Appendix F

Comparison of Observed and Predicted Water Surface Elevations and Currents

Appendix F1. Water Surface Elevations

Model-predicted water surface elevations were compared with observed data at seven National Oceanic and Atmospheric Administration (NOAA) stations (Figure F1).

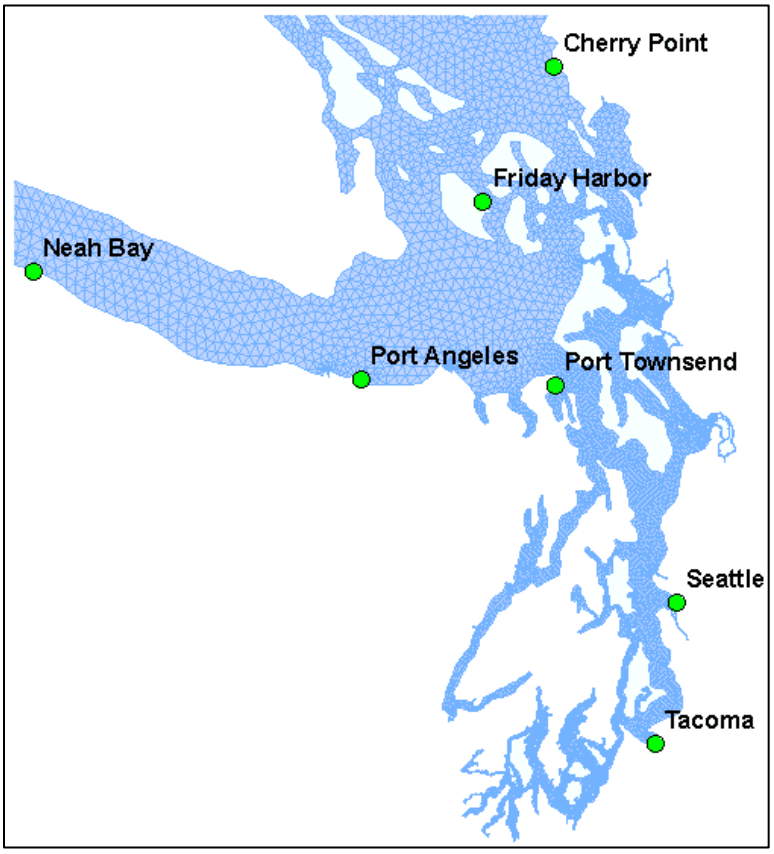

Figure F1. NOAA water surface elevation observation stations.

Figures F2 through F4 show 1:1 plots of model prediction versus observed data, along with error statistics, for all seven NOAA stations for years 2006, 2008, and 2014 respectively. To assess whether model predictions match the observed phase, Figures F5 through F7 show time series plots at the seven stations for years 2006, 2008, and 2014, respectively.

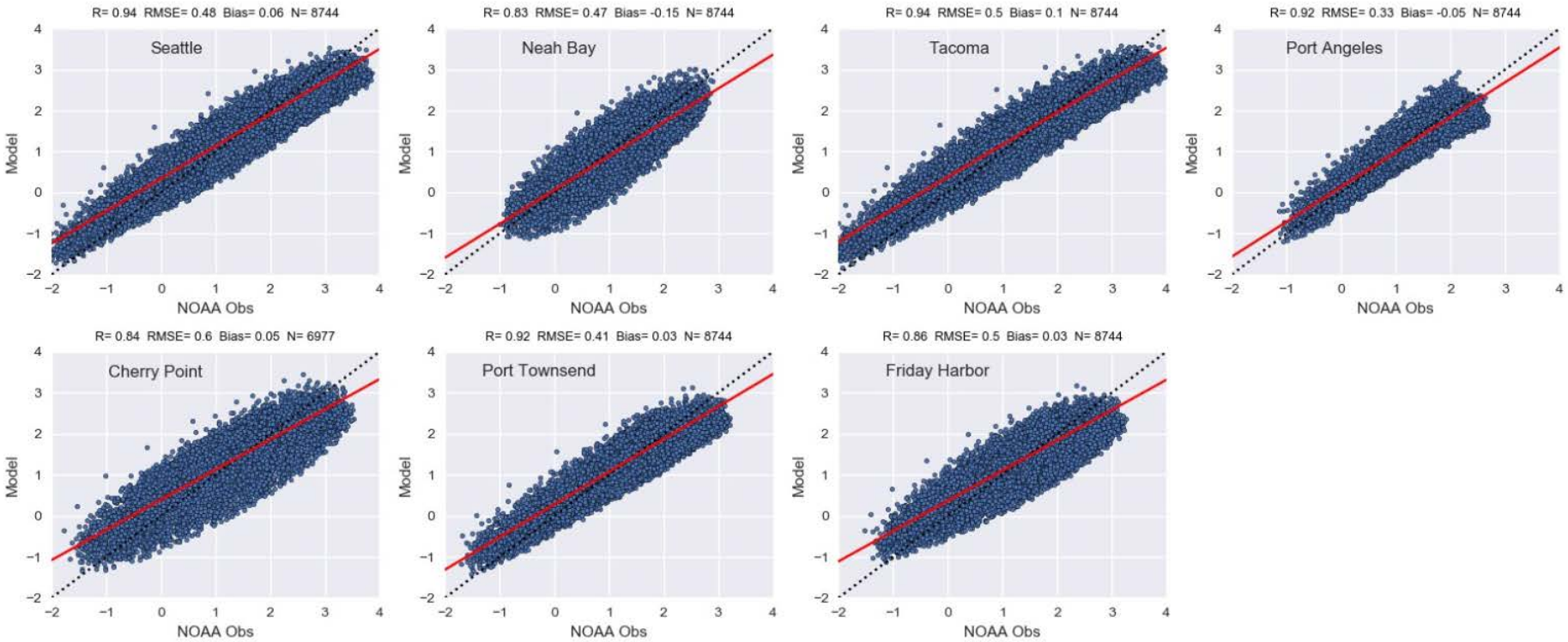

Figure F2. Global scatter plots for observed (NOAA) and SSM-predicted water surface elevations (meters) for 2006 at seven stations.

