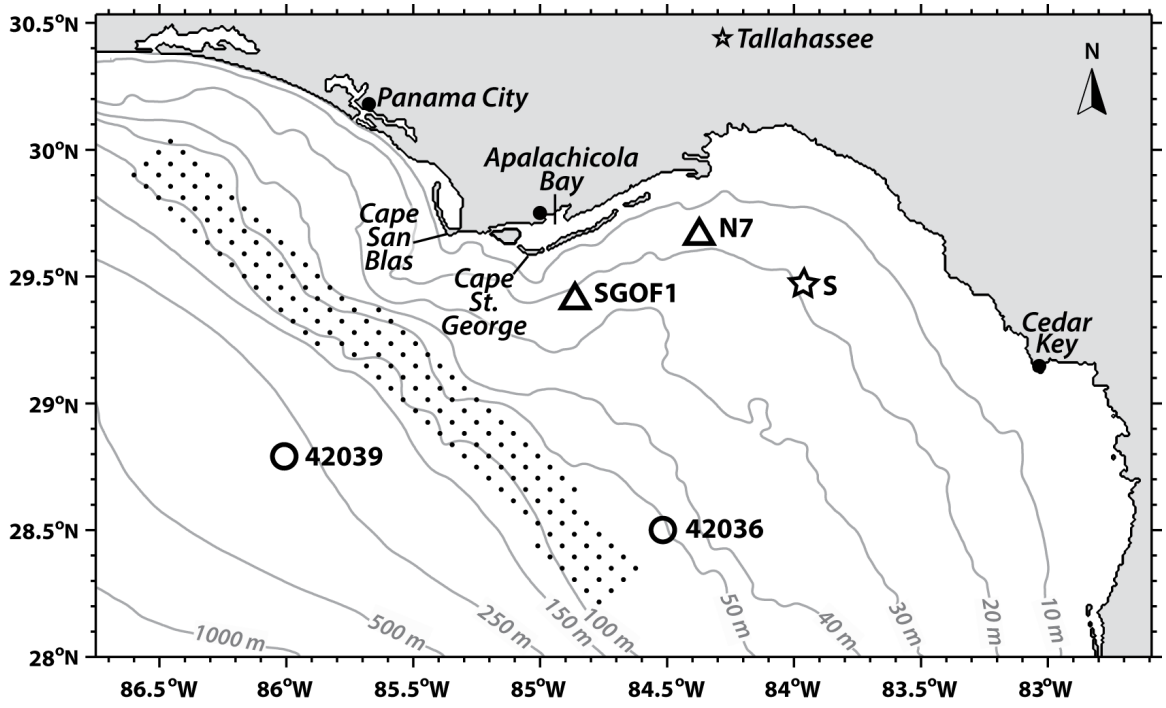

Figure 1: Florida Big Bend and the BBROMS modeling domain. Triangles represent observational towers, open circles represent NDBC buoys, closed circles represent coastal sea level stations, dots depict particle seeding locations, and the star denotes the location of the current profiler at site S.

