marine Monitoring Network maintains a network of hydrographic and meteorological stations across Florida Bay providing water level and salinity data to calibrate and verify BAM.

Stations are shown with red triangles and two-letter station identifiers.



Rainfall data from Everglades National Park Marine Monitoring Network is a primary BAM input.

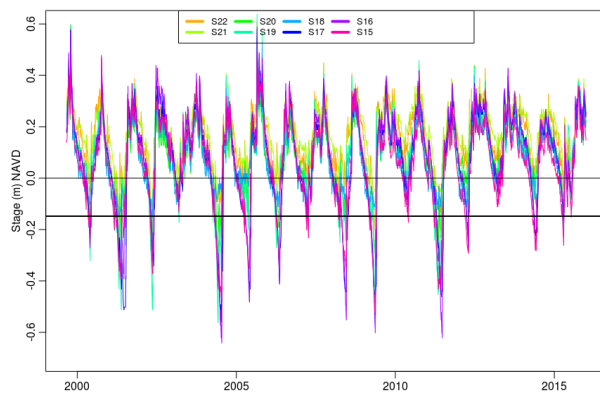
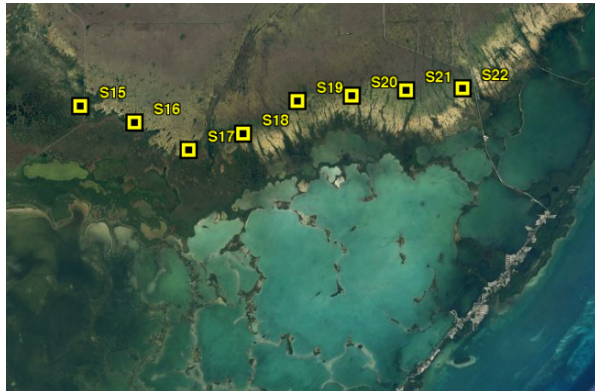




Salinity and water level data from Everglades National Park Marine Monitoring Network are used to calibrate and verify BAM.



## United States Geological Survey Everglades Depth Estimation Network



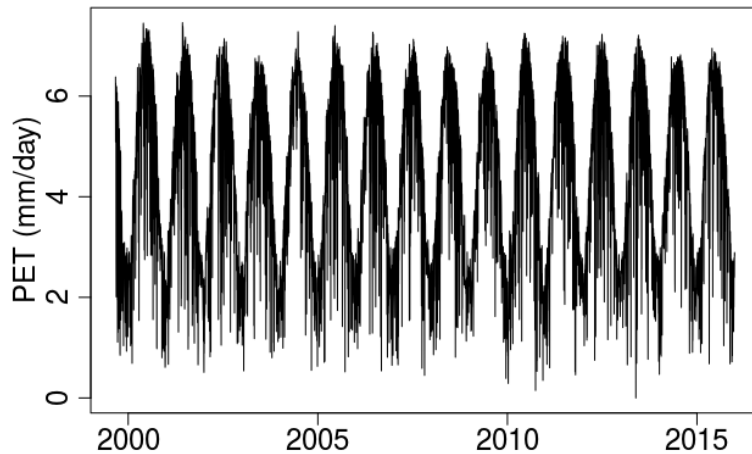
A hydraulic head relationship exists between water levels in the southern Everglades and freshwater runoff into the coastal basins. BAM uses this relationship to estimate integrated Everglades runoff (streamflow, sheetflow and groundwater) into the coastal basins.

Everglades water levels are determined at eight stations designated S15 through S22. Data corresponding to these stations are obtained from the USGS Everglades Depth Estimation Network (EDEN)<sup>1</sup>.

These water levels are a primary data input to BAM.