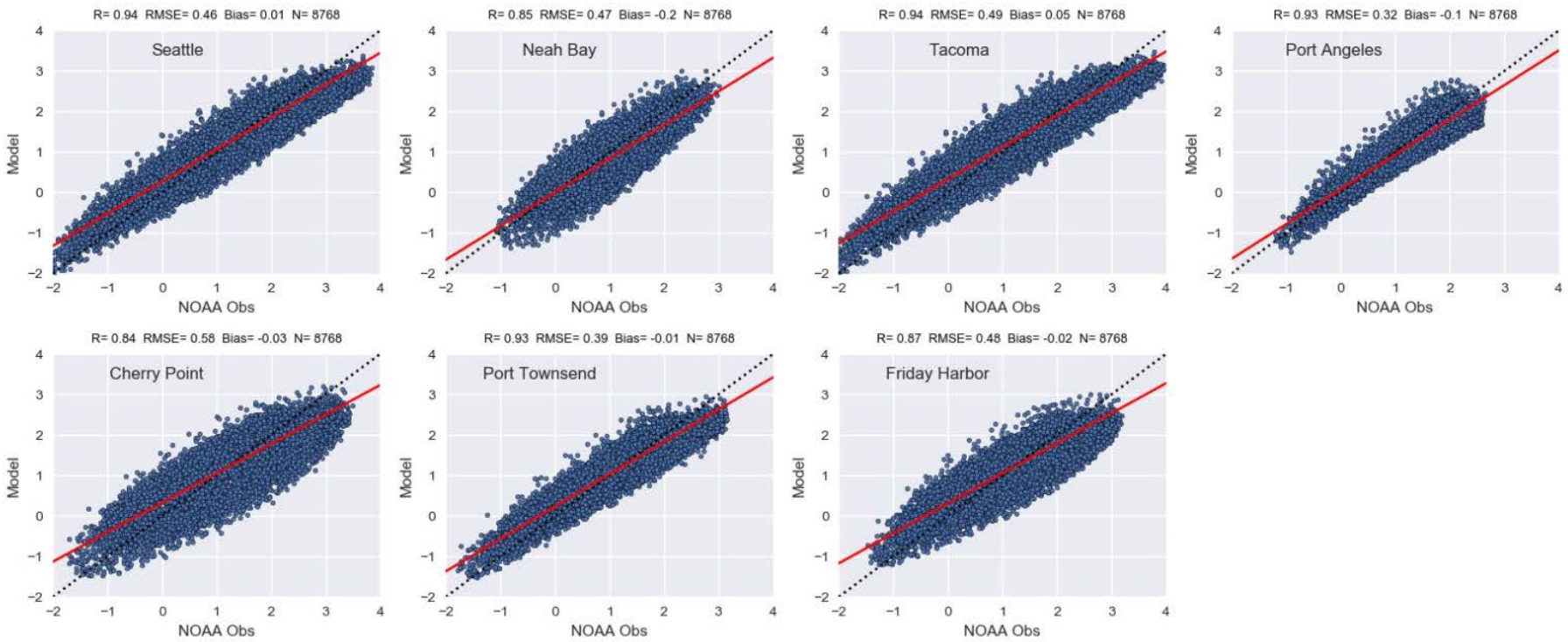

Figure F3. Global scatter plots for observed (NOAA) and SSM-predicted water surface elevations (meters) for 2008 at seven stations.

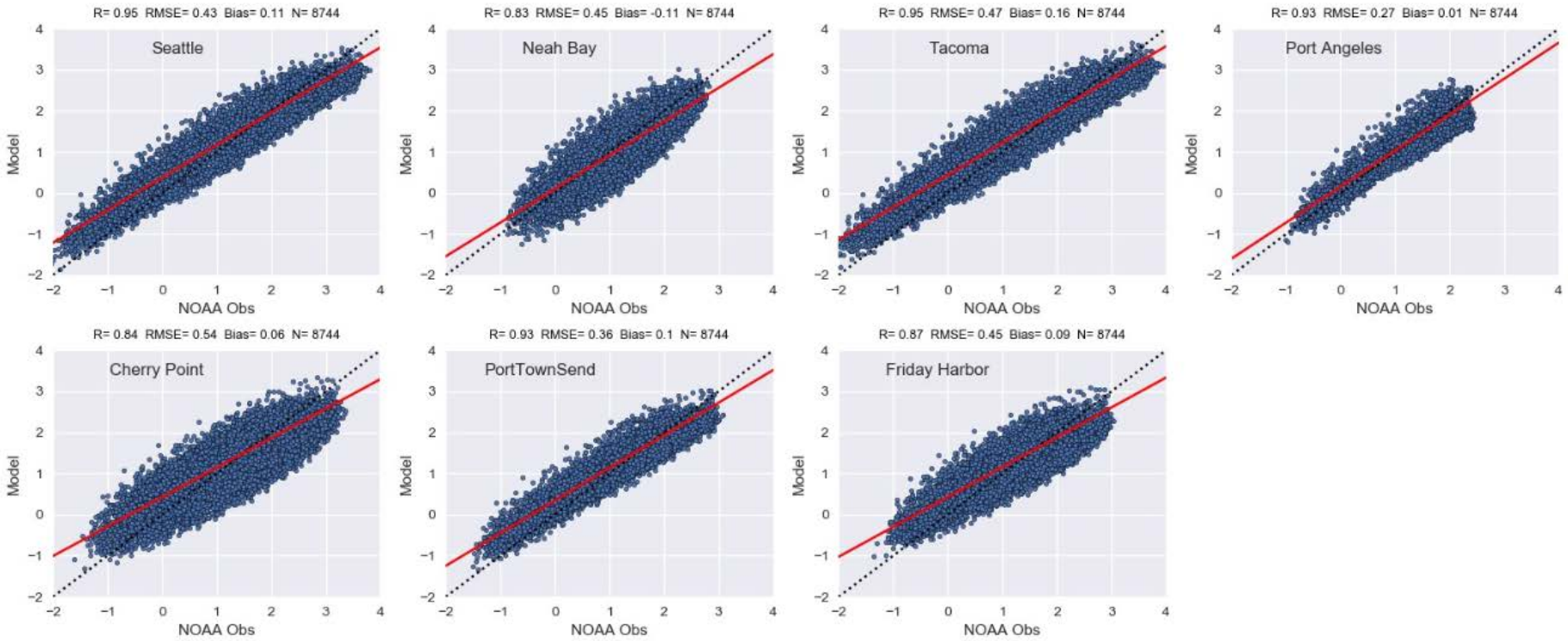

Figure F4. Global scatter plots for observed (NOAA) and SSM predicted water surface elevations (meters) for 2014 at seven stations.