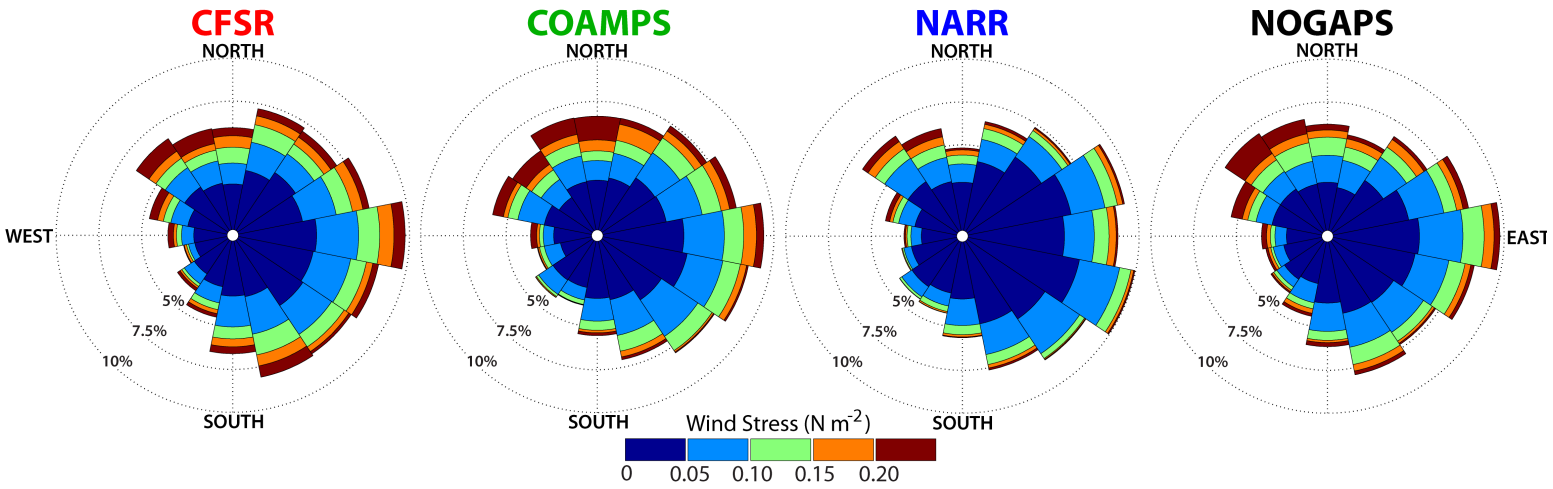

Figure 2: Wind stress roses for 2004—2010 spring months (Feb—May) from BBROMS simulations. The atmospheric product used to force each simulation is indicated above the four roses. Bars point in the direction from which the wind originates, and the lengths of the bars indicate the percentage of time that winds come from each direction. Different colors represent the range of wind stress magnitudes.

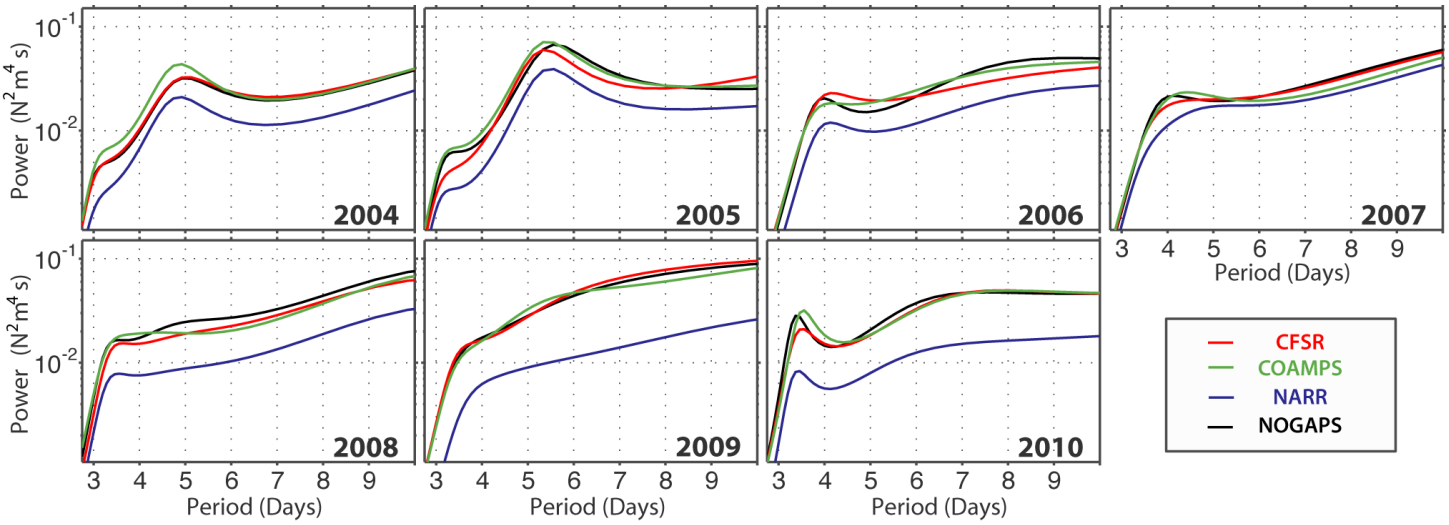

Figure 3: Power spectra density (N^2m^4s) for alongshore subinertial wind stress estimated using the maximum entropy method. Winds are extracted from a point near buoy 42036 and rotated 30 degrees west of North.

