NOAA Technical Report NOS CS 30

THE TAMPA BAY OPERATIONAL FORECAST SYSTEM (TBOFS): MODEL DEVELOPMENT AND SKILL ASSESSMENT

Silver Spring, Maryland
March 2011

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U.S. DEPARTMENT OF COMMERCE
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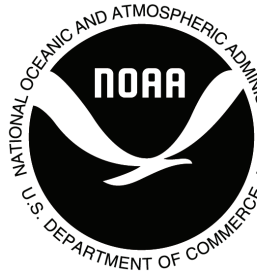

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EXECUTIVE SUMMARY

The Tampa Bay Operational Forecast System (TBOFS) has been developed based on a hydrodynamic model system, Regional Ocean Model System (ROMS, Haidvogel, 2008). The curvilinear model grid was constructed and populated with bathymetry obtained from NOS survey soundings. The model for TBOFS was calibrated and validated with observed data obtained from the NOS Tampa Bay Oceanography Project (TOP) survey in 1990 and 1991 (Nowadly, 1992; Zervas, 1993). With carefully selected ROMS dynamic options, the model tide and hindcast simulations were conducted to obtain optimal model results. The tide simulation was carried out with astronomical tide predictions at model grid lateral open boundary. The hindcast simulation was conducted with forcings of: observation interpolated water levels at the lateral open boundary, atmospheric wind and heat flux analyses on the surface, and river. The tide and hindcast simulation skills were measured by NOS skill assessment software (Zhang, et. al., 2006). By comparing with observations, a set of performance statistics (Zhang et al., 2006) for variables of water level, current, temperature and salinity were obtained. Statistical parameters included in the NOS skill assessment procedures for operational forecast systems (Hess, 1997, Zhang et al., 2006) included in the following graphic presentations are Root Mean Squared Error (RMSE) and Central Frequency (CF) for hourly records, high and low water levels, and time of high and low water levels. The real-time nowcast/forecast was then set-up based the validated model and the nowcast/forecast skills were also examined before the system transition to operations.

The skills are summarized as the followings (refer to Figures 4.1 – 4.10):

Tide Simulations

For tide elevations, high and low tides (Figure 4.1): Central Frequency (CF) exceeds NOS criteria (90%); RMSE in the order of 5 cm;
For times of high and low tide (Figure 4.1): CF about 70% to 80%; RMSE about 0.4 to 0.6 hour..
For tidal current speeds and amplitudes of maximum flood and ebb speeds (Figure 4.2): CF exceeds 90%; RMSE about 10 cm s^{-1}.
For times of tidal current maximum flood and ebb speeds (Figure 4.2): CF about 60%; RMSE about 0.4 to 0.7 hour.

Hindcast Simulations

For water levels (Figure 4.3): CF near 90% or above; RMSE about 8 to 10 cm.
For times of maximum and minimum water levels (Figure 4.3): CF about 60%; RMSE about 0.7 hour.
For current speeds and maximum and minimum current speeds (Figure 4.4): CF exceeds 90% mostly; RMSE on the order of 15 cm s^{-1}.
For times of current maximum flood and ebb speeds (Figure 4.4): CF about 60% to 70 %; RMSE about 0.8 to 1 hour.
For temperature (Figure 4.5): all CF 100%; RMSE about 1^0C.
For salinity (Figure 4.6): all CF 100%; RMSE 0.6 PSU.

Semi-operational Nowcasts/Forecasts

For water levels and current speed nowcasts and all forecast hours (Figures 4.8 and 4.9): CF near 100%; RMSE 5 cm and 13 cm s^{-1}.
For surface temperature (Figure 4.10): CF 80 –92%; RMSE 1.5 – 2.5 ^{0}C.
For surface salinity (Figure 4.11): CF 100%; RMSE 0.5 PSU.

1. INTRODUCTION

This report documents the development of the hydrodynamic model for the Tampa Bay Operational Forecast System (TBOFS). The objective of TBOFS is to provide real time nowcast and forecast oceanographic conditions to mariners navigating in Tampa Bay, Florida as part of the NOS Tampa Bay PORTS (Physical Oceanographic Real-Time System).

As the largest estuary and the largest port in Florida, and the seventh largest U.S. commercial port in terms of tonnage handled, Tampa Bay (Figure 1) is a relatively shallow bay with an entrance to the West Florida shelf of the Gulf of Mexico. The average depth of the bay ranges from 2 m to 5 m except in the navigational channels which range from 10 m to 15 m.

The Tampa Bay hydrodynamic circulation has been studied by many investigators. Galperin et al., (1991) studied density driven circulation in Tampa Bay using model simulations. Hess (1993) developed a model to provide tidal characteristics in Tampa Bay validated with observations. Tidal datums for Tampa Bay were also determined from a similar study (Hess, 2001, Hess and Bosley, 1991). Vincent et al., (2000) developed a nowcast/forecast system using the Estuarine and Coastal Ocean Model (ECOM) (Blumberg, 1990). Meyers et al., (2007) also studied Lagrangian residual currents using ECOM. Finally, Weisberg and Zheng (2006) studied general circulation of Tampa Bay using the Finite Volume Coastal Ocean Model (Chen et al., 2003)

Model development procedures for TBOFS include the selection of a hydrodynamic model, model grid generation, and model calibration and validation with skill assessment software. Each procedure is described in detail in this document.

2. MODEL SYSTEM OVERVIEW

2.1. ROMS Hydrodynamic Model

A well developed community ocean model, the Regional Ocean Model System (ROMS) developed by Rutgers University (Haidvogel, et al., 2008), was selected as the hydrodynamic model for TBOFS. Employing a curvilinear coordinate grid in the horizontal and a terrain following sigma coordinate grid in the vertical, the model solves for water surface elevation, currents, salinity and temperature using the conservation of mass, momentum, and tracer equations. Depends on the application requirements, ROMS allows various combination of option selection for physical terms included and types of boundary condition. These options for TBOFS tide and hindcast simulations are listed in Appendix A.

2.2. Model Grid

The orthogonal model grid (Figure 2) was constructed with commercial software, DELFT3D. The grid was dimensioned 176 by 290 to cover Tampa Bay, Saratoga Bay, and the major rivers that flow into Tampa Bay leaving the south as the only open boundary lateral forcing. The grid also extends into offshore about 60 km so that the shelf and estuary dynamic exchange can be accurately simulated. The model grid resolution ranges from 1.2 km near the offshore open boundary to about 120 m along the navigation channels inside the Bay. There are 11 sigma levels in the vertical grid to adequately resolve flow and density structures.

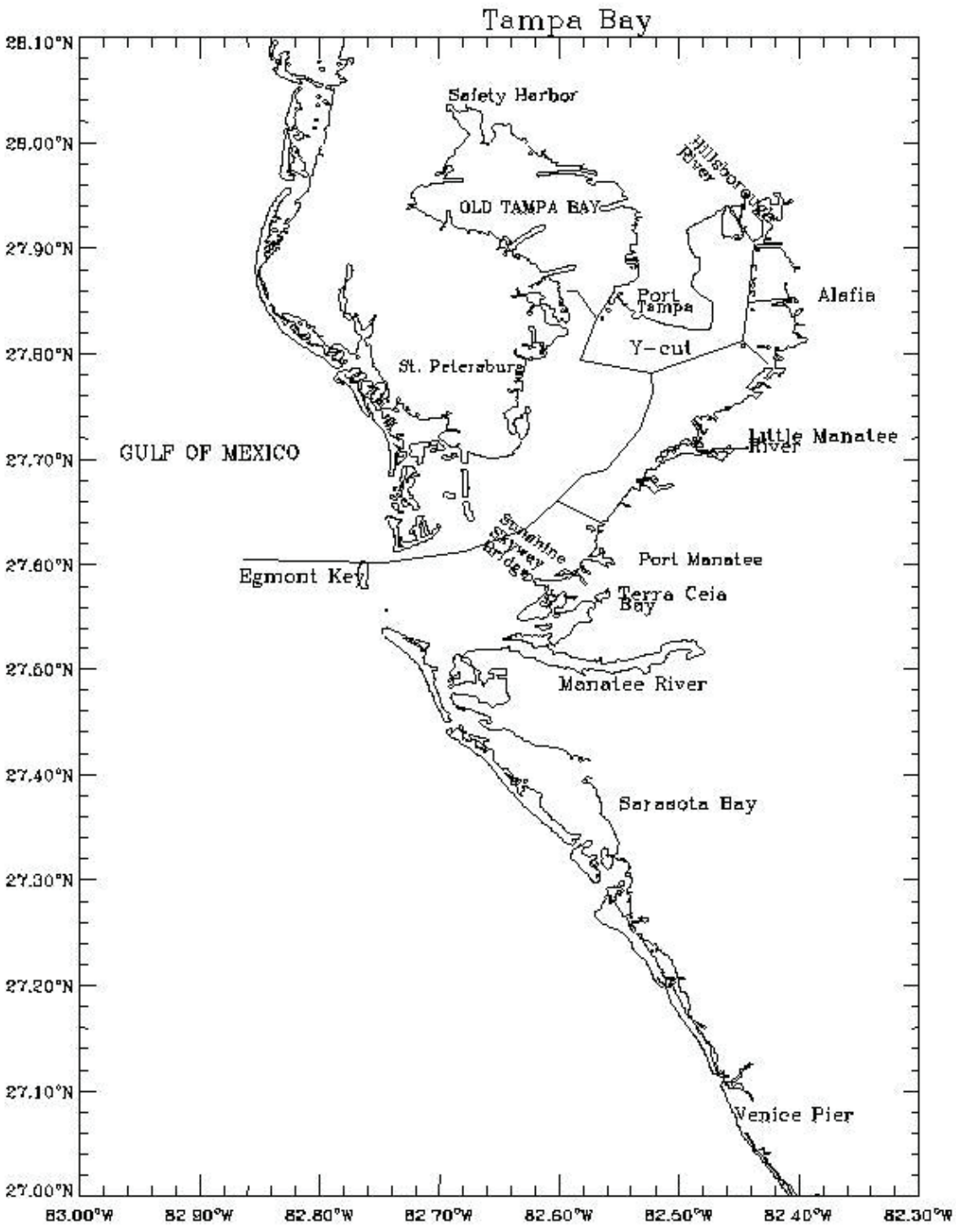

Figure 1. Tampa Bay base map.

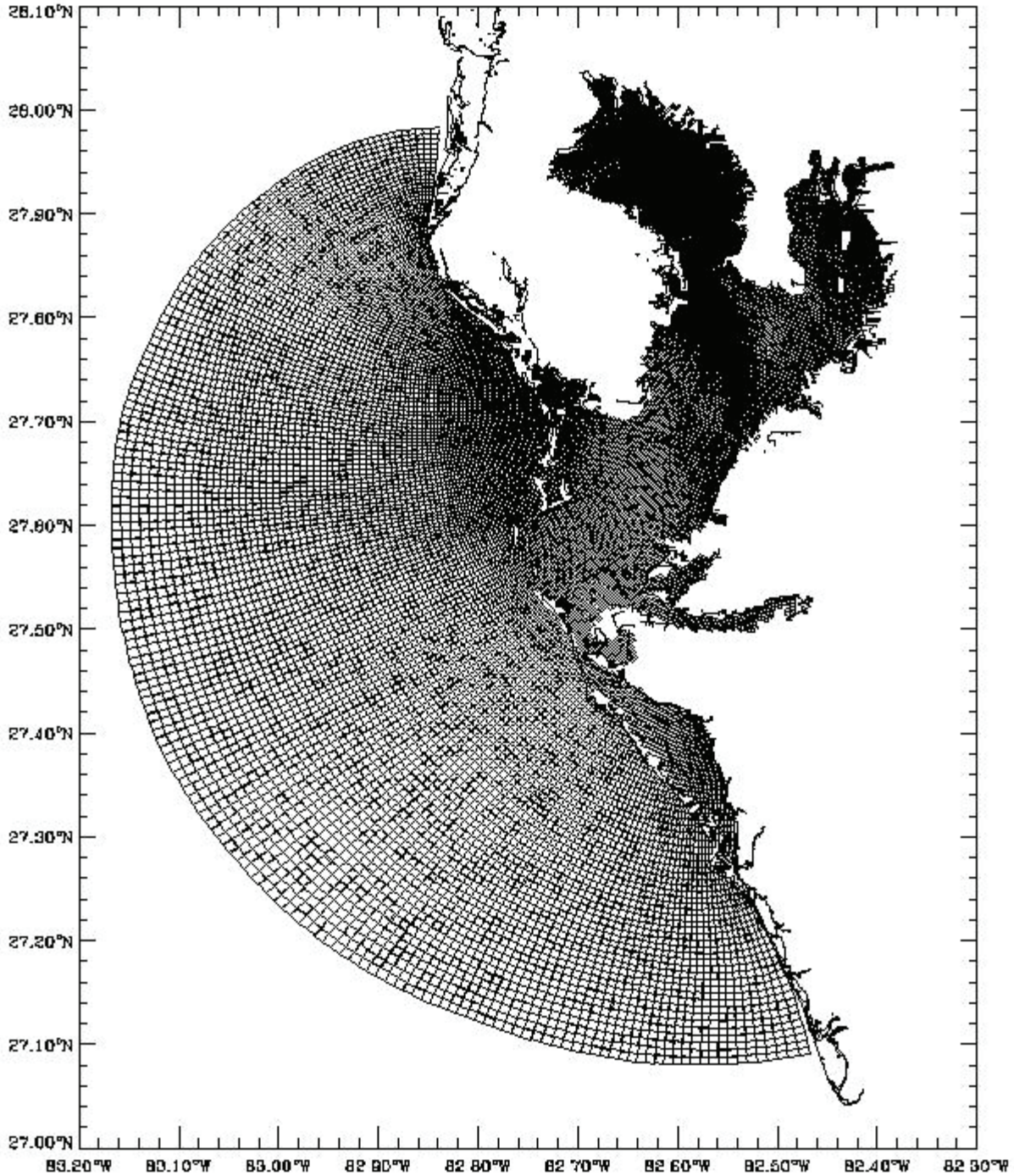

Figure 2. Tampa Bay ROMS model grid.

3. MODEL RUN SCENARIO DEFINITION

For TBOFS to provide accurate forecast guidance in the Tampa Bay estuary, the core hydrodynamic model ROMS needs to be calibrated with tide simulation and verified with hindcast simulation. The TBOFS operational test runs are then conducted on NCEP's Centers of Computer System. The procedures of preparing initial and boundary forcing and conducting these runs are described and in each sub-section.

3.1. Astronomical Tide Simulation

NOS conducted a two year circulation survey under the Tampa Bay Oceanographic Pject (TOP) for the period of 1990 to 1991 (Nowadly et al., 1992). Extensive oceanographic observations of water elevations, current velocities, salinity and temperatures were collected at the bay entrance and within the bay. The data collected were analyzed and synthesized by Zervas, et al., (1993). Maps of water levels and current measurement locations are shown in Figure 3.1 and 3.2. These data were used for model calibration and verification during the development of TBOFS.

For tidal simulations, the offshore open boundary conditions are based on harmonic constants obtained from ADCIRC East Coast 2001 (Mukai et al, 2002) with adjustment using the NOS accepted harmonic constants at NOS tide gauge stations of Clearwater Beach and Venice Pier. Surface forcing and river inflows were not included. Several sensitivity experiments were conducted to find the best ROMS options of lateral open boundary conditions (Appendix A.1 for tide simulation and Appendix A.2 for hindcast simulation). For example, the following cppdef options are used in the tide and hindcast simulations: logarithmic z_0 law of the wall scheme for bottom friction (z_{0b}=0.005 m,), reduced (no vertically integrated currents) south open boundary conditions, M2 Flather formulation, Mellor and Yamada 2.5 for turbulence formulation, and bulk flux parameterization for surface heat flux. The tide simulation was run from June 1, 1990 for a year. The model water levels and currents time series at survey stations (Figures 3.3 and 3.4) are compared with predictions from harmonic constants obtained from analyzing TOP data.

Time Series Plots

Figure 3.3 shows a portion of the water level time series (from July 9 to July 20, 1990) for the model simulated tide at 16 stations with the tide predictions based on harmonically analyzed from TOP data. The transition from semi-diurnal to diurnal tide signal clearly demonstrates a strong mixed tide region in Tampa Bay. Agreement between model simulated and harmonically predicted tides reveals model simulated tide accuracy which is also presented in the skill assessment in Section 4 and in Appendix B.

Figures 3.4a to 3.4d present the simulated and harmonically predicted tidal current speed component time series for stations C-02, C-04, C-15, and C-30. These stations are located from the Bay entrance (C-02) to mid- and upper-Bay along the main navigation channel toward the upper Bay (C-30). Current velocities at 5 observed bins through the water column are displayed to show velocity structure in the vertical. Opposite to the tide amplitude increases from the Bay entrance at Egmont Key toward the upper Bay, the current velocity decreases along the navigation channel toward the upper Bay due to shoaling effect caused by decreasing depths.

The model simulated current velocities are in good agreement with tidal predictions as shown in the time series plots as well as in Section 4 and Appendix C.

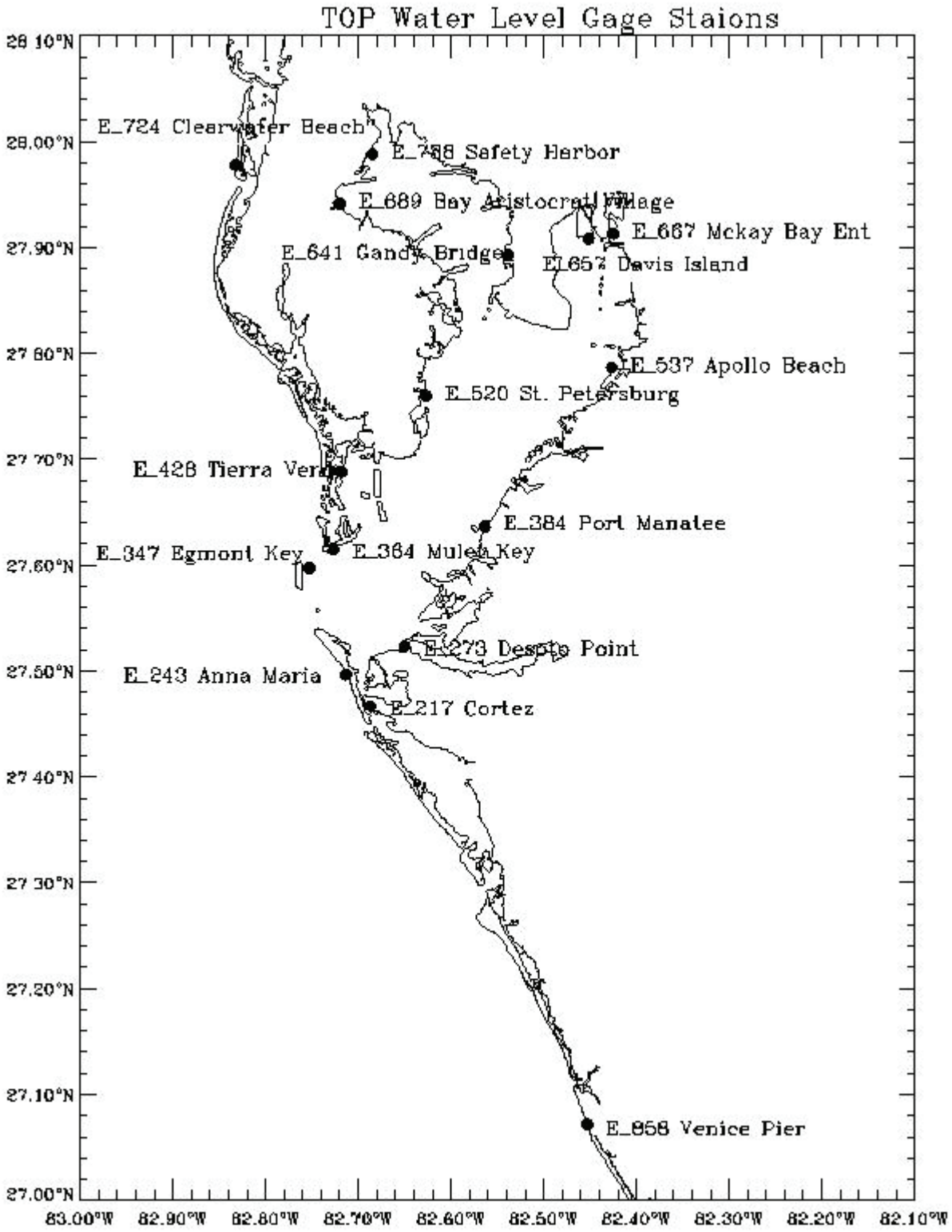

Figure 3.1. TOP water level gage station location map.

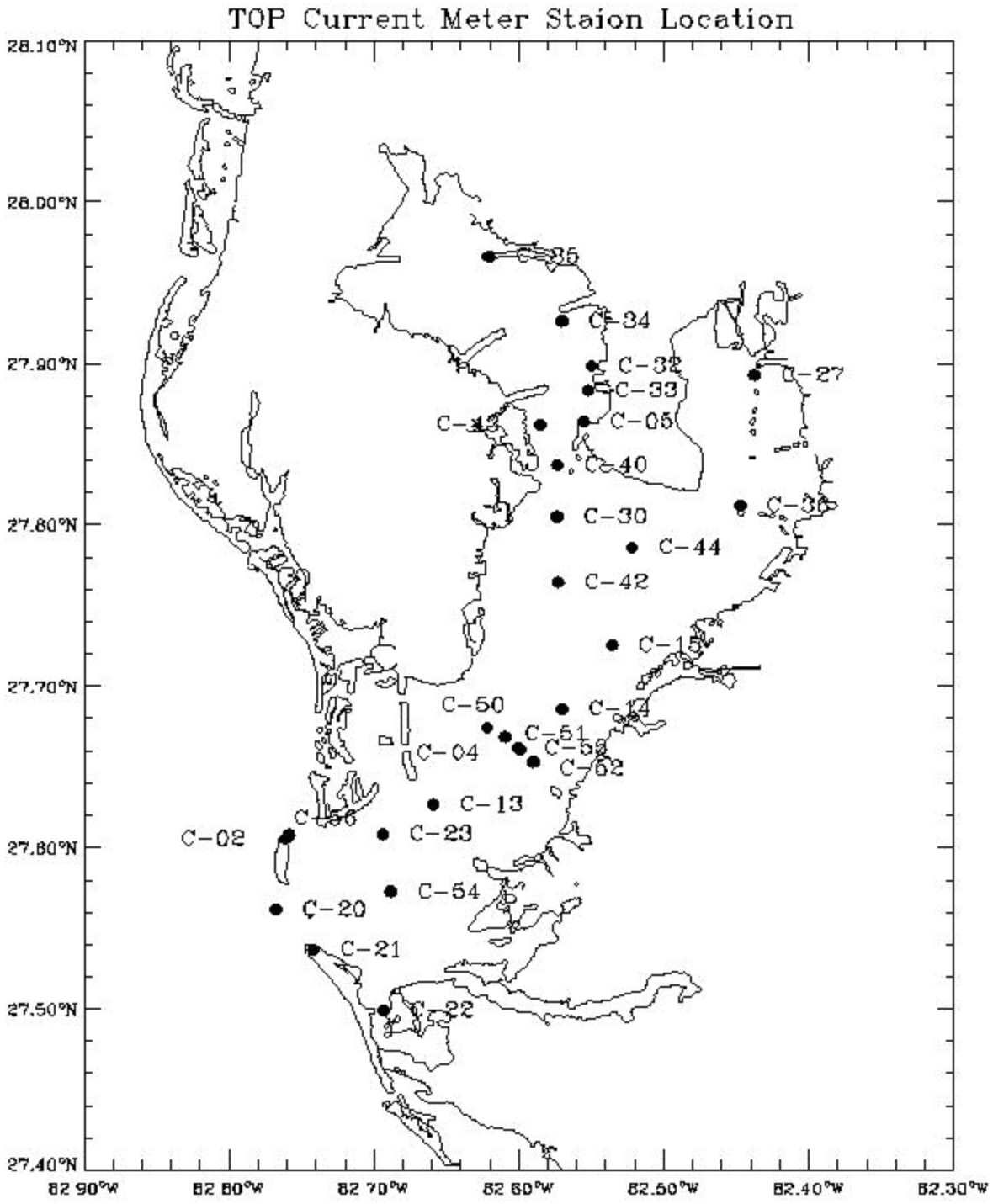

Figure 3.2. TOP current meter station location map.

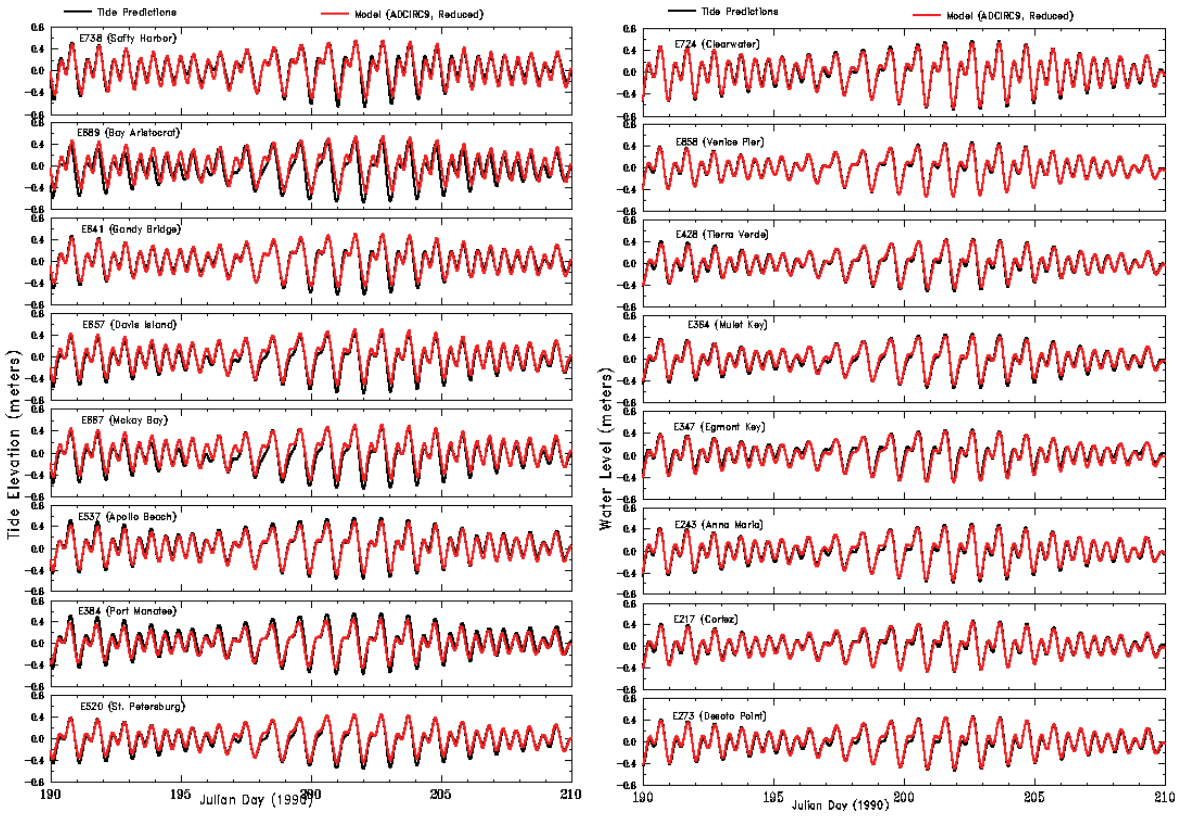

Figure 3.3. Tide elevation time series from tide simulation (black) compared with harmonic predicted tides (red) for upper bay (left panel) and coastal and lower bay (right panel) stations.

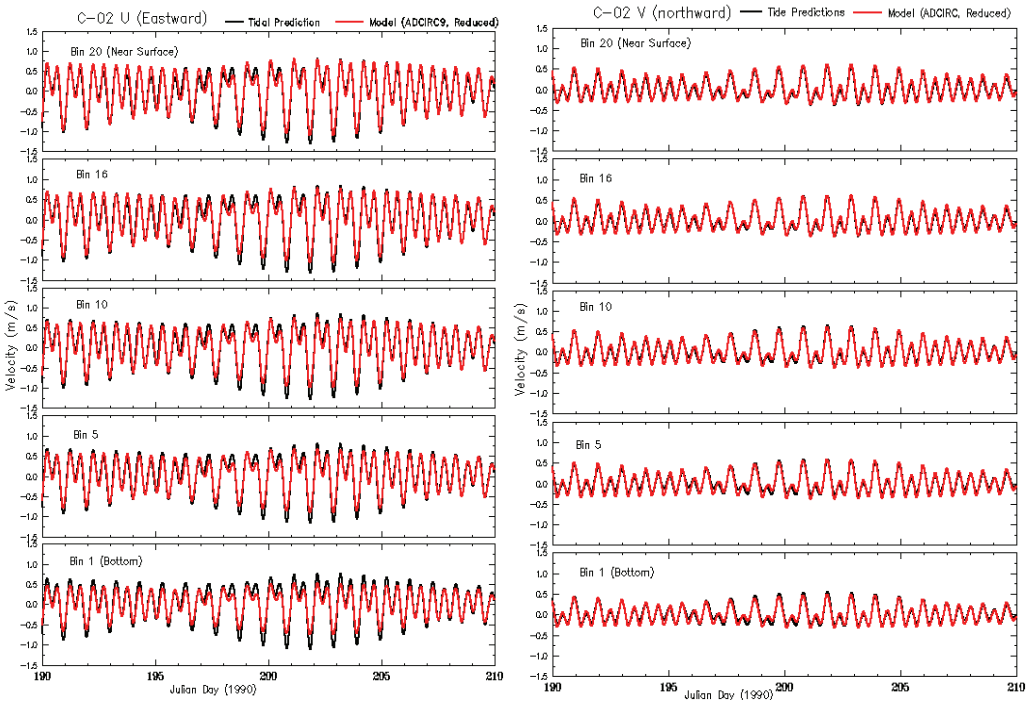

Figure 3.4a. East (left panel) and north (right panel) component of current velocity time series for harmonically predicted simulated (black) and harmonically predicted (red) tidal currents at station C-02 (Egmont Key, Figure 3.2) for observed bins 1, 5, 10, 16 and 20.

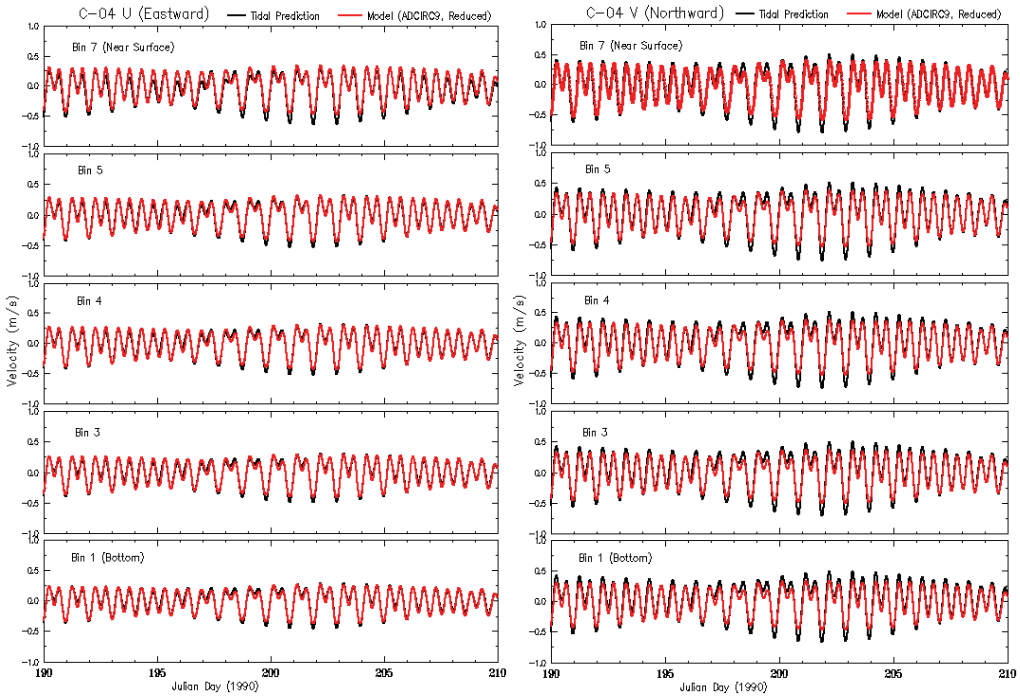

Figure 3.4b. East (left panel) and north (right panel) component of current velocity time series for harmonically predicted (black) and model simulated (red) tidal at station C-04 (central bay navigation channel, Figure 3.2) for observed bins 1, 3, 4, 5, and 7.

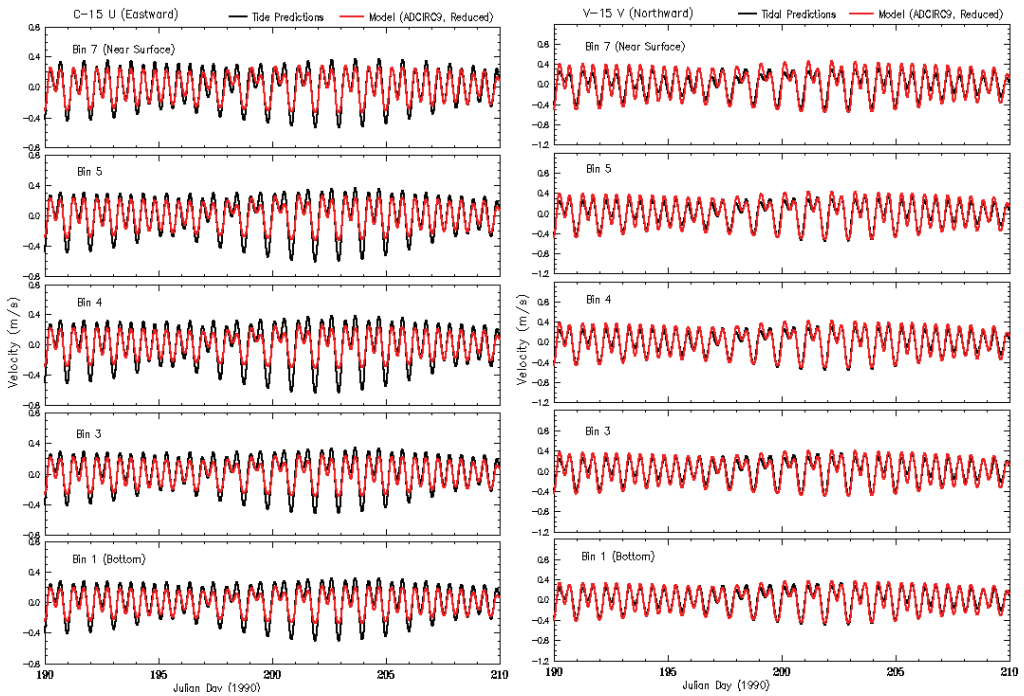

Figure 3.4c. East (left panel) and north (lower panel) component of current velocity time series for harmonically predicted (black) and model simulated (red) tidal currents at station C-15 (central bay navigational channel, Figure 3.2) for observed bins 1, 3, 4, 5, and 7.