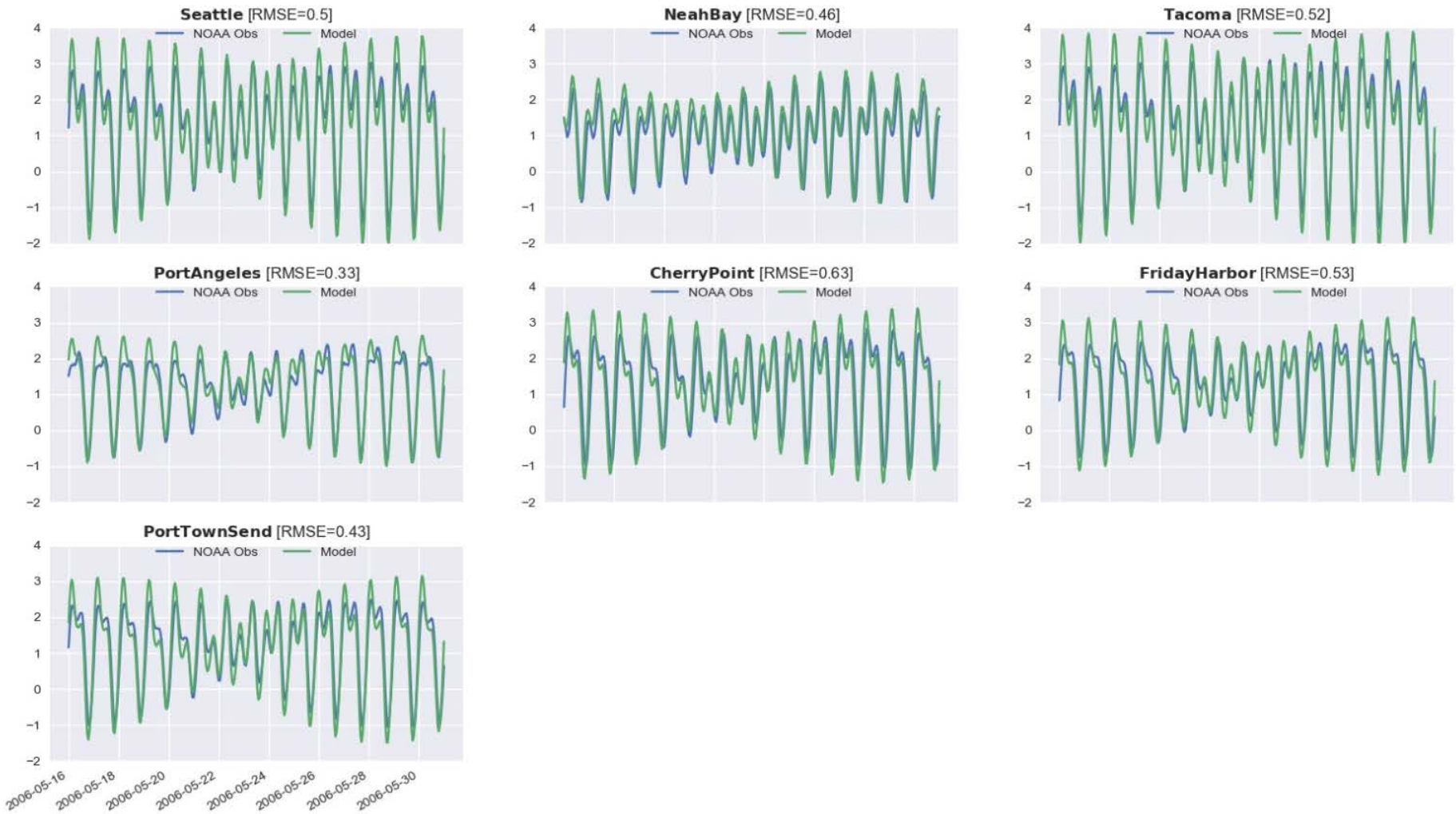

Figure F5. Comparison of model-predicted and observed (NOAA) tidal elevations at seven stations for May 16–30, 2006.