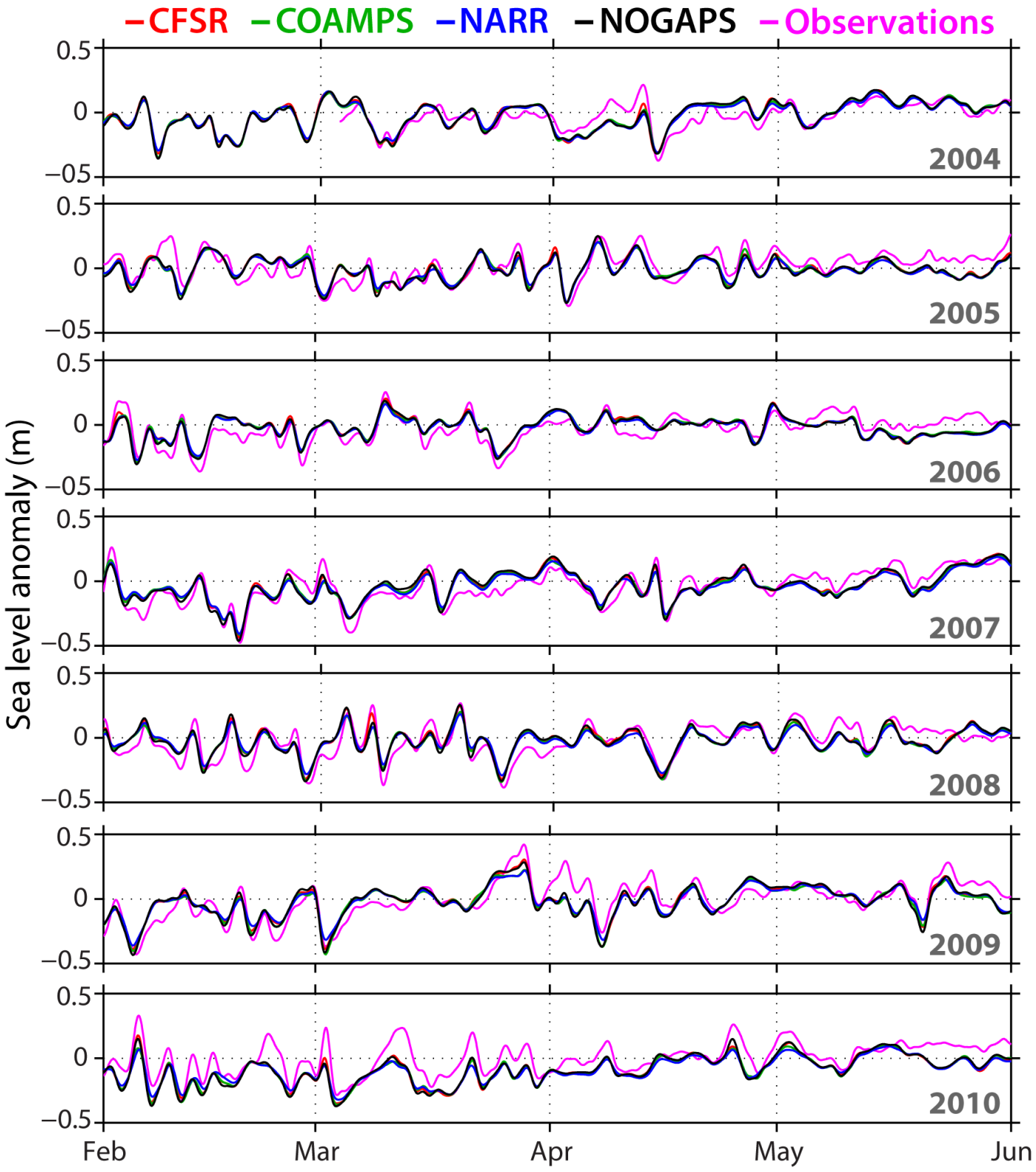

Figure 4: Modeled and observed springtime sub-inertial sea level anomalies near Panama City, FL. Observations are shown in pink, CFSR-forced BBROMS in red, COAMPS-forced BBROMS in green, NARR-forced BBROMS in blue, and NOGAPS-forced BBROMS in black.

