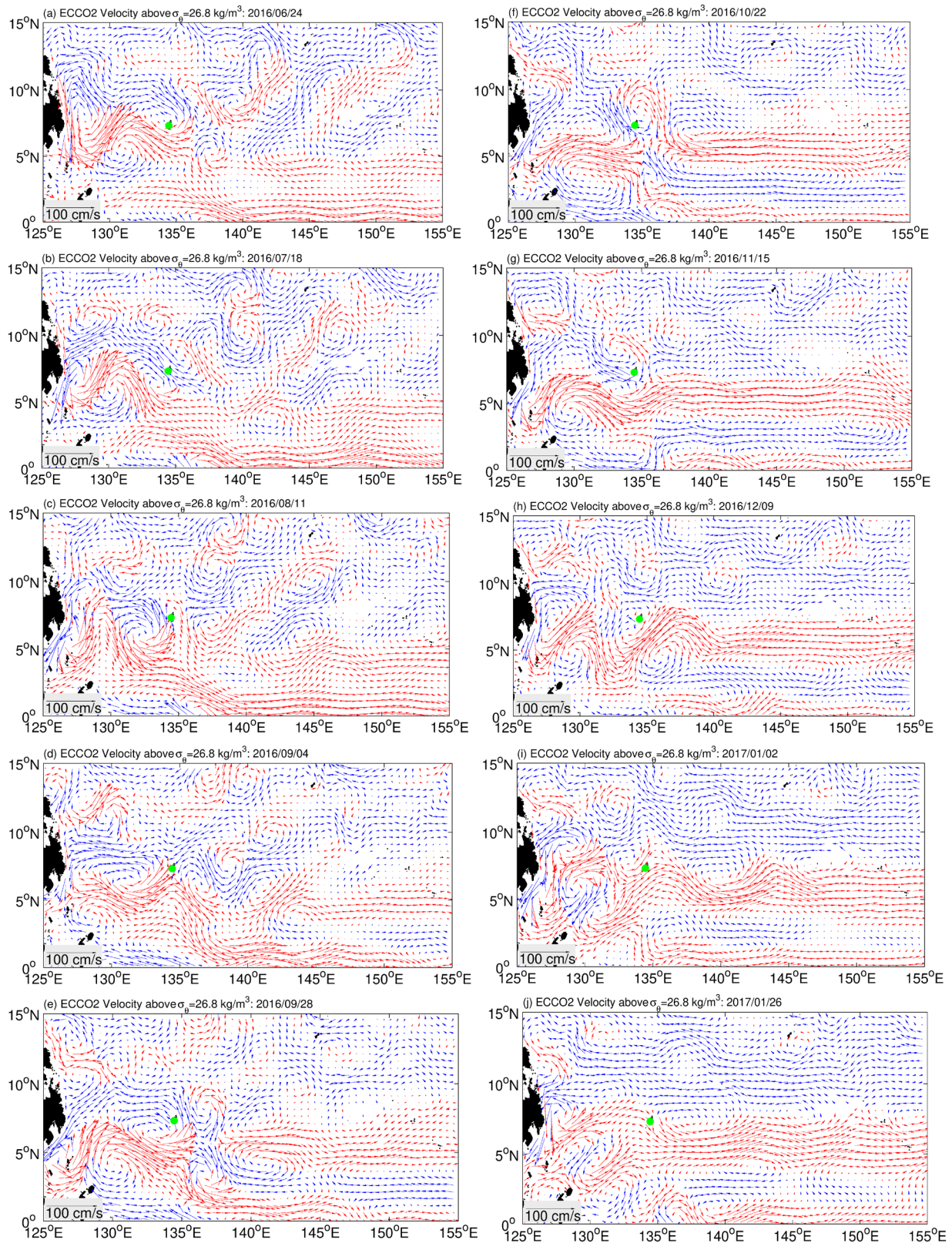
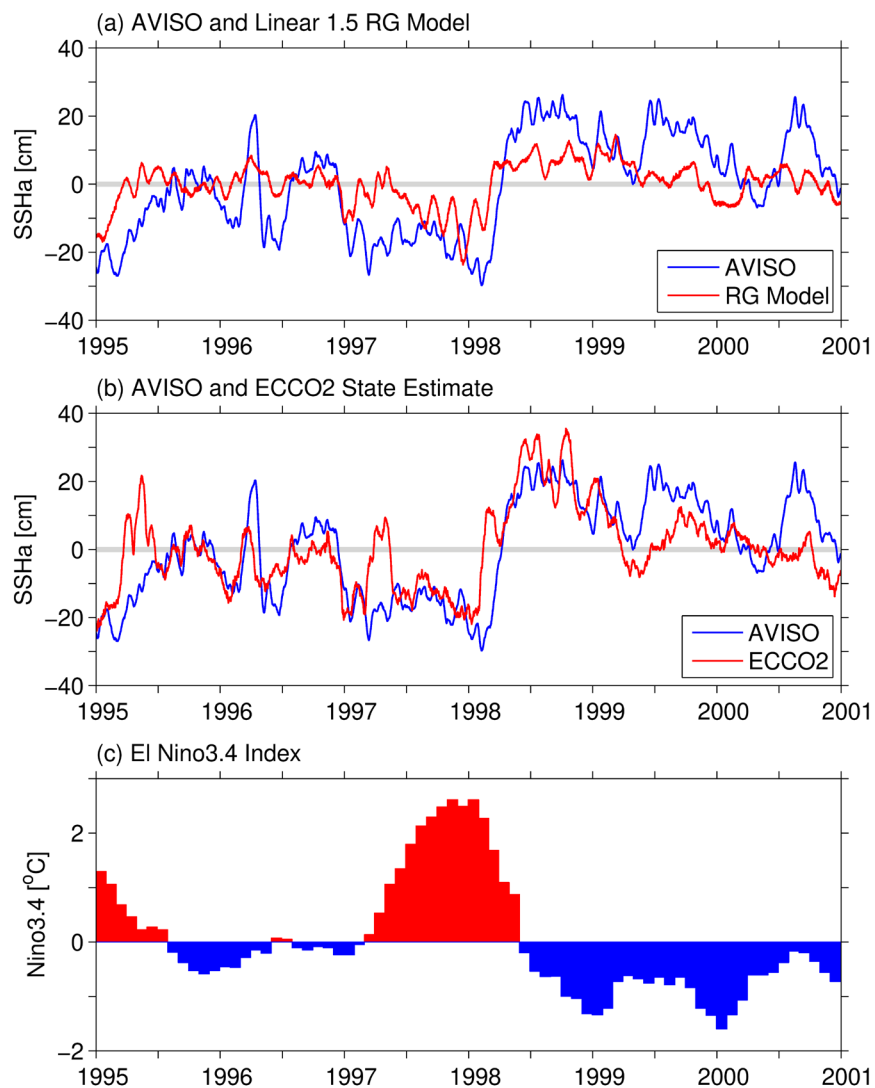


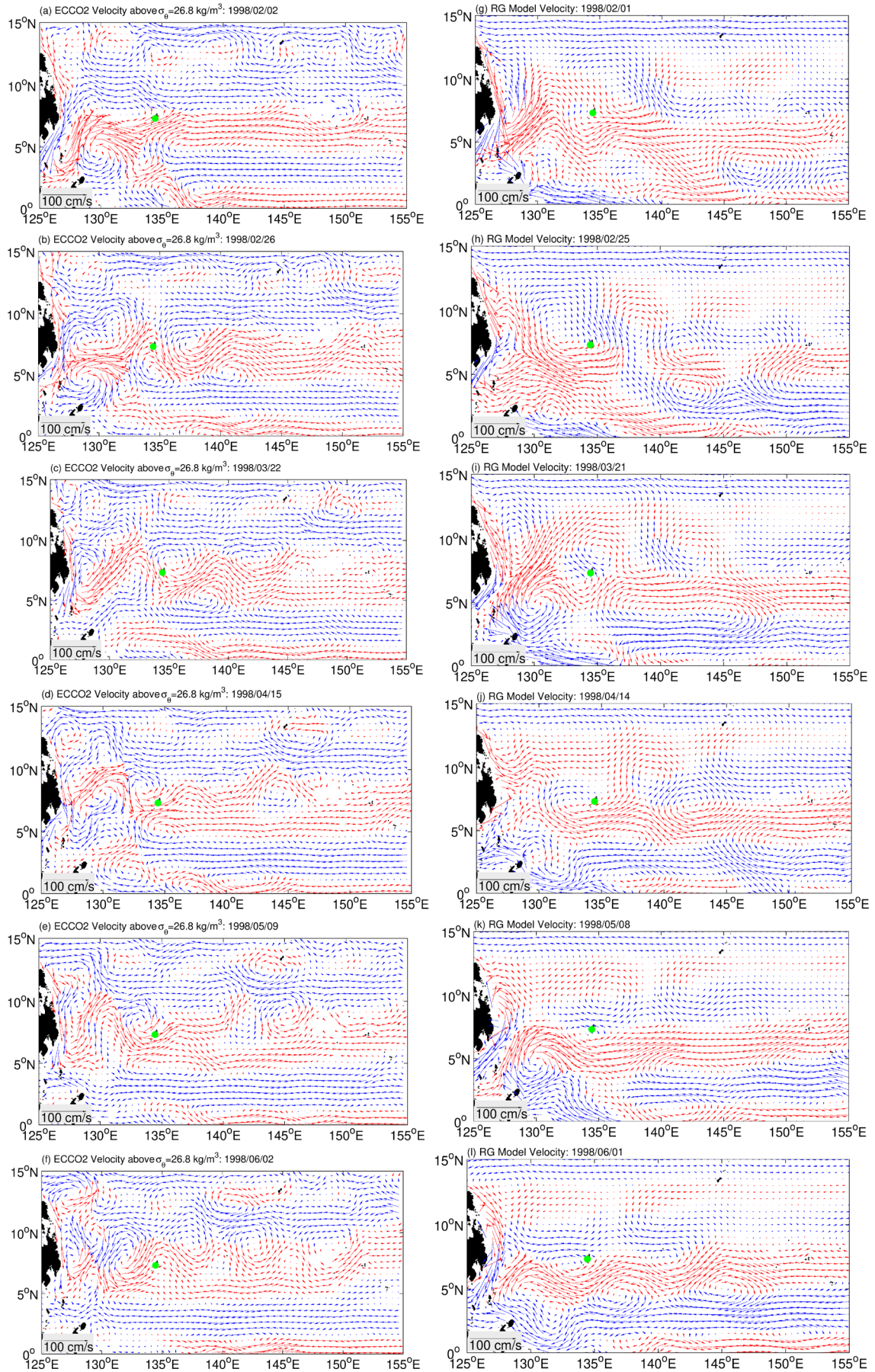
**FIGURE S1.** Comparisons of sea level anomalies between AVISO (blue lines) and ECCO2 output (red lines) at (a) Kwajalein, (b) Pohnpei, (c) Yap, and (d) Palau.



**FIGURE S2.** Evolution of the upper ocean velocity fields from the ECCO2 ocean state estimate from June 16, 2016, to January 26, 2017. These maps follow the sequential maps shown in the left column of Figure 4. Velocity vectors with an eastward (westward) component are plotted in red (blue).



**FIGURE S3.** Comparisons between observed versus modeled sea level anomalies at Palau (a) between AVISO and the wind-forced 1½-layer RG model and (b) between AVISO and the ECCO2 ocean state estimate for 1995–2000. (c) Time series of the Niño-3.4 index.



**FIGURE S4.** (left column) Evolution of the upper ocean velocity fields from the ECCO2 ocean state estimate on (a) February 2, (b) February 26, (c) March 22, (d) April 15, (e) May 9, and (f) June 2, 1998. (right column) Same as left column except for the upper ocean velocity field from the wind-forced 1½-layer RG model output.