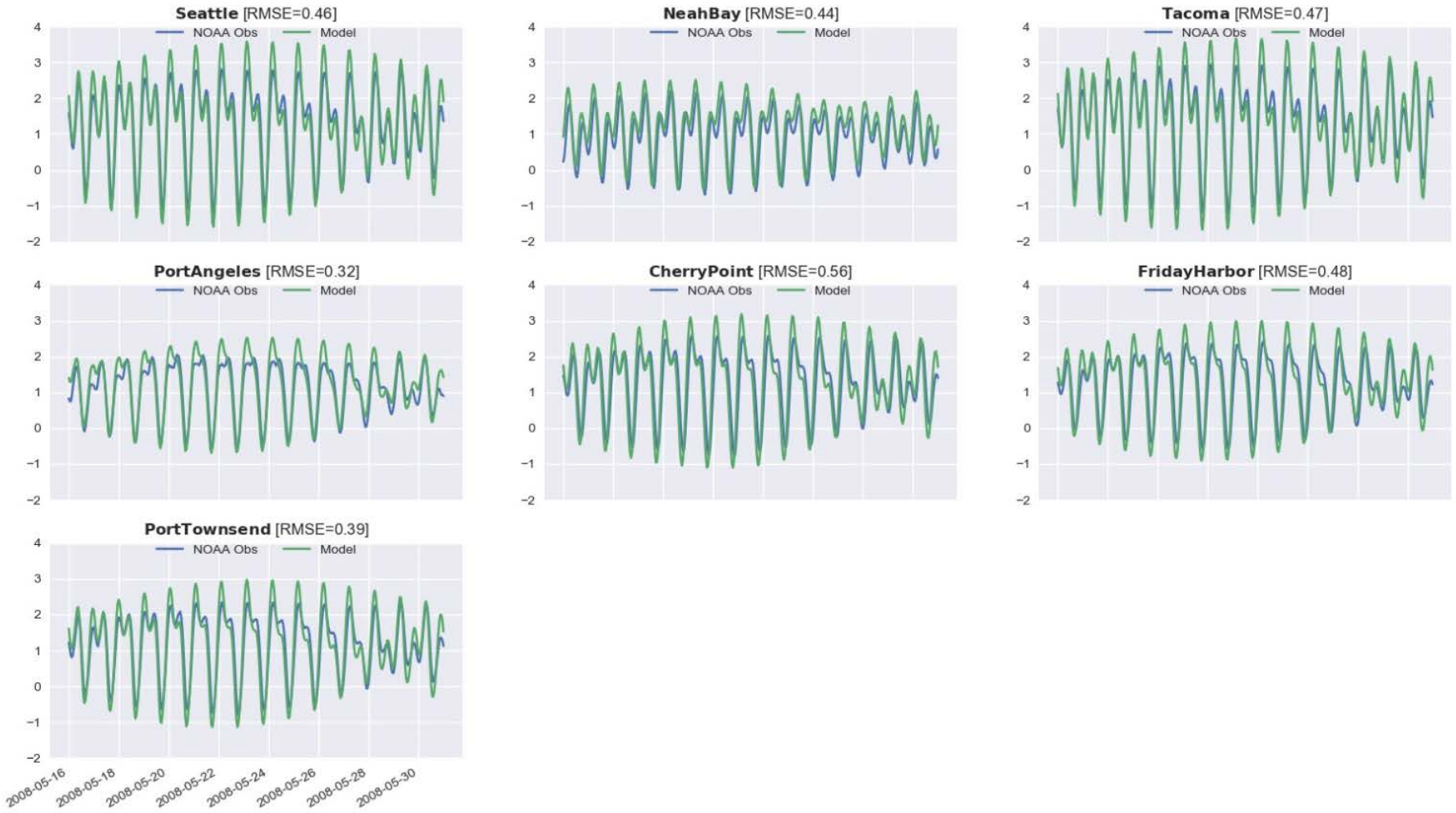

Figure F6. Comparison of model-predicted and observed (NOAA) tidal elevations at seven stations for May 16–30, 2008.