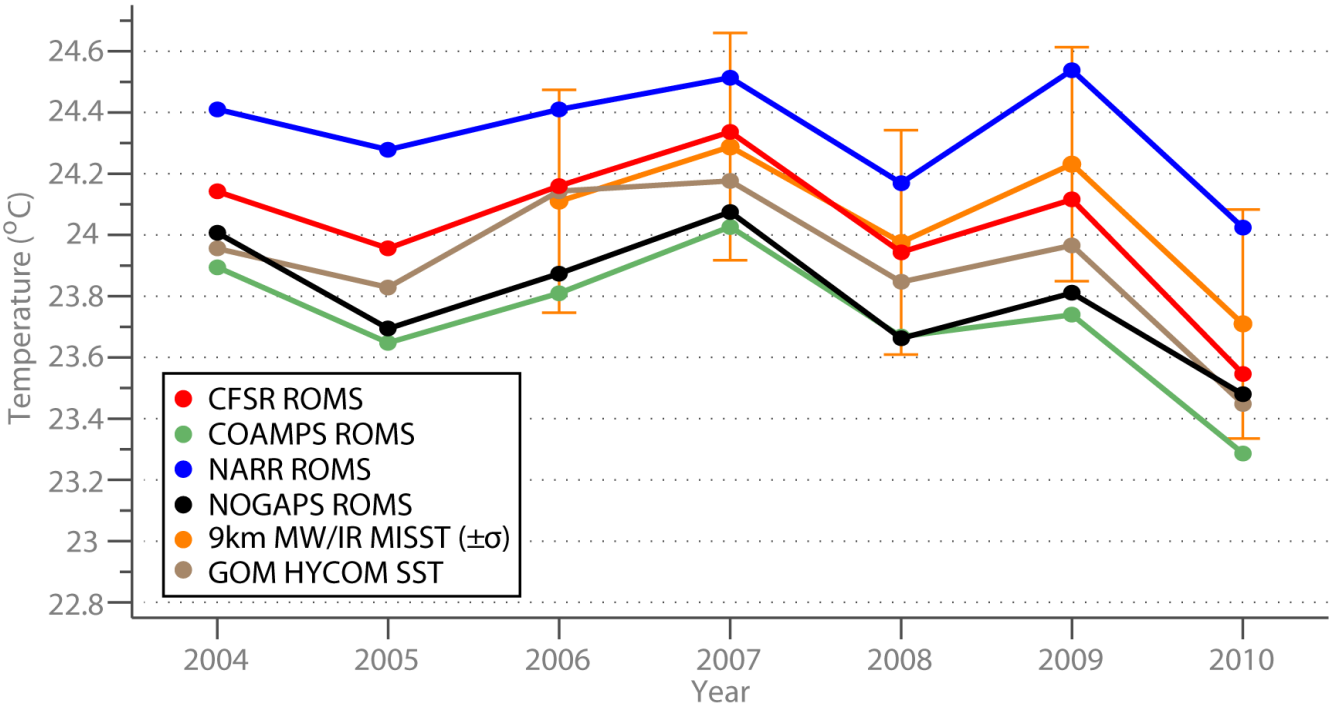

Figure 5: Annual mean sea surface temperatures (°C) averaged across portion of the BBROMS domain that is covered by the 9km MISST.