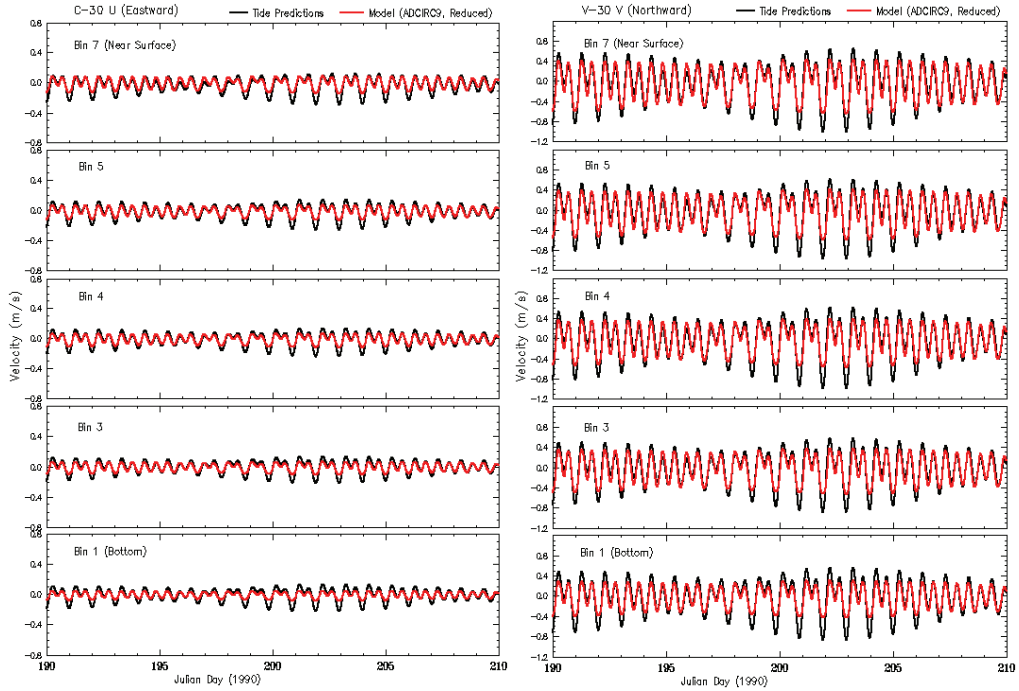

Figure 3.4d. East (left panel) and north (right panel) component of current velocity time series for harmonically predicted (black) and simulated (red) tidal currents at station C-30 (navigation channel at central Bay, Figure 3.2) for observed bins 1, 3, 5, and 7.

Average Circulation

The mean tidal circulation residual over the Bay play an important role in dispersion characteristics over the Bay. Eco-system forecasts rely on the tidal residual circulation of the Bay. Tidal circulation residuals can be obtained by averaging tidal currents over a long period of time. Figure 3.5 shows the tidal current residuals near the surface (left panel) and at the bottom (right panel) layers over 30 days of the tidal simulation for August 1990. It is apparent that tidal residuals near the surface are much stronger than those at the bottom. The averaged tidal current fields are comparable with M_2 residuals presented by Weisberg and Zheng (2006). Current residual circulation pattern and the order of magnitude for other months are similar to the month shown in Figure 3.5.

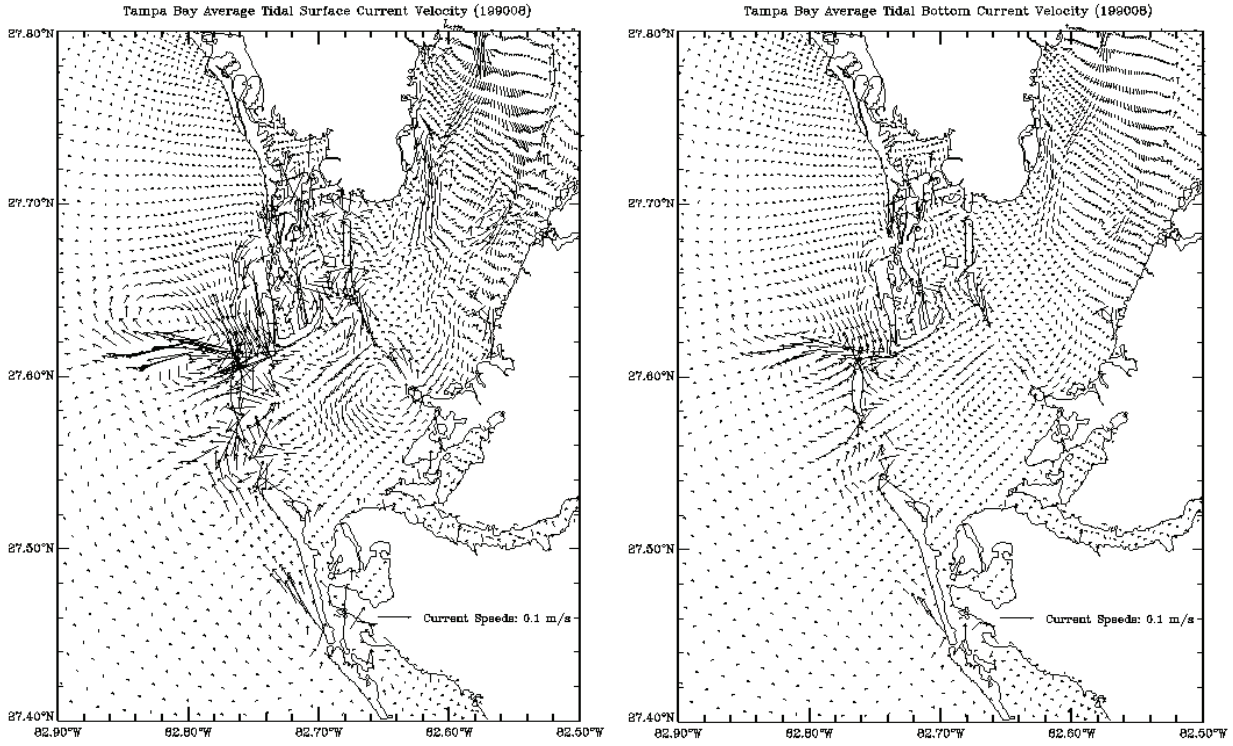

Figure 3.5. Averaged tidal currents over 30 days simulation (August, 1990). Left: near surface. Right: bottom.

3.2. Model Hindcast Simulation

The open boundary conditions for hindcast simulation were specified using the TOP survey data for water levels, temperature, and salinity at a single measurement location about 60 km offshore of Tampa Bay. Other locations of temperature and conductivity measurement are shown in Figure 3.9. The model was initialized with temperature and salinity fields generated from monthly measurements from the Environmental Protection Commission of Hillsborough County (EPCHC).

Model parameters such as the bottom friction formulation and its coefficients obtained from the tidal simulation were kept invariant in this validation simulation. Three hourly atmospheric surface forcing variables, which include wind, sea level atmospheric air pressure, relative humidity, downward and upward short wave radiation, and downward long wave radiation, were obtained from the North America Regional Reanalysis (NARR) provided by the Physical Sciences Division of NOAA's Ocean and Atmospheric Research office (http://www.cdc.noaa.gov). Initial model calibration indicated that excessive heat flux from NARR caused simulated surface temperatures to be about $2^{o}C$ warmer than observations. Net input heat flux for the synoptic hindcast simulation was therefore reduced by 10%.

Averaged daily river fresh water inflows at 7 river basins from 12 rivers were specified using USGS measurements (Figure 3.6). Salinity was set to be zero, and river temperatures were specified from observed time series.

The model was run for 15 months from May 31, 1990 to August 31, 1991. Simulated water levels, currents, temperature and salinity at TOP gage locations are compared with observations for model performance skill assessment.

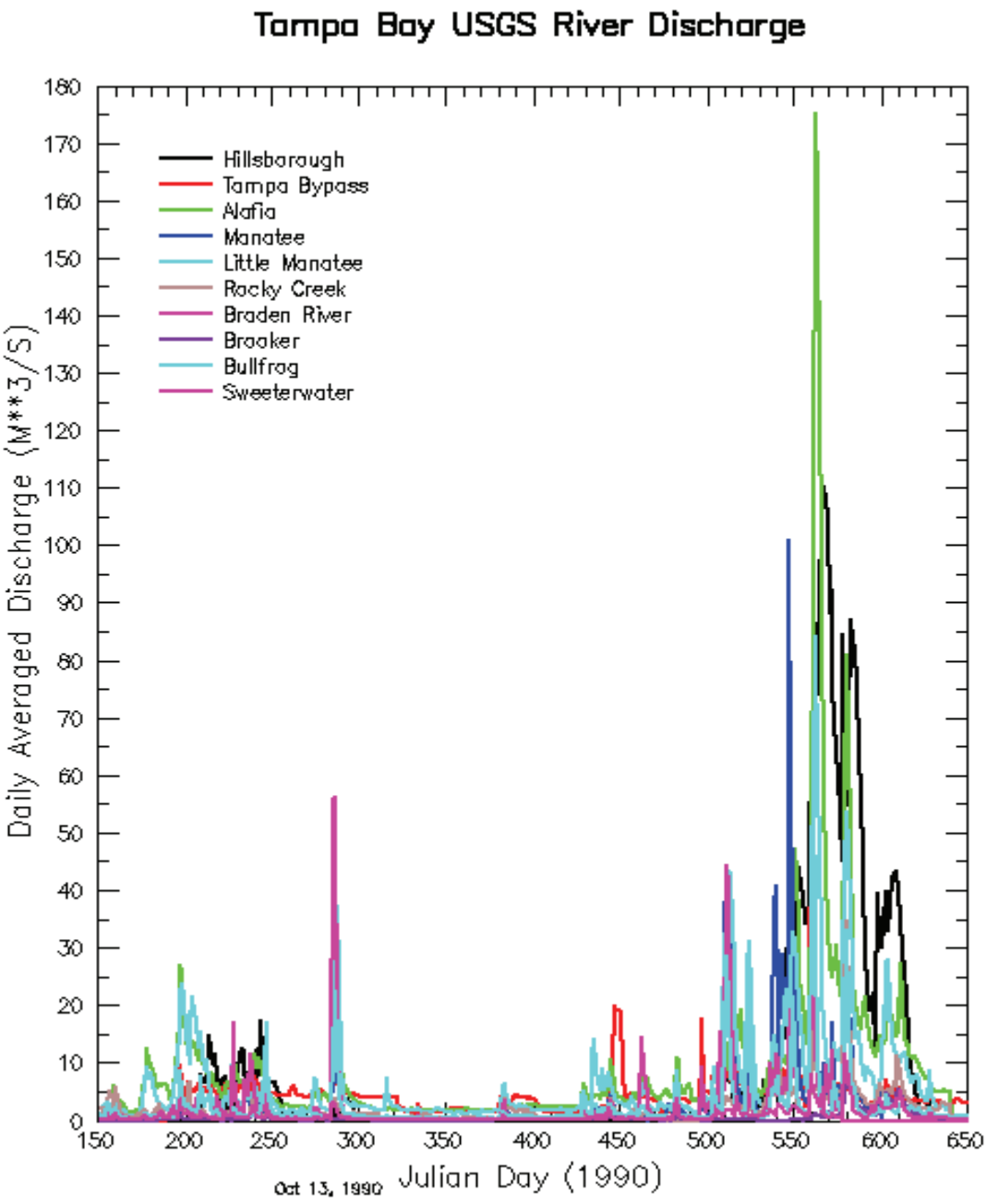

Figure 3.6. Major river inflows for synoptic hindcast simulation.

3.2.1. Water Level and Current Velocity

Figure 3.7 shows model hindcast water level time series compared with observations at gauge stations inside the bay. Total water surface elevations from the hindcast simulation represented the non-tidal components well and therefore matched the observations better than those from the tidal simulation. Modeled hindcast velocities at all current meter stations were compared with observations and tidal current harmonic predictions. Velocity time series from 4 stations are shown in Figures 3.8a to 3.8d: C02 (Bay entrance near Egmont Key), C04 (main navigation channel), C15 (mid-bay), and C30 (near Old Tampa Bay). Mixed tide transition between semi-diurnal and diurnal is shown clearly in the current velocity time series. Current amplitudes decrease from the bay entrance (C2) toward the upper bay (C30). In the vertical, similar to the tidal current vertical the velocity gradient is not significant, thus revealing a well-mixed shallow bay.

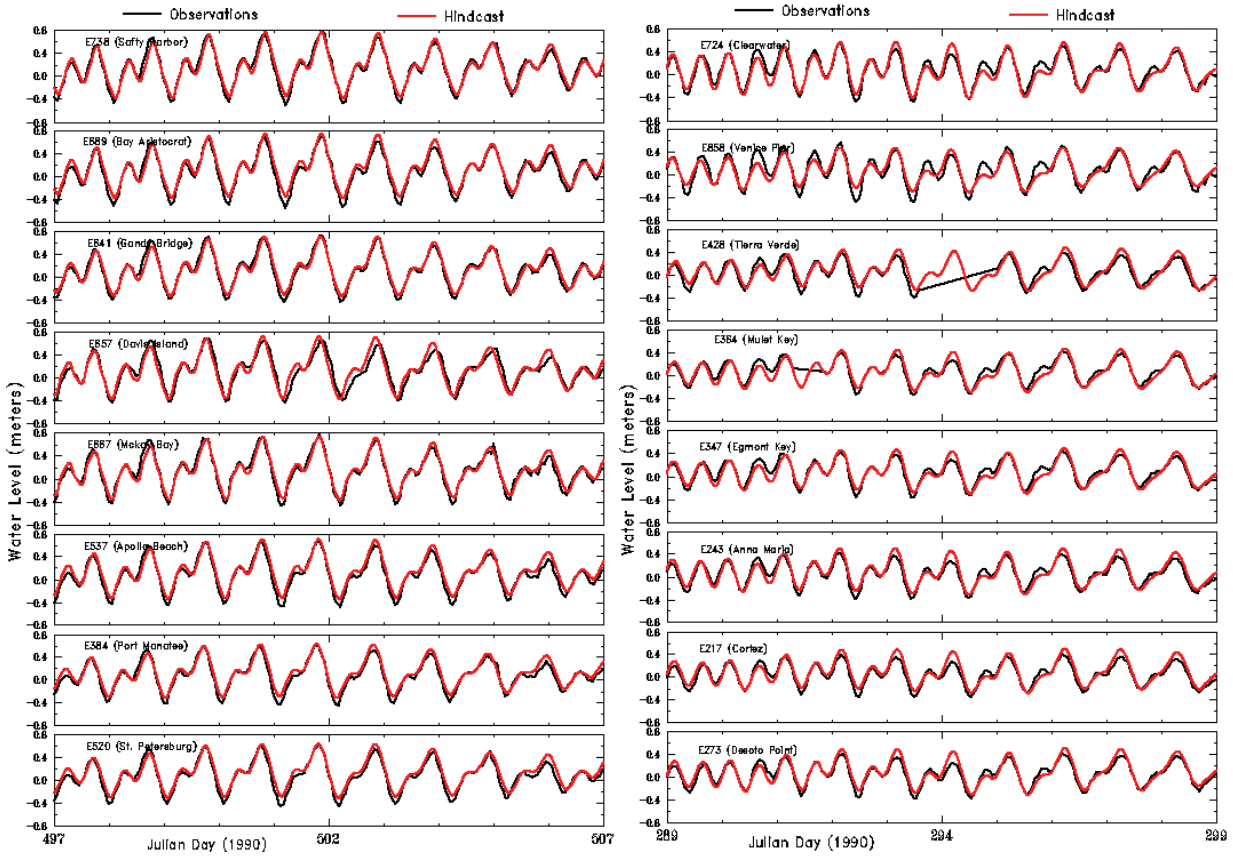

Figure 3.7. Water elevation at TOP stations; hindcasts (red) compares with observations (black).

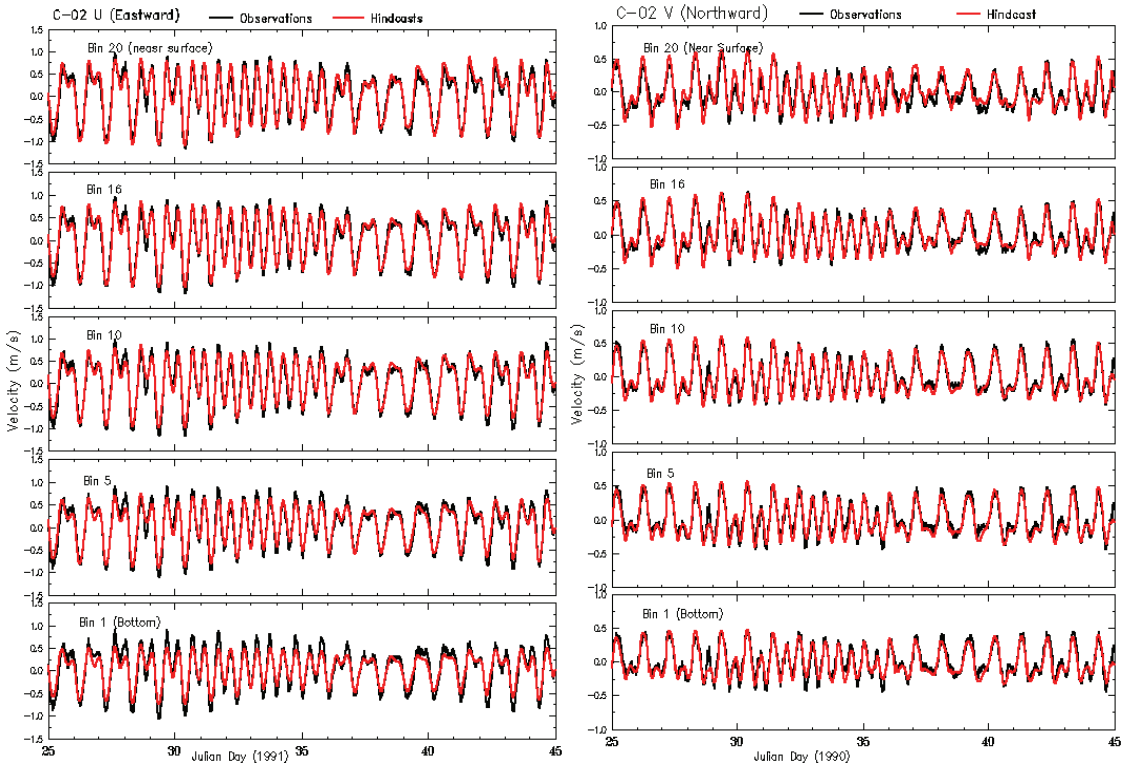

Figure 3.8a. East (left) and north (right) component of hindcast current velocity time series at station C-02 (bay entrance).

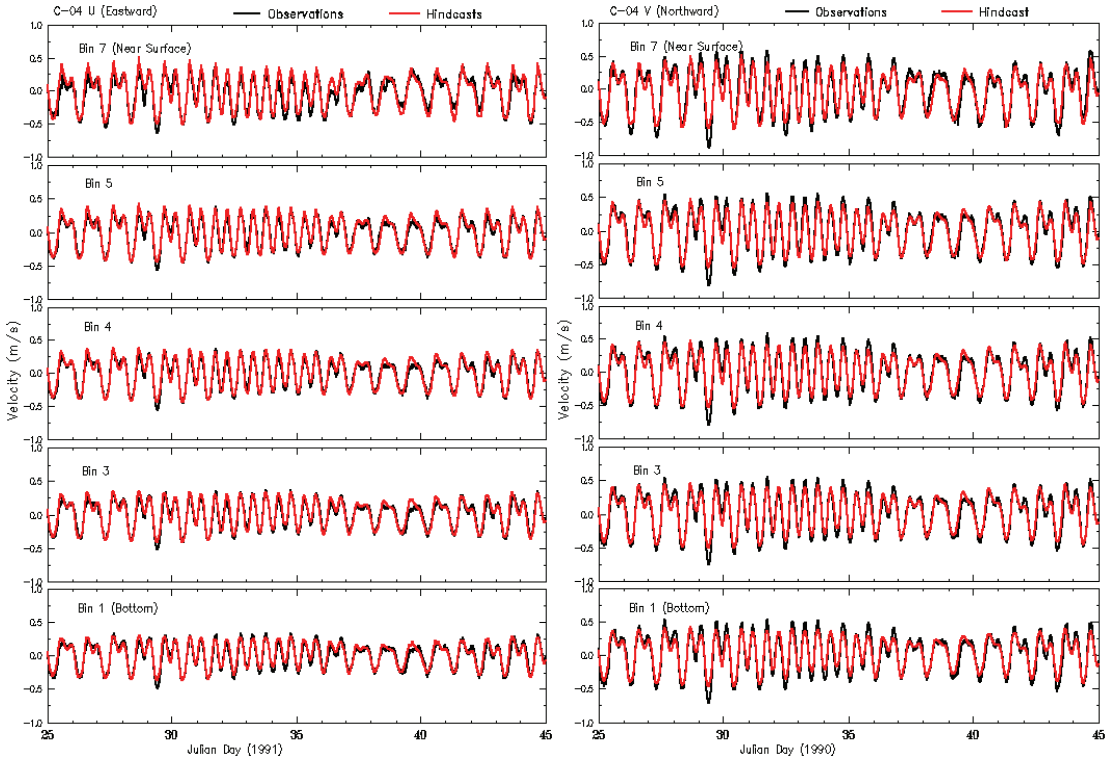

Figure 3.8b. East (left) and north (right) component of hindcast current velocity time series at station C-04 (mid-bay).

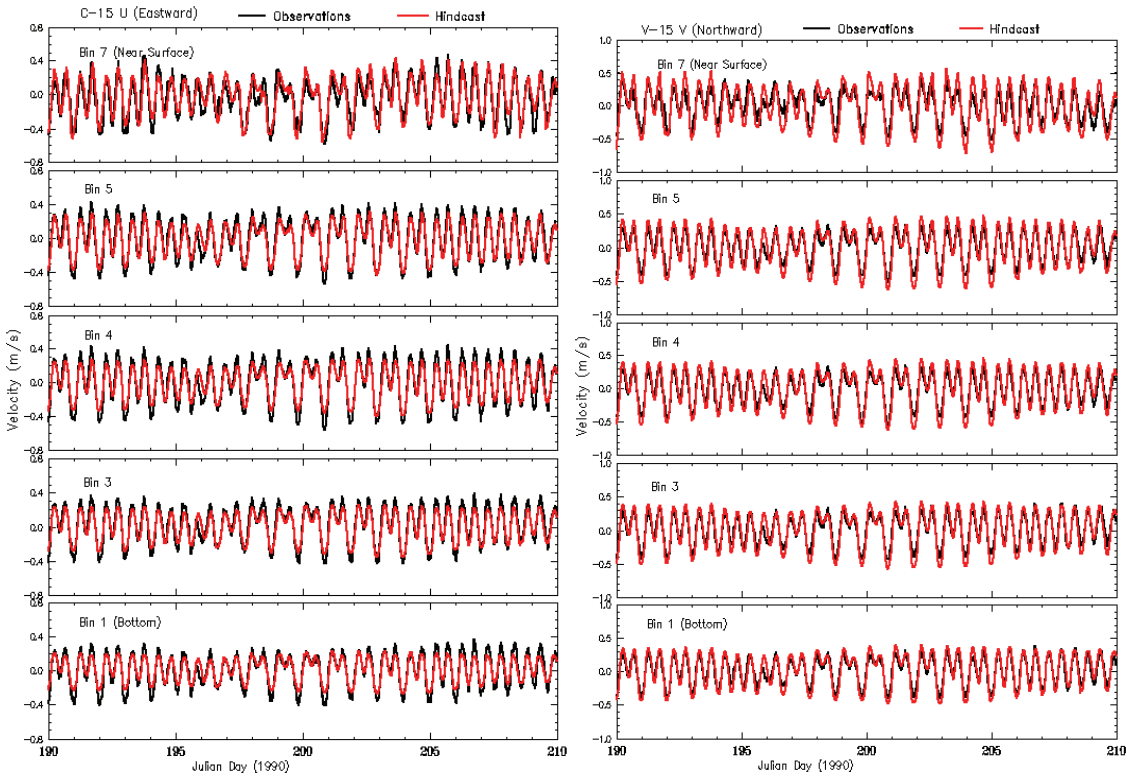

Figure 3.8c. East (left) and north (right) component of hindcast current velocity time series at station C-15 (upper mid-bay).

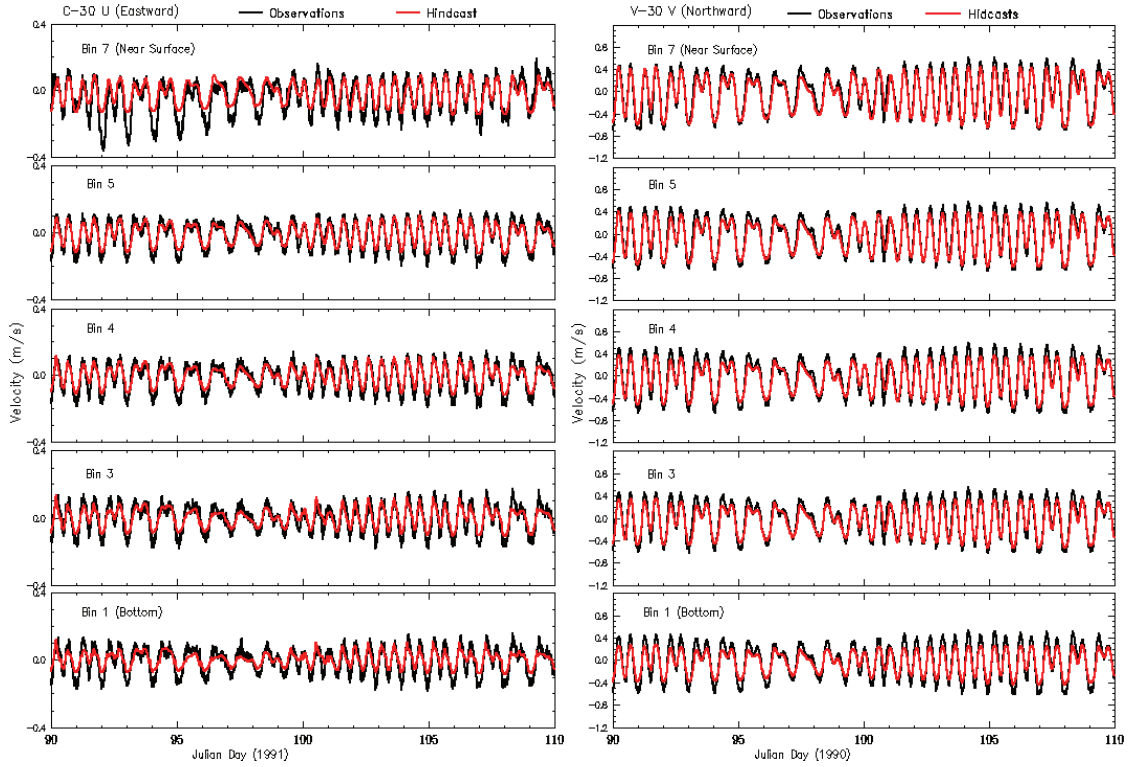

Figure 3.8d. East (left) and north (right) component of hindcast current velocity time series at station C-30 (upper bay).

3.2.2. Temperature and Salinity

Figure 3.9 shows the salinity and temperature stations from TOP. Figures 3.10a-d show simulated surface temperature at stations from the bay entrance to the upper bay. For all of the stations, the model accurately simulates the annual temperature signal from the 1990 summer (about 30°C) to the winter (about 17°C) and recovering back to the 1991 summer (again 30°C). For salinity, most of instruments were affected by bio-fouling during the survey period, as only a limited usable data set from a few instruments was recovered. These are shown in Figure 11 in comparisons with simulated surface salinity. Tidal signals are obvious in these comparisons at some stations (21and 52).

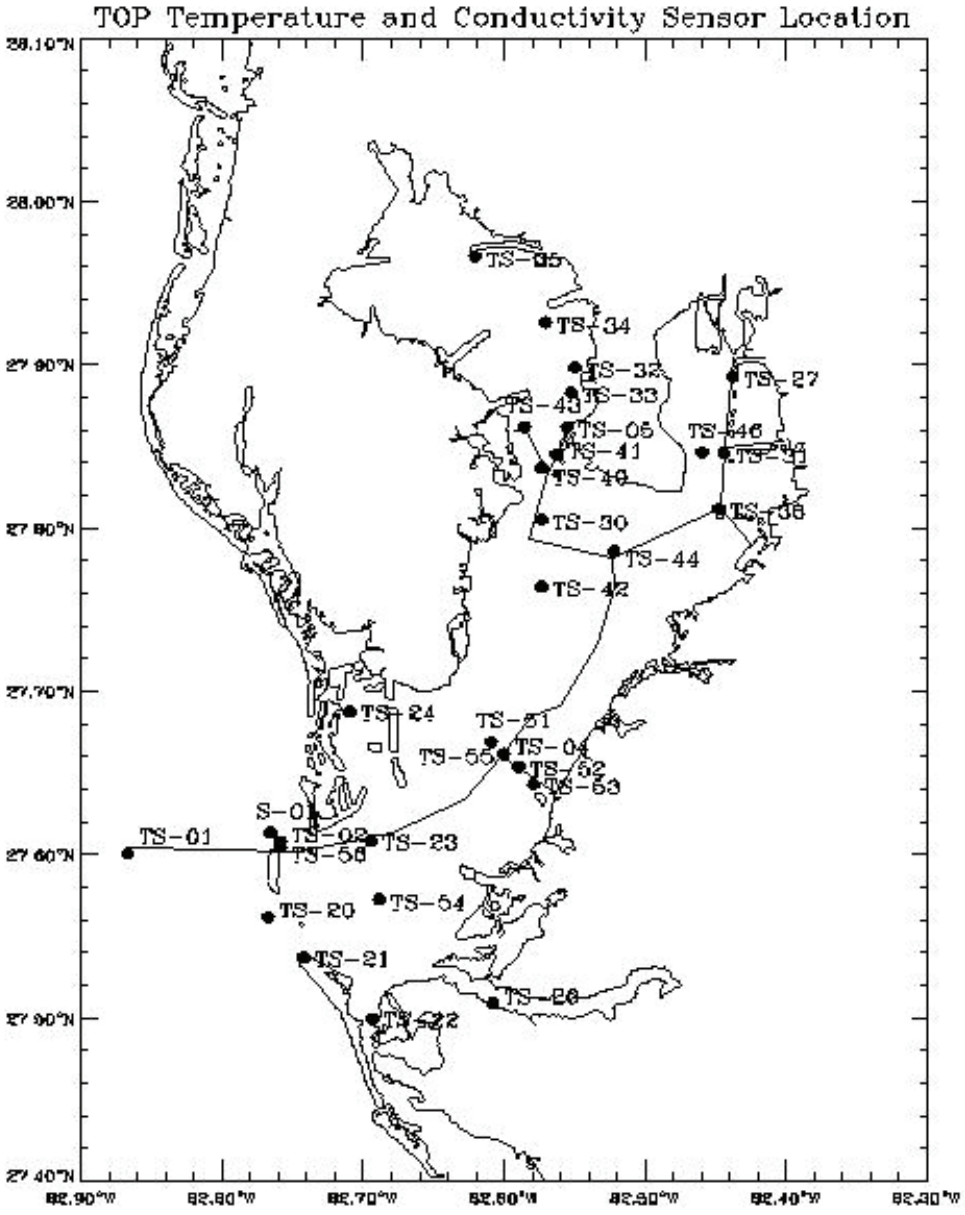

Figure 3.9. TOP temperature and conductivity sensor locations.

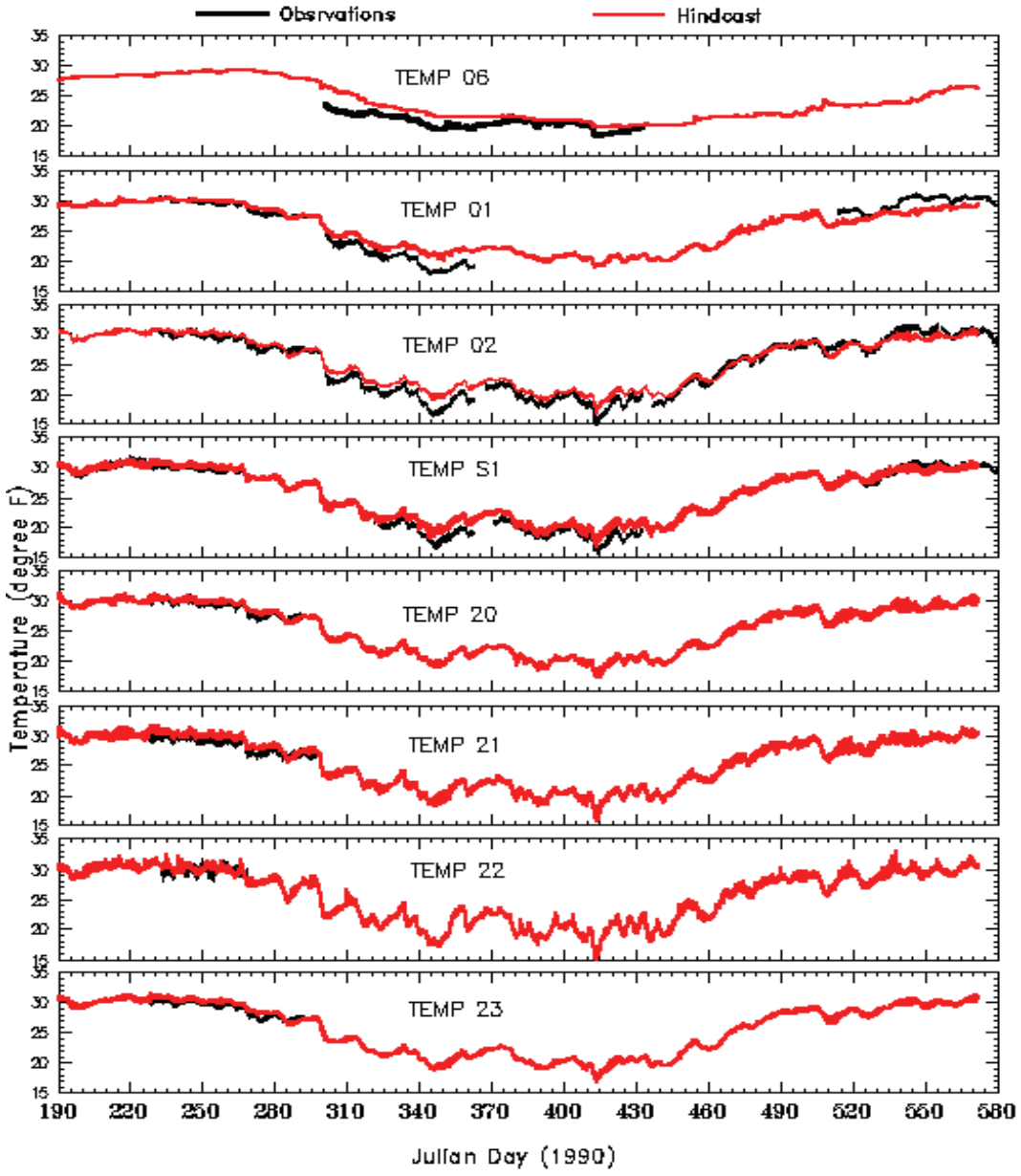

Figure 3.10a. Model simulated (red) near surface temperature time series with observations (black) for stations near bay entrance area (See Figure 3.9 for station locations).