## United States Geological Survey Potential Evapotranspiration (PET) from Geostationary Operational Environmental Satellite (GOES)



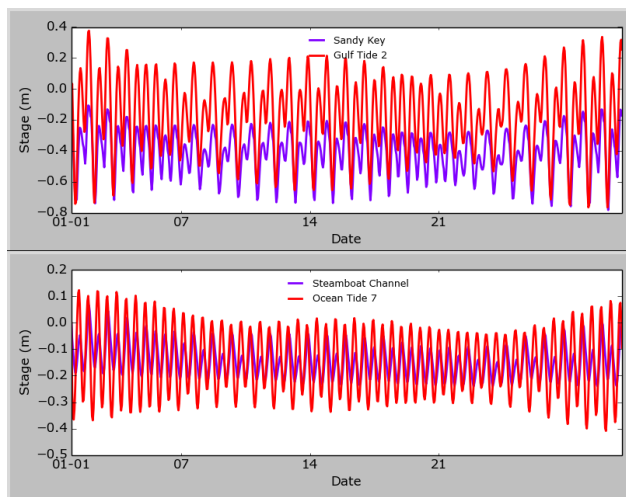
Evapotranspiration is obtained from USGS derived estimates<sup>2</sup> based on NOAA GOES observations.

These evapotranspiration estimates are a primary data input to BAM.



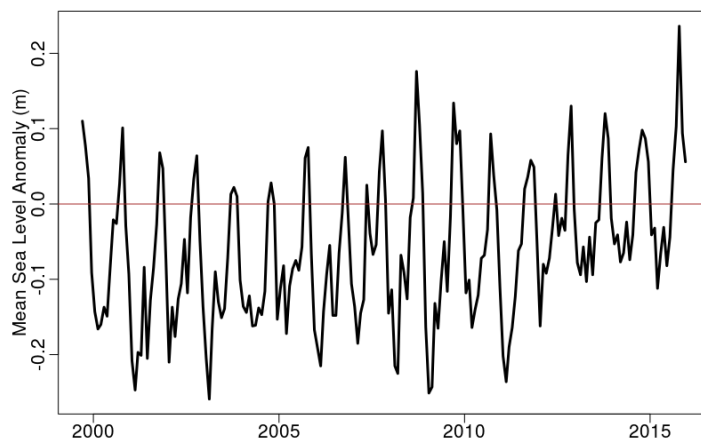
## National Oceanic and Atmospheric Administration Center for Operational Oceanographic Products and Services

Location	Station ID	To accurately estimate basin water levels and mass transports, BAM uses local, hourly tidal estimates for tidal boundary conditions. These estimates are computed from NOAA subordinate station harmonic constituents <sup>3</sup> at the stations listed here.
Cape Sable, East Cape	TEC4165	
Long Key, western end,	8723899	
Lignumvitae Key, NE side, Florida Bay	8723824	
Snake Creek, Hwy. 1 bridge, Windley Key	8723787	
Tavernier Creek, Hwy. 1 bridge, Hawk Channel	8723748	
Garden Cove, Key Largo	8723622	
Little Card Sound bridge	8723534	



NOAA tidal timeseries at four BAM basins

Tidal estimates are a primary data input to BAM.



Observed water levels at three NOAA tide stations<sup>3</sup> are used to derive the mean sea level fluctuations in Florida Bay.

Location	CO-OPS ID
Virginia Key	8723214
Vaca Key	8723970
Key West	8724580

Mean sea level data are a secondary input to BAM.



## References

- [1] Telis, P.A., Xie, Zhixiao, Liu, Zhongwei, Li, Yingru, and Conrads, P.A., (2015), The Everglades Depth Estimation Network (EDEN) Surface-Water Model, Version 2: U.S. Geological Survey Scientific Investigations Report 2014-5209, 42 p., doi 10.3133/sir20145209. <http://sofia.usgs.gov/eden/>
- [2] Jennifer, J., Mecikalski, J., and S. Paech. (2008). Satellite-based solar radiation, net radiation, and potential and reference evapotranspiration estimates over Florida, Technical Report prepared for the United States Geological Survey, July 2008. <https://sofia.usgs.gov/eden/evapotrans.php>
- [3] National Oceanic and Atmospheric Administration (NOAA) Center for Operational Oceanographic Products and Services (CO-OPS) <https://tidesandcurrents.noaa.gov/>