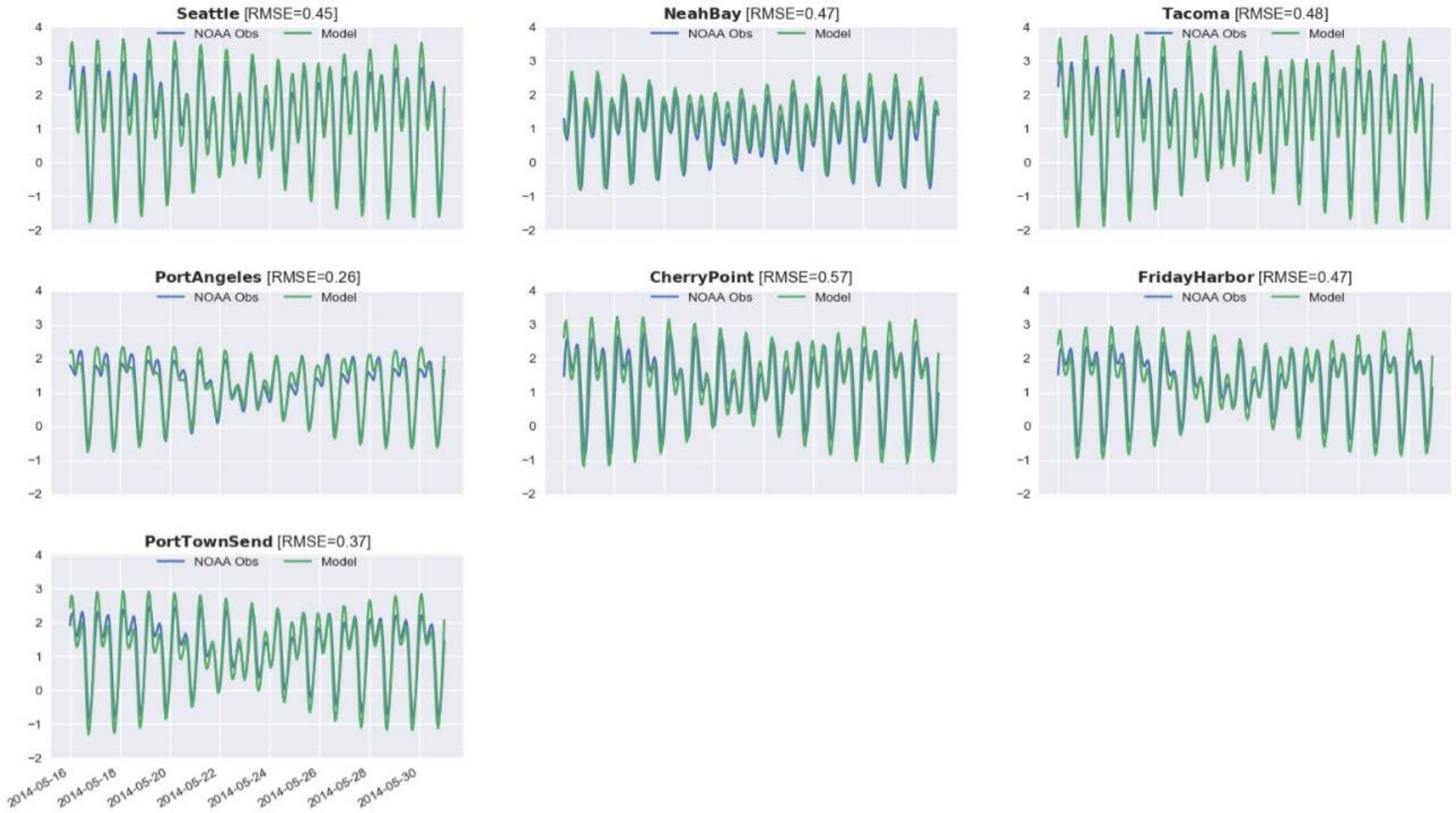

Figure F7. Comparison of model-predicted and observed (NOAA) tidal elevations at seven stations for May 16–30, 2014.

Appendix F2. Currents

Observed current data were available at two stations (Dana and Pickering Passages) for year 2006 only (Figure F8). The two stations were monitored from September 30 through October 13, 2006.

Figure F9 shows the predicted water surface elevations, the location of the Acoustic Doppler Current Profiler (ADCP) current meter, and the model-smoothed bathymetry at the two locations. There is a large discrepancy between model bathymetry and the observed bathymetry (i.e., the depth at which ADCP was deployed). As such, direct comparison between observed and model predictions are difficult to make. However, depth-averaged current velocities were compared between predicted and observed data at these two stations for the easterly (U) and northerly (V) component of current velocities, as shown in Figure F10. In addition, an attempt was made to compare average observed velocities within each model layer with model predictions at these two stations, as shown in Figures F11 through F14.

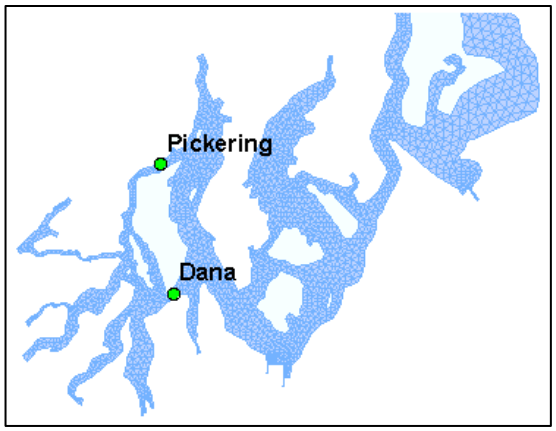

Figure F8. Locations of ADCP stations where currents were measured in 2006.

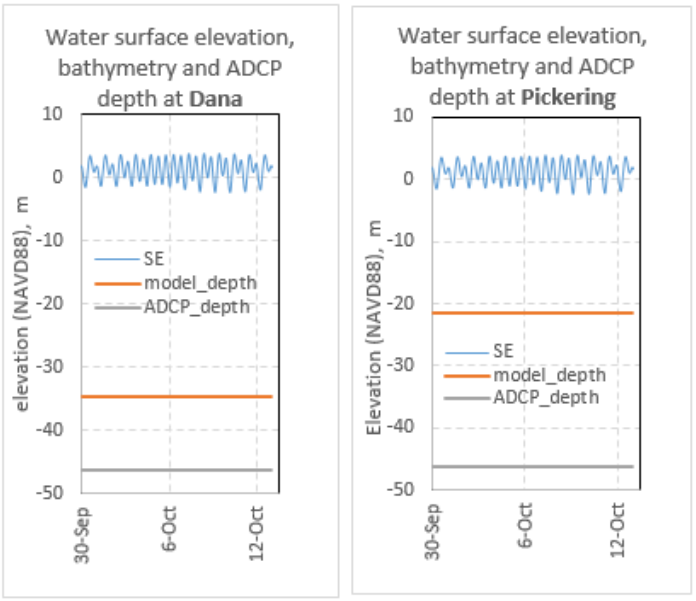

Figure F9. Predicted water surface elevation (SE) and location of model and observed bathymetry.