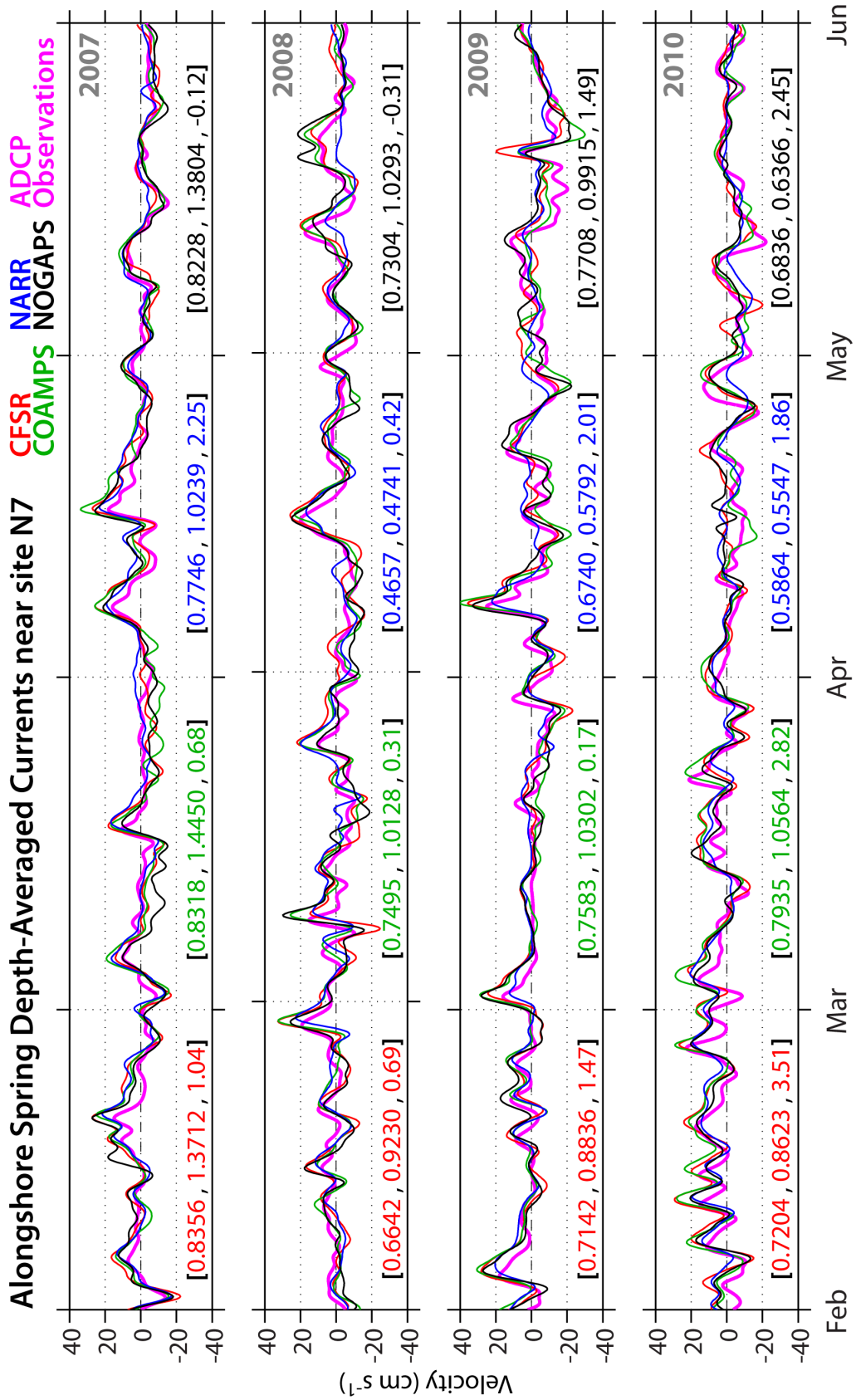

Figure 6: Modeled and observed depth-averaged springtime alongshore currents at site N7. Values in the triplet indicate the correlation R, regression slope, and difference between modeled mean and observed mean currents.

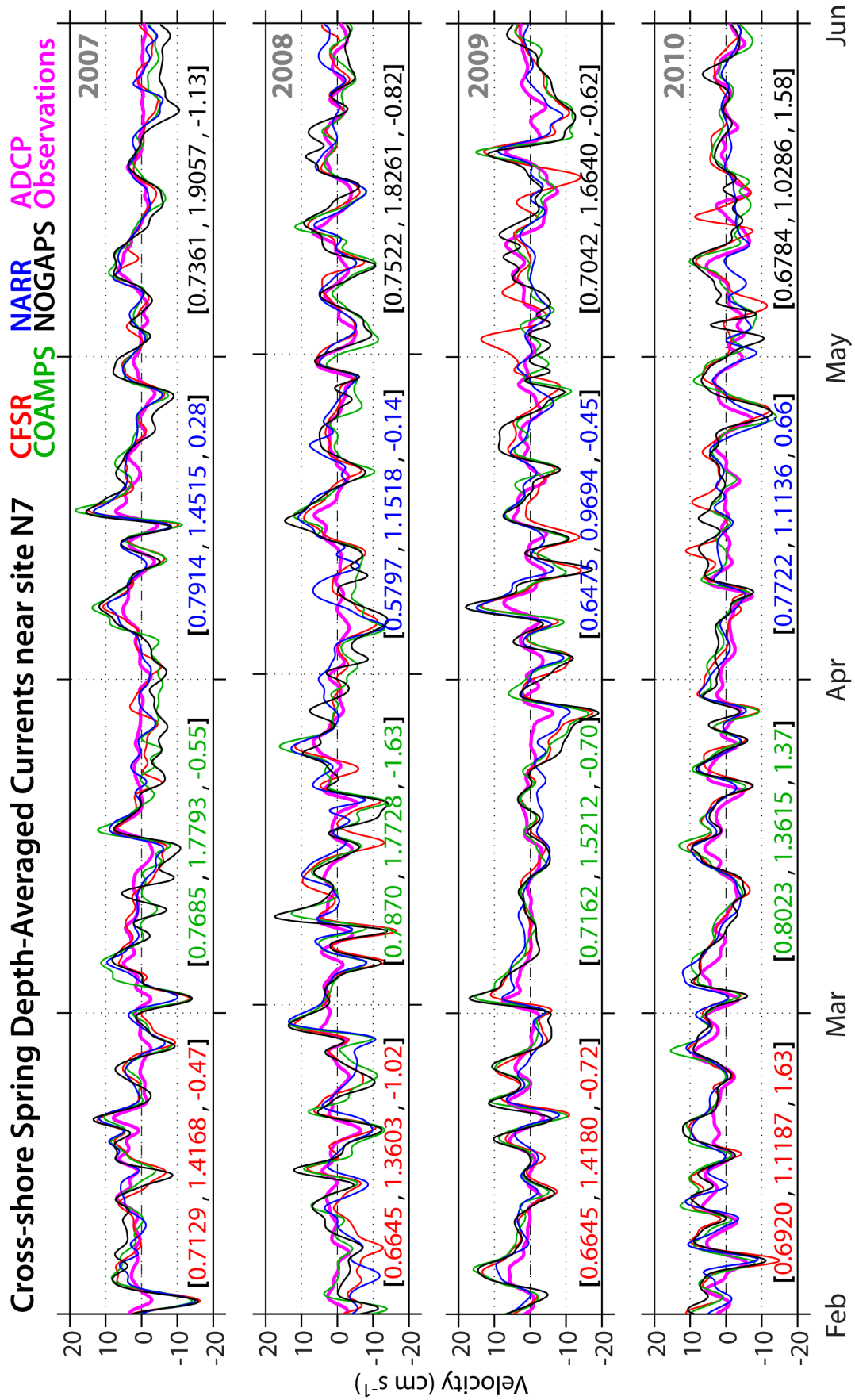

Figure 7: Same as Figure 6, except for depth-averaged springtime cross-shore currents at site N7.

