OPERATIONAL OCEANOGRAPHY ON THE TEXAS COAST

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Texas A&M University, with support from the Texas General Land Office, operates the Texas Automated Buoy System (TABS) with nine oceanographic buoys in the Northern Gulf of Mexico. Buoys at all nine locations measure surface currents, water temperature and salinity. At two of the nine locations, along with surface currents, salinity and temperature, the buoys also measure wind velocity, barometric pressure, atmospheric temperature and relative humidity, and three locations measure directional waves along with all the other meteorological and oceanographic parameters. Data collected by the buoys are transmitted via satellite to Texas A&M University where they undergo quality control before being posted to the World Wide Web. Real-time data are available as time series in both graphic and tabular formats that can be downloaded by the public. An analysis program runs daily which prepares additional data analyses including stick plots with different low-pass filters, wind and currents roses, scatter plots, tidal analysis, and estimates of the probability of current reversals. A Hindcast program is run once per month to produce a complete data set for the previous month along with the monthly graphics. A complete archive of these monthly products extending back to 1995 is maintained on a web page. A Climate Analysis program is run once per month to give monthly and annual statistics for oceanographic conditions on the Texas shelf. All data collected from 1995 through the present are used in this climate analysis and the results are presented on a web page. A model of the currents on the Texas shelf, driven primarily by winds forecast from a NOAA operational high resolution atmospheric model, is run four times each day to produce 3-day forecasts of circulation on the Texas shelf. This model uses the Regional Ocean Modeling System (ROMS). Forecasts from this model are made available to the public on a web page. A more advanced version of the ROMS model is now under development and has a larger domain that covers most of the Northern Gulf of Mexico at very high resolution. The model incorporates the large volumes of freshwater input from rivers and basins which empty into the Gulf. Forcing from offshore rings and the Loop Current is accomplished by embedding the model in a larger-scale operation model of the Gulf of Mexico.