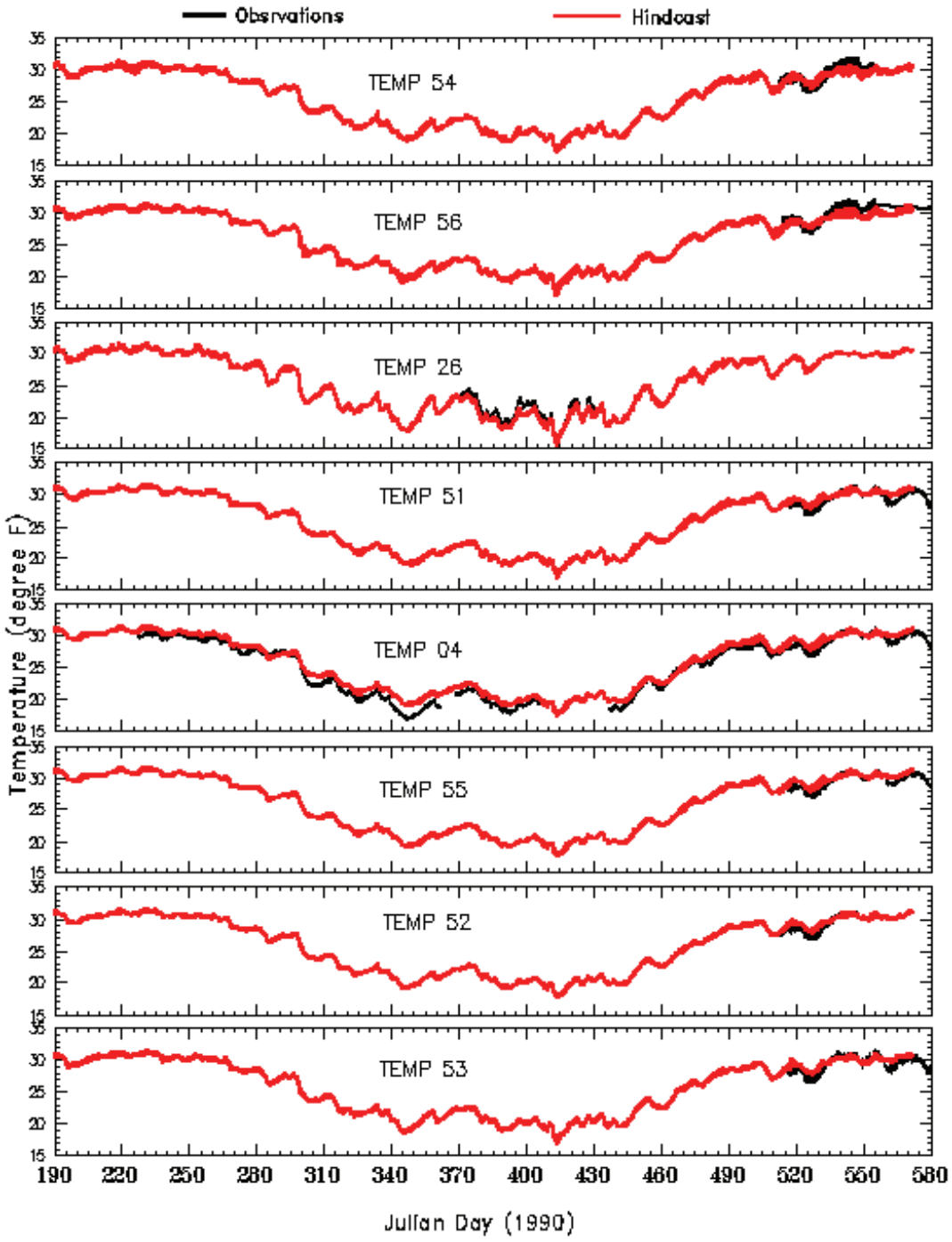

Figure 3.10b. Model simulated (red) near surface temperature time series with observations (black) near the center of the bay and Manatee Channel (See Figure 3.9 for station locations).

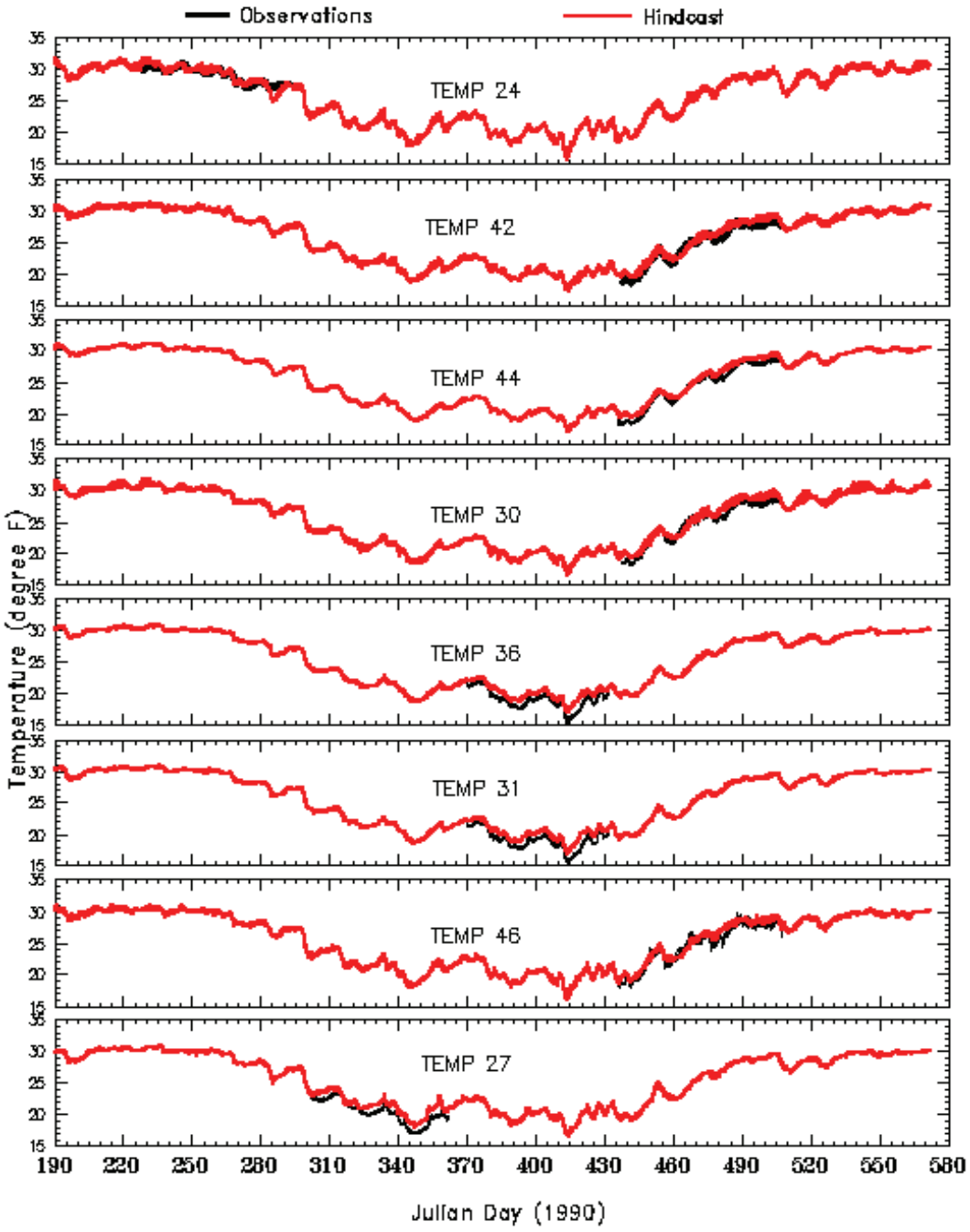

Figure 3.10c. Model simulated (red) near surface temperature time series with observations (black) at Y-Cut channel and Hillsborough Bay (See Figure 3.9 for station locations).

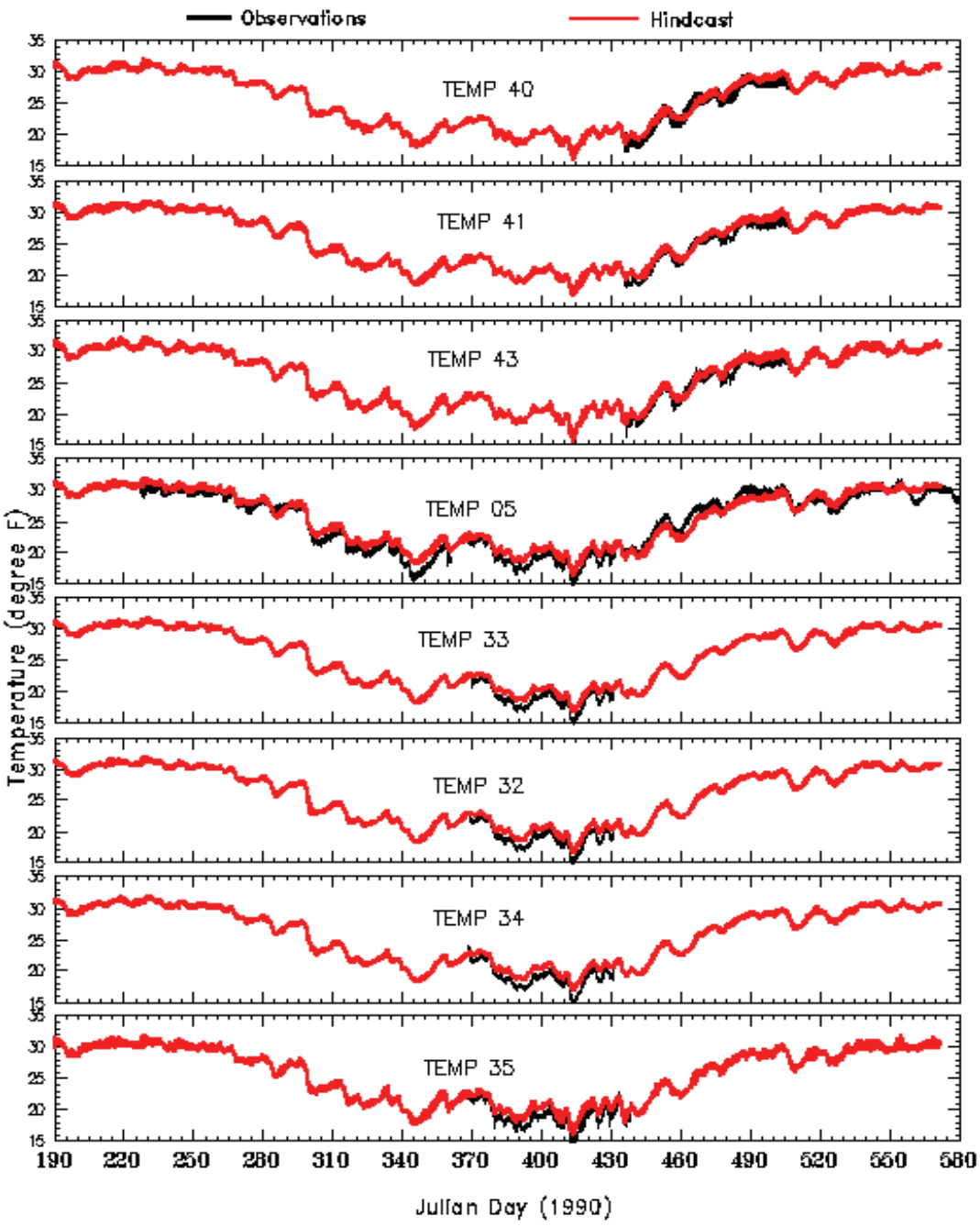

Figure 3.10d. Model simulated (single line) near surface temperature time series with observations (heavy line) at Old Tampa Bay (See Figure 3.9 for station locations).

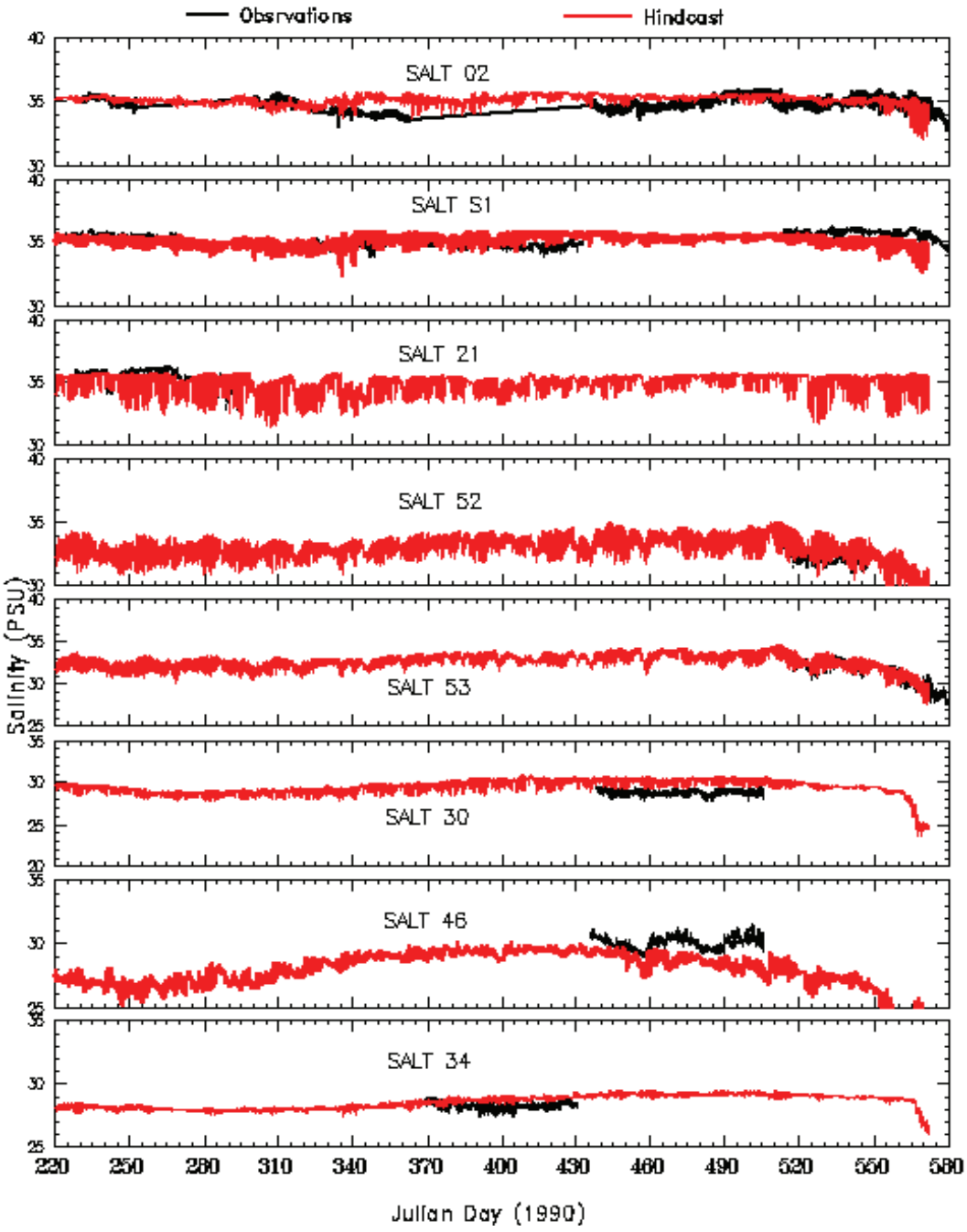

Figure 3.11. Model simulated (red) near surface salinity time series with observations (black) for stations from the entrance (02, S1, and 21) to mid-bay (52 and 53) and upper bay (30, 46, and 34) (see Figure 3.9 for station location).

3.3. Semi-Operational Nowcast/Forecast Simulation

The calibrated ROMS model for Tampa Bay was next implemented as an semi-operational nowcast/forecast system at NOAA's NCEP high performance computer systems as part of process towards an operational nowcast/forecast model system. The TBOFS model system is currently running in multi-processor environment. Sub-tidal water levels along offshore open boundaries are derived from the operational Extra-tropical Storm Surge Model (ETSS) and are added to the tidal harmonic predictions for the lateral water level open boundary forcing. Surface meteorological forcing and heat flux are obtained from NCEP operational products of Real-Time Mesoscale Analysis (RTMA) for nowcast run and the North America Mesoscale model forecasts (NAM) for forecast run. Surface forcing includes winds, air pressure and temperature, relative humidity and radiation fluxes. River discharges and temperature are obtained from USGS real-time river measurement at 8 stations. A simplified schematic flow chart (Figure 3.12) shows the processes of TBOFS and the data flow within NCEP CCS. The data inflow and running procedures are managed by NOS Coastal Ocean Modeling Framework (COMF) system (Zhang et al., in preparation) together with other two operational systems under development: Chesapeake Bay (CBOFS) and Delaware Bay (DBOFS) Operational Forecast Systems. After the NCEP standard procedures of transition models from development to operations, TBOFS will be operational and provide forecast information of the Tampa Bay to the users in late 2010.

The semi-operational TBOFS has been running at NCEP CCS since October 1, 2009. Semi-operational nowcasts and forecast guidance (up to 24 hours) from TBOFS at NOS real-time stations are archived for the period of April 15 to July 19, 2010 for operational skill assessments. They are: Mckay Bay Entrance (E_667 in Figure 3.1), Old Port Tampa (near E_641), St. Petersburg (E_520), and Port Manatee (E_384) for water levels; Sunshine Skyway Bridge (near C-13 in Figure 3.2) and Old Port Tampa (C-33) for current velocity; Frog Fork, Campbell Park, St. Petersburg, and NDBC Buoy 42013 for surface temperature (Figure 3.13); and NDBC Buoy 42013 for surface salinity (Figure 3.13). Skill assessments of semi-operational nowcast and forecasts for water level, current velocity at NOS standard depth (5 m below sea surface or half of the water depth), surface temperature, and surface salinity are listed in Appendices I, J, K, and L, respectively. Skill assessment discussion for semi-operational nowcast and forecast is presented in Chapter 4.

Figures 3.14 and 3.15 show the time series of semi-operational water level and current speed nowcasts and forecasts with observations. Mixed tides are obvious on water levels and currents. Model simulated nowcasts and forecasts are almost identical and accurately follow the observations. Semi-operational nowcasts and forecasts for temperature and salinity are shown in Figures 3.16 and 17.

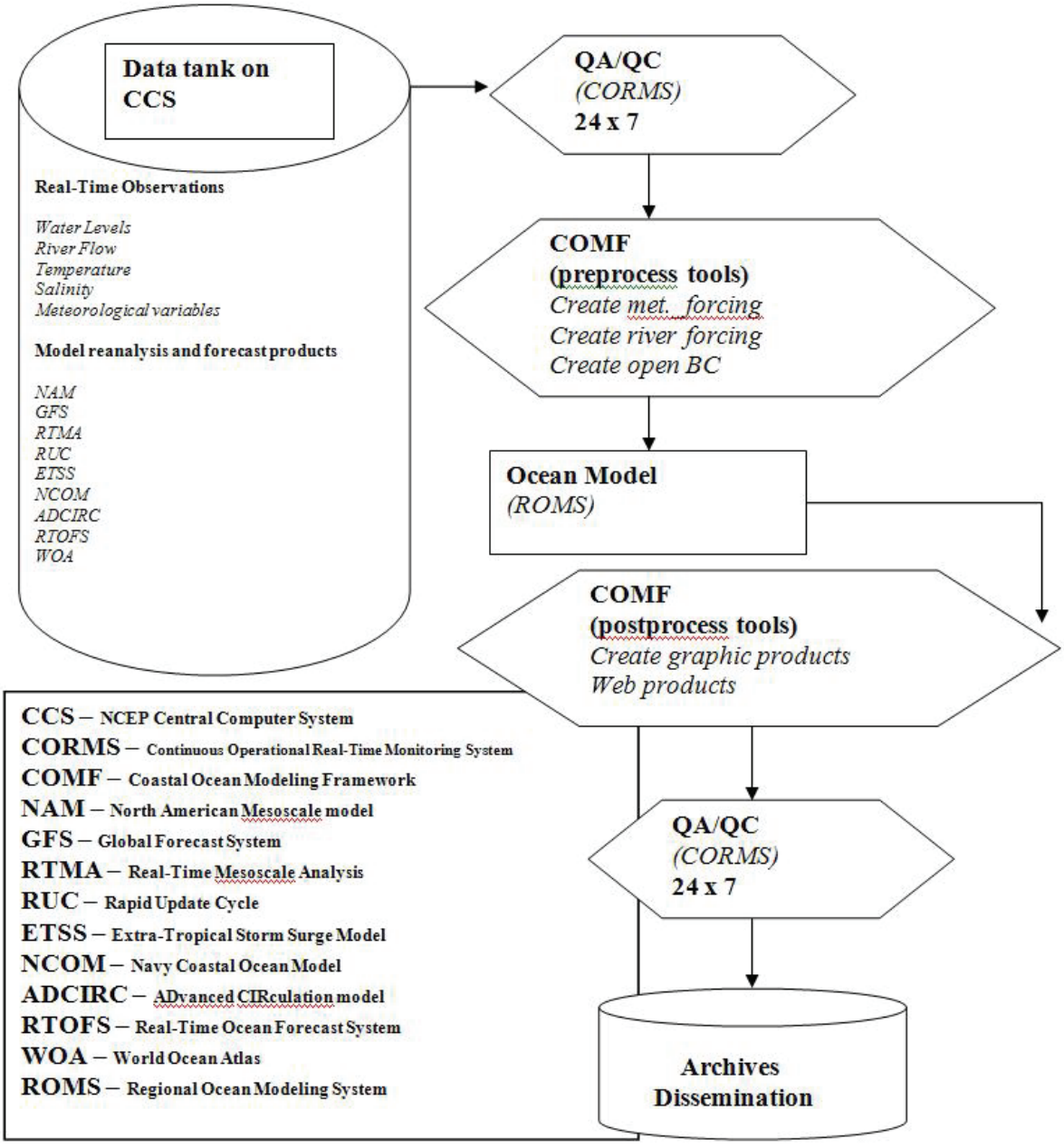

Figure 3.12. Schematic TBOFS run script and data flow chart.

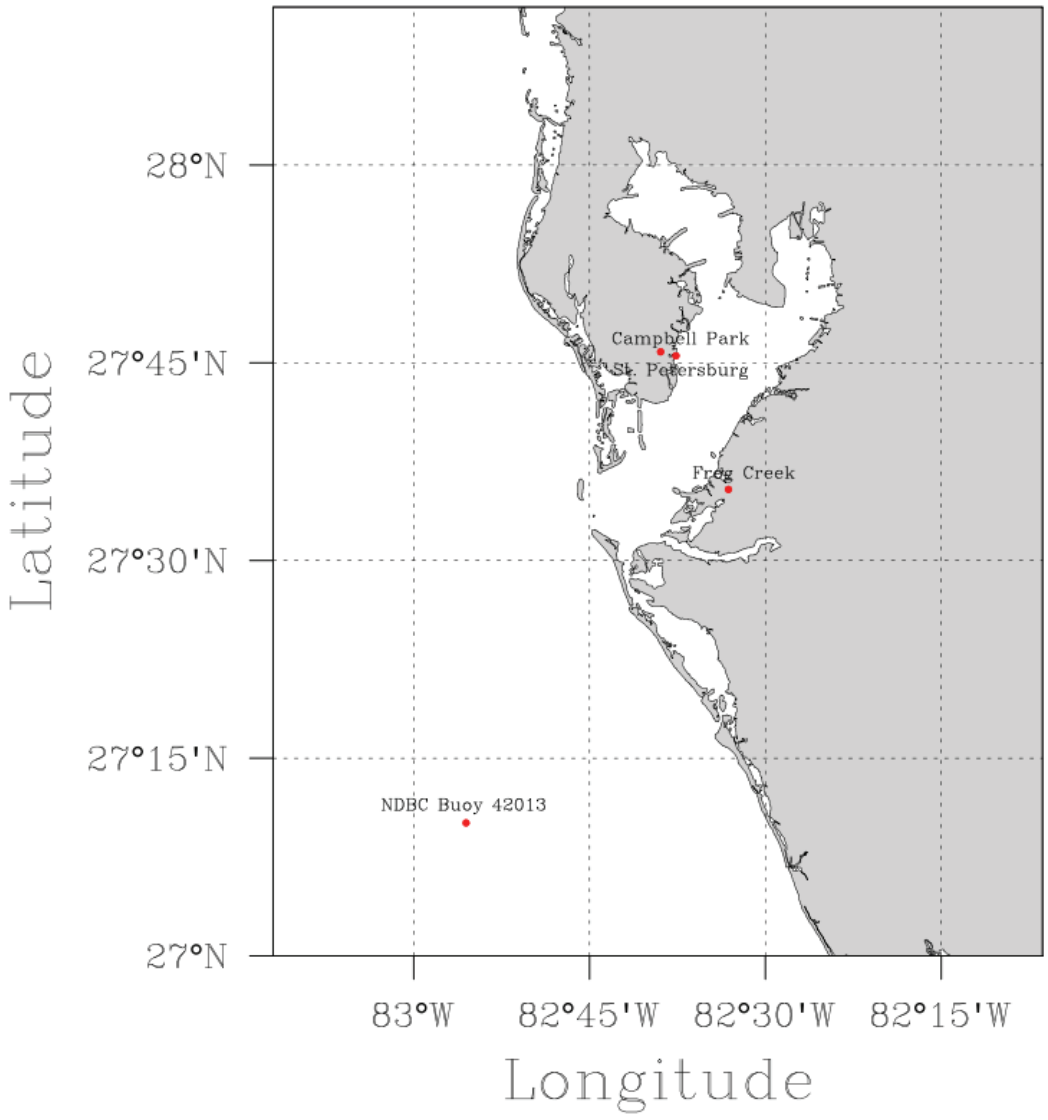

Figure 3.13. Real-time observation locations for TBOFS semi-operational nowcasts and forecasts verification for surface temperature and salinity.

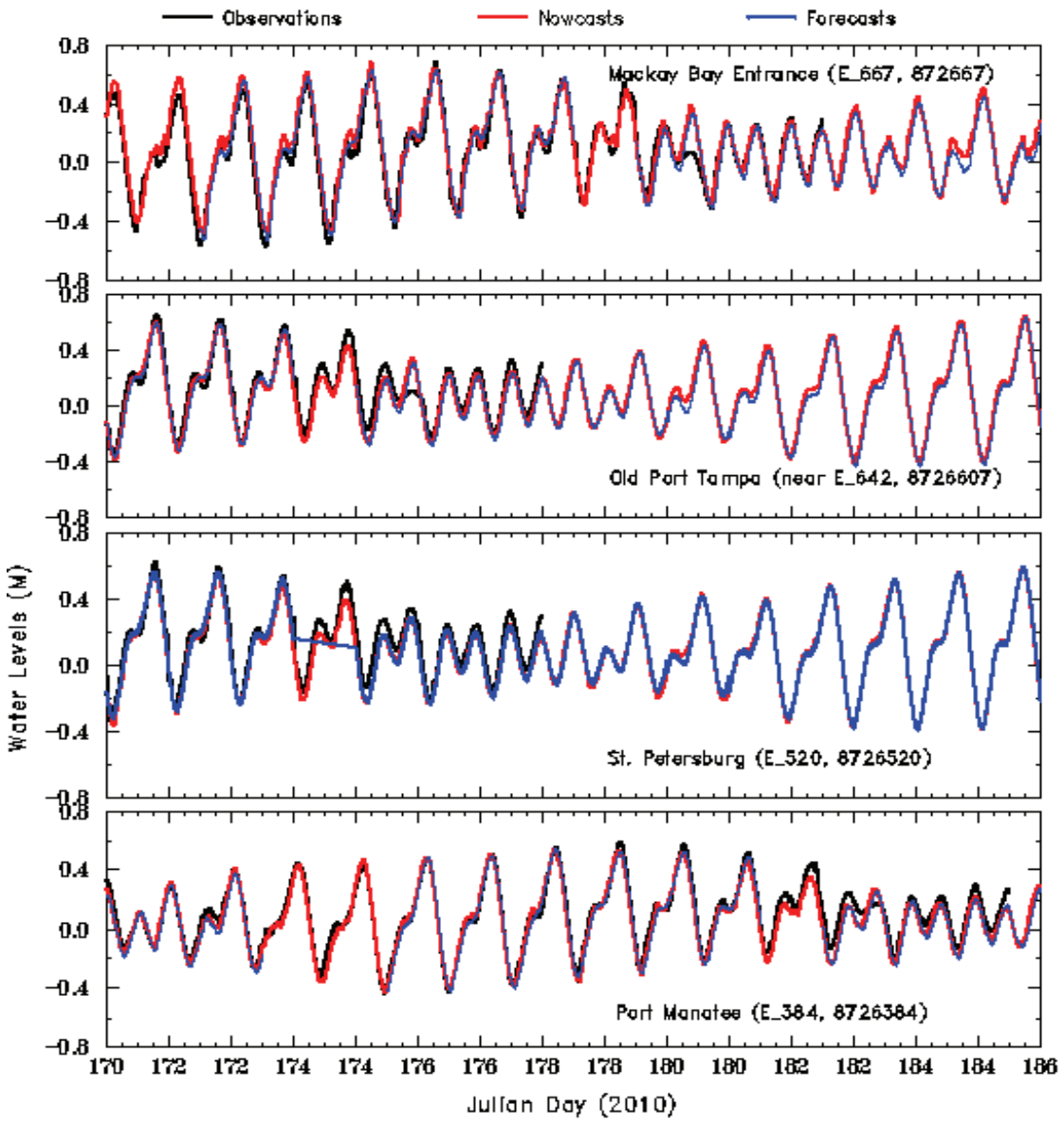

Figure 3.14. Water level comparison of observations (black) with semi-operational nowcasts (red) and forecasts (blue) at 4 NOS real-time locations: Mckay Bay Entrance, Old Port Tampa, St. Petersburg, and Port Manatee.

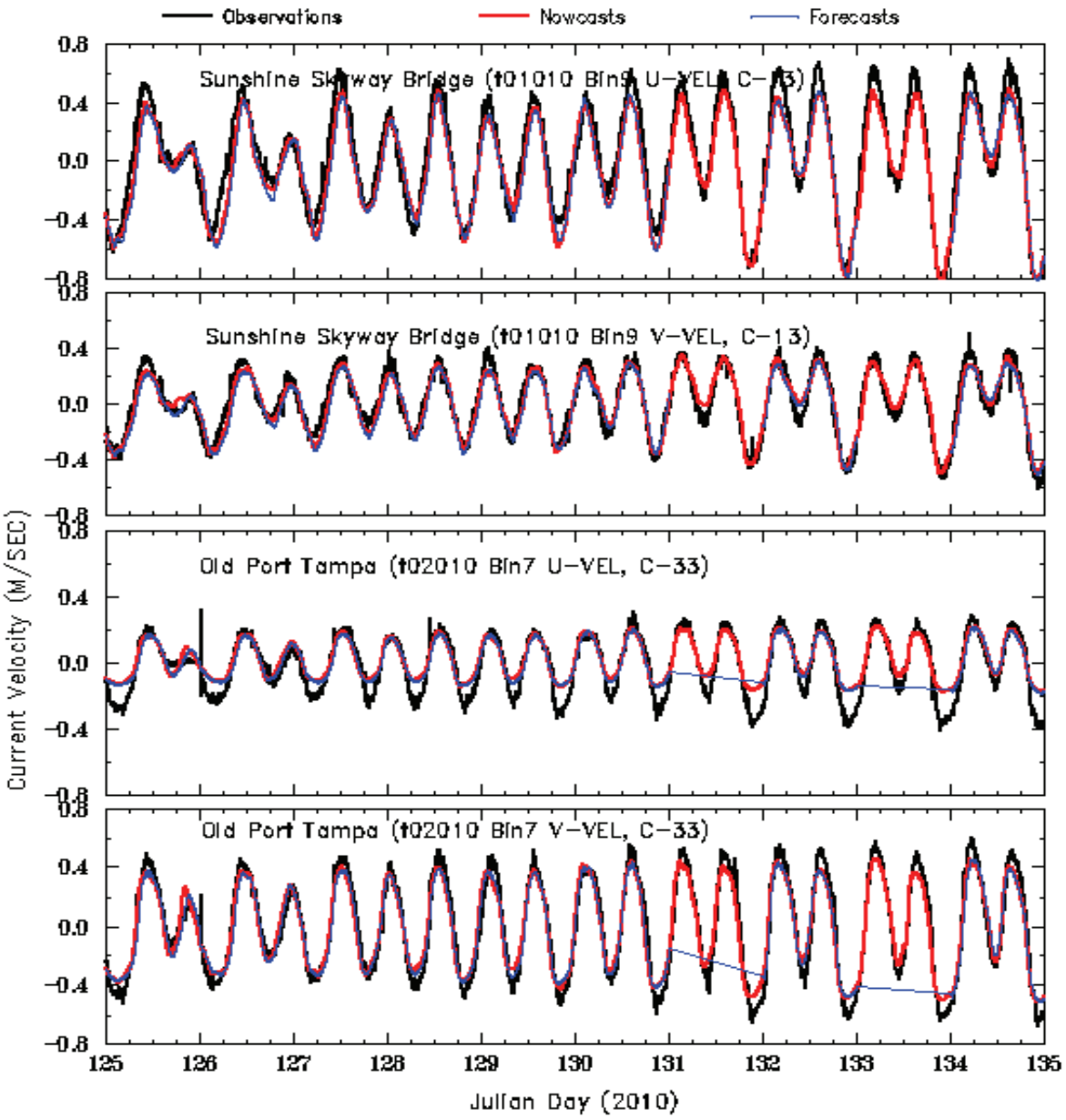

Figure 3.15. Currents time series of observations (black) compared with semi-operational nowcasts (red) and forecasts (blue) at 2 NOS real-time locations: Sunshine Skyway Bridge and Old Port Tampa.