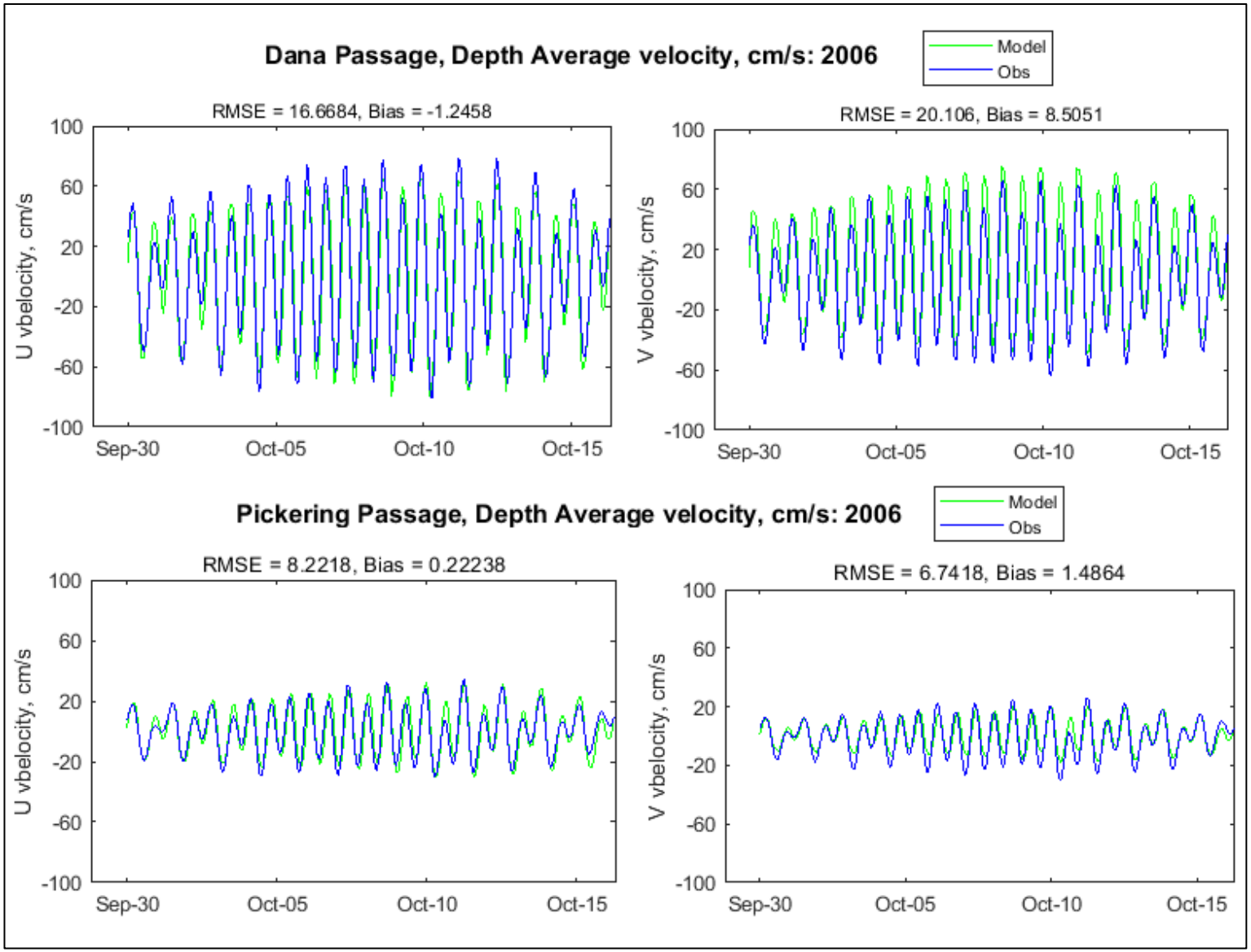

Figure F10. Depth-averaged current velocities at Dana and Pickering Passages.

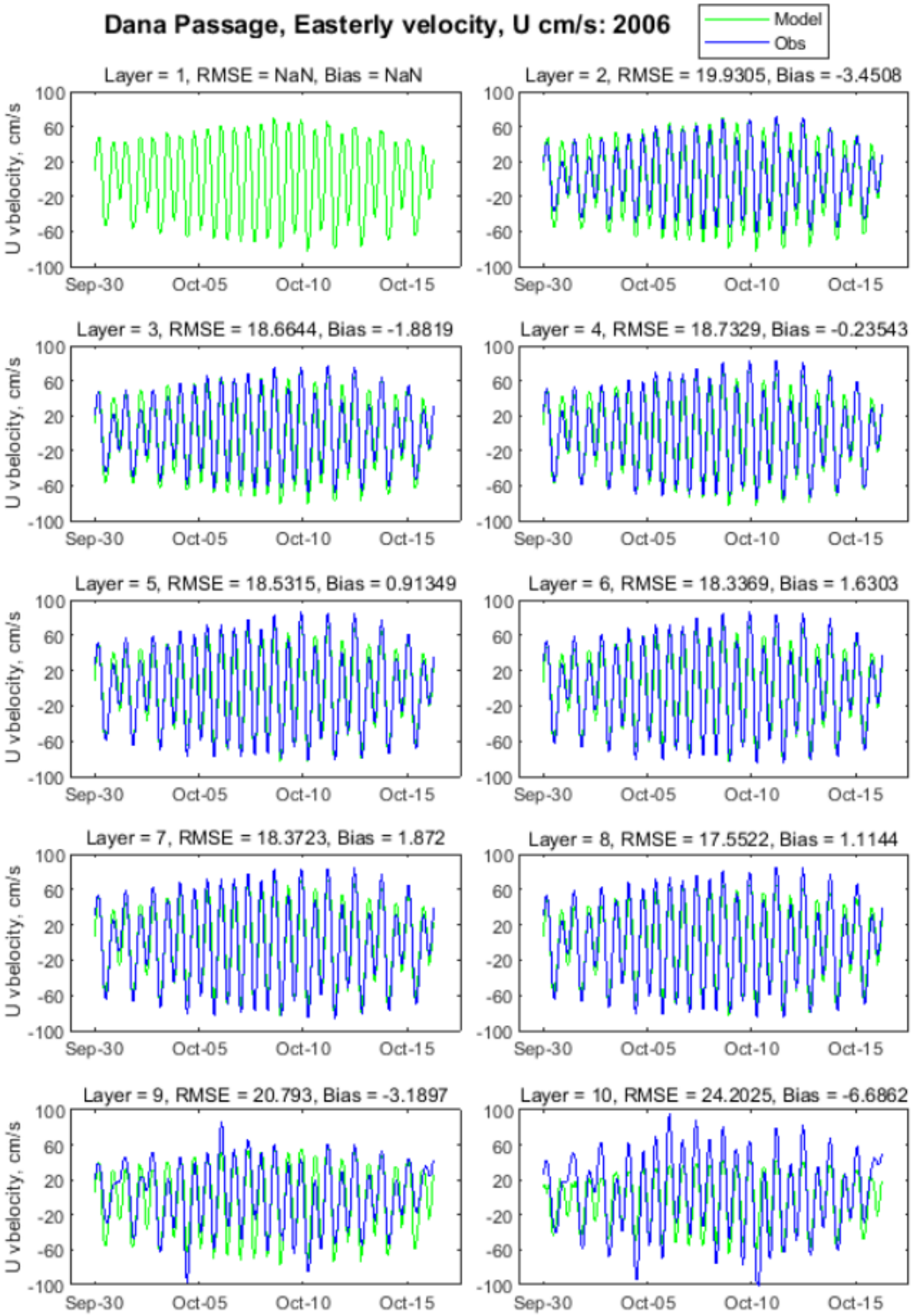

Figure F11. Predicted and observed eastward (U) current speeds at Dana Passage for year 2006 (October 1–14).