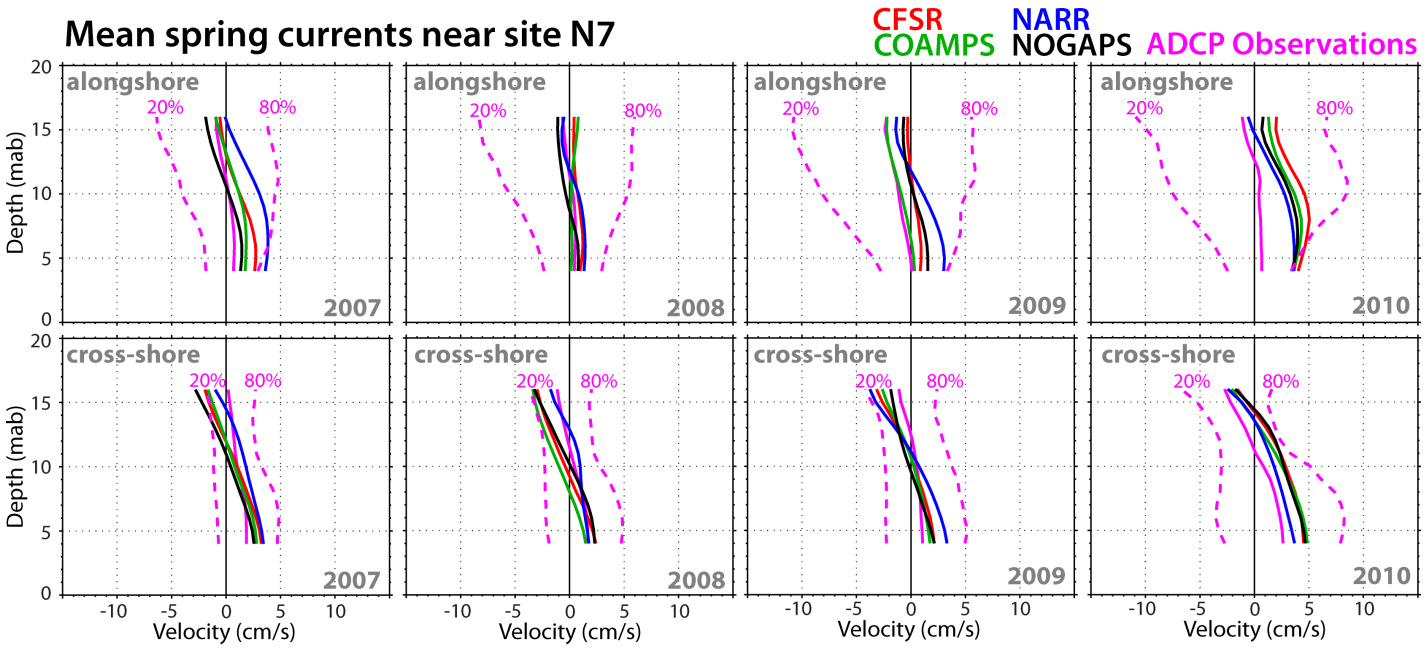

Figure 8: Modeled and observed current profiles at site N7, averaged for the period Feb—June. Dashed lines show the 20th and 80th percentiles of the observed flow, and the interquantile range is the difference between the two percentiles.