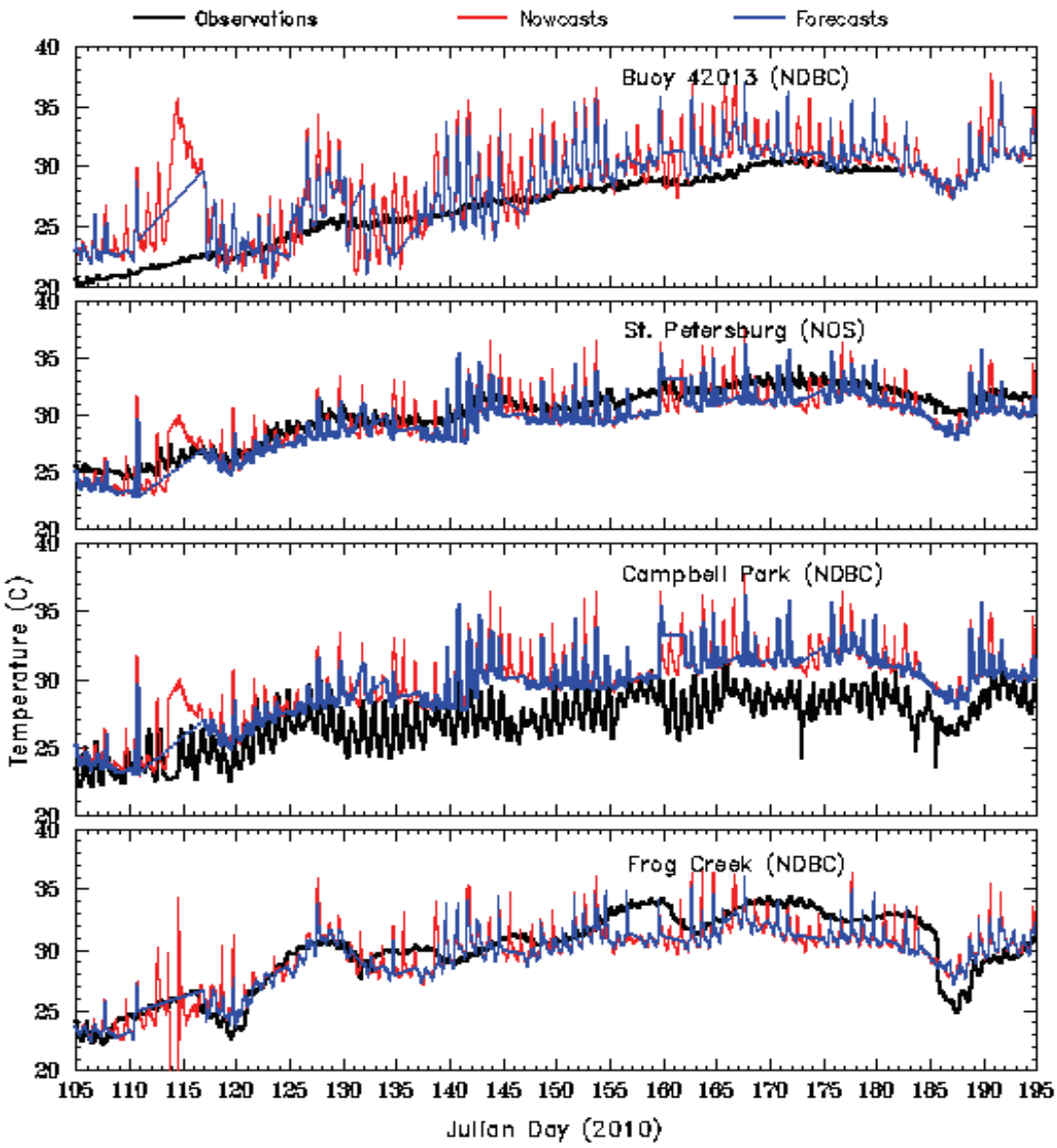

Figure 3.16. Observed (black) temperature time series with semi-operational nowcasts (red) and forecasts (blue) at real-time locations: Buoy 42013 (NDBC), St. Petersburg (NOS), and Campbell Park and Frog Creek (Terra Ceia Aquatic Preserve, via NBDC) for the period from April 15 to July 14, 2010.

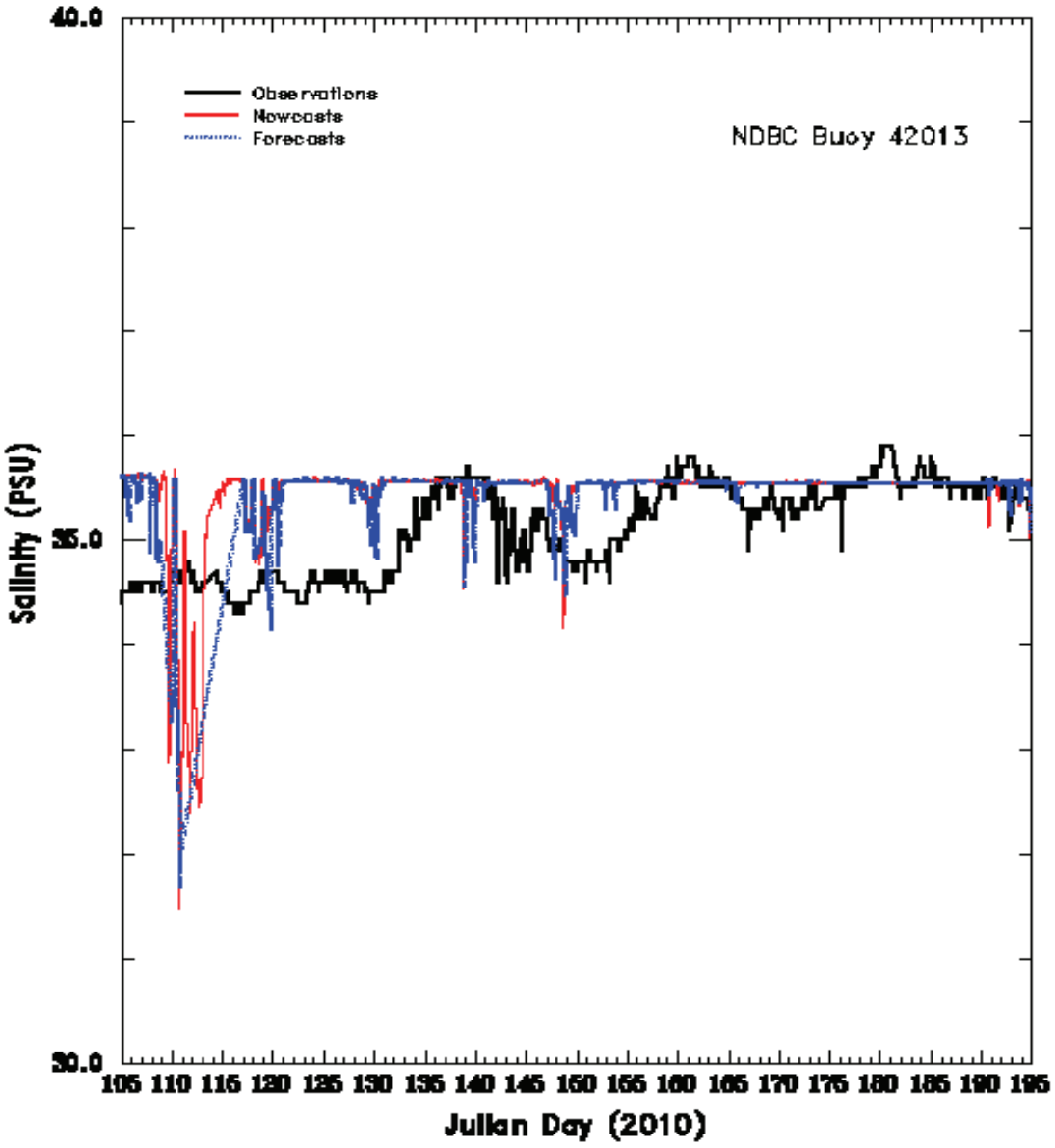

Figure 3.17. Observed (black) salinity time series with semi-operational nowcasts (red) and forecasts (blue) at real-time location Buoy 42013 (NDBC) for the period from April 15 to July 14, 2010.

4. SKILL ASSEESSMENT STATISTICS AND DATA

4.1. Skill Assessment Statistics

Model skill assessment was carried out using the NOS skill assessment software (Zhang et al., 2006). Tidal and hindcast model simulations were compared with observations to obtain a set of performance statistics for water levels, currents, temperatures and salinity. Some of the statistic parameters in the NOS skill assessment procedures for operational forecast systems (Hess, 2003; Zhang et. al., 2006) include the Root Mean Squared Error (RMSE), Central Frequency (CF), and Positive Outlier Frequency (POF) and Negative Outlier Frequency (NOF) for hourly records. The NOS statistic standard criteria is such that greater than 90% for CF, and less than 1% for NOF and POF. More detail definition of the above parameters can be found in NOAA's technical report (Hess et al., 2003).

In addition, a slightly different measure of model skill defined by Willmott (1981) and used by Warner et al, (2005) in a ROMS hydrodynamic simulation of the Hudson River was also computed for model comparison. Following Willmott, it takes the form,

$$Skill = 1 - \frac{\sum \left| X_{\mathrm{mod}el} - X_{obs} \right|^2}{\sum \left(\left| X_{\mathrm{mod}el} - \overline{X}_{obs} \right| + \left| X_{obs} - \overline{X}_{obs} \right| \right)^2}$$

This parameter, called "index of agreement" by Willmott, is a relative average error and bounded measure. Perfect agreement between model results and observations will yield a skill of one and complete disagreement yields a skill of zero.

Statistics resulted from skill assessment software application to tide, hindcast, semi-operational nowcast/forecast simulations are listed in detail as Appendices B to L. The CF and RMSE, two most critical statistic parameters are plotted as the bar charts and presented in this Section.

4.2. Tide Simulation Skills

Figures 4.1 and 4.2 show the CF and RMSE of tides and tidal currents at 14 water level stations and 27 tidal current stations from tide simulations described in Section 3. NOS standard for CF (90%) is shown as the dashed line in the plot. Tidal water level comparisons are given in Appendix B and tidal current speed comparisons are given in Appendix C.

Tide Elevations

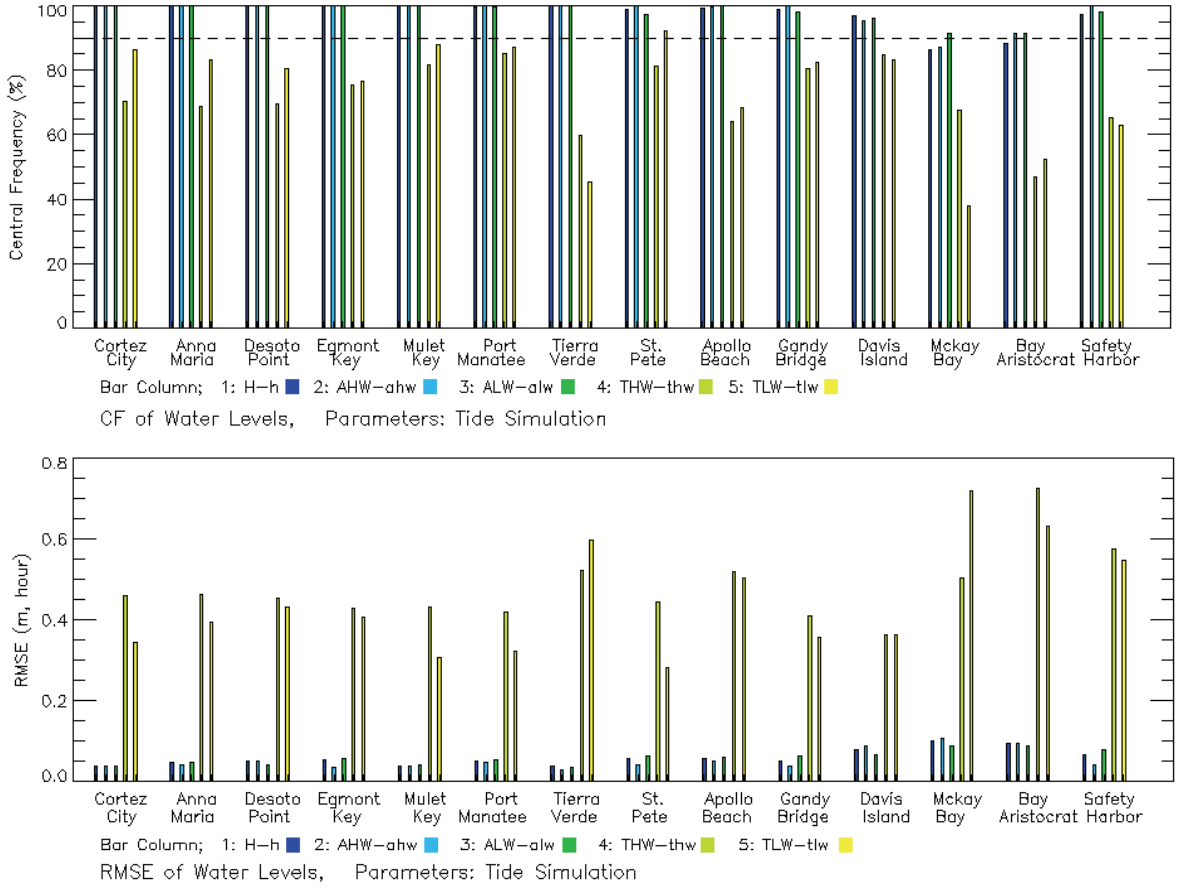

Figure 4.1. Central Frequency (CF) and Root Mean Squared Error (RMSE) of tide from tide simulation**.**

Tidal Current Speed

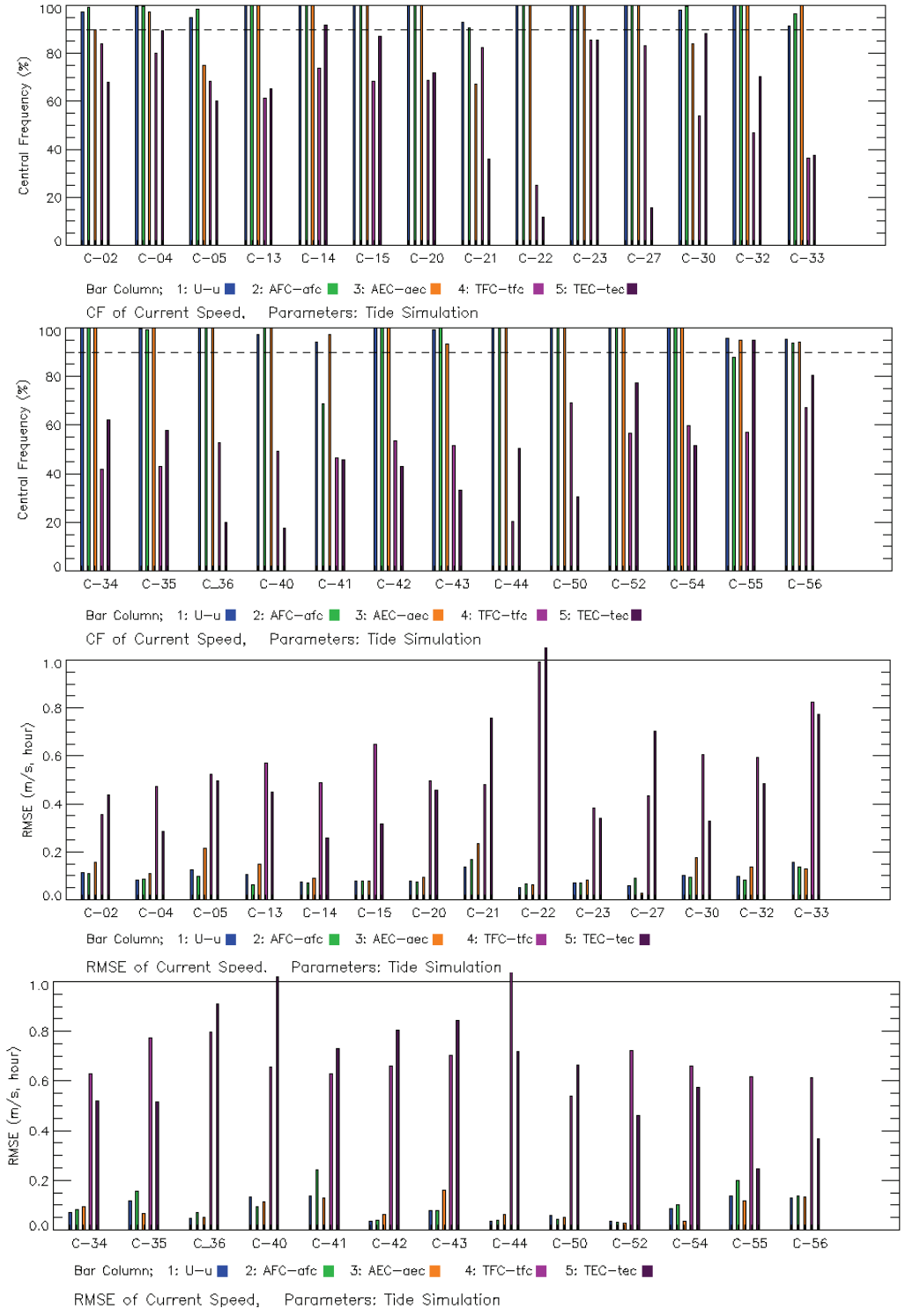

Figure 4.2. Central Frequency (CF) and Root Mean Squared Error (RMSE) of tide current speed (at NOS tide prediction depth: 15 ft below the surface or mid-depth) from tide simulation**.**

4.3. Hindcast Skills

Tables 1 to 4 show the NOS skill assessment statistics for water levels, currents, temperatures and salinity. In general, the model performs well and skill assessment scores are close to the target criteria set by NOS guideline (Hess et al., 2003) for water levels and currents at most of stations. The Willmott's indices of agreement are close to 1 at all water level stations. The RMSE of water levels are less than 12 cm for most stations. The RMSE of current speeds and directions are generally less than 11 cm/s and 10 degrees at most stations. The simulated temperature and salinity match the observations well with the RMSE generally less than 1° for temperature and 1.0 psu for salinity. It is seen that temperature and salinity hindcasts realistically reproduce general features of the observed temperature and salinity fields including tidal signature, low-frequency oscillation, and seasonal warming tendency in temperature. Sensitivity model experiments showed that net heat flux interpolated from NARR grid points has to be reduced by 10%, otherwise, modeled surface temperature is over-predicted by a nearly constant of 1.5°C. The CF and RMSE from the skill assessment of hindcast simulations are shown as Figures 4.3 to 4.6.

In general, the statistics exceeds NOS criteria except for hindcast water levels at locations in the shallow water upper bay at which the CF are slightly less than 90%. However the skills are more than 0.95 at those stations. All the current speed and direction statistics exceed NOS. For model skills for temperature (Table 3) meet NOS standards.

Skill assessments of water levels and current speeds from this one year hindcast are shown as in Appendices D and E, respectively. Skill assessment of temperature and salinity are given in Appendices F and G, respectively.

Table 1. Hindcast water level skill assessment statistics: RMSE (m), CF (%), NOF (%), POF(%), and index of agreement (SKILL). NOS error criteria X=15 cm.

STATION	RMSE	CF	NOF	POF	SKILL
CORTEZ	0.070	96.3	0.0	0.1	0.97
ANNA MARIA	0.073	95.8	0.0	0.1	0.97
DESOTO POINT	0.071	96.0	0.0	0.1	0.97
EGMONT KEY	0.095	91.6	0.3	1.1	0.95
MULET KEY	0.101	89.5	0.1	1.4	0.94
PORT MANATEE	0.104	88.8	0.3	1.5	0.95
TIERRA VERDE	0.074	95.1	0.0	0.2	0.97
ST. PETERSBURG	0.109	87.2	0.3	1.8	0.94
APOLLO BEACH	0.110	86.5	0.3	1.7	0.95
GRANDY BRIDGE	0.116	83.1	1.0	1.2	0.95
DAVIS ISLAND	0.114	85.4	0.4	1.8	0.95
MCKAY BAY	0.115	84.4	1.0	1.4	0.95
BAY ARISTOCRAT	0.120	84.2	0.4	2.2	0.95
CLEARWATER BEACH	0.113	86.9	0.7	1.7	0.95
SAFETY HARBOR	0.120	82.6	1.2	1.5	0.95
VENICE PIER	0.075	95.6	0.2	0.1	0.97

Table 2. Hindcast current speed skill assessment statistics: RMSE (m s^{-1}), CF (%), NOF (%), and POF (%), and index of agreement (SKILL). NOS error criteria X=26 m s^{-1}.

STA. NAME	WATER DEPTH	OBSERVED DEPTH	RMSE		CF		NOF		POF		SKILL	
			SPD	DIR	SPD	DIR	SPD	DIR	SPD	DIR	SPD	DIR
C04	8.2	5.6	0.087	6.319	99.0	99.9	0.0	0.1	0.0	0.0	0.92	0.90
C05	9.3	4.7	0.111	9.235	97.3	99.9	0.0	0.1	0.0	0.0	0.92	0.87
C13	6.9	5.2	0.109	3.449	98.5	99.9	0.0	0.0	0.0	0.0	0.84	0.92
C14	6.9	4.2	0.143	4.459	90.7	100.0	0.3	0.0	0.0	0.0	0.78	0.83
C15	7.0	4.4	0.138	7.119	92.1	99.5	0.1	0.0	0.0	0.0	0.77	0.85
C20	9.3	4.7	0.093	15.574	98.7	89.7	0.0	0.0	0.0	0.1	0.94	0.90
C21	8.6	6.9	0.123	9.003	96.4	96.0	0.0	0.0	0.0	0.0	0.82	0.92
C22	1.8	1.3	0.070	0.000	100.0	100.0	0.0	0.0	0.0	0.0	0.61	0.65
C23	9.1	4.5	0.091	2.484	99.1	100.0	0.0	0.0	0.1	0.0	0.94	0.91
C30	10.2	5.3	0.086	2.449	99.5	100.0	0.0	0.0	0.0	0.0	0.93	0.88
C32	5.3	3.6	0.089	2.376	99.9	100.0	0.0	0.0	0.0	0.0	0.80	0.64
C33	4.0	2.3	0.160	6.237	91.5	99.9	0.0	0.1	0.0	0.0	0.62	0.45
C34	4.7	3.0	0.078	0.257	100.0	100.0	0.0	0.0	0.0	0.0	0.75	0.80
C35	4.3	2.9	0.131	10.045	95.1	97.0	0.0	0.7	0.0	0.8	0.54	0.74
C36	12.6	8.8	0.068	0.000	99.9	100.0	0.0	0.0	0.0	0.0	0.56	0.76
C40	7.1	5.1	0.156	7.915	91.3	97.8	0.0	0.1	0.0	0.3	0.56	0.56
C42	5.5	4.1	0.046	0.000	99.9	100.0	0.0	0.0	0.0	0.0	0.74	0.68
C43	9.2	7.5	0.110	0.000	97.0	100.0	0.0	0.0	0.0	0.0	0.65	0.55
C44	11.9	8.0	0.058	0.000	100.0	100.0	0.0	0.0	0.0	0.0	0.48	0.59
C50	4.4	3.9	0.076	4.763	99.8	99.4	0.0	0.0	0.0	0.0	0.82	0.81
C51	6.9	6.4	0.112	10.573	96.4	96.0	0.0	1.3	0.0	1.4	0.75	0.81
C52	14.1	10.4	0.051	0.000	99.8	100.0	0.0	0.0	0.0	0.0	0.77	0.81
C54	5.7	4.0	0.094	4.510	99.9	99.2	0.0	0.0	0.0	0.0	0.70	0.83
C55	13.7	10.1	0.126	1.875	96.6	100.0	0.0	0.0	0.0	0.0	0.77	0.92

Table 3. Hindcast temperature skill assessment statistics: RMSE (^{0}C for temperature), CF (%), NOF (%), and POF (%) , and index agreement (SKILL). NOS error criteria X=3 ^{0}C.

STA. NAME	WATER DEPTH	OBSERVED DEPTH	RMSE	CF	NOF	POF	SKILL
T02	26.5	24.6	1.019	99.9	0.0	0.0	0.99
T04	8.0	7.5	0.746	100.0	0.0	0.0	0.99
T05	9.3	8.8	1.034	99.5	0.0	0.0	0.99
T06	29.0	27.1	1.556	90.4	0.0	0.0	0.75
T20	9.3	8.8	0.451	100.0	0.0	0.0	0.97
T21	8.6	6.5	0.672	100.0	0.0	0.0	0.94
T22	1.8	1.2	0.799	100.0	0.0	0.0	0.54
T23	9.1	8.5	0.500	100.0	0.0	0.0	0.96
T24	5.1	5.2	0.665	100.0	0.0	0.0	0.94
T26	5.1	2.4	1.235	100.0	0.0	0.0	0.88
T27	10.2	9.7	0.973	100.0	0.0	0.0	0.95
T30	12.2	10.2	0.591	100.0	0.0	0.0	0.99
T31	14.0	13.8	0.899	100.0	0.0	0.0	0.90
T32	5.0	5.3	1.026	100.0	0.0	0.0	0.90
T33	4.0	1.9	1.008	100.0	0.0	0.0	0.90
T34	4.0	2.6	1.085	100.0	0.0	0.0	0.89
T35	4.0	2.5	1.045	100.0	0.0	0.0	0.90
T36	12.0	11.9	0.875	100.0	0.0	0.0	0.90
T40	7.3	4.7	0.653	100.0	0.0	0.0	0.99
T41	8.0	7.5	0.697	100.0	0.0	0.0	0.99
T42	5.5	3.7	0.596	100.0	0.0	0.0	0.99
T43	8.2	7.1	0.691	100.0	0.0	0.0	0.99
T44	11.9	11.1	0.572	100.0	0.0	0.0	0.99
T46	4.3	2.5	0.628	100.0	0.0	0.0	0.99
T51	7.9	5.5	0.625	100.0	0.0	0.0	0.89
T52	12.1	11.4	0.558	100.0	0.0	0.0	0.93
T53	4.6	2.8	0.642	100.0	0.0	0.0	0.89
T54	5.7	3.6	0.845	100.0	0.0	0.0	0.85
T55	13.7	13.2	0.545	100.0	0.0	0.0	0.92
T56	14.1	13.6	0.973	100.0	0.0	0.0	0.81
TS1	3.6	1.8	0.972	100.0	0.0	0.0	0.99
TS2	7.0	2.0	0.660	100.0	0.0	0.0	0.99
TS3	5.5	2.7	0.698	100.0	0.0	0.0	0.99
TS1B	3.6	3.6	0.671	100.0	0.0	0.0	0.90
TS2B	7.0	7.0	0.771	100.0	0.0	0.0	0.99
TS3B	5.5	5.5	0.648	100.0	0.0	0.0	0.99

Table 4. Hindcast salinity skill assessment statistics: RMSE (PSU), CF (%), NOF (%), and POF (%) , and index agreement (SKILL). NOS error criteria X=3.5 PSU.

STA. NAME	WATER DEPTH	OBSERVED DEPTH	RMSE	CF	NOF	POF	SKILL
S02	26.5	25.5	0.688	100.0	0.0	0.0	0.52
S21	10.0	8.6	0.657	100.0	0.0	0.0	0.76
S30	12.2	10.2	1.347	100.0	0.0	0.0	0.27
S34	4.0	4.7	0.507	100.0	0.0	0.0	0.41
S46	4.0	4.3	0.597	100.0	0.0	0.0	0.76
S52	10.1	12.1	0.702	100.0	0.0	0.0	0.76
S53	4.3	4.6	0.803	98.7	0.0	0.0	0.88
SS1	1.8	3.6	0.704	100.0	0.0	0.0	0.32

Figure 4.3 shows hindcast water level CF and RMSE. The CF of tide elevations and amplitude of high and low tides are either near or exceeding NOS target, i.e., 90% and RMSE are about 5 cm. The CF of time of high and low tides are about 60% corresponding to RMSE of 0.7 hour. The selection of high and low tide time involves significant errors due to the fact: 1) hourly data used in the analysis and 2) a long flat high or low tide duration at some geographic location. This magnitude of time errors becomes more apparent in the current speed skill analyses as shown in Figure 4.4.

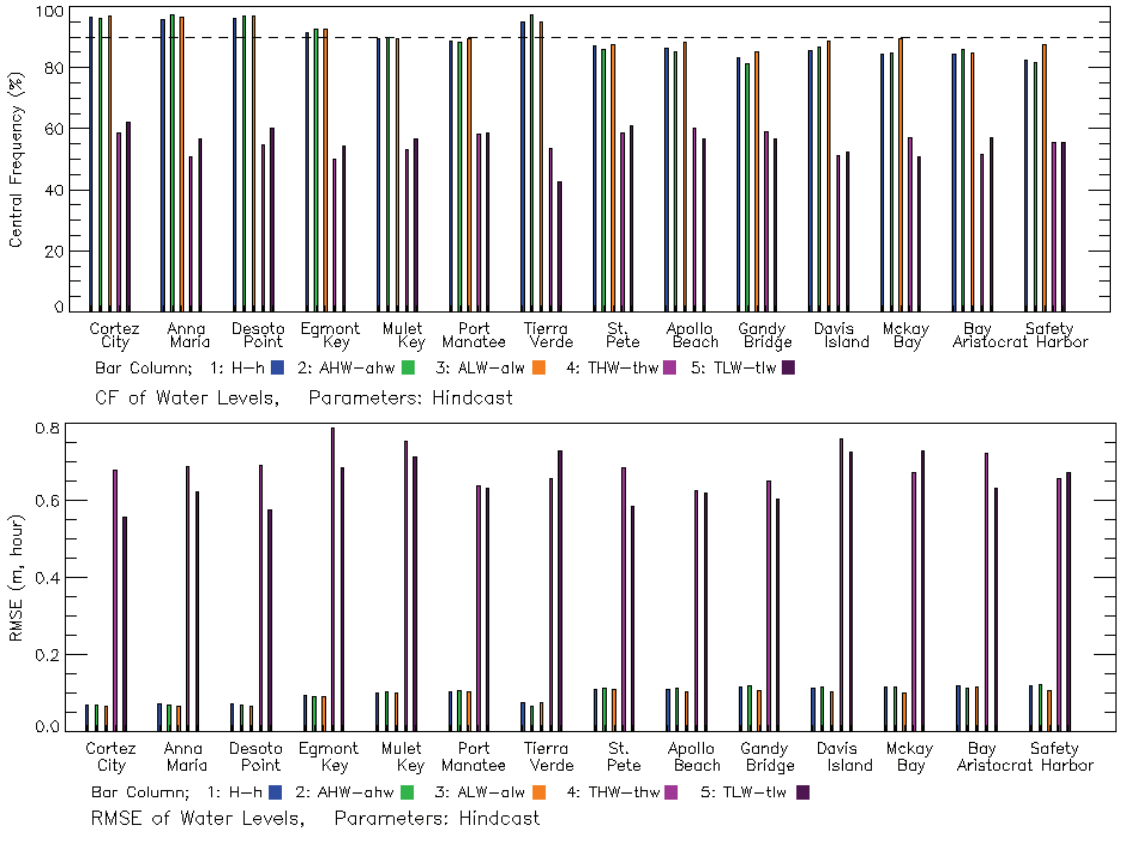

Figure 4.3. Central Frequency (CF) and Root Mean Squared Error (RMSE) of water level from hindcast simulation**.**

Current Speed Skill

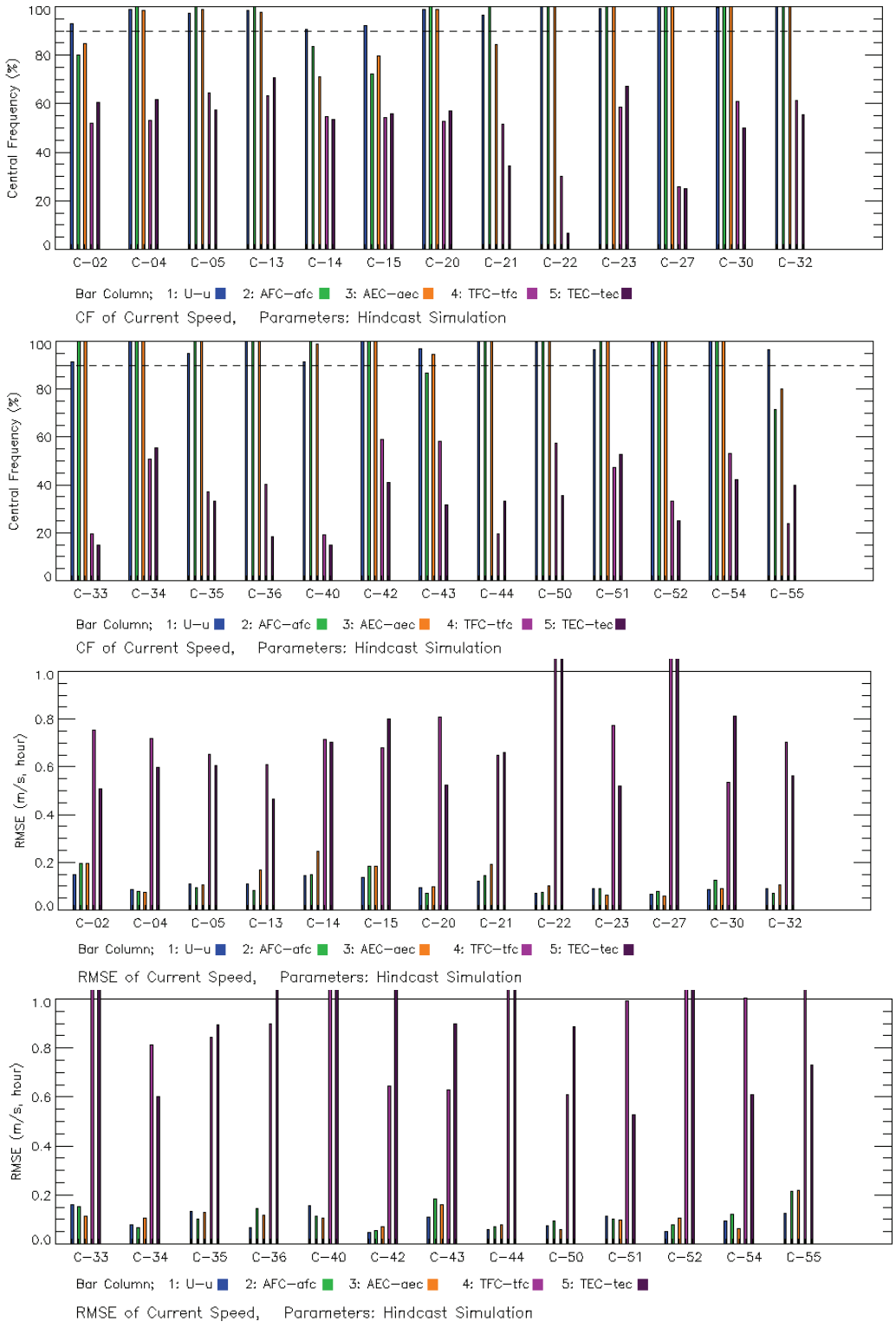

Figure 4.4. Central Frequency (CF) and Root Mean Squared Error (RMSE) of current speed from hindcast simulation at NOS current prediction depth (5 m from the water surface or mid-depth).