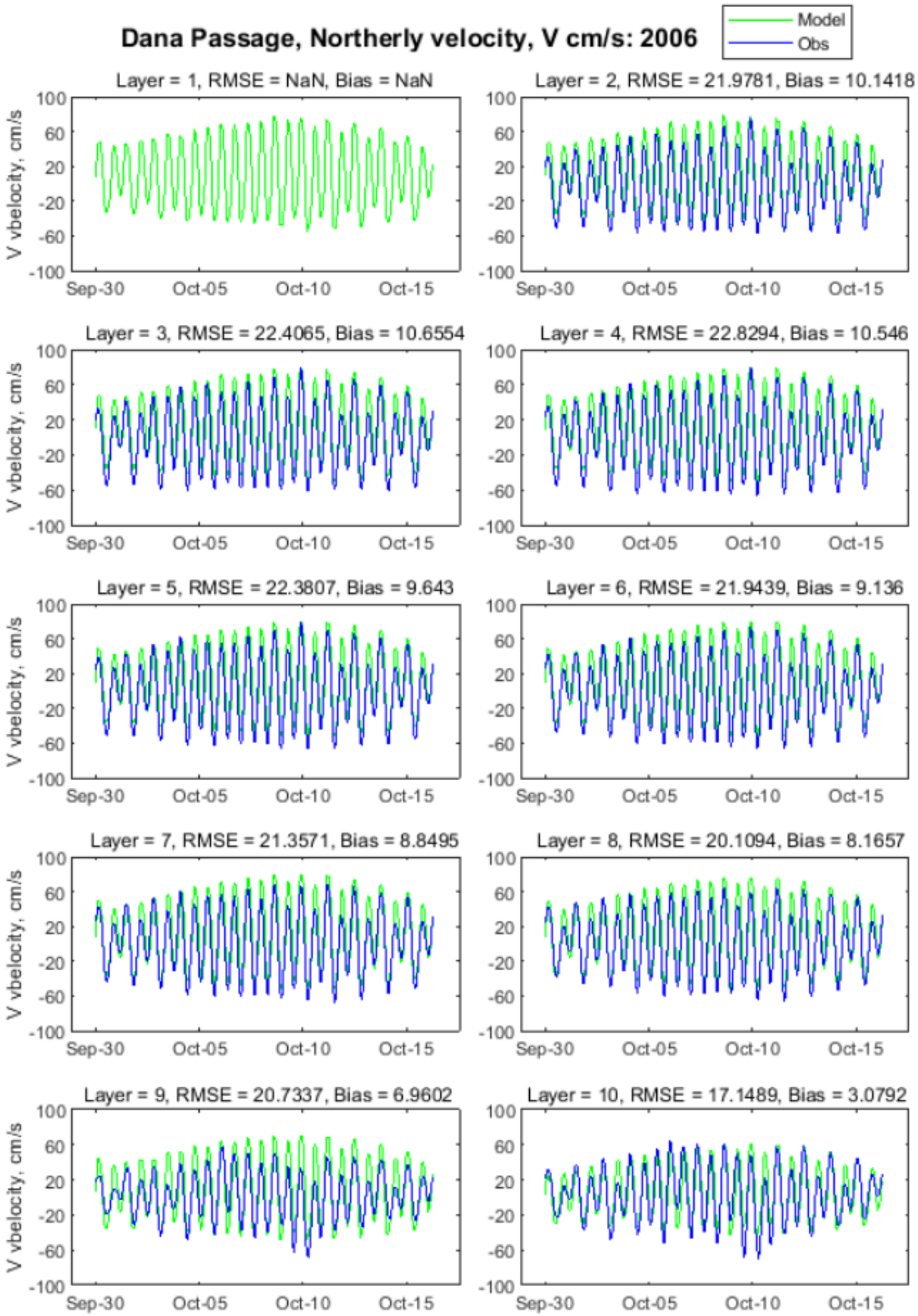

Figure F12. Predicted and observed northward (V) current speeds at Dana Passage for year 2006 (October 1–14).