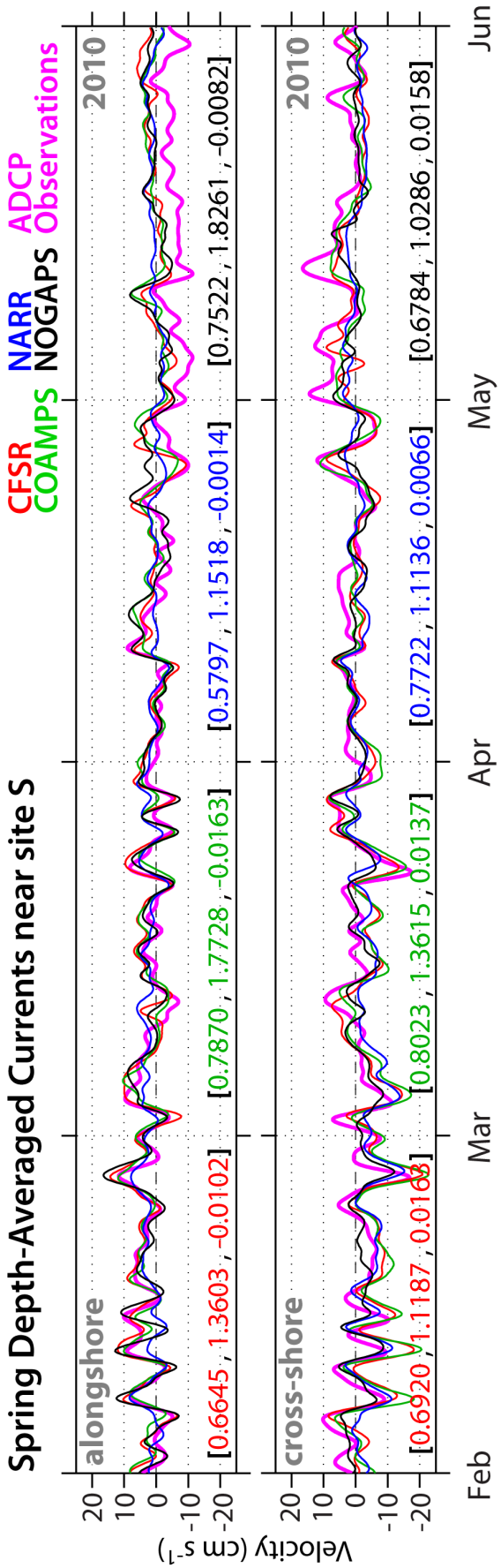

Figure 9: Modeled and observed depth-averaged springtime currents at site S. Values in the triplet inticate the correlation R, regression slope, and difference between modeled mean and observed mean currents.