Temperature Skill

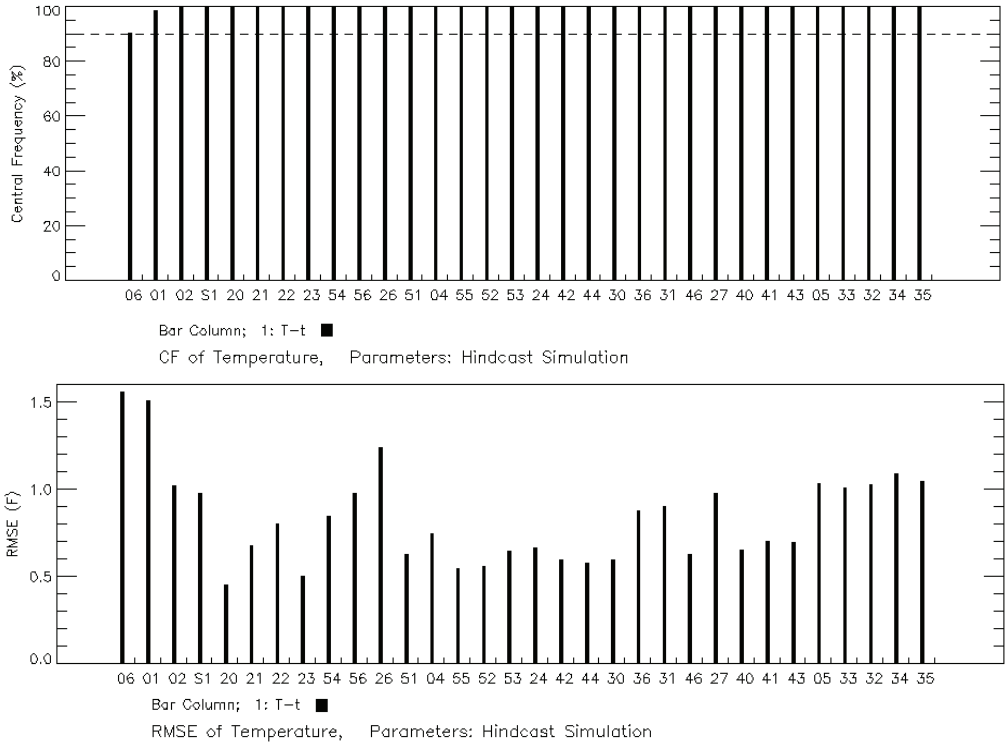

Figure 4.5. Central Frequency (CF) and Root Mean Squared Error (RMSE) of temperature from hindcast simulation**.**

Salinity Skill

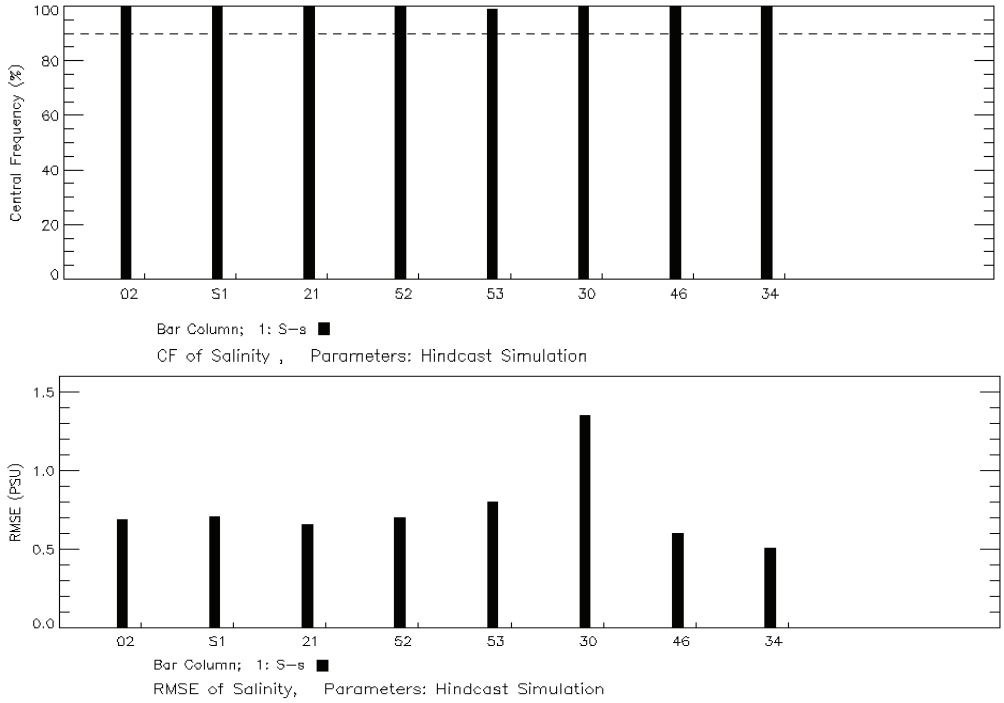

Figure 4.6. Central Frequency (CF) and Root Mean Squared Error (RMSE) of salinity from hindcast simulation**.**

4.4. Tidal Constituent Comparison

Simulated water levels from the one-year hindcast are harmonically analyzed by a least squared method for tidal constituents and compared with the observations. The tide amplitude comparison of the most significant constituents (M2, O1, K1, S2, N2, and M4) is given in Figure 4.7 in bar chart format for water levels. Except K1 at Cortez and Egmont Key, the differences between observed and simulated tidal constituent amplitude are in the order of 1 to 2 cm. Current comparisons are given in Appendix H.

4.5. Semi-operational Nowcast/Forecast Skill Assessment

Water level nowcast and forecast from semi-operational runs at 4 NOS operational stations are archived and compared with observations from NOS's COOPS NWLON data base and listed in Appendix I. The system nowcast and forecast performance satisfy NOS skill criteria for most of parameters except the time of high and low water where the RMSE is in the order of 30 minutes. The Central Frequency (CF) of forecast does not degrade within 24 hours and the RMSE remains around 5 cm.

Current speed and direction at the NOS real-time water depth (about 5 m from the surface) from nowcast and forecast runs are compared with observations and the skill statistics are listed in Appendix J. The skills show near 100% of CF in current direction nowcast and forecast. The nowcast and forecast CF of current speed are over 90% except the maximum ebbing current at Old Port Tampa (76%). However, the time of maximum currents and slacks are in the order of 60% with RMSE over 30 minutes in general.

Surface temperature from semi-operational nowcast/forecast runs at Buoy 42013, St. Petersburg, Campbell Park, Frog Creek are compared with observations obtained from NDBC, COOPS, and Terra Ceia Aquatic Preserve to generate skill assessment tables listed in Appendix K. The surface temperature nowcast/forecast skills indicate the model system accurately predicted surface temperature at these two stations. The RMSE in the order of 1.5^0 C with forecast skill slightly better than the nowcast probably due to the effect from the heat flux surface forcing (from atmospheric forecasts) to the model.

Surface salinity observations are available from NDBC Buoy 42013 located on West Florida Shelf near the model grid offshore open boundary (Figure 3.2). Skills for surface salinity nowcast/forecast at this location is listed as Appendix L. RMSE of 0.5 PSU for nowcasts and 0.8 PSU for forecasts at this station show the model system forced with the salinity open boundary condition by NCOM model nowcasts and forecasts are well represented.

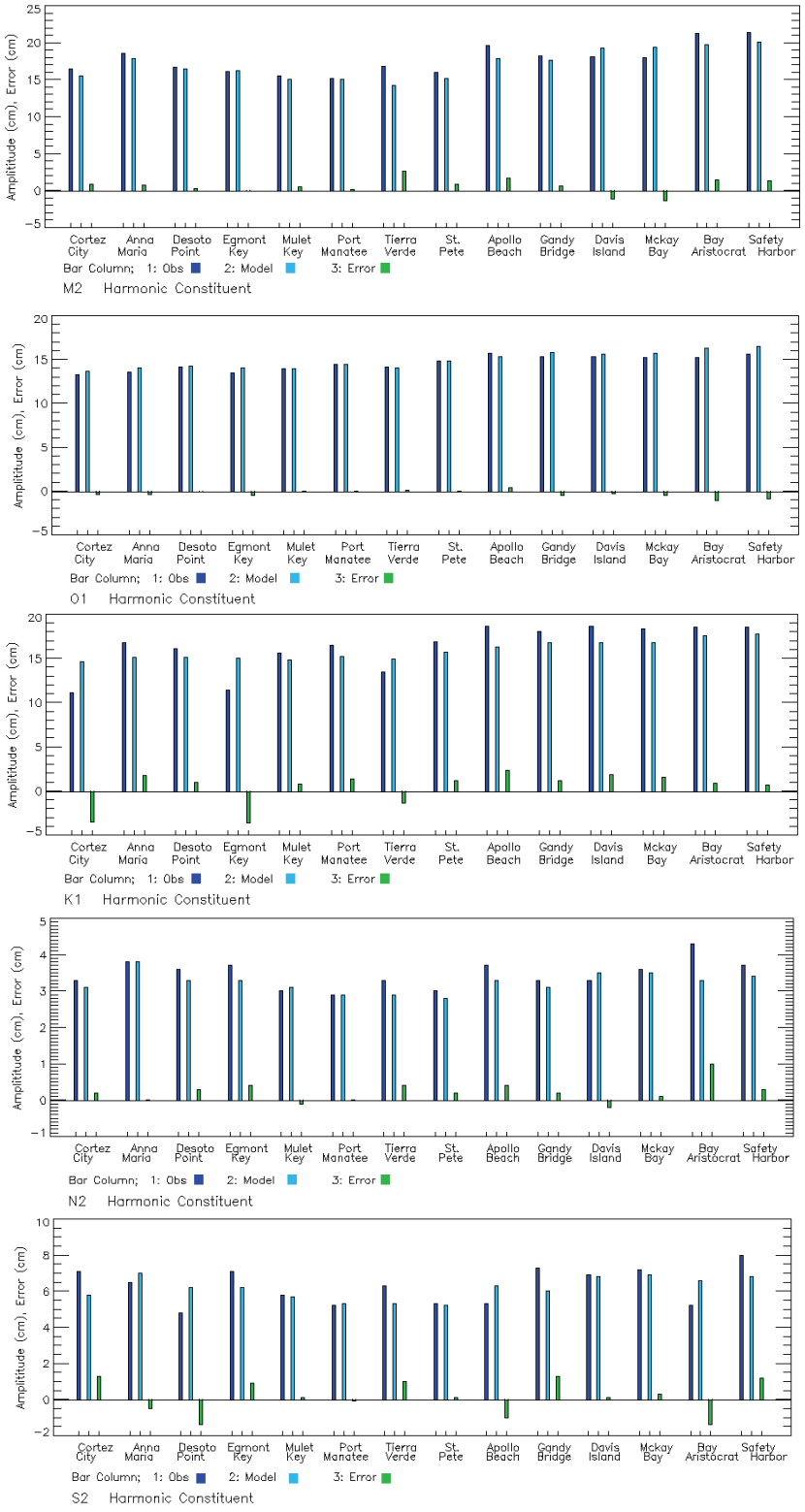

Figure 4.7. Tidal constituents (M2, O1, K1, N2, S2) comparison between observations and hindcast.

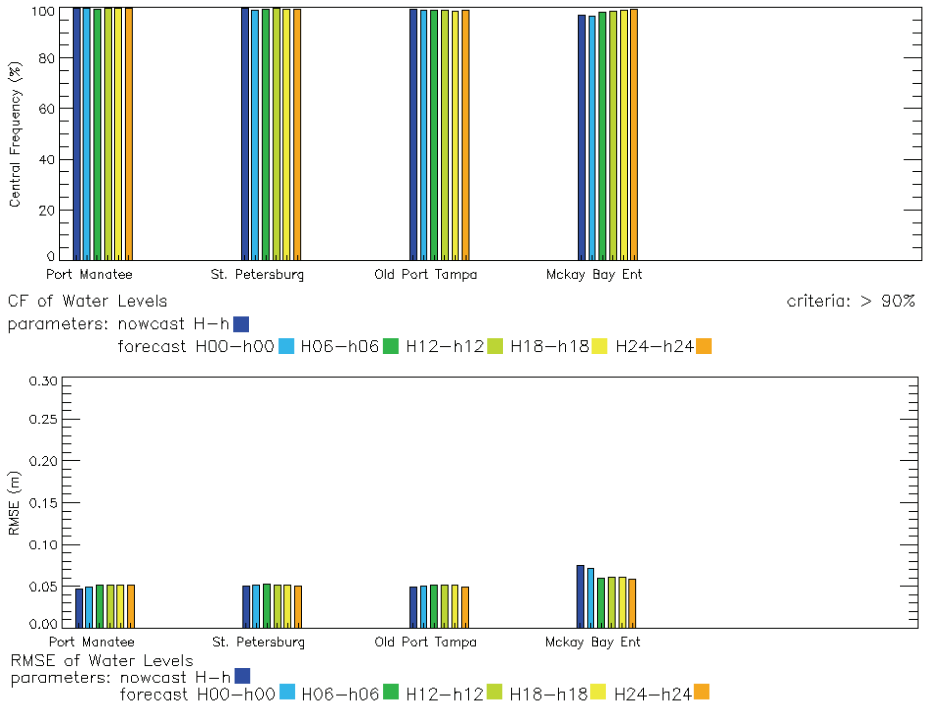

Figure 4.8. Central Frequency (CF) and Root Mean Squared Error (RMSE) of water levels from semi-operational runs**.**

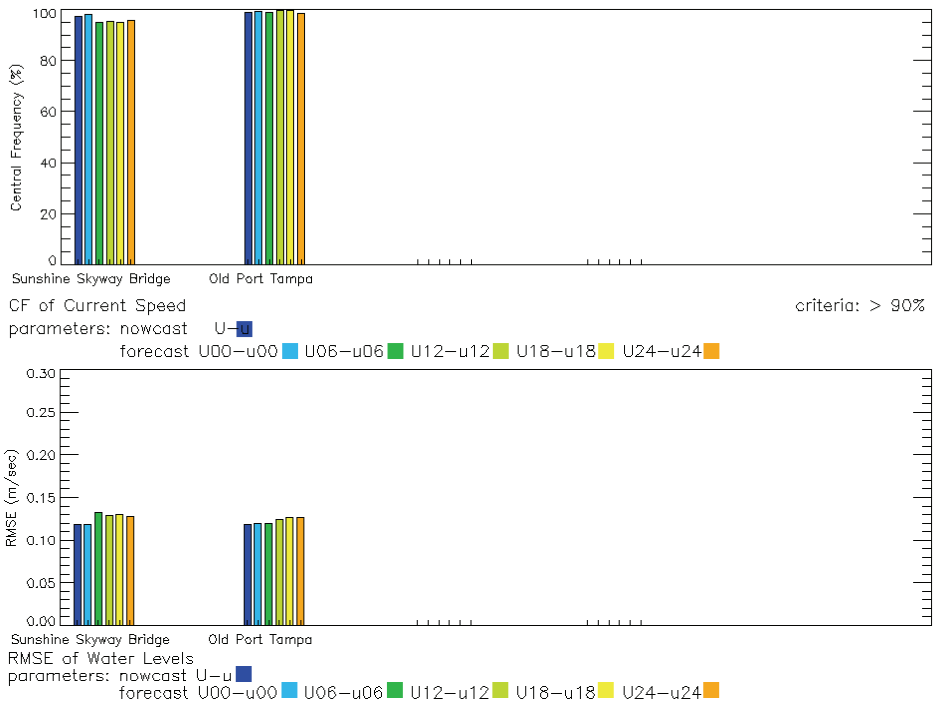

Figure 4.9. Central Frequency (CF) and Root Mean Squared Error (RMSE) of current speed from semi-operational runs**.**

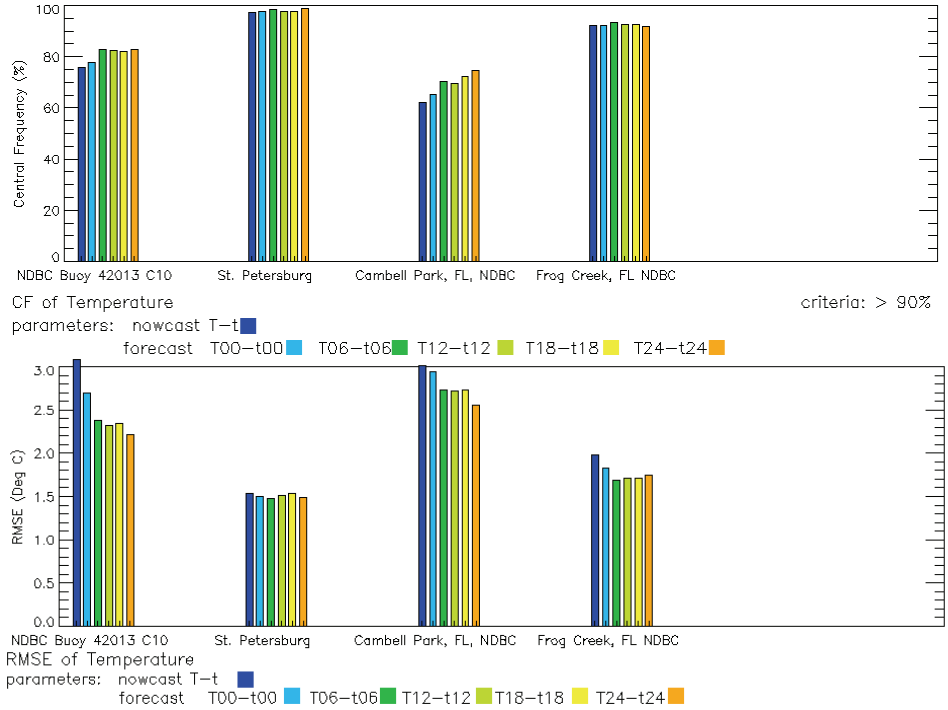

Figure 4.10. Central Frequency (CF) and Root Mean Squared Error (RMSE) of temperature from semi-operational runs.

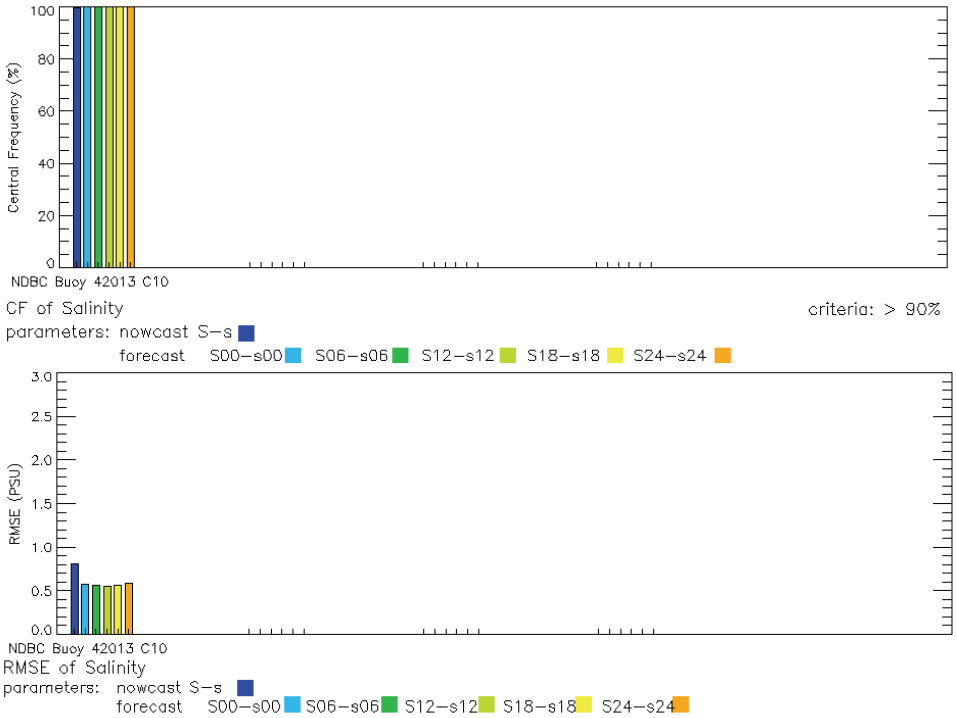

Figure 4.11. Central Frequency (CF) and Root Mean Squared Error (RMSE) salinity from semi-operational runs.

5. SUMMARY

The ROMS model has been tested and evaluated for hydrodynamic simulations of Tampa Bay as part of the development of an operational nowcast/forecast system. The observations from an extensive 1990-1991 NOS circulation survey were analyzed and used for model calibration and validation. Model initial conditions for temperature and salinity are generated from monthly measurements from the Environmental Protection Commission of Hillsborough County (EPCHC).

The averaged surface circulation from the tidal simulation compared well with previous studies by Weisberg et al., (1991, 2006) and shows that the model is capable of representing well the tidal circulation patterns from the Bay entrance to the upper bay.

The performance of the ROMS hindcast simulations was evaluated by comparison with observed water levels, currents, temperatures, and salinity. The model results show that the currents are simulated very well throughout Tampa Bay in both speed and direction. The values of RMSE are generally less than 10 cm/s for maximum current speeds that range from 30 cm/s to 70 cm/s. Skill assessment statistics for water levels, currents, temperatures, and salinity evaluated at stations exceed the NOS criteria with the exception of the water level Central Frequency at some stations inside the upper shallow portion of the bay. The temperature hindcast time series shows that the model is capable of reproducing the annual cycle of surface water temperature.

The calibrated ROMS-based model for Tampa Bay is being implemented on NOAA high performance computers (NCEP CCS) as a nowcast/forecast model to provide real-time and forecast information of water levels, currents, temperatures and salinity for mariners navigating in Tampa Bay. Skill assessment from semi-operational nowcast/forecast runs at NCEP CCS meets NOS operational model system standard. The TBOFS will be implemented as an NOAA operational system in 2011.

ACKNOWLEDGEMENTS

We would like to thank our colleagues Frank Aikman, Richard Schmalz, Lyon Lanerolle at NOS's Coast Survey Development Laboratory and Mark Vincent of Office of Oceanic Atmospheric Research (formerly at the Center for Operational Oceanographic Products and Services) for their discussions, suggestions and comments during TBOFS development.

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APPENDIX A: ROMS CPPDEFS.H

A.1 Tide simulation

```
#define SOLVE3D
#define CURVGRID
#define MASKING
#undef WET_DRY
#define SALINITY
#ifdef SALINITY
# define ANA_BSFLUX
# define ANA_SSFLUX
#endif
#define NONLIN_EOS
#define UV_ADV
#define UV_COR
#undef UV_QDRAG
#define UV_LOGDRAG
#define UV_SADVECTION
#define TS_U3HADVECTION
#define TS_SVADVECTION
#define DJ_GRADPS
#define SPLINES
#define RADIATION_2D
#define SOUTH_M3RADIATION
#define SOUTH_TRADIATION
#define ANA_FSOBC
#define ANA_M2OBC
#define SSH_TIDES
#define RAMP_TIDES
#define SOUTH_FSCLAMPED
#define FSOBC_REDUCED
#ifdef FSOBC_REDUCED
# define SOUTH_M2REDUCED
#endif
#undef UV_TIDES
#ifdef UV_TIDES
# define SOUTH_M2FLATHER
#endif
#define MY25_MIXING
#define STATIONS
#define PERFECT_RESTART
#ifdef PERFECT_RESTART
#define  AVERAGES
# define OUT_DOUBLE
#endif
#define ANA_BTFLUX
#define ANA_STFLUX
#define ANA_SMFLUX
#define ANA_SMFLUX
#define ANA_STFLUX
```

A.2. Hindcast

```
#define SOLVE3D
#define CURVGRID
#define MASKING
#undef WET_DRY
#define ATM_PRESS
#define SALINITY
#ifdef SALINITY
# define ANA_BSFLUX
# define ANA_SSFLUX
#endif
#define NONLIN_EOS
#define  UV_ADV
#define  UV_COR
#undef UV_QDRAG
#define UV_LOGDRAG
#define UV_SADVECTION
#define TS_U3HADVECTION
#define TS_SVADVECTION
#define DJ_GRADPS
#define SPLINES
#define RADIATION_2D
#define SOUTH_M3RADIATION
#define SOUTH_TRADIATION
#define SOUTH_TNUDGING
#undef ANA_FSOBC
#define ANA_M2OBC
#define  SSH_TIDES
#define  RAMP_TIDES
#ifdef SSH_TIDES
# define SOUTH_FSCHAPMAN
#endif
#define ADD_FSOBC
#define FSOBC_REDUCED
#ifdef FSOBC_REDUCED
# define SOUTH_M2REDUCED
#endif
#undef  UV_TIDES
#ifdef UV_TIDES
# define SOUTH_M2FLATHER
#endif
#define MY25_MIXING
#undef GLS_MIXING
#if defined MY25_MIXING || defined GLS_MIXING
# define N2S2_HORAVG
# define KANTHA_CLAYSON
#endif
#define STATIONS
#define  PERFECT_RESTART
#ifdef PERFECT_RESTART
# define  AVERAGES
# undef  DIAGNOSTICS_BIO
```

```
# undef  DIAGNOSTICS_TS
# undef  DIAGNOSTICS_UV
# define OUT_DOUBLE
#endif
#define ANA_BTFLUX
#define ANA_STFLUX
#define ANA_SMFLUX
#define BULK_FLUXES
#ifdef BULK_FLUXES
# define LONGWAVE_OUT
# define ANA_CLOUD
# define ANA_RAIN
#else
# define ANA_SMFLUX
# define ANA_STFLUX
#endif
#define UV_PSOURCE
#define TS_PSOURCE
```

APPENDIX B. SKILL ASSESSMENT SCORE TABLES FOR TIDES

Station: Cortez
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.011									
h			87840	0.016									
H-h	15	cm 24h	87840	-0.005	0.039	0.039	0.0	100.0	0.0	0.0	0.0	0.00	0.99
AHW-ahw	15	cm 24h	617	0.004	0.036	0.036	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	617	-0.010	0.038	0.036	0.0	100.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	617	-0.106	0.460	0.448	1.9	70.2	1.1	24.9	0.0		
TLW-tlw	0.50	h 25h	617	-0.007	0.343	0.344	0.2	86.2	0.2	0.0	0.0		

Station: Anna Maria Outside
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.000									
h			87840	-0.013									
H-h	15	cm 24h	87840	0.013	0.046	0.044	0.0	100.0	0.0	0.0	0.0	0.00	0.99
AHW-ahw	15	cm 24h	619	0.012	0.041	0.039	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	619	0.024	0.046	0.039	0.0	100.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	619	-0.028	0.463	0.463	1.0	68.8	2.4	24.6	0.0		
TLW-tlw	0.50	h 25h	619	0.005	0.393	0.393	0.0	83.2	2.6	0.0	0.0		

Station: Venice Pier
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.000									
h			87840	0.000									
H-h	15	cm 24h	87840	0.000	0.027	0.027	0.0	100.0	0.0	0.0	0.0	0.00	1.00
AHW-ahw	15	cm 24h	619	0.009	0.027	0.026	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	619	0.001	0.024	0.024	0.0	100.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	619	-0.013	0.383	0.383	0.2	78.5	0.6	0.0	0.0		
TLW-tlw	0.50	h 25h	619	0.041	0.295	0.292	0.0	88.4	0.8	0.0	0.0		

Station: Desoto Point
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.009									
h			87840	-0.011									
H-h	15	cm 24h	87840	0.020	0.051	0.047	0.0	100.0	0.0	0.0	0.0	0.00	0.98
AHW-ahw	15	cm 24h	609	0.029	0.050	0.041	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	609	0.014	0.040	0.037	0.0	100.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	609	-0.082	0.454	0.447	1.0	69.6	1.3	49.1	0.0		
TLW-tlw	0.50	h 25h	609	-0.043	0.430	0.428	0.3	80.3	2.5	0.0	0.0		

Station: Egmont Key
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.001									
h			87840	0.038									
H-h	15	cm 24h	87840	-0.037	0.054	0.039	0.0	100.0	0.0	0.0	0.0	0.00	0.98
AHW-ahw	15	cm 24h	609	-0.013	0.035	0.032	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	609	-0.039	0.056	0.040	0.0	100.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	609	-0.033	0.427	0.426	2.0	75.2	0.7	0.0	0.0		
TLW-tlw	0.50	h 25h	609	0.163	0.407	0.373	0.7	76.5	0.3	0.0	0.0		

Station: Mulet Key
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.001									
h			87840	-0.010									
H-h	15	cm 24h	87840	0.011	0.039	0.038	0.0	100.0	0.0	0.0	0.0	0.00	0.99
AHW-ahw	15	cm 24h	575	0.012	0.038	0.036	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	575	0.014	0.042	0.039	0.0	100.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	575	0.099	0.431	0.420	2.6	81.6	1.9	0.0	0.0		
TLW-tlw	0.50	h 25h	575	0.177	0.306	0.250	0.0	88.0	0.3	0.0	0.0		

Station: Port Manatee
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.015									
h			87840	-0.016									
H-h	15	cm 24h	87840	0.031	0.051	0.041	0.0	99.8	0.0	0.0	0.0	0.00	0.98
AHW-ahw	15	cm 24h	553	0.033	0.048	0.035	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	554	0.028	0.053	0.044	0.0	99.5	0.0	0.0	0.0		
THW-thw	0.50	h 25h	553	-0.062	0.420	0.416	4.0	85.0	0.0	24.7	0.0		
TLW-tlw	0.50	h 25h	554	0.169	0.323	0.276	0.0	87.2	0.5	0.0	0.0		

Station: Tierra Verde
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.009									
h			87840	0.001									
H-h	15	cm 24h	87840	0.008	0.039	0.038	0.0	100.0	0.0	0.0	0.0	0.00	0.99
AHW-ahw	15	cm 24h	582	0.000	0.027	0.027	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	582	0.017	0.034	0.030	0.0	100.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	582	0.308	0.523	0.424	0.0	59.8	3.1	0.0	0.0		
TLW-tlw	0.50	h 25h	582	0.425	0.596	0.417	0.9	45.5	3.8	0.0	0.0		

Station: St. Petersburg
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.019									
h			87840	-0.014									
H-h	15	cm 24h	87840	0.034	0.055	0.044	0.0	99.0	0.0	0.0	0.0	0.00	0.98
AHW-ahw	15	cm 24h	562	0.025	0.041	0.032	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	563	0.035	0.062	0.051	0.0	97.3	0.0	0.0	0.0		
THW-thw	0.50	h 25h	562	-0.151	0.445	0.419	3.4	81.1	0.4	25.0	0.0		
TLW-tlw	0.50	h 25h	563	0.091	0.280	0.265	0.0	92.0	0.5	0.0	0.0		

Station: Apollo Beach
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.021									
h			87840	0.046									
H-h	15	cm 24h	87840	-0.025	0.056	0.050	0.0	99.4	0.0	0.0	0.0	0.00	0.98
AHW-ahw	15	cm 24h	614	-0.033	0.051	0.039	0.0	99.7	0.0	0.0	0.0		
ALW-alw	15	cm 24h	615	-0.022	0.058	0.054	0.0	100.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	614	0.169	0.518	0.490	3.1	64.2	2.4	74.5	9.9		
TLW-tlw	0.50	h 25h	615	0.272	0.503	0.423	0.5	68.5	3.4	0.0	0.0		

Station: Gandy Bridge
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.022									
h			87840	0.021									
H-h	15	cm 24h	87840	0.001	0.051	0.051	0.0	98.9	0.0	0.0	0.0	0.00	0.99
AHW-ahw	15	cm 24h	626	0.013	0.038	0.036	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	626	-0.006	0.062	0.062	0.0	98.2	0.0	0.0	0.0		
THW-thw	0.50	h 25h	626	0.086	0.408	0.399	1.6	80.5	1.1	49.7	0.0		
TLW-tlw	0.50	h 25h	626	0.132	0.356	0.331	0.2	82.6	0.3	0.0	0.0		

Station: Davis Island
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.021									
h			87840	-0.041									
H-h	15	cm 24h	87840	0.062	0.078	0.047	0.0	97.0	0.0	0.0	0.0	0.00	0.97
AHW-ahw	15	cm 24h	609	0.078	0.087	0.037	0.0	95.2	0.0	0.0	0.0		
ALW-alw	15	cm 24h	609	0.045	0.067	0.049	0.0	95.9	0.0	0.0	0.0		
THW-thw	0.50	h 25h	609	0.046	0.361	0.359	1.0	84.6	0.0	0.0	0.0		
TLW-tlw	0.50	h 25h	609	0.152	0.364	0.331	0.2	83.1	1.6	0.0	0.0		