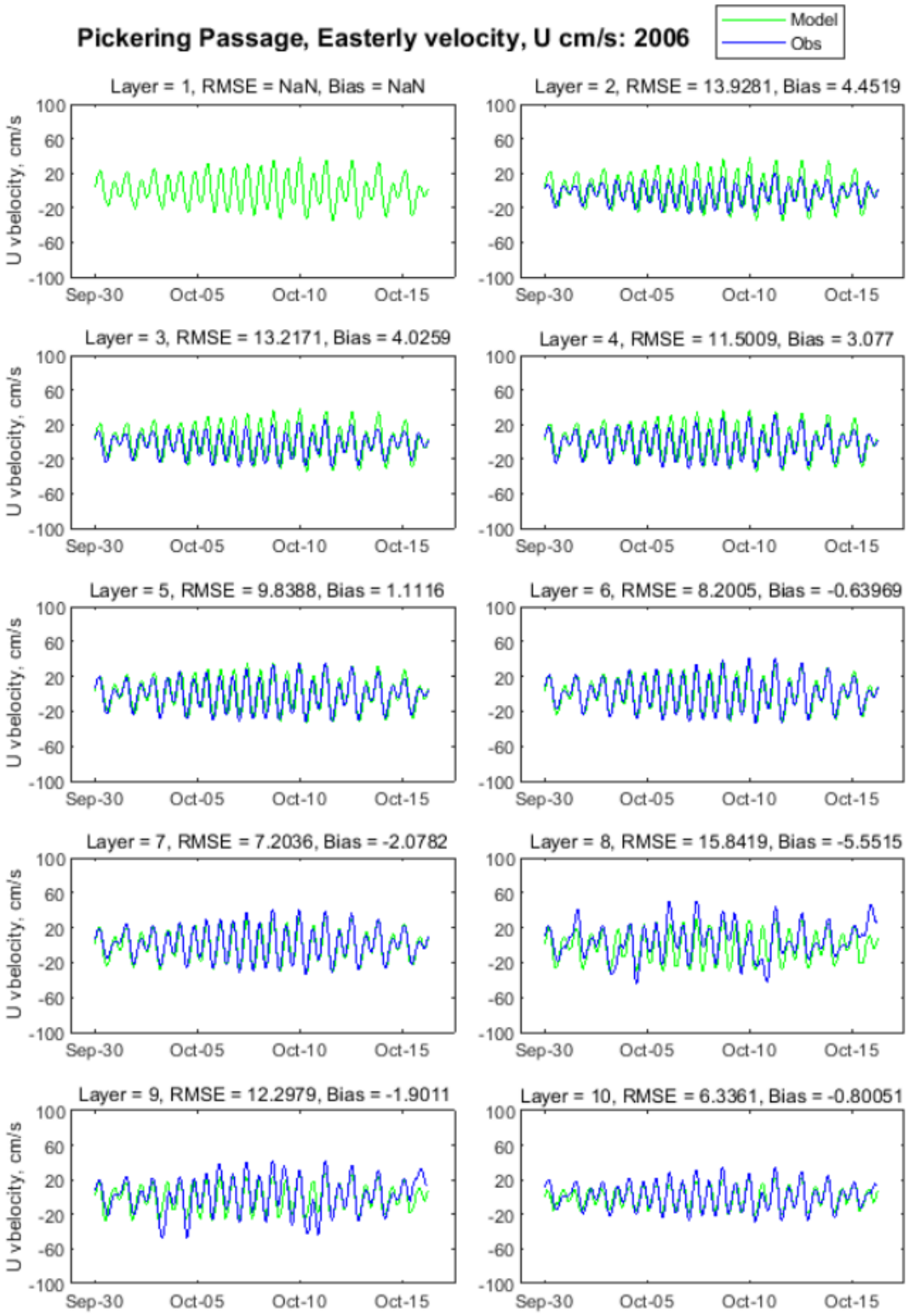

Figure F13. Predicted and observed eastward (U) current speeds at Pickering Passage for year 2006 (October 1–14).

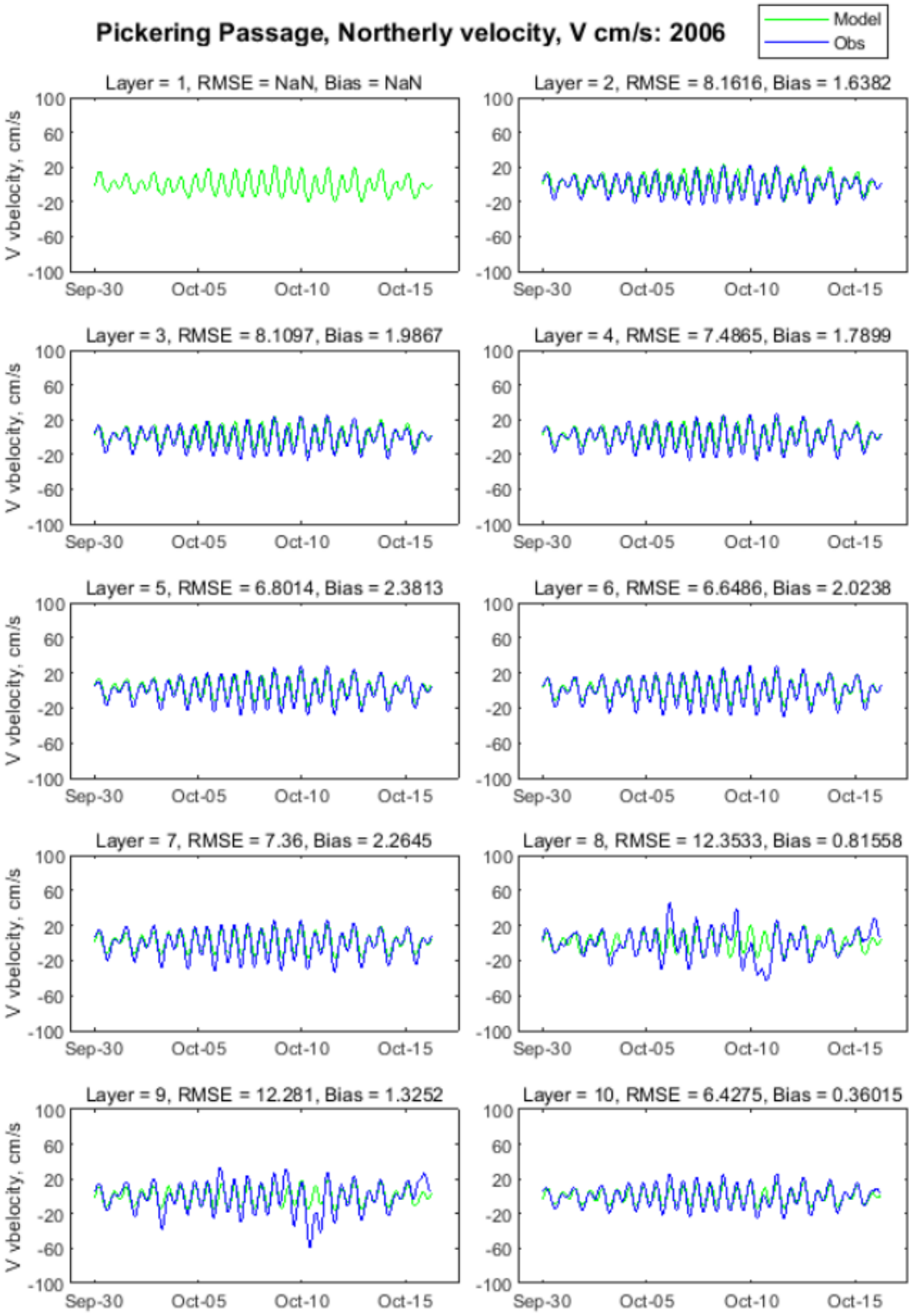

Figure F14. Predicted and observed northward (V) current speeds at Pickering Passage for year 2006 (October 1–14).