Station: Mckay Bay Ent
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.021									
h			87840	-0.052									
H-h	15	cm 24h	87840	0.073	0.101	0.070	0.0	86.3	0.3	0.0	2.4	0.00	0.95
AHW-ahw	15	cm 24h	575	0.092	0.106	0.054	0.0	87.3	0.0	0.0	0.0		
ALW-alw	15	cm 24h	574	0.042	0.087	0.076	0.0	91.6	0.0	0.0	0.0		
THW-thw	0.50	h 25h	575	0.108	0.503	0.492	3.5	67.5	1.6	24.9	13.2		
TLW-tlw	0.50	h 25h	574	0.505	0.718	0.511	1.7	37.8	8.2	0.0	49.7		

Station: Bay Aristocrat Village
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.024									
h			87840	-0.045									
H-h	15	cm 24h	87840	0.069	0.095	0.065	0.0	88.3	0.0	0.0	0.0	0.00	0.96
AHW-ahw	15	cm 24h	656	0.083	0.093	0.042	0.0	91.3	0.0	0.0	0.0		
ALW-alw	15	cm 24h	658	0.059	0.087	0.064	0.0	91.3	0.0	0.0	0.0		
THW-thw	0.50	h 25h	656	0.333	0.724	0.643	3.2	47.0	10.7	24.9	35.1		
TLW-tlw	0.50	h 25h	658	0.388	0.631	0.498	0.9	52.4	5.8	0.0	39.0		

Station: Clearwater Beach
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.000									
h			87840	0.000									
H-h	15	cm 24h	87840	0.000	0.041	0.041	0.0	100.0	0.0	0.0	0.0	0.00	0.99
AHW-ahw	15	cm 24h	657	0.004	0.043	0.043	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	657	0.004	0.039	0.039	0.0	100.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	657	0.001	0.294	0.294	0.5	92.1	0.3	0.0	0.0		
TLW-tlw	0.50	h 25h	657	0.003	0.257	0.257	0.5	92.7	0.0	0.0	0.0		

Station: Safety Harbor
Observed data time period from: / 6/ 8/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
H			87840	0.024									
h			87840	0.043									
H-h	15	cm 24h	87840	-0.019	0.066	0.063	0.0	97.1	0.0	0.0	0.0	0.00	0.98
AHW-ahw	15	cm 24h	657	0.003	0.040	0.040	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	657	-0.033	0.077	0.070	0.0	98.2	0.0	0.0	0.0		
THW-thw	0.50	h 25h	657	0.250	0.576	0.520	1.1	65.1	7.9	0.0	0.0		
TLW-tlw	0.50	h 25h	657	0.348	0.547	0.423	0.0	63.0	5.9	0.0	0.0		

APPENDIX C. SKILL ASSESSMENT SCORE TABLES FOR TIDAL CURRENT SPEEDS

Station: C-02 Inner Egmont (REF)
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.366									
u			41520	0.409									
U-u	26 cm/s	24h	41520	-0.043	0.115	0.106	0.0	97.3	0.0	0.0	0.0		0.94
AFC-afc	26 cm/s	24h	323	-0.053	0.111	0.098	0.0	99.1	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	209	-0.090	0.158	0.131	0.0	90.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	323	0.072	0.356	0.349	0.6	83.9	0.9	0.0	0.0		
TEC-tec	0.50h	25h	209	-0.196	0.439	0.393	1.0	67.9	0.5	0.0	0.0		
TSF-tsf	0.25h	25h	300	0.077	0.462	0.457	0.0	79.0	4.3	0.0	24.2		
TEF-tef	0.25h	25h	307	0.438	0.756	0.617	1.6	58.0	13.7	0.0	0.0		
TSE-tse	0.25h	25h	198	-0.066	0.581	0.578	7.1	75.3	2.5	24.8	0.0		
TEE-tee	0.25h	25h	202	0.070	0.411	0.406	1.5	77.7	0.5	0.0	0.0		

Station: C-04 Port Manatee Entranc
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.261									
u			41520	0.276									
U-u	26 cm/s	24h	41520	-0.015	0.081	0.080	0.0	99.7	0.0	0.0	0.0		0.94
AFC-afc	26 cm/s	24h	326	-0.040	0.085	0.075	0.0	99.7	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	212	-0.032	0.108	0.103	0.0	97.2	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	326	0.084	0.472	0.465	0.6	80.1	2.8	0.0	0.0		
TEC-tec	0.50h	25h	212	-0.061	0.285	0.279	0.0	89.6	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	308	0.247	0.590	0.536	1.0	63.0	8.4	0.0	92.8		
TEF-tef	0.25h	25h	286	0.235	0.618	0.573	1.0	60.5	8.4	0.0	0.0		
TSE-tse	0.25h	25h	182	0.000	0.547	0.548	0.5	68.1	5.5	0.0	74.4		
TEE-tee	0.25h	25h	197	-0.183	0.454	0.416	4.6	76.6	0.0	0.0	0.0		

Station: C-05 Port Tampa
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.352									
u			41520	0.368									
U-u	26 cm/s	24h	41520	-0.016	0.126	0.125	0.0	94.8	0.0	0.8	0.0		0.91
AFC-afc	26 cm/s	24h	326	-0.037	0.096	0.089	0.0	98.5	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	240	-0.134	0.216	0.169	0.8	75.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	326	-0.194	0.524	0.488	6.4	68.4	0.6	0.0	0.0		
TEC-tec	0.50h	25h	240	-0.360	0.496	0.342	2.9	60.0	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	306	0.517	0.629	0.359	0.0	51.0	6.5	0.0	0.0		
TEF-tef	0.25h	25h	297	0.111	0.676	0.668	6.4	53.9	7.7	0.0	24.8		
TSE-tse	0.25h	25h	225	0.074	0.571	0.567	3.6	74.2	4.0	0.0	0.0		
TEE-tee	0.25h	25h	237	-0.182	0.435	0.396	4.2	83.1	0.0	24.9	0.0		

Station: C-13 Sun Bridge
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.266									
u			41520	0.212									
U-u	26 cm/s	24h	41520	0.053	0.107	0.093	0.0	99.9	0.0	0.0	0.0		0.85
AFC-afc	26 cm/s	24h	325	0.018	0.064	0.061	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	210	0.141	0.149	0.050	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	325	-0.048	0.571	0.569	0.9	61.5	5.2	0.0	0.0		
TEC-tec	0.50h	25h	210	-0.316	0.448	0.318	0.0	65.2	0.5	0.0	0.0		
TSF-tsf	0.25h	25h	273	0.896	1.164	0.745	0.0	27.5	39.6	0.0	74.6		
TEF-tef	0.25h	25h	300	-0.220	0.744	0.712	11.7	56.7	3.0	49.3	0.0		
TSE-tse	0.25h	25h	181	-0.067	0.587	0.585	1.7	73.5	5.5	0.0	24.8		
TEE-tee	0.25h	25h	161	-1.135	1.263	0.558	55.9	6.8	0.0	208.9	0.0		

Station: C-14 Beacon Key
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.244									
u			41520	0.233									
U-u	26 cm/s	24h	41520	0.012	0.074	0.073	0.0	100.0	0.0	0.0	0.0		0.94
AFC-afc	26 cm/s	24h	327	0.024	0.071	0.067	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	223	-0.030	0.090	0.085	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	327	0.050	0.489	0.487	0.9	73.7	3.7	0.0	0.0		
TEC-tec	0.50h	25h	223	0.084	0.259	0.245	0.0	91.9	0.4	0.0	0.0		
TSF-tsf	0.25h	25h	307	0.471	0.686	0.499	0.0	49.2	11.7	0.0	31.8		
TEF-tef	0.25h	25h	285	-0.122	0.628	0.617	8.8	54.7	1.4	49.6	0.0		
TSE-tse	0.25h	25h	182	0.359	0.676	0.574	1.1	65.4	13.2	0.0	49.3		
TEE-tee	0.25h	25h	208	-0.090	0.382	0.373	1.9	83.2	0.0	0.0	0.0		

Station: C-15 Mangrove Pt., Cut E
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.250									
u			41520	0.238									
U-u	26 cm/s	24h	41520	0.012	0.080	0.079	0.0	100.0	0.0	0.0	0.0		0.92
AFC-afc	26 cm/s	24h	324	-0.007	0.078	0.078	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	215	0.011	0.080	0.079	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	324	0.092	0.650	0.645	2.8	68.5	7.4	0.0	24.9		
TEC-tec	0.50h	25h	215	-0.021	0.315	0.315	0.0	87.0	0.5	0.0	0.0		
TSF-tsf	0.25h	25h	290	0.538	0.755	0.530	0.0	54.8	15.2	0.0	56.3		
TEF-tef	0.25h	25h	268	0.060	0.584	0.582	4.1	64.6	3.4	49.3	0.0		
TSE-tse	0.25h	25h	174	-0.038	0.633	0.634	8.0	61.5	5.2	24.9	0.0		
TEE-tee	0.25h	25h	187	-0.403	0.567	0.401	7.5	62.0	0.0	49.1	0.0		

Station: C-20 Southwest Channel
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.309									
u			41520	0.319									
U-u	26 cm/s	24h	41520	-0.011	0.078	0.077	0.0	99.9	0.0	0.0	0.0		0.96
AFC-afc	26 cm/s	24h	319	-0.031	0.074	0.068	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	227	-0.042	0.092	0.081	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	319	-0.196	0.498	0.459	1.3	68.7	1.6	0.0	0.0		
TEC-tec	0.50h	25h	227	-0.256	0.457	0.380	2.2	71.8	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	307	0.089	0.379	0.368	0.3	85.0	1.6	0.0	0.0		
TEF-tef	0.25h	25h	289	-0.021	0.593	0.594	4.5	70.2	3.1	25.0	0.0		
TSE-tse	0.25h	25h	201	0.023	0.487	0.487	2.5	85.1	3.0	0.0	0.0		
TEE-tee	0.25h	25h	223	0.052	0.403	0.401	2.2	84.3	1.8	0.0	0.0		

Station: C-21 Passage Key
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.228									
u			41520	0.309									
U-u	26 cm/s	24h	41520	-0.081	0.138	0.111	0.1	93.1	0.0	0.9	0.0		0.82
AFC-afc	26 cm/s	24h	323	-0.148	0.169	0.082	0.0	90.7	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	227	-0.197	0.235	0.129	0.0	67.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	323	-0.219	0.480	0.428	1.2	82.4	1.2	0.0	0.0		
TEC-tec	0.50h	25h	227	-0.645	0.759	0.401	14.5	36.1	0.0	98.9	0.0		
TSF-tsf	0.25h	25h	301	-0.793	0.887	0.397	25.2	19.6	0.3	36.4	0.0		
TEF-tef	0.25h	25h	281	0.111	0.497	0.486	1.8	74.4	3.6	0.0	0.0		
TSE-tse	0.25h	25h	196	-0.712	0.823	0.413	18.9	28.1	0.5	24.3	0.0		
TEE-tee	0.25h	25h	214	-0.181	0.417	0.376	3.3	80.4	0.0	25.0	0.0		

Station: C-22 Anna Maria
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.060									
u			41520	0.092									
U-u	26 cm/s	24h	41520	-0.032	0.049	0.037	0.0	100.0	0.0	0.0	0.0		0.76
AFC-afc	26 cm/s	24h	179	-0.059	0.067	0.031	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	127	-0.055	0.064	0.033	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	179	0.560	0.992	0.821	5.6	25.1	32.4	24.3	74.4		
TEC-tec	0.50h	25h	127	-1.098	1.462	0.969	58.3	11.8	3.9	122.7	24.2		

Station: C-23 Mullet Key
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.302									
u			41520	0.305									
U-u	26 cm/s	24h	41520	-0.003	0.072	0.072	0.0	100.0	0.0	0.0	0.0		0.97
AFC-afc	26 cm/s	24h	325	-0.019	0.072	0.069	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	226	-0.015	0.081	0.080	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	325	0.034	0.381	0.380	0.6	85.5	2.2	0.0	0.0		
TEC-tec	0.50h	25h	226	-0.065	0.338	0.333	0.4	85.4	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	310	0.244	0.471	0.403	0.6	75.2	3.2	0.0	0.0		
TEF-tef	0.25h	25h	294	0.146	0.580	0.563	2.0	70.1	5.1	0.0	0.0		
TSE-tse	0.25h	25h	200	-0.034	0.456	0.456	4.0	82.0	3.0	0.0	0.0		
TEE-tee	0.25h	25h	215	-0.077	0.394	0.387	2.3	84.7	0.5	0.0	0.0		

Station: C-27 Penlopen Point
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.038									
u			41520	0.069									
U-u	26 cm/s	24h	41520	-0.031	0.057	0.048	0.0	100.0	0.0	0.0	0.0		0.35
AFC-afc	26 cm/s	24h	78	-0.089	0.090	0.014	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	32	0.025	0.027	0.011	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	78	-0.168	0.435	0.404	3.8	83.3	0.0	0.0	0.0		
TEC-tec	0.50h	25h	32	0.634	0.703	0.308	0.0	15.6	12.5	0.0	0.0		

Station: C-30 Cut J Channel
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.257									
u			41520	0.288									
U-u	26 cm/s	24h	41520	-0.031	0.101	0.097	0.0	98.0	0.0	0.0	0.0		0.92
AFC-afc	26 cm/s	24h	314	-0.056	0.095	0.077	0.0	99.7	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	233	-0.105	0.177	0.142	0.0	84.1	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	314	-0.477	0.607	0.377	7.3	54.1	0.0	0.0	0.0		
TEC-tec	0.50h	25h	233	-0.164	0.327	0.283	1.3	88.4	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	294	0.017	0.508	0.508	4.4	64.6	0.0	0.0	0.0		
TEF-tef	0.25h	25h	283	0.053	0.636	0.635	7.4	55.8	5.7	0.0	0.0		
TSE-tse	0.25h	25h	206	-0.419	0.629	0.470	12.6	58.7	0.5	49.0	0.0		
TEE-tee	0.25h	25h	220	-0.102	0.429	0.417	3.2	80.0	0.0	0.0	0.0		

Station: C-32 Gandy Bridge East
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.223									
u			41520	0.147									
U-u	26 cm/s	24h	41520	0.077	0.096	0.058	0.0	100.0	0.0	0.0	0.0		0.80
AFC-afc	26 cm/s	24h	219	0.050	0.083	0.066	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	329	0.130	0.137	0.041	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	219	-0.353	0.593	0.477	6.4	47.0	0.5	62.1	0.0		
TEC-tec	0.50h	25h	329	-0.323	0.486	0.363	3.6	70.2	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	107	1.190	1.259	0.411	0.0	5.6	71.0	0.0	86.4		
TEF-tef	0.25h	25h	187	-1.147	1.229	0.443	57.8	7.5	0.0	73.6	0.0		
TSE-tse	0.25h	25h	254	1.208	1.283	0.434	0.0	1.2	63.4	0.0	97.7		
TEE-tee	0.25h	25h	185	-1.172	1.282	0.521	69.2	11.9	0.0	81.3	0.0		

Station: C-33 Gandy Bridge West
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.289									
u			41520	0.192									
U-u	26 cm/s	24h	41520	0.097	0.155	0.121	0.0	91.4	0.0	0.0	0.0		0.70
AFC-afc	26 cm/s	24h	221	0.108	0.135	0.081	0.0	96.4	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	326	0.114	0.130	0.062	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	221	0.669	0.825	0.484	0.0	36.2	18.6	0.0	74.6		
TEC-tec	0.50h	25h	326	0.586	0.774	0.508	0.0	37.4	19.3	0.0	35.1		
TSF-tsf	0.25h	25h	140	1.415	1.484	0.449	0.0	2.9	86.4	0.0	185.6		
TEF-tef	0.25h	25h	179	-0.205	0.727	0.700	11.7	64.2	0.0	73.6	0.0		
TSE-tse	0.25h	25h	249	1.964	2.154	0.884	2.8	0.0	97.2	24.6	259.8		
TEE-tee	0.25h	25h	252	0.120	0.726	0.718	9.5	52.4	12.3	0.0	24.8		

Station: C-34 Franklnd Bridge
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.157									
u			41520	0.126									
U-u	26 cm/s	24h	41520	0.031	0.071	0.064	0.0	100.0	0.0	0.0	0.0		0.82
AFC-afc	26 cm/s	24h	239	-0.047	0.083	0.068	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	317	0.087	0.094	0.036	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	239	-0.482	0.629	0.404	6.7	41.8	0.0	24.6	0.0		
TEC-tec	0.50h	25h	317	-0.350	0.519	0.384	6.3	62.1	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	24	-1.839	1.898	0.479	91.7	0.0	0.0	73.9	0.0		
TEF-tef	0.25h	25h	91	0.657	0.760	0.385	0.0	28.6	13.2	0.0	48.9		
TSE-tse	0.25h	25h	108	-1.384	1.519	0.629	66.7	10.2	0.0	73.9	0.0		
TEE-tee	0.25h	25h	75	0.739	0.875	0.472	0.0	21.3	21.3	0.0	48.9		

Station: C-35 Courtney Bridge
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.234									
u			41520	0.142									
U-u	26 cm/s	24h	41520	0.092	0.118	0.075	0.0	99.8	0.0	0.0	0.0		0.68
AFC-afc	26 cm/s	24h	244	0.151	0.158	0.046	0.0	99.2	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	26	0.061	0.067	0.030	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	244	-0.459	0.773	0.623	16.8	43.0	3.3	24.9	24.9		
TEC-tec	0.50h	25h	26	-0.312	0.516	0.420	0.0	57.7	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	72	2.398	2.415	0.287	0.0	0.0	100.0	0.0	49.0		
TEF-tef	0.25h	25h	240	-1.657	1.763	0.605	89.2	0.0	0.0	147.3	0.0		
TSE-tse	0.25h	25h	31	2.483	2.493	0.227	0.0	0.0	100.0	0.0	48.7		
TEE-tee	0.25h	25h	32	-1.931	1.983	0.455	100.0	0.0	0.0	49.6	0.0		

Station: C_36 Gadsden Point
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.046									
u			41520	0.076									
U-u	26 cm/s	24h	41520	-0.030	0.045	0.034	0.0	100.0	0.0	0.0	0.0		0.63
AFC-afc	26 cm/s	24h	178	-0.069	0.072	0.021	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	86	-0.044	0.052	0.028	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	178	-0.313	0.798	0.737	11.8	52.8	1.7	0.0	24.8		
TEC-tec	0.50h	25h	86	0.620	0.911	0.672	4.7	19.8	31.4	0.0	49.4		

Station: C-40 Christmas Island
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.255									
u			41520	0.195									
U-u	26 cm/s	24h	41520	0.060	0.131	0.116	0.0	97.3	0.0	0.0	0.0		0.73
AFC-afc	26 cm/s	24h	212	0.031	0.092	0.087	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	328	0.101	0.115	0.055	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	212	-0.168	0.658	0.638	6.6	49.1	3.8	74.1	0.0		
TEC-tec	0.50h	25h	328	0.901	1.021	0.481	0.0	17.4	43.0	0.0	37.3		
TSF-tsf	0.25h	25h	165	1.678	1.744	0.475	0.0	0.0	92.7	0.0	219.7		
TEF-tef	0.25h	25h	169	-0.035	0.685	0.686	11.2	42.6	0.0	0.0	0.0		
TSE-tse	0.25h	25h	258	1.692	1.771	0.525	0.0	0.0	93.0	0.0	644.6		
TEE-tee	0.25h	25h	274	0.416	0.915	0.817	6.9	31.8	27.0	0.0	74.6		

Station: C-41 Pinic I, Cut K
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.304									
u			41520	0.347									
U-u	26 cm/s	24h	41520	-0.043	0.137	0.130	0.2	94.1	0.0	1.9	0.0		0.87
AFC-afc	26 cm/s	24h	230	-0.158	0.241	0.183	3.0	68.7	0.0	74.3	0.0		
AEC-aec	26 cm/s	24h	307	-0.081	0.129	0.100	0.0	97.1	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	230	-0.487	0.627	0.396	7.0	46.5	0.0	49.6	0.0		
TEC-tec	0.50h	25h	307	-0.569	0.731	0.460	16.6	45.6	0.0	24.8	0.0		
TSF-tsf	0.25h	25h	202	-0.254	0.617	0.563	8.9	66.8	2.5	74.3	0.0		
TEF-tef	0.25h	25h	223	-0.346	0.615	0.510	11.2	64.6	0.0	99.1	0.0		
TSE-tse	0.25h	25h	287	0.118	0.466	0.451	0.3	70.7	2.1	0.0	0.0		
TEE-tee	0.25h	25h	286	0.034	0.652	0.652	8.0	57.0	2.4	0.0	0.0		

Station: C-42 Venebian Island
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.076									
u			41520	0.091									
U-u	26 cm/s	24h	41520	-0.015	0.036	0.033	0.0	100.0	0.0	0.0	0.0		0.85
AFC-afc	26 cm/s	24h	304	-0.022	0.038	0.030	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	243	-0.045	0.062	0.043	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	304	-0.512	0.659	0.415	11.5	53.6	0.3	63.1	0.0		
TEC-tec	0.50h	25h	243	-0.526	0.805	0.610	18.9	42.8	0.0	73.9	0.0		

Station: C-43 Old TB Street
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.111									
u			41520	0.153									
U-u	26 cm/s	24h	41520	-0.042	0.079	0.067	0.0	99.3	0.0	0.0	0.0		0.74
AFC-afc	26 cm/s	24h	306	-0.062	0.077	0.046	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	220	-0.142	0.162	0.077	0.0	93.2	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	306	-0.204	0.702	0.673	11.4	51.6	1.3	49.6	0.0		
TEC-tec	0.50h	25h	220	-0.704	0.843	0.466	29.5	33.2	0.0	98.3	0.0		

Station: C-44 Intersec Y-cut
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.067									
u			41520	0.093									
U-u	26 cm/s	24h	41520	-0.026	0.037	0.027	0.0	100.0	0.0	0.0	0.0		0.66
AFC-afc	26 cm/s	24h	230	-0.037	0.040	0.016	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	139	-0.053	0.061	0.029	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	230	-1.101	1.415	0.890	46.1	20.4	0.4	86.9	0.0		
TEC-tec	0.50h	25h	139	-0.419	0.720	0.588	15.8	50.4	0.0	0.0	0.0		

Station: C-50 Point Pine
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.174									
u			41520	0.155									
U-u	26 cm/s	24h	41520	0.019	0.059	0.055	0.0	100.0	0.0	0.0	0.0		0.89
AFC-afc	26 cm/s	24h	326	-0.004	0.044	0.044	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	224	0.019	0.050	0.046	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	326	-0.068	0.539	0.536	3.7	69.0	1.8	0.0	0.0		
TEC-tec	0.50h	25h	224	-0.567	0.666	0.350	9.4	30.4	0.0	74.4	0.0		
TSF-tsf	0.25h	25h	220	0.052	0.627	0.627	7.7	67.3	5.5	24.6	42.7		
TEF-tef	0.25h	25h	224	-0.348	0.731	0.644	18.3	46.4	1.3	0.0	0.0		
TSE-tse	0.25h	25h	145	-0.100	0.767	0.763	14.5	41.4	6.2	49.0	0.0		
TEE-tee	0.25h	25h	152	-0.777	0.924	0.503	32.2	19.7	0.0	49.3	0.0		

Station: C-52 Manatee Channel
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.100									
u			41520	0.091									
U-u	26 cm/s	24h	41520	0.009	0.035	0.034	0.0	100.0	0.0	0.0	0.0		0.89
AFC-afc	26 cm/s	24h	324	0.014	0.033	0.030	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	228	-0.002	0.028	0.028	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	324	0.505	0.721	0.516	0.0	56.5	15.1	0.0	62.0		
TEC-tec	0.50h	25h	228	0.278	0.462	0.370	0.0	77.2	3.9	0.0	0.0		

Station: C-54 Waterway L
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.155									
u			41520	0.213									
U-u	26 cm/s	24h	41520	-0.058	0.087	0.065	0.0	100.0	0.0	0.0	0.0		0.72
AFC-afc	26 cm/s	24h	324	-0.092	0.102	0.043	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	173	0.012	0.036	0.034	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	324	0.364	0.659	0.550	0.6	59.6	9.6	0.0	24.7		
TEC-tec	0.50h	25h	173	-0.424	0.574	0.388	5.8	51.4	0.6	49.4	0.0		
TSF-tsf	0.25h	25h	142	-0.244	0.654	0.609	16.2	68.3	0.0	0.0	0.0		
TEF-tef	0.25h	25h	59	1.160	1.413	0.814	3.4	5.1	83.1	0.0	122.5		
TSE-tse	0.25h	25h	18	-1.131	1.171	0.315	66.7	5.6	0.0	48.9	0.0		
TEE-tee	0.25h	25h	106	-0.442	0.649	0.477	10.4	51.9	1.9	0.0	0.0		

Station: C-55 Manatee Channel Out
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.201									
u			41520	0.279									
U-u	26 cm/s	24h	41520	-0.078	0.135	0.110	0.0	95.7	0.0	0.0	0.0		0.77
AFC-afc	26 cm/s	24h	321	-0.189	0.199	0.063	0.0	87.9	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	200	-0.069	0.117	0.095	0.0	95.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	321	0.393	0.616	0.475	0.6	57.0	7.2	0.0	0.0		
TEC-tec	0.50h	25h	200	0.094	0.245	0.227	0.0	95.0	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	255	-0.005	0.771	0.773	15.7	37.6	3.1	0.0	24.5		
TEF-tef	0.25h	25h	205	1.451	1.545	0.530	0.0	3.9	79.0	0.0	245.7		
TSE-tse	0.25h	25h	120	-0.921	0.989	0.363	32.5	10.0	0.0	123.4	0.0		
TEE-tee	0.25h	25h	177	0.089	0.378	0.368	0.6	84.7	1.7	0.0	0.0		

Station: C-56 Egmont Chan 2
Observed data time period from: / 6/ 8/1990 to /11/29/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: TIDAL SIMULATION ONLY													
U			41520	0.348									
u			41520	0.390									
U-u	26 cm/s	24h	41520	-0.042	0.128	0.121	0.0	95.3	0.0	0.0	0.0		0.93
AFC-afc	26 cm/s	24h	320	-0.093	0.138	0.103	0.0	93.8	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	224	-0.091	0.134	0.099	0.0	94.2	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	320	0.247	0.615	0.565	0.6	67.2	7.8	0.0	0.0		
TEC-tec	0.50h	25h	224	-0.203	0.366	0.305	0.0	80.4	0.4	0.0	0.0		
TSF-tsf	0.25h	25h	304	0.334	0.622	0.526	1.3	65.5	5.6	0.0	0.0		
TEF-tef	0.25h	25h	300	0.670	0.980	0.716	2.7	31.7	28.3	24.6	74.2		
TSE-tse	0.25h	25h	209	-0.237	0.542	0.489	6.7	78.0	0.0	24.7	0.0		
TEE-tee	0.25h	25h	222	0.092	0.421	0.411	1.8	82.0	3.6	0.0	0.0		

APPENDIX D. SKILL ASSESSMENT SCORE TABLES FOR HINDCAST WATER LEVELS

Station: Cortez
Observed data time period from: / 7/20/1990 to /11/ 1/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			34932	0.019									
h			34932	0.000									
H-h	15	cm 24h	34932	0.019	0.070	0.067	0.0	96.3	0.1	0.0	3.8	0.00	0.97
AHW-ahw	15	cm 24h	238	0.017	0.068	0.066	0.0	96.2	0.0	0.0	0.0		
ALW-alw	15	cm 24h	239	0.023	0.065	0.061	0.0	96.7	0.0	0.0	0.0		
THW-thw	0.50	h 25h	238	-0.078	0.679	0.676	7.6	58.4	4.6	24.0	0.0		
TLW-tlw	0.50	h 25h	239	0.121	0.555	0.543	1.7	62.3	4.6	0.0	0.0		

Station: Anna Maria
Observed data time period from: / 6/ 9/1990 to / 8/23/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			33414	0.007									
h			33414	0.000									
H-h	15	cm 24h	33414	0.007	0.073	0.073	0.0	95.8	0.1	0.0	3.4	0.00	0.97
AHW-ahw	15	cm 24h	222	0.005	0.069	0.069	0.0	97.3	0.0	0.0	0.0		
ALW-alw	15	cm 24h	223	0.019	0.067	0.065	0.0	96.4	0.0	0.0	0.0		
THW-thw	0.50	h 25h	222	0.057	0.688	0.687	5.4	50.9	5.9	0.0	0.0		
TLW-tlw	0.50	h 25h	223	0.040	0.622	0.622	4.0	56.5	5.4	0.0	0.0		

Station: Desoto Point
Observed data time period from: / 6/ 8/1990 to / 8/21/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			33943	0.017									
h			33943	0.000									
H-h	15	cm 24h	33943	0.017	0.071	0.069	0.0	96.0	0.1	0.0	2.1	0.00	0.97
AHW-ahw	15	cm 24h	223	0.023	0.068	0.065	0.0	96.9	0.0	0.0	0.0		
ALW-alw	15	cm 24h	225	0.020	0.065	0.062	0.0	96.9	0.0	0.0	0.0		
THW-thw	0.50	h 25h	223	-0.148	0.690	0.676	9.4	54.7	3.1	0.0	0.0		
TLW-tlw	0.50	h 25h	225	0.022	0.576	0.577	4.0	60.0	3.1	0.0	0.0		

Station: Egmont Key
Observed data time period from: / 8/11/1990 to /11/25/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			69552	0.006									
h			69552	0.000									
H-h	15	cm 24h	69552	0.006	0.095	0.094	0.3	91.6	1.1	5.3	14.4	0.00	0.95
AHW-ahw	15	cm 24h	439	0.008	0.092	0.092	0.2	92.5	1.1	0.0	14.0		
ALW-alw	15	cm 24h	439	0.014	0.090	0.089	0.0	92.5	1.1	0.0	0.0		
THW-thw	0.50	h 25h	439	-0.160	0.789	0.774	11.2	50.1	5.2	39.0	25.0		
TLW-tlw	0.50	h 25h	439	0.148	0.683	0.668	4.6	54.2	6.8	0.0	0.0		

Station: Mulet Key
Observed data time period from: / 1/22/1991 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			83576	-0.004									
h			83576	-0.008									
H-h	15	cm 24h	83576	0.004	0.101	0.101	0.1	89.5	1.4	4.0	19.9	0.00	0.94
AHW-ahw	15	cm 24h	531	0.005	0.103	0.103	0.6	90.0	1.3	0.0	14.0		
ALW-alw	15	cm 24h	531	0.013	0.101	0.100	0.0	89.5	1.5	0.0	10.0		
THW-thw	0.50	h 25h	531	0.089	0.753	0.748	6.0	53.1	9.2	0.0	15.0		
TLW-tlw	0.50	h 25h	531	0.190	0.712	0.687	4.1	56.7	9.0	0.0	24.0		

Station: Port Manatee
Observed data time period from: /12/26/1990 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			84727	0.008									
h			84727	-0.010									
H-h	15	cm 24h	84727	0.018	0.104	0.102	0.3	88.8	1.5	4.2	20.6	0.00	0.95
AHW-ahw	15	cm 24h	524	0.021	0.107	0.105	0.4	88.4	1.5	0.0	14.0		
ALW-alw	15	cm 24h	525	0.025	0.103	0.100	0.2	89.3	1.5	0.0	0.0		
THW-thw	0.50	h 25h	524	-0.031	0.638	0.637	5.7	58.2	3.6	0.0	14.0		
TLW-tlw	0.50	h 25h	525	0.169	0.630	0.608	3.0	58.5	6.3	0.0	0.0		

Station: Tierra Verde
Observed data time period from: / 6/ 8/1990 to /10/20/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			34492	0.016									
h			34492	0.000									
H-h	15	cm 24h	34492	0.016	0.074	0.072	0.0	95.1	0.2	0.0	5.4	0.00	0.97
AHW-ahw	15	cm 24h	224	-0.005	0.066	0.065	0.0	97.3	0.4	0.0	0.0		
ALW-alw	15	cm 24h	223	0.038	0.075	0.065	0.0	95.1	0.0	0.0	0.0		
THW-thw	0.50	h 25h	224	0.180	0.657	0.634	2.7	53.6	5.8	0.0	0.0		
TLW-tlw	0.50	h 25h	223	0.491	0.729	0.540	0.4	42.6	13.0	0.0	10.0		

Station: St. Pete
Observed data time period from: / 1/ 3/1991 to / 6/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			86692	0.015									
h			86692	-0.013									
H-h	15	cm 24h	86692	0.027	0.109	0.106	0.3	87.2	1.8	7.9	21.9	0.00	0.94
AHW-ahw	15	cm 24h	550	0.025	0.113	0.110	0.4	86.0	2.2	0.0	14.0		
ALW-alw	15	cm 24h	551	0.041	0.108	0.099	0.2	87.5	1.3	0.0	0.0		
THW-thw	0.50	h 25h	550	-0.110	0.683	0.675	7.8	58.5	2.7	24.0	0.0		
TLW-tlw	0.50	h 25h	551	0.077	0.583	0.579	3.8	61.0	3.3	0.0	25.0		

Station: Apollo Beach
Observed data time period from: /11/30/1990 to / 2/15/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			77875	0.015									
h			77875	-0.012									
H-h	15	cm 24h	77875	0.027	0.110	0.107	0.3	86.5	1.7	8.0	15.0	0.00	0.95
AHW-ahw	15	cm 24h	529	0.025	0.113	0.110	0.6	85.3	2.1	0.0	0.0		
ALW-alw	15	cm 24h	529	0.037	0.102	0.095	0.2	88.1	1.3	0.0	0.0		
THW-thw	0.50	h 25h	529	0.066	0.626	0.624	4.7	60.1	5.7	24.0	14.0		
TLW-tlw	0.50	h 25h	529	0.252	0.619	0.566	2.3	56.7	5.1	0.0	25.0		

Station: Gandy Bridge
Observed data time period from: / 2/10/1991 to / 6/ 4/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			41402	0.004									
h			41402	0.000									
H-h	15	cm 24h	41402	0.003	0.116	0.116	1.0	83.1	1.2	10.3	19.8	0.00	0.95
AHW-ahw	15	cm 24h	286	-0.002	0.120	0.120	1.7	81.1	1.4	0.0	14.0		
ALW-alw	15	cm 24h	286	0.020	0.105	0.103	0.3	85.3	0.7	0.0	0.0		
THW-thw	0.50	h 25h	286	0.138	0.651	0.637	3.1	59.1	7.7	0.0	14.0		
TLW-tlw	0.50	h 25h	286	0.222	0.603	0.562	2.1	56.6	4.2	0.0	0.0		

Station: Davis Island
Observed data time period from: /12/ 3/1990 to / 6/ 5/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			86015	0.016									
h			86015	-0.012									
H-h	15	cm 24h	86015	0.028	0.114	0.111	0.4	85.4	1.8	7.8	21.1	0.00	0.95
AHW-ahw	15	cm 24h	594	0.029	0.115	0.111	0.5	86.9	2.0	0.0	15.0		
ALW-alw	15	cm 24h	595	0.035	0.103	0.097	0.3	88.6	1.3	0.0	15.0		
THW-thw	0.50	h 25h	594	-0.077	0.760	0.756	9.6	51.2	5.4	26.0	14.0		
TLW-tlw	0.50	h 25h	595	0.082	0.724	0.720	6.7	52.3	6.7	38.0	25.0		

Station: Mckay Bay
Observed data time period from: / 1/22/1991 to / 2/25/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			37110	0.004									
h			37110	0.000									
H-h	15	cm 24h	37110	0.003	0.115	0.115	1.0	84.4	1.4	6.9	19.7	0.00	0.95
AHW-ahw	15	cm 24h	250	0.001	0.117	0.117	2.0	84.8	1.6	0.0	15.0		
ALW-alw	15	cm 24h	247	0.010	0.099	0.098	0.0	89.5	0.8	0.0	0.0		
THW-thw	0.50	h 25h	250	0.096	0.671	0.665	6.0	57.2	5.2	0.0	15.0		
TLW-tlw	0.50	h 25h	247	0.303	0.729	0.664	2.8	50.6	8.9	0.0	0.0		

Station: Bay Aristocrat
Observed data time period from: /10/ 3/1990 to / 1/29/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			78281	0.031									
h			78281	-0.011									
H-h	15	cm 24h	78281	0.042	0.120	0.113	0.4	84.2	2.2	6.3	18.0	0.00	0.95
AHW-ahw	15	cm 24h	572	0.031	0.113	0.109	0.3	86.0	2.1	0.0	13.0		
ALW-alw	15	cm 24h	570	0.064	0.115	0.096	0.2	84.7	1.6	0.0	14.0		
THW-thw	0.50	h 25h	572	0.227	0.723	0.687	3.5	51.6	9.4	0.0	16.0		
TLW-tlw	0.50	h 25h	570	0.289	0.632	0.563	2.3	57.0	6.5	12.0	0.0		

Station: Safety Harbor
Observed data time period from: / 2/28/1991 to / 6/ 4/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
H			40483	0.008									
h			40483	0.000									
H-h	15	cm 24h	40483	0.007	0.120	0.120	1.2	82.6	1.5	12.4	20.8	0.00	0.95
AHW-ahw	15	cm 24h	289	0.007	0.121	0.121	1.4	81.7	1.4	0.0	14.0		
ALW-alw	15	cm 24h	290	0.020	0.106	0.104	1.0	87.6	0.7	0.0	0.0		
THW-thw	0.50	h 25h	289	0.185	0.657	0.631	2.8	55.4	7.6	0.0	14.0		
TLW-tlw	0.50	h 25h	290	0.350	0.673	0.576	1.0	55.5	8.6	0.0	24.0		

APPENDIX E. SKILL ASSESSMENT SCORE TABLES FOR HINDCAST CURRENT SPEED

Station: C-33 t3301s--GandyBrWst
Observed data time period from: / 1/ 5/1991 to / 3/ 5/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			14161	0.293									
u			14161	0.208									
U-u	26 cm/s	24h	14161	0.085	0.160	0.136	0.0	91.5	0.0	0.0	0.0		0.62
AFC-afc	26 cm/s	24h	76	0.140	0.152	0.059	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	102	0.087	0.112	0.070	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	76	1.043	1.245	0.683	0.0	19.7	50.0	0.0	49.3		
TEC-tec	0.50h	25h	102	0.911	1.054	0.533	0.0	14.7	35.3	0.0	38.2		
TSF-tsf	0.25h	25h	53	1.528	1.696	0.743	0.0	11.3	79.2	0.0	86.9		
TEF-tef	0.25h	25h	61	0.070	0.769	0.772	9.8	52.5	8.2	0.0	49.4		
TSE-tse	0.25h	25h	73	1.487	2.065	1.443	9.6	1.4	84.9	0.0	140.3		
TEE-tee	0.25h	25h	94	0.597	0.859	0.621	2.1	31.9	24.5	0.0	24.9		

Station: C-34 t3401s--FranklndBr
Observed data time period from: / 1/ 5/1991 to / 3/ 5/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			14161	0.161									
u			14161	0.122									
U-u	26 cm/s	24h	14161	0.039	0.078	0.068	0.0	100.0	0.0	0.0	0.0		0.75
AFC-afc	26 cm/s	24h	79	-0.008	0.067	0.067	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	85	0.093	0.107	0.054	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	79	-0.106	0.811	0.809	13.9	50.6	6.3	48.2	0.0		
TEC-tec	0.50h	25h	85	-0.046	0.601	0.603	5.9	55.3	3.5	0.0	0.0		
TSF-tsf	0.25h	25h	14	-0.729	0.799	0.340	7.1	0.0	0.0	0.0	0.0		
TEF-tef	0.25h	25h	23	0.575	0.616	0.225	0.0	26.1	0.0	0.0	0.0		
TSE-tse	0.25h	25h	22	-0.805	0.887	0.382	27.3	9.1	0.0	0.0	0.0		
TEE-tee	0.25h	25h	22	0.558	0.602	0.231	0.0	31.8	0.0	0.0	0.0		

Station: C-35 t3501s--CourtneyBr
Observed data time period from: / 1/ 5/1991 to / 2/17/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			10321	0.231									
u			10321	0.219									
U-u	26 cm/s	24h	10321	0.012	0.131	0.131	0.0	95.1	0.0	0.0	0.0		0.54
AFC-afc	26 cm/s	24h	35	0.062	0.101	0.080	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	6	-0.121	0.130	0.052	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	35	-0.117	0.843	0.847	17.1	37.1	11.4	24.4	0.0		
TEC-tec	0.50h	25h	6	-0.700	0.894	0.610	33.3	33.3	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	15	0.731	1.605	1.479	6.7	40.0	46.7	0.0	0.0		
TEF-tef	0.25h	25h	33	0.050	0.732	0.741	12.1	54.5	6.1	0.0	0.0		
TSE-tse	0.25h	25h	2	-0.049	2.196	3.105	50.0	0.0	50.0	0.0	0.0		

Station: C-36 Gadsden Point
Observed data time period from: / 1/ 5/1991 to / 3/ 7/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			14806	0.047									
u			14806	0.091									
U-u	26 cm/s	24h	14806	-0.043	0.068	0.053	0.0	99.9	0.0	0.0	0.0		0.56
AFC-afc	26 cm/s	24h	62	-0.139	0.146	0.044	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	11	-0.110	0.117	0.041	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	62	0.197	0.898	0.883	8.1	40.3	12.9	0.0	24.2		
TEC-tec	0.50h	25h	11	0.545	1.413	1.367	9.1	18.2	45.5	0.0	0.0		

Station: C-40 t4001s--Xmas isl
Observed data time period from: / 3/12/1991 to / 5/17/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			16324	0.274									
u			16324	0.211									
U-u	26 cm/s	24h	16324	0.062	0.156	0.143	0.0	91.3	0.0	0.0	0.0		0.56
AFC-afc	26 cm/s	24h	42	0.077	0.112	0.083	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	87	0.053	0.107	0.094	0.0	98.9	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	42	0.681	1.069	0.835	2.4	19.0	31.0	0.0	0.0		
TEC-tec	0.50h	25h	87	1.167	1.331	0.644	0.0	14.9	60.9	0.0	62.3		
TSF-tsf	0.25h	25h	32	0.717	1.598	1.452	18.8	6.3	62.5	0.0	0.0		
TEF-tef	0.25h	25h	33	0.105	1.014	1.024	15.2	33.3	9.1	0.0	0.0		
TSE-tse	0.25h	25h	50	1.286	1.772	1.232	8.0	2.0	74.0	0.0	49.5		
TEE-tee	0.25h	25h	66	0.905	1.225	0.832	1.5	33.3	51.5	0.0	50.2		

Station: C-42 t4201s--Venebian I
Observed data time period from: / 3/13/1991 to / 5/15/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			15633	0.077									
u			15633	0.092									
U-u	26 cm/s	24h	15633	-0.015	0.046	0.044	0.0	99.9	0.0	0.0	0.0		0.74
AFC-afc	26 cm/s	24h	61	-0.045	0.055	0.032	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	66	-0.052	0.070	0.047	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	61	-0.156	0.646	0.632	9.8	59.0	1.6	0.0	0.0		
TEC-tec	0.50h	25h	66	-0.262	1.046	1.020	22.7	40.9	6.1	49.3	0.0		

Station: C-43 t4301s--Old TB Str
Observed data time period from: / 4/18/1991 to / 5/15/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			14944	0.113									
u			14944	0.186									
U-u	26 cm/s	24h	14944	-0.073	0.110	0.082	0.0	97.0	0.0	0.0	0.0		0.65
AFC-afc	26 cm/s	24h	105	-0.165	0.183	0.081	0.0	86.7	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	57	-0.144	0.160	0.070	0.0	94.7	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	105	0.122	0.627	0.618	4.8	58.1	3.8	0.0	0.0		
TEC-tec	0.50h	25h	57	-0.223	0.900	0.880	10.5	31.6	10.5	0.0	0.0		

Station: C-44 Intersec Y-cut
Observed data time period from: / 3/12/1991 to / 5/17/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			15842	0.078									
u			15842	0.107									
U-u	26 cm/s	24h	15842	-0.029	0.058	0.051	0.0	100.0	0.0	0.0	0.0		0.48
AFC-afc	26 cm/s	24h	36	-0.060	0.072	0.040	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	18	-0.073	0.077	0.024	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	36	-0.556	1.413	1.318	30.6	19.4	13.9	0.0	0.0		
TEC-tec	0.50h	25h	18	-0.017	1.219	1.254	22.2	33.3	16.7	0.0	0.0		

Station: C-50 t5001s--Point Pine
Observed data time period from: / 5/31/1991 to / 6/30/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			7202	0.168									
u			7202	0.189									
U-u	26 cm/s	24h	7202	-0.020	0.076	0.073	0.0	99.8	0.0	0.0	0.0		0.82
AFC-afc	26 cm/s	24h	47	-0.049	0.092	0.079	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	31	-0.005	0.057	0.058	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	47	0.106	0.609	0.607	4.3	57.4	2.1	0.0	0.0		
TEC-tec	0.50h	25h	31	-0.539	0.885	0.714	25.8	35.5	3.2	0.0	0.0		
TSF-tsf	0.25h	25h	40	-0.853	1.358	1.070	37.5	22.5	2.5	48.9	0.0		
TEF-tef	0.25h	25h	31	0.309	1.075	1.046	29.0	12.9	19.4	0.0	49.3		
TSE-tse	0.25h	25h	7	-0.541	1.280	1.253	28.6	14.3	0.0	0.0	0.0		
TEE-tee	0.25h	25h	14	0.008	0.516	0.535	0.0	64.3	0.0	0.0	0.0		

Station: C-51 t5102s--Outer Mana
Observed data time period from: / 7/ 3/1991 to / 7/24/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			5457	0.179									
u			5457	0.241									
U-u	26 cm/s	24h	5457	-0.063	0.112	0.093	0.0	96.4	0.0	0.0	0.0		0.75
AFC-afc	26 cm/s	24h	34	-0.098	0.103	0.033	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	19	-0.059	0.099	0.083	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	34	-0.088	0.992	1.003	14.7	47.1	14.7	0.0	0.0		
TEC-tec	0.50h	25h	19	-0.311	0.529	0.440	5.3	52.6	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	21	-0.479	0.825	0.688	19.0	42.9	4.8	24.2	0.0		
TEF-tef	0.25h	25h	16	1.042	1.144	0.488	0.0	12.5	43.8	0.0	13.3		
TSE-tse	0.25h	25h	6	-0.848	0.873	0.229	16.7	0.0	0.0	0.0	0.0		
TEE-tee	0.25h	25h	12	0.259	1.288	1.318	8.3	66.7	25.0	0.0	0.0		

Station: C-52 Manatee Channel
Observed data time period from: / 7/ 2/1991 to / 8/15/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			5689	0.096									
u			5689	0.108									
U-u	26	cm/s 24h	5689	-0.011	0.051	0.050	0.0	99.8	0.0	0.0	0.0		0.77
AFC-afc	26	cm/s 24h	12	-0.068	0.080	0.044	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26	cm/s 24h	20	-0.096	0.104	0.042	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	12	0.550	1.407	1.353	8.3	33.3	33.3	0.0	0.0		
TEC-tec	0.50h	25h	20	1.075	1.476	1.037	5.0	25.0	45.0	0.0	49.1		

Station: C-54 t5401s--Waterway L
Observed data time period from: / 5/28/1991 to / 6/24/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			6482	0.148									
u			6482	0.197									
U-u	26	cm/s 24h	6482	-0.049	0.094	0.081	0.0	99.9	0.0	0.0	0.0		0.70
AFC-afc	26	cm/s 24h	45	-0.082	0.121	0.091	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26	cm/s 24h	19	-0.036	0.062	0.051	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	45	-0.033	1.005	1.016	15.6	53.3	15.6	49.3	11.3		
TEC-tec	0.50h	25h	19	-0.211	0.611	0.590	10.5	42.1	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	21	-0.294	0.627	0.567	9.5	52.4	4.8	0.0	0.0		
TEF-tef	0.25h	25h	15	0.548	0.591	0.228	0.0	33.3	0.0	0.0	0.0		
TSE-tse	0.25h	25h	5	-0.212	0.477	0.477	0.0	60.0	0.0	0.0	0.0		
TEE-tee	0.25h	25h	14	0.363	0.482	0.330	0.0	57.1	0.0	0.0	0.0		

Station: C-55 Manatee Channel
Observed data time period from: / 7/14/1991 to / 8/15/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			2880	0.193									
u			2880	0.281									
U-u	26	cm/s 24h	2880	-0.087	0.126	0.091	0.0	96.6	0.0	0.0	0.0		0.77
AFC-afc	26	cm/s 24h	21	-0.204	0.215	0.068	0.0	71.4	0.0	0.0	0.0		
AEC-aec	26	cm/s 24h	10	-0.208	0.219	0.075	0.0	80.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	21	0.552	1.190	1.081	9.5	23.8	38.1	0.0	33.8		
TEC-tec	0.50h	25h	10	-0.040	0.731	0.769	10.0	40.0	20.0	0.0	0.0		
TSF-tsf	0.25h	25h	13	-0.772	1.057	0.752	30.8	30.8	0.0	0.0	0.0		
TEF-tef	0.25h	25h	15	0.930	1.167	0.730	0.0	26.7	40.0	0.0	63.6		
TSE-tse	0.25h	25h	5	-0.786	1.061	0.797	40.0	60.0	0.0	0.0	0.0		
TEE-tee	0.25h	25h	6	1.292	1.325	0.326	0.0	0.0	83.3	0.0	0.0		

Station: C-02 Inner Egmont (REF)
Observed data time period from: / 1/20/1991 to / 3/ 4/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			13806	0.381									
u			13806	0.449									
U-u	26 cm/s	24h	13806	-0.068	0.147	0.130	0.3	93.1	0.0	1.8	0.0		0.90
AFC-afc	26 cm/s	24h	96	-0.160	0.196	0.113	0.0	80.2	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	66	-0.183	0.197	0.072	0.0	84.8	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	96	0.117	0.753	0.748	4.2	52.1	8.3	0.0	10.4		
TEC-tec	0.50h	25h	66	-0.039	0.509	0.511	4.5	60.6	1.5	0.0	0.0		
TSF-tsf	0.25h	25h	85	-0.237	0.654	0.613	9.4	63.5	5.9	0.0	0.0		
TEF-tef	0.25h	25h	85	0.197	0.708	0.684	3.5	60.0	8.2	0.0	0.0		
TSE-tse	0.25h	25h	61	-0.145	0.656	0.645	6.6	63.9	3.3	0.0	0.0		
TEE-tee	0.25h	25h	62	0.217	0.530	0.487	0.0	71.0	6.5	0.0	0.0		

Station: C-04 Port Manatee Entranc
Observed data time period from: / 1/ 5/1991 to / 3/ 8/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			14881	0.286									
u			14881	0.296									
U-u	26 cm/s	24h	14881	-0.010	0.087	0.086	0.0	99.0	0.0	0.0	0.0		0.92
AFC-afc	26 cm/s	24h	109	-0.027	0.079	0.074	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	73	-0.057	0.075	0.050	0.0	98.6	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	109	-0.225	0.720	0.688	11.0	53.2	0.9	13.3	0.0		
TEC-tec	0.50h	25h	73	0.136	0.599	0.587	1.4	61.6	6.8	0.0	0.0		
TSF-tsf	0.25h	25h	104	0.061	0.656	0.656	4.8	58.7	4.8	0.0	0.0		
TEF-tef	0.25h	25h	98	0.044	0.753	0.756	4.1	54.1	8.2	0.0	0.0		
TSE-tse	0.25h	25h	63	-0.020	0.699	0.704	4.8	58.7	7.9	0.0	0.0		
TEE-tee	0.25h	25h	70	0.168	0.442	0.411	0.0	85.7	4.3	0.0	0.0		

Station: C-05 Port Tampa
Observed data time period from: / 8/15/1990 to /10/20/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			15842	0.369									
u			15842	0.394									
U-u	26 cm/s	24h	15842	-0.025	0.111	0.108	0.0	97.3	0.0	0.0	0.2		0.92
AFC-afc	26 cm/s	24h	113	-0.076	0.094	0.055	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	96	-0.093	0.104	0.046	0.0	99.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	113	0.196	0.651	0.624	5.3	64.6	8.8	0.0	0.0		
TEC-tec	0.50h	25h	96	-0.129	0.605	0.594	9.4	57.3	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	106	0.294	0.595	0.519	1.9	68.9	6.6	0.0	6.7		
TEF-tef	0.25h	25h	104	0.307	0.710	0.644	3.8	59.6	4.8	0.0	24.8		
TSE-tse	0.25h	25h	87	0.060	0.676	0.677	6.9	69.0	2.3	0.0	0.0		
TEE-tee	0.25h	25h	94	-0.062	0.570	0.570	6.4	73.4	0.0	0.0	0.0		

Station: C-13 Sun Bridge
Observed data time period from: / 7/11/1990 to / 8/13/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			7904	0.271									
u			7904	0.217									
U-u	26 cm/s	24h	7904	0.054	0.109	0.095	0.0	98.5	0.0	0.0	0.0		0.84
AFC-afc	26 cm/s	24h	60	0.024	0.081	0.078	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	41	0.146	0.169	0.086	0.0	97.6	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	60	-0.210	0.608	0.576	6.7	63.3	3.3	11.3	0.0		
TEC-tec	0.50h	25h	41	-0.212	0.463	0.417	2.4	70.7	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	38	0.571	0.794	0.559	0.0	36.8	21.1	0.0	72.6		
TEF-tef	0.25h	25h	56	-0.426	0.805	0.689	23.2	44.6	0.0	35.5	0.0		
TSE-tse	0.25h	25h	36	-0.014	0.701	0.711	5.6	47.2	5.6	0.0	0.0		
TEE-tee	0.25h	25h	28	-0.725	0.974	0.663	39.3	25.0	0.0	98.8	0.0		

Station: C-14 Beacon Key
Observed data time period from: / 6/ 8/1990 to / 8/10/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			15122	0.185									
u			15122	0.257									
U-u	26 cm/s	24h	15122	-0.071	0.143	0.125	0.3	90.7	0.0	2.2	0.0		0.78
AFC-afc	26 cm/s	24h	86	-0.086	0.148	0.122	0.0	83.7	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	69	-0.173	0.247	0.177	4.3	71.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	86	0.042	0.713	0.716	9.3	54.7	10.5	24.3	13.7		
TEC-tec	0.50h	25h	69	0.067	0.705	0.707	4.3	53.6	10.1	0.0	0.0		
TSF-tsf	0.25h	25h	62	0.352	0.632	0.529	0.0	69.4	9.7	0.0	0.0		
TEF-tef	0.25h	25h	59	0.144	0.507	0.491	1.7	69.5	3.4	0.0	24.8		
TSE-tse	0.25h	25h	41	0.197	0.709	0.690	4.9	51.2	4.9	0.0	0.0		
TEE-tee	0.25h	25h	45	0.117	0.579	0.573	4.4	75.6	6.7	0.0	0.0		

Station: C-15 Mangrove Pt., Cut E
Observed data time period from: / 6/ 6/1990 to / 8/ 9/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			15362	0.207									
u			15362	0.259									
U-u	26 cm/s	24h	15362	-0.053	0.138	0.128	0.1	92.1	0.0	1.8	0.0		0.77
AFC-afc	26 cm/s	24h	94	-0.116	0.183	0.142	0.0	72.3	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	59	-0.064	0.185	0.175	1.7	79.7	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	94	-0.122	0.680	0.672	7.4	54.3	7.4	0.0	0.0		
TEC-tec	0.50h	25h	59	-0.227	0.799	0.772	15.3	55.9	6.8	0.0	0.0		
TSF-tsf	0.25h	25h	58	0.664	0.809	0.466	0.0	37.9	24.1	0.0	6.6		
TEF-tef	0.25h	25h	57	0.147	0.506	0.489	1.8	70.2	3.5	0.0	0.0		
TSE-tse	0.25h	25h	35	0.022	0.756	0.766	8.6	62.9	5.7	24.5	0.0		
TEE-tee	0.25h	25h	39	-0.200	0.739	0.721	12.8	66.7	2.6	73.3	0.0		

Station: C-20 Southwest Channel
Observed data time period from: / 8/16/1990 to /10/18/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			15122	0.325									
u			15122	0.326									
U-u	26 cm/s	24h	15122	-0.002	0.093	0.093	0.0	98.7	0.0	0.0	0.0		0.94
AFC-afc	26 cm/s	24h	91	-0.022	0.071	0.068	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	84	-0.060	0.096	0.075	0.0	98.8	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	91	0.146	0.807	0.798	7.7	52.7	7.7	0.0	24.9		
TEC-tec	0.50h	25h	84	-0.209	0.522	0.481	2.4	57.1	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	82	0.102	0.465	0.457	1.2	76.8	4.9	0.0	0.0		
TEF-tef	0.25h	25h	79	0.071	0.620	0.620	5.1	63.3	6.3	0.0	0.0		
TSE-tse	0.25h	25h	71	0.038	0.639	0.642	4.2	77.5	2.8	0.0	0.0		
TEE-tee	0.25h	25h	80	-0.095	0.484	0.477	3.8	71.3	0.0	0.0	0.0		

Station: C-21 PassageKey
Observed data time period from: / 8/16/1990 to / 9/ 9/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			5762	0.238									
u			5762	0.312									
U-u	26 cm/s	24h	5762	-0.074	0.123	0.098	0.0	96.4	0.0	0.0	0.0		0.82
AFC-afc	26 cm/s	24h	31	-0.138	0.146	0.048	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	32	-0.156	0.193	0.114	0.0	84.4	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	31	0.019	0.650	0.660	6.5	51.6	3.2	0.0	0.0		
TEC-tec	0.50h	25h	32	-0.509	0.659	0.425	3.1	34.4	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	28	-0.842	0.935	0.416	35.7	25.0	0.0	0.0	0.0		
TEF-tef	0.25h	25h	23	0.227	0.595	0.562	0.0	78.3	8.7	0.0	0.0		
TSE-tse	0.25h	25h	24	-0.722	0.932	0.602	29.2	33.3	0.0	71.8	0.0		
TEE-tee	0.25h	25h	24	-0.124	0.354	0.339	0.0	91.7	0.0	0.0	0.0		

Station: C-22 t2201s--Anna Maria
Observed data time period from: / 8/16/1990 to / 9/18/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			7922	0.070									
u			7922	0.115									
U-u	26 cm/s	24h	7922	-0.045	0.070	0.053	0.0	100.0	0.0	0.0	0.0		0.61
AFC-afc	26 cm/s	24h	20	-0.067	0.076	0.037	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	15	-0.094	0.102	0.041	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	20	0.090	1.100	1.124	15.0	30.0	25.0	0.0	0.0		
TEC-tec	0.50h	25h	15	-0.913	1.562	1.311	40.0	6.7	6.7	24.9	0.0		

Station: C-23 Mullet Key
Observed data time period from: / 8/15/1990 to /10/18/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			15362	0.317									
u			15362	0.314									
U-u	26 cm/s	24h	15362	0.004	0.091	0.091	0.0	99.1	0.1	0.0	0.9		0.94
AFC-afc	26 cm/s	24h	116	-0.050	0.090	0.075	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	85	-0.021	0.063	0.060	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	116	0.056	0.774	0.776	8.6	58.6	10.3	17.3	49.0		
TEC-tec	0.50h	25h	85	-0.187	0.520	0.488	5.9	67.1	0.0	0.0	0.0		
TSF-tsf	0.25h	25h	107	0.125	0.597	0.586	2.8	68.2	4.7	0.0	0.0		
TEF-tef	0.25h	25h	106	0.034	0.573	0.575	3.8	63.2	1.9	0.0	0.0		
TSE-tse	0.25h	25h	79	-0.089	0.709	0.708	8.9	78.5	2.5	23.9	0.0		
TEE-tee	0.25h	25h	83	-0.139	0.545	0.530	6.0	66.3	0.0	0.0	0.0		

Station: C-27 Penlopen Point
Observed data time period from: /10/23/1990 to /12/26/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			15361	0.065									
u			15361	0.076									
U-u	26 cm/s	24h	15361	-0.011	0.066	0.065	0.0	100.0	0.0	0.0	0.0		0.38
AFC-afc	26 cm/s	24h	31	-0.058	0.080	0.055	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	4	-0.025	0.058	0.061	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	31	-0.035	1.445	1.469	25.8	25.8	25.8	0.0	0.0		
TEC-tec	0.50h	25h	4	-1.075	1.343	0.929	25.0	25.0	0.0	0.0	0.0		

Station: C-30 Cut J Channel
Observed data time period from: / 3/14/1991 to / 5/20/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
U			16082	0.266									
u			16082	0.303									
U-u	26 cm/s	24h	16082	-0.037	0.086	0.078	0.0	99.5	0.0	0.0	0.0		0.93
AFC-afc	26 cm/s	24h	102	-0.109	0.126	0.063	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	92	-0.077	0.090	0.047	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	102	-0.233	0.535	0.484	4.9	60.8	0.0	0.0	0.0		
TEC-tec	0.50h	25h	92	0.009	0.812	0.816	9.8	50.0	12.0	24.7	24.9		
TSF-tsf	0.25h	25h	95	0.049	0.602	0.603	7.4	69.5	3.2	0.0	0.0		
TEF-tef	0.25h	25h	89	0.355	0.571	0.451	1.1	57.3	4.5	0.0	0.0		
TSE-tse	0.25h	25h	80	-0.481	0.886	0.749	17.5	41.3	3.8	12.6	0.0		
TEE-tee	0.25h	25h	87	0.070	0.562	0.561	1.1	81.6	2.3	0.0	0.0		

Station: C-32 t3201s--GandyBrEst
Observed data time period from: / 1/ 5/1991 to / 3/ 5/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE / CRITERION	X -	N -	IMAX -	SM -	RMSE -	SD -	NOF <1%	CF >90%	POF <1%	MDNO <N	MDPO <N	WOF <.5%	SKILL
SCENARIO: HINDCAST													
U			14161	0.229									
u			14161	0.171									
U-u	26 cm/s	24h	14161	0.058	0.089	0.068	0.0	99.9	0.0	0.0	0.0		0.80
AFC-afc	26 cm/s	24h	67	0.055	0.070	0.044	0.0	100.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	103	0.084	0.104	0.061	0.0	100.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	67	-0.004	0.703	0.708	4.5	61.2	9.0	0.0	0.0		
TEC-tec	0.50h	25h	103	0.084	0.564	0.560	1.9	55.3	2.9	0.0	0.0		
TSF-tsf	0.25h	25h	46	1.114	1.451	0.940	0.0	17.4	50.0	0.0	48.3		
TEF-tef	0.25h	25h	48	-0.970	1.237	0.777	47.9	25.0	0.0	0.0	0.0		
TSE-tse	0.25h	25h	65	1.246	1.527	0.890	0.0	16.9	60.0	0.0	49.8		
TEE-tee	0.25h	25h	80	-0.504	0.807	0.634	17.5	36.3	0.0	6.9	0.0		

APPENDIX F. SKILL ASSESSMENT SCORE TABLES FOR HINDCAST TEMPERATURE

Station: 06 Gulf of Mexico
Observed data time period from: /10/27/1990 to / 1/ 2/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			31572	21.982									
t			31572	20.703									
T-t	3.0	c 24h	31572	1.279	1.556	0.885	0.0	90.4	0.0	0.0	0.0		0.75

Station: 01 Outer Egmont
Observed data time period from: /10/27/1990 to /12/28/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			43207	26.356									
t			43207	26.350									
T-t	3.0	c 24h	43207	0.006	1.507	1.507	0.0	98.4	0.0	0.0	0.0		0.96

Station:02 Inner Egmont
Observed data time period from: / 3/12/1991 to / 5/28/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			78572	25.020									
t			78572	24.615									
T-t	3.0	c 24h	78572	0.405	1.019	0.935	0.0	99.9	0.0	0.0	0.0		0.99

Station: S1 outer Egmont Channel
Observed data time period from: / 1/ 5/1991 to / 3/ 8/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			51966	25.354									
t			51966	24.937									
T-t	3.0	c 24h	51966	0.417	0.972	0.878	0.0	100.0	0.0	0.0	0.0		0.99

Station: 20 Southwest Channel
Observed data time period from: / 8/15/1990 to /10/19/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			15582	29.152									
t			15582	29.121									
T-t	3.0	c 24h	15582	0.030	0.451	0.450	0.0	100.0	0.0	0.0	0.0		0.97

Station: 21 PassageKey
Observed data time period from: / 8/15/1990 to /10/23/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			16514	29.007									
t			16514	28.530									
T-t	3.0	c 24h	16514	0.477	0.672	0.474	0.0	100.0	0.0	0.0	0.0		0.94

Station: 22 Anna Maria
Observed data time period from: / 8/19/1990 to / 9/25/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			8789	29.979									
t			8789	29.953									
T-t	3.0	c 24h	8789	0.026	0.799	0.799	0.0	100.0	0.0	0.0	0.0		0.54

Station: 23 Mullet Key
Observed data time period from: / 8/14/1990 to /10/19/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			15864	29.383									
t			15864	29.197									
T-t	3.0	c 24h	15864	0.186	0.500	0.464	0.0	100.0	0.0	0.0	0.0		0.96

Station: 54 Waterway L
Observed data time period from: / 5/27/1991 to / 7/ 7/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			9773	28.979									
t			9773	29.421									
T-t	3.0	c 24h	9773	-0.441	0.845	0.720	0.0	100.0	0.0	0.0	0.0		0.85

Station: 56 Egmont Chan 2
Observed data time period from: / 5/29/1991 to / 7/ 9/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			9806	28.831									
t			9806	29.487									
T-t	3.0	c 24h	9806	-0.656	0.973	0.718	0.0	100.0	0.0	0.0	0.0		0.81

Station: 26 ManateeRiv
Observed data time period from: / 1/ 5/1991 to / 3/ 6/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			14429	19.933									
t			14429	21.052									
T-t	3.0 c	24h	14429	-1.119	1.235	0.522	0.0	100.0	0.0	0.0	0.0		0.88

Station: 51 Outer Mana
Observed data time period from: / 5/30/1991 to / 7/ 1/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			13186	29.776									
t			13186	29.640									
T-t	3.0 c	24h	13186	0.136	0.625	0.610	0.0	100.0	0.0	0.0	0.0		0.89

Station: 04 Port Manatee Entranc
Observed data time period from: / 3/12/1991 to / 5/29/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			73484	25.790									
t			73484	25.307									
T-t	3.0 c	24h	73484	0.484	0.746	0.568	0.0	100.0	0.0	0.0	0.0		0.99

Station: 55 Manatee Channel
Observed data time period from: / 5/30/1991 to / 7/12/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			13168	29.804									
t			13168	29.599									
T-t	3.0 c	24h	13168	0.204	0.545	0.506	0.0	100.0	0.0	0.0	0.0		0.92

Station: 52 Manatee Channel
Observed data time period from: / 6/ 8/1991 to / 7/ 1/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			8216	29.359									
t			8216	29.120									
T-t	3.0 c	24h	8216	0.238	0.558	0.505	0.0	100.0	0.0	0.0	0.0		0.93

Station: 53 Inner Mana
Observed data time period from: / 5/30/1991 to / 7/ 7/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			13206	29.679									
t			13206	29.579									
T-t	3.0	c 24h	13206	0.100	0.642	0.634	0.0	100.0	0.0	0.0	0.0		0.89

Station: 24 PinellasBu
Observed data time period from: / 8/20/1990 to /10/24/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			15783	28.885									
t			15783	28.944									
T-t	3.0	c 24h	15783	-0.058	0.665	0.663	0.0	100.0	0.0	0.0	0.0		0.94

Station: 42 Venebian I
Observed data time period from: / 3/13/1991 to / 5/21/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			16513	24.897									
t			16513	24.596									
T-t	3.0	c 24h	16513	0.301	0.596	0.515	0.0	100.0	0.0	0.0	0.0		0.99

Station: 44 Intersec Y-cut
Observed data time period from: / 3/11/1991 to / 5/20/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			16758	24.806									
t			16758	24.471									
T-t	3.0	c 24h	16758	0.335	0.572	0.464	0.0	100.0	0.0	0.0	0.0		0.99

Station: 30 Cut J Channel
Observed data time period from: / 3/13/1991 to / 5/20/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			16288	25.182									
t			16288	24.950									
T-t	3.0	c 24h	16288	0.232	0.591	0.544	0.0	100.0	0.0	0.0	0.0		0.99

Station: 36 Gadsden Point
Observed data time period from: / 1/ 4/1991 to / 3/ 7/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			14814	20.133									
t			14814	19.335									
T-t	3.0	c 24h	14814	0.799	0.875	0.356	0.0	100.0	0.0	0.0	0.0	0.0	0.90

Station: 31 Cut C Channel
Observed data time period from: / 1/ 5/1991 to / 3/ 7/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			14776	20.123									
t			14776	19.310									
T-t	3.0	c 24h	14776	0.812	0.899	0.385	0.0	100.0	0.0	0.0	0.0	0.0	0.90

Station: 46 AlphiaRv
Observed data time period from: / 3/11/1991 to / 5/22/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			17214	24.967									
t			17214	24.847									
T-t	3.0	c 24h	17214	0.119	0.628	0.617	0.0	100.0	0.0	0.0	0.0	0.0	0.99

Station: 27 PinellasPt
Observed data time period from: /10/22/1990 to /12/27/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			15750	21.927									
t			15750	21.091									
T-t	3.0	c 24h	15750	0.836	0.973	0.498	0.0	100.0	0.0	0.0	0.0	0.0	0.95

Station: 40 Xmas Is
Observed data time period from: / 3/11/1991 to / 5/21/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			16950	25.232									
t			16950	24.928									
T-t	3.0	c 24h	16950	0.304	0.653	0.577	0.0	100.0	0.0	0.0	0.0	0.0	0.99

Station: 41 Pinic I, Cut K
Observed data time period from: / 3/11/1991 to / 5/21/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			16972	25.200									
t			16972	24.771									
T-t	3.0	c 24h	16972	0.429	0.697	0.549	0.0	100.0	0.0	0.0	0.0	0.0	0.99

Station: 43 Old TB Str
Observed data time period from: / 3/11/1991 to / 5/21/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			16939	25.321									
t			16939	25.046									
T-t	3.0	c 24h	16939	0.275	0.691	0.634	0.0	100.0	0.0	0.0	0.0	0.0	0.99

Station: 05 Port Tampa
Observed data time period from: / 3/11/1991 to / 5/23/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			79706	25.286									
t			79706	25.102									
T-t	3.0	c 24h	79706	0.184	1.034	1.017	0.0	99.5	0.0	0.0	0.0	0.0	0.99

Station: 33 GandyBrWst
Observed data time period from: / 1/ 4/1991 to / 3/ 6/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			14707	20.160									
t			14707	19.214									
T-t	3.0	c 24h	14707	0.947	1.008	0.345	0.0	100.0	0.0	0.0	0.0	0.0	0.90

Station: 32 GandyBrEst
Observed data time period from: / 1/ 3/1991 to / 3/ 6/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			14875	20.195									
t			14875	19.231									
T-t	3.0	c 24h	14875	0.964	1.026	0.353	0.0	100.0	0.0	0.0	0.0	0.0	0.90

Station: 34 FranklndBr
Observed data time period from: / 1/ 3/1991 to / 3/ 6/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			14910	20.219									
t			14910	19.194									
T-t	3.0	c 24h	14910	1.025	1.085	0.355	0.0	100.0	0.0	0.0	0.0		0.89

Station: 35 CourtneyBr
Observed data time period from: / 1/ 3/1991 to / 3/14/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
T			16710	20.174									
t			16710	19.220									
T-t	3.0	c 24h	16710	0.954	1.045	0.427	0.0	100.0	0.0	0.0	0.0		0.90

APPENDIX G. SKILL ASSESSMENT SCORE TABLES FOR HINDCAST SALINITY

Station: 02 Inner Egmont
Observed data time period from: / 3/12/1991 to / 5/28/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
S			52030	35.158									
s			52030	34.783									
S-s	3.5	24h	52030	0.375	0.688	0.577	0.0	100.0	0.0	0.0	0.0		0.52

Station: S1 outer Egmont Channel
Observed data time period from: / 1/ 5/1991 to / 3/ 8/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
S			51966	35.102									
s			51966	35.287									
S-s	3.5	24h	51966	-0.184	0.704	0.679	0.0	100.0	0.0	0.0	0.0		0.32

Station: 21 PassageKey
Observed data time period from: / 8/15/1990 to /10/23/1990
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
S			16469	35.134									
s			16469	35.447									
S-s	3.5	24h	16469	-0.313	0.657	0.578	0.0	100.0	0.0	0.0	0.0		0.76

Station: 52 Manatee Channel
Observed data time period from: / 5/28/1991 to / 7/ 1/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
S			8261	33.084									
s			8261	32.560									
S-s	3.5	24h	8261	0.524	0.702	0.468	0.0	100.0	0.0	0.0	0.0		0.76

Station: 53 Inner Mana
Observed data time period from: / 5/30/1991 to / 7/ 7/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
S			13195	31.950									
s			13195	31.722									
S-s	3.5	24h	13195	0.228	0.803	0.770	0.0	98.7	0.0	0.0	0.0		0.88

Station: 30 Cut J Channel
Observed data time period from: / 3/13/1991 to / 5/20/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
S			16278	30.278									
s			16278	28.955									
S-s	3.5	24h	16278	1.323	1.347	0.250	0.0	100.0	0.0	0.0	0.0		0.27

Station: 46 AlphiaRv
Observed data time period from: / 3/11/1991 to / 5/22/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
S			17214	28.585									
s			17214	28.937									
S-s	3.5	24h	17214	-0.352	0.597	0.483	0.0	100.0	0.0	0.0	0.0		0.76

Station: 34 FranklndBr
Observed data time period from: / 1/ 3/1991 to / 3/ 6/1991
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: HINDCAST													
S			14838	28.795									
s			14838	28.380									
S-s	3.5	24h	14838	0.415	0.507	0.290	0.0	100.0	0.0	0.0	0.0		0.41

APPENDIX H. COMPARISON OF TIDAL CONSTITUENT AMPLITUDES AND EPOCHS FOR CURRENTS

	M2		S2		N2		K1		O1		M4	
	amp	pha	amp	pha	amp	pha	amp	pha	amp	pha	amp	pha
Cortez												
Obs.	16.4	145.7	7.1	156.1	3.3	147.6	11.1	32.0	13.3	18.6	0.3	103.3
Model	15.5	144.1	5.8	157.3	3.1	141.2	14.6	25.7	13.7	17.4	0.3	136.9
Obs-Model	0.9	1.6	1.3	-1.2	0.2	6.4	-3.5	6.3	-0.4	1.2	0.0	-33.6
Anna Maria Outside												
Obs.	18.6	116.2	6.5	144.2	3.8	100.7	16.8	23.9	13.6	2.7	0.5	37.3
Model	17.9	117.9	7.0	129.5	3.8	114.7	15.1	9.4	14.0	2.1	0.2	23.5
Obs-Model	0.7	-1.7	-0.5	14.7	0.0	-14.0	1.7	14.5	-0.4	0.6	0.3	13.8
Desoto Point												
Obs.	16.7	148.7	4.8	180.7	3.6	135.1	16.1	41.2	14.1	21.2	0.4	126.5
Model	16.4	146.8	6.2	160.2	3.3	143.9	15.1	25.8	14.2	17.0	0.3	151.1
Obs-Model	0.3	1.9	-1.4	20.5	0.3	-8.8	1.0	15.4	-0.1	4.2	0.1	-24.6
Egmont Key												
Obs.	16.1	130.8	7.1	134.2	3.7	127.7	11.4	13.4	13.5	11.5	1.1	58.1
Model	16.2	132.9	6.2	145.3	3.3	129.8	15.0	19.7	14.0	10.9	0.5	71.9
Obs-Model	-0.1	-2.1	0.9	-11.1	0.4	-2.1	-3.6	-6.3	-0.5	0.6	0.6	-13.8
Mulet Key												
Obs.	15.5	137.1	5.8	151.4	3.0	131.8	15.6	26.1	13.9	13.5	0.6	67.8
Model	15.0	140.7	5.7	153.2	3.1	137.5	14.8	24.3	13.9	15.3	0.5	71.2
Obs-Model	0.5	-3.6	0.1	-1.8	-0.1	-5.7	0.8	1.8	0.0	-1.8	0.1	-3.4
Port Manatee												
Obs.	15.2	170.8	5.2	186.8	2.9	165.9	16.5	39.8	14.4	30.3	0.4	172.0
Model	15.0	172.5	5.3	186.1	2.9	168.0	15.2	37.7	14.4	28.0	0.3	192.4
Obs-Model	0.2	-1.7	-0.1	0.7	0.0	-2.1	1.3	2.1	0.0	2.3	0.1	-20.4
Tierra Verde												
Obs.	16.8	145.6	6.3	164.1	3.3	141.1	13.5	35.2	14.1	19.4	0.5	76.2
Model	14.2	157.3	5.3	169.0	2.9	153.4	14.9	33.1	14.0	23.3	0.5	122.7
Obs-Model	2.6	-11.7	1.0	-4.9	0.4	-12.3	-1.4	2.1	0.1	-3.9	0.0	-46.5
St. Petersburg												
Obs.	16.0	198.1	5.3	217.3	3.0	192.3	16.9	52.4	14.8	38.8	0.3	253.8
Model	15.1	199.3	5.2	214.9	2.8	194.2	15.7	49.8	14.8	38.8	0.3	266.3
Obs-Model	0.9	-1.2	0.1	2.4	0.2	-1.9	1.2	2.6	0.0	0.0	0.0	-12.5
Apollo Beach												
Obs.	19.6	197.5	5.3	224.9	3.7	185.6	18.6	56.4	15.7	38.4	0.8	275.0
Model	17.9	200.8	6.3	218.0	3.3	197.2	16.3	49.5	15.3	38.6	0.8	287.4
Obs-Model	1.7	-3.3	-1.0	6.9	0.4	-11.6	2.3	6.9	0.4	-0.2	0.0	-12.4
Gandy Bridge												
Obs.	18.2	228.8	7.3	243.9	3.3	230.3	18.0	60.4	15.3	48.9	0.4	343.7
Model	17.6	232.4	6.0	253.6	3.1	228.7	16.8	64.5	15.8	51.7	0.5	4.5
Obs-Model	0.6	-3.6	1.3	-9.7	0.2	1.6	1.2	-4.1	-0.5	-2.8	-0.1	20.8
Davis Island												
Obs.	18.1	207.9	6.9	225.1	3.3	201.5	18.6	53.0	15.3	46.1	1.0	287.3
Model	19.2	204.1	6.8	221.1	3.5	200.9	16.8	51.0	15.6	39.9	1.1	297.2
Obs-Model	-1.1	3.8	0.1	4.0	-0.2	0.6	1.8	2.0	-0.3	6.2	-0.1	-9.9
Mckay Bay Ent												
Obs.	18.0	201.4	7.2	225.9	3.6	183.1	18.3	45.3	15.2	45.3	0.9	283.9
Model	19.4	205.0	6.9	222.2	3.5	202.0	16.8	51.3	15.7	40.3	1.2	299.6
Obs-Model	-1.4	-3.6	0.3	3.7	0.1	-18.9	1.5	-6.0	-0.5	5.0	-0.3	-15.7
Bay Aristocrat Villa												
Obs.	21.2	236.0	5.2	249.6	4.3	236.7	18.5	58.7	15.2	58.8	0.9	355.3
Model	19.7	241.5	6.6	264.4	3.3	238.4	17.6	68.9	16.3	55.4	0.9	21.9
Obs-Model	1.5	-5.5	-1.4	-14.8	1.0	-1.7	0.9	-10.2	-1.1	3.4	0.0	26.6

Clearwater Beach												
Obs.	24.3	122.9	9.4	140.4	4.8	116.9	15.4	11.3	14.6	4.9	1.0	76.1
Model	24.0	123.3	9.4	140.7	4.5	120.6	15.9	12.5	15.1	3.5	0.9	74.0
Obs-Model	0.3	-0.4	0.0	-0.3	0.3	-3.7	-0.5	-1.2	-0.5	1.4	0.1	2.1
Safety Harbor												
Obs.	21.4	242.9	8.0	250.6	3.7	252.4	18.5	63.6	15.6	54.3	0.9	15.0
Model	20.1	245.9	6.8	269.4	3.4	243.4	17.8	71.0	16.5	57.5	1.0	31.0
Obs-Model	1.3	-3.0	1.2	-18.8	0.3	9.0	0.7	-7.4	-0.9	-3.2	-0.1	-16.0
Venice Pier												
Obs.	17.0	117.6	6.6	129.0	3.8	111.2	13.3	15.8	13.4	3.9	0.2	53.9
Model	16.9	117.5	6.6	125.7	3.7	111.3	14.6	8.5	13.6	3.2	0.2	57.9
Obs-Model	0.1	0.1	0.0	3.3	0.1	-0.1	-1.3	7.3	-0.2	0.7	0.0	-4.0

APPENDIX I. SKILL ASSESSMENT SCORE TABLES FOR SEME-OPEATIONAL WATER LEVELS

NOWCASTS

Station: Mckay Bay Ent
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.00 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
SCENARIO: SEMI-OPERATIONAL NOWCAST													
H			23102	0.077									
h			23102	0.030									
H-h	15	cm 24h	23102	0.047	0.075	0.058	0.0	97.0	0.1	0.2	1.0	0.06	0.98
AHW-ahw	15	cm 24h	167	0.047	0.073	0.056	0.0	98.8	0.6	0.0	0.0		
ALW-alw	15	cm 24h	166	0.051	0.070	0.048	0.0	97.0	0.0	0.0	0.0		
THW-thw	0.50	h 25h	167	0.108	0.569	0.560	1.8	62.3	4.2	12.4	0.0		
TLW-tlw	0.50	h 25h	166	0.158	0.726	0.710	7.8	53.6	7.2	14.4	0.0		

Station: Port Manatee
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.00 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
H			23102	0.048									
h			23102	0.057									
H-h	15	cm 24h	23102	-0.009	0.047	0.046	0.0	99.8	0.0	0.0	0.0	0.00	0.99
AHW-ahw	15	cm 24h	147	-0.015	0.047	0.045	0.0	100.0	0.0	0.0	0.0		
ALW-alw	15	cm 24h	145	0.000	0.047	0.047	0.0	99.3	0.0	0.0	0.0		
THW-thw	0.50	h 25h	147	-0.090	0.579	0.574	4.1	66.7	4.8	0.0	0.0		
TLW-tlw	0.50	h 25h	145	-0.048	0.491	0.490	3.4	67.6	0.0	0.0	0.0		

Station: St. Petersburg
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.00 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
H			23102	0.054									
h			23102	0.061									
H-h	15	cm 24h	23102	-0.008	0.050	0.050	0.0	99.5	0.0	0.0	0.0	0.00	0.99
AHW-ahw	15	cm 24h	146	-0.020	0.052	0.048	0.0	99.3	0.0	0.0	0.0		
ALW-alw	15	cm 24h	145	0.006	0.047	0.047	0.0	99.3	0.0	0.0	0.0		
THW-thw	0.50	h 25h	146	-0.090	0.500	0.494	2.1	69.2	1.4	0.0	0.0		
TLW-tlw	0.50	h 25h	145	0.063	0.443	0.440	2.1	78.6	1.4	0.0	0.0		

Station: Old Port Tampa
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.00 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
H			23102	0.056									
h			23102	0.058									
H-h	15	cm 24h	23102	-0.002	0.049	0.049	0.0	99.3	0.0	0.0	0.7	0.00	0.99
AHW-ahw	15	cm 24h	157	-0.009	0.050	0.049	0.0	99.4	0.0	0.0	0.0		
ALW-alw	15	cm 24h	156	0.012	0.045	0.044	0.0	99.4	0.0	0.0	0.0		
THW-thw	0.50	h 25h	157	0.055	0.427	0.425	0.6	77.1	0.6	0.0	0.0		
TLW-tlw	0.50	h 25h	156	0.038	0.369	0.368	0.6	78.8	0.6	0.0	0.0		

FORECASTS

Station: Mckay Bay Ent
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.00 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL FORECAST													
H00-h00	15	cm 24h	296	0.045	0.071	0.055	0.0	96.6	0.0	0.0	0.0	0.00	
H06-h06	15	cm 24h	296	0.019	0.060	0.057	0.0	98.0	0.0	0.0	0.0	0.00	
H12-h12	15	cm 24h	296	0.025	0.061	0.055	0.0	98.6	0.0	0.0	0.0	0.00	
H18-h18	15	cm 24h	296	0.026	0.061	0.056	0.0	99.0	0.0	0.0	0.0	0.00	
H24-h24	15	cm 24h	296	0.025	0.059	0.053	0.0	99.3	0.0	0.0	0.0	0.00	
AHW-ahw	15	cm 24h	122	0.014	0.055	0.053	0.0	98.4	0.0				
ALW-alw	15	cm 24h	120	0.041	0.064	0.049	0.0	99.2	0.0				
THW-thw	0.50	h 25h	122	0.131	0.549	0.536	0.8	68.9	5.7				
TLW-tlw	0.50	h 25h	120	0.094	0.621	0.617	8.3	64.2	4.2				

Station: Port Manatee
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.00 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL FORECAST													
H00-h00	15	cm 24h	296	-0.009	0.049	0.048	0.0	99.7	0.0	0.0	0.0	0.00	
H06-h06	15	cm 24h	296	-0.016	0.052	0.050	0.0	99.3	0.0	0.0	0.0	0.00	
H12-h12	15	cm 24h	296	-0.015	0.051	0.049	0.0	99.7	0.0	0.0	0.0	0.00	
H18-h18	15	cm 24h	296	-0.014	0.051	0.049	0.0	99.7	0.0	0.0	0.0	0.00	
H24-h24	15	cm 24h	296	-0.014	0.051	0.049	0.0	99.7	0.0	0.0	0.0	0.00	
AHW-ahw	15	cm 24h	103	-0.026	0.049	0.042	0.0	100.0	0.0				
ALW-alw	15	cm 24h	102	-0.001	0.049	0.050	0.0	99.0	0.0				
THW-thw	0.50	h 25h	103	-0.102	0.551	0.544	2.9	68.0	4.9				
TLW-tlw	0.50	h 25h	102	-0.054	0.487	0.486	2.9	70.6	2.0				

Station: St. Petersburg
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.00 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL FORECAST													
H00-h00	15	cm 24h	296	-0.011	0.052	0.051	0.0	99.0	0.0	0.0	0.0	0.00	
H06-h06	15	cm 24h	296	-0.011	0.053	0.052	0.0	99.3	0.0	0.0	0.0	0.00	
H12-h12	15	cm 24h	296	-0.010	0.051	0.050	0.0	99.7	0.0	0.0	0.0	0.00	
H18-h18	15	cm 24h	296	-0.010	0.052	0.051	0.0	99.3	0.0	0.0	0.0	0.00	
H24-h24	15	cm 24h	296	-0.010	0.050	0.049	0.0	99.3	0.0	0.0	0.0	0.00	
AHW-ahw	15	cm 24h	100	-0.024	0.050	0.044	0.0	98.0	0.0				
ALW-alw	15	cm 24h	98	0.008	0.050	0.050	0.0	99.0	0.0				
THW-thw	0.50	h 25h	100	-0.125	0.496	0.483	3.0	81.0	1.0				
TLW-tlw	0.50	h 25h	98	0.101	0.445	0.435	1.0	79.6	3.1				

Station: Old Port Tampa
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.00 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL FORECAST													
H00-h00	15	cm 24h	296	-0.006	0.050	0.049	0.0	99.0	0.0	0.0	0.0	0.00	
H06-h06	15	cm 24h	296	-0.010	0.052	0.051	0.0	99.0	0.0	0.0	0.0	0.00	
H12-h12	15	cm 24h	296	-0.008	0.051	0.050	0.0	99.0	0.0	0.0	0.0	0.00	
H18-h18	15	cm 24h	296	-0.009	0.052	0.051	0.0	98.6	0.0	0.0	0.0	0.00	
H24-h24	15	cm 24h	296	-0.009	0.049	0.048	0.0	99.0	0.0	0.0	0.0	0.00	
AHW-ahw	15	cm 24h	109	-0.020	0.054	0.050	0.0	96.3	0.0				
ALW-alw	15	cm 24h	108	0.008	0.048	0.048	0.0	99.1	0.0				
THW-thw	0.50	h 25h	109	0.026	0.435	0.436	0.9	78.0	2.8				
TLW-tlw	0.50	h 25h	108	0.070	0.345	0.340	0.0	86.1	0.9				

APPENDIX J. SKILL ASSESSMENT SCORE TABLES FOR SEME-OPEATIONAL CURRENT SPEEDS AND DIRECTIONS

NOWCASTS

Station: Sunshine Skyway Bridge
Observed data time period from: / 4/10/2010 to / 7/18/2010with gaps of 0.42 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
D			23002	137.451									
d			23002	135.564									
D-d	22.5 dg	24h	23002	-0.613	6.197	6.167	0.0	99.8	0.0	0.7	0.5		0.91
DFC-dfc	22.5 dg	24h	177	-2.104	4.613	4.117	0.0	100.0	0.0	0.0	0.0		
DEC-dec	22.5 dg	24h	110	0.198	3.199	3.207	0.0	100.0	0.0	0.0	0.0		

Station: Sunshine Skyway Bridge
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.42 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
U			23002	0.347									
u			23002	0.412									
U-u	26 cm/s	24h	23002	-0.065	0.121	0.102	0.0	97.2	0.0	0.4	0.0		0.94
AFC-afc	26 cm/s	24h	177	-0.175	0.189	0.073	0.0	89.3	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	110	-0.097	0.139	0.100	0.0	98.2	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	177	0.141	0.621	0.607	2.8	58.2	7.3	0.0	0.0		
TEC-tec	0.50h	25h	110	-0.006	0.608	0.611	7.3	51.8	3.6	0.0	0.0		
TSF-tsf	0.25h	25h	164	0.120	0.533	0.521	1.2	65.9	3.0	0.0	24.2		
TEF-tef	0.25h	25h	169	0.463	0.640	0.443	0.0	56.2	6.5	0.0	25.4		
TSE-tse	0.25h	25h	106	-0.391	0.483	0.285	2.8	65.1	0.0	0.0	0.0		
TEE-tee	0.25h	25h	106	0.147	0.292	0.253	0.0	92.5	0.9	0.0	0.0		

Station: Old Port Tampa
Observed data time period from: / 4/10/2010 to / 7/18/2010with gaps of 0.43 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
D			23001	112.089									
d			23001	118.237									
D-d	22.5 dg	24h	23001	-2.805	8.422	7.941	0.1	99.8	0.1	1.0	1.0		0.93
DFC-dfc	22.5 dg	24h	147	1.207	2.332	2.003	0.0	100.0	0.0	0.0	0.0		
DEC-dec	22.5 dg	24h	108	-11.659	11.783	1.716	0.0	100.0	0.0	0.0	0.0		

Station: Old Port Tampa
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.43 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
U			23001	0.295									
u			23001	0.374									
U-u	26	cm/s	24h 23001	-0.079	0.123	0.094	0.0	98.4	0.0	0.0	0.0		0.88
AFC-afc	26	cm/s	24h 147	-0.128	0.140	0.058	0.0	98.0	0.0	0.0	0.0		
AEC-aec	26	cm/s	24h 108	-0.214	0.223	0.063	0.0	76.9	0.0	0.0	0.0		
TFC-tfc	0.50h		25h 147	-0.216	0.665	0.631	6.8	59.2	4.8	0.0	0.0		
TEC-tec	0.50h		25h 108	-0.157	0.792	0.780	13.9	52.8	5.6	0.0	0.0		
TSF-tsf	0.25h		25h 134	-0.244	0.570	0.517	2.2	65.7	0.7	0.0	0.0		
TEF-tef	0.25h		25h 132	0.213	0.762	0.734	1.5	85.6	6.8	0.0	0.0		
TSE-tse	0.25h		25h 89	-0.543	0.759	0.534	18.0	48.3	0.0	0.0	0.0		
TEE-tee	0.25h		25h 89	-0.057	0.436	0.435	0.0	88.8	2.2	0.0	0.0		

FORECASTS

Station: Sunshine Skyway Bridge
Observed data time period from: / 4/10/2010 to / 7/18/2010with gaps of 0.42 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL FORECAST													
D00-d00	22.5	dg	24h 161	-1.497	4.941	4.723	0.0	100.0	0.0	0.0	0.0		
D06-d06	22.5	dg	24h 158	-1.664	4.760	4.474	0.0	100.0	0.0	0.0	0.0		
D12-d12	22.5	dg	24h 157	-1.317	4.978	4.816	0.0	99.4	0.0	0.0	0.0		
D18-d18	22.5	dg	24h 160	-1.629	5.446	5.213	0.0	99.4	0.0	0.0	0.0		
D24-d24	22.5	dg	24h 164	-1.606	5.332	5.099	0.0	99.4	0.0	0.0	0.0		
DFC-dfc	22.5	dg	24h 120	-2.024	4.545	4.087	0.0	100.0	0.0	0.0	0.0		
DEC-dec	22.5	dg	24h 74	0.127	3.359	3.380	0.0	100.0	0.0	0.0	0.0		

Station: Sunshine Skyway Bridge
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.42 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL FORECAST													
U00-u00	26	cm/s	24h 161	-0.101	0.137	0.093	0.0	97.5	0.0	0.0	0.0		
U06-u06	26	cm/s	24h 158	-0.112	0.154	0.107	0.0	91.1	0.0	0.0	0.0		
U12-u12	26	cm/s	24h 157	-0.108	0.151	0.105	0.0	91.7	0.0	0.0	0.0		
U18-u18	26	cm/s	24h 160	-0.109	0.154	0.109	0.0	91.3	0.0	0.0	0.0		
U24-u24	26	cm/s	24h 164	-0.110	0.151	0.104	0.0	92.1	0.0	0.0	0.0		
AFC-afc	26	cm/s	24h 120	-0.200	0.215	0.079	0.0	75.0	0.0	0.0	0.0		
AEC-aec	26	cm/s	24h 74	-0.100	0.150	0.112	0.0	95.9	0.0	0.0	0.0		
TFC-tfc	0.50h		25h 120	0.049	0.607	0.607	5.0	54.2	5.8	0.0	0.0		
TEC-tec	0.50h		25h 74	0.046	0.524	0.526	4.1	66.2	2.7	0.0	0.0		
TSF-tsf	0.25h		25h 111	0.102	0.531	0.524	0.9	67.6	5.4	0.0	0.0		
TEF-tef	0.25h		25h 115	0.420	0.634	0.477	0.0	49.6	7.8	0.0	8.7		
TSE-tse	0.25h		25h 72	-0.451	0.566	0.344	5.6	55.6	0.0	0.0	0.0		
TEE-tee	0.25h		25h 72	0.151	0.298	0.259	0.0	91.7	0.0	0.0	0.0		

Station: Old Port Tampa
Observed data time period from: / 4/10/2010 to / 7/18/2010with gaps of 0.43 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL FORECAST													
D00-d00	22.5 dg	24h	172	-4.879	7.654	5.915	0.0	100.0	0.0	0.0	0.0		
D06-d06	22.5 dg	24h	167	-4.640	7.605	6.043	0.0	100.0	0.0	0.0	0.0		
D12-d12	22.5 dg	24h	162	-4.709	7.690	6.098	0.0	100.0	0.0	0.0	0.0		
D18-d18	22.5 dg	24h	162	-4.500	7.682	6.245	0.0	100.0	0.0	0.0	0.0		
D24-d24	22.5 dg	24h	167	-4.574	7.653	6.154	0.0	100.0	0.0	0.0	0.0		
DFC-dfc	22.5 dg	24h	101	0.980	2.248	2.033	0.0	100.0	0.0	0.0	0.0		
DEC-dec	22.5 dg	24h	74	-11.455	11.567	1.612	0.0	100.0	0.0	0.0	0.0		

Station: Old Port Tampa
Observed data time period from: / 4/10/2010 to / 7/18/2010 with gaps of 0.43 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL FORECAST													
U00-u00	26 cm/s	24h	172	-0.116	0.137	0.072	0.0	97.7	0.0	0.0	0.0		
U06-u06	26 cm/s	24h	167	-0.118	0.139	0.073	0.0	97.6	0.0	0.0	0.0		
U12-u12	26 cm/s	24h	162	-0.121	0.144	0.077	0.0	98.1	0.0	0.0	0.0		
U18-u18	26 cm/s	24h	162	-0.120	0.144	0.079	0.0	98.1	0.0	0.0	0.0		
U24-u24	26 cm/s	24h	167	-0.121	0.145	0.080	0.0	97.0	0.0	0.0	0.0		
AFC-afc	26 cm/s	24h	101	-0.134	0.148	0.063	0.0	97.0	0.0	0.0	0.0		
AEC-aec	26 cm/s	24h	74	-0.214	0.223	0.065	0.0	77.0	0.0	0.0	0.0		
TFC-tfc	0.50h	25h	101	-0.301	0.638	0.566	5.9	57.4	0.0	0.0	0.0		
TEC-tec	0.50h	25h	74	-0.153	0.810	0.801	12.2	55.4	6.8	0.0	0.0		
TSF-tsf	0.25h	25h	90	-0.254	0.610	0.557	6.7	65.6	1.1	0.0	0.0		
TEF-tef	0.25h	25h	85	0.075	0.544	0.542	1.2	90.6	3.5	0.0	0.0		
TSE-tse	0.25h	25h	62	-0.511	0.771	0.583	19.4	50.0	0.0	74.2	0.0		
TEE-tee	0.25h	25h	63	0.011	0.521	0.525	0.0	85.7	3.2	0.0	0.0		

APPENDIX K. SKILL ASSESSMENT SCORE TABLES FOR SEME-OPEATIONAL SURFACE TEMPERATURE

Station: NDBC Buoy 42013 C10
Observed data time period from: / 4/15/2010 to / 7/18/2010 with gaps of 1.60 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
T			21702	28.590									
t			21702	26.786									
T-t	3.0	c 24h	21702	1.805	3.086	2.504	0.0	75.8	7.2	0.0	62.5		0.78
SCENARIO: SEMI-OPERATIONAL FORECAST													
T00-t00	3.0	c 24h	279	1.644	2.691	2.134	0.0	77.8	5.0	0.0	0.0		
T06-t06	3.0	c 24h	279	1.412	2.378	1.917	0.0	82.8	2.9	0.0	0.0		
T12-t12	3.0	c 24h	280	1.384	2.319	1.864	0.0	82.5	2.1	0.0	0.0		
T18-t18	3.0	c 24h	280	1.346	2.348	1.927	0.0	82.1	2.9	0.0	0.0		
T24-t24	3.0	c 24h	280	1.219	2.214	1.851	0.0	82.9	1.8	0.0	0.0		

Station: St. Petersburg
Observed data time period from: / 4/15/2010 to / 7/18/2010 with gaps of 0.65 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
T			21747	29.547									
t			21747	30.233									
T-t	3.0	c 24h	21747	-0.687	1.541	1.379	0.3	97.4	0.1	5.5	1.0		0.91
SCENARIO: SEMI-OPERATIONAL FORECAST													
T00-t00	3.0	c 24h	278	-0.693	1.499	1.331	0.0	97.5	0.0	0.0	0.0		
T06-t06	3.0	c 24h	278	-0.915	1.481	1.166	0.0	98.6	0.0	0.0	0.0		
T12-t12	3.0	c 24h	278	-0.978	1.509	1.152	0.0	97.8	0.0	0.0	0.0		
T18-t18	3.0	c 24h	278	-1.004	1.534	1.162	0.0	97.8	0.0	0.0	0.0		
T24-t24	3.0	c 24h	278	-1.120	1.493	0.989	0.0	98.9	0.0	0.0	0.0		

Station: Campbell Park, FL, NDBC
Observed data time period from: / 4/15/2010 to / 7/18/2010 with gaps of 2.53 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
T			21487	29.496									
t			21487	26.952									
T-t	3.0	c 24h	21487	2.544	3.015	1.619	0.2	62.1	1.5	4.2	5.3		0.68
SCENARIO: SEMI-OPERATIONAL FORECAST													
T00-t00	3.0	c 24h	274	2.525	2.940	1.508	0.0	65.3	1.5	0.0	0.0		
T06-t06	3.0	c 24h	274	2.313	2.731	1.454	0.0	70.4	1.5	0.0	0.0		
T12-t12	3.0	c 24h	274	2.280	2.717	1.480	0.0	69.7	0.7	0.0	0.0		
T18-t18	3.0	c 24h	274	2.254	2.725	1.534	0.0	72.3	0.7	0.0	0.0		
T24-t24	3.0	c 24h	273	2.139	2.553	1.397	0.0	74.7	0.7	0.0	0.0		

Station: Frog Creek, FL NDBC
Observed data time period from: / 4/15/2010 to / 7/18/2010 with gaps of 1.60 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE / CRITERION	X -	N -	IMAX -	SM -	RMSE -	SD -	NOF <1%	CF >90%	POF <1%	MDNO <N	MDPO <N	WOF <.5%	SKILL
SCENARIO: SEMI-OPERATIONAL NOWCAST													
T			21902	29.407									
t			21902	29.874									
T-t	3.0	c 24h	21902	-0.467	1.986	1.930	0.3	92.0	0.1	4.7	2.1		0.88
SCENARIO: SEMI-OPERATIONAL FORECAST													
T00-t00	3.0	c 24h	280	-0.174	1.823	1.818	0.0	92.1	0.4	0.0	0.0		
T06-t06	3.0	c 24h	280	-0.342	1.689	1.657	0.0	93.2	0.0	0.0	0.0		
T12-t12	3.0	c 24h	280	-0.333	1.714	1.684	0.0	92.5	0.0	0.0	0.0		
T18-t18	3.0	c 24h	280	-0.339	1.716	1.685	0.0	92.5	0.0	0.0	0.0		
T24-t24	3.0	c 24h	280	-0.392	1.749	1.707	0.0	91.8	0.0	0.0	0.0		

APPENDIX L. SKILL ASSESSMENT SCORE TABLES FOR SEME-OPEATIONAL SURFACE SALINITY

Station: NDBC Buoy 42013 C10
Observed data time period from: / 4/15/2010 to / 7/18/2010 with gaps of 1.30 days
Data gap is filled using SVD method
Data are not filtered

VARIABLE	X	N	IMAX	SM	RMSE	SD	NOF	CF	POF	MDNO	MDPO	WOF	SKILL
CRITERION	-	-	-	-	-	-	<1%	>90%	<1%	<N	<N	<.5%	
SCENARIO: SEMI-OPERATIONAL NOWCAST													
S			21772	35.424									
s			21772	35.120									
S-s	3.5	24h	21772	0.304	0.811	0.752	0.2	99.7	0.0	5.0	0.0		0.43
SCENARIO: SEMI-OPERATIONAL FORECAST													
S00-s00	3.5	24h	280	0.373	0.576	0.441	0.0	100.0	0.0	0.0	0.0		
S06-s06	3.5	24h	280	0.356	0.566	0.440	0.0	100.0	0.0	0.0	0.0		
S12-s12	3.5	24h	280	0.344	0.555	0.437	0.0	100.0	0.0	0.0	0.0		
S18-s18	3.5	24h	280	0.333	0.557	0.448	0.0	100.0	0.0	0.0	0.0		
S24-s24	3.5	24h	280	0.321	0.585	0.490	0.0	100.0	0.0	0.0	0.0		