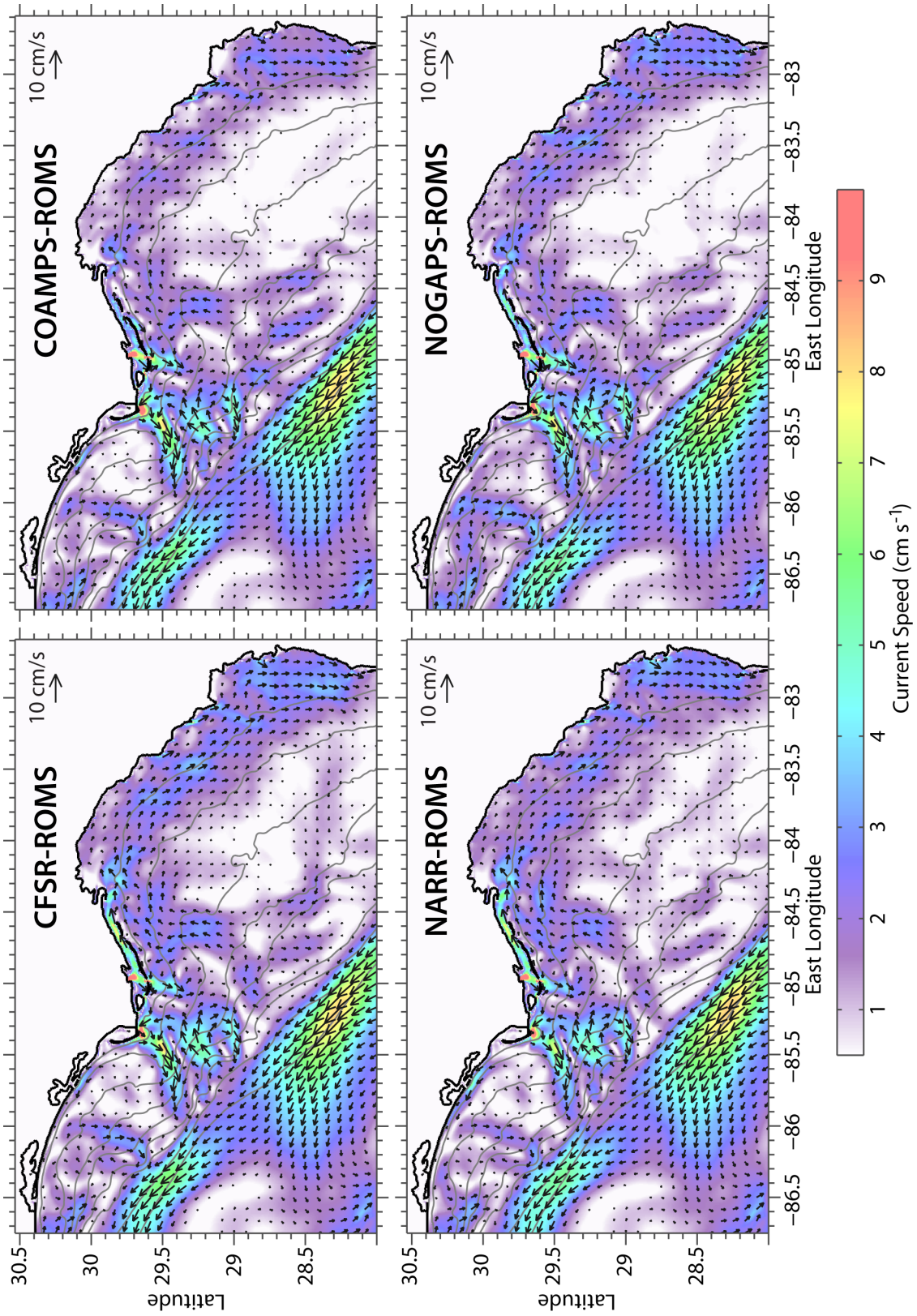

Figure 10: Seven-year mean vertically averaged spring velocities for each contemporaneous model run. Current speeds are contoured in color and velocity vectors are plotted every 10 gridpoints.

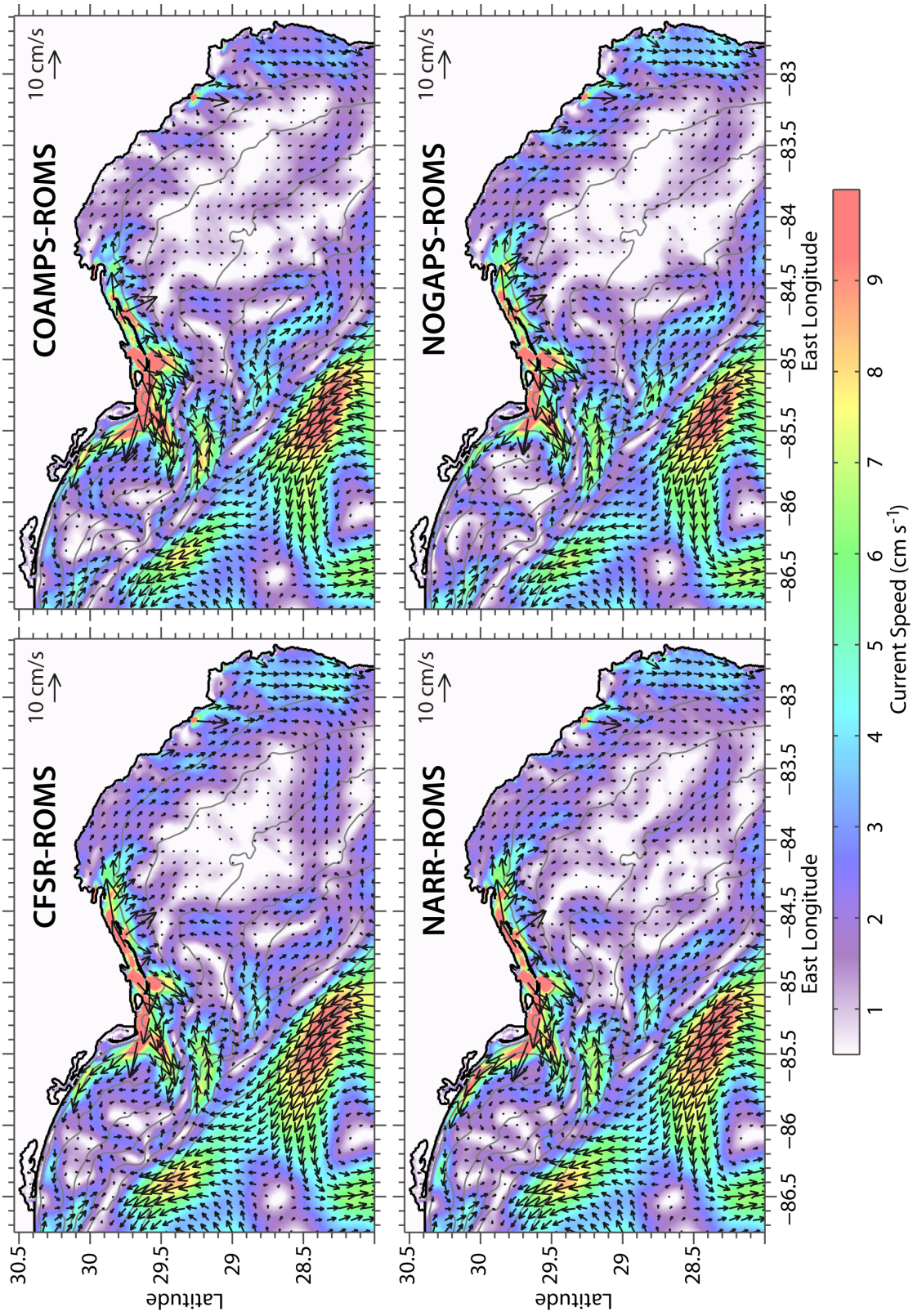

Figure 11: Same as Figure 10, except for seven-year mean near-surface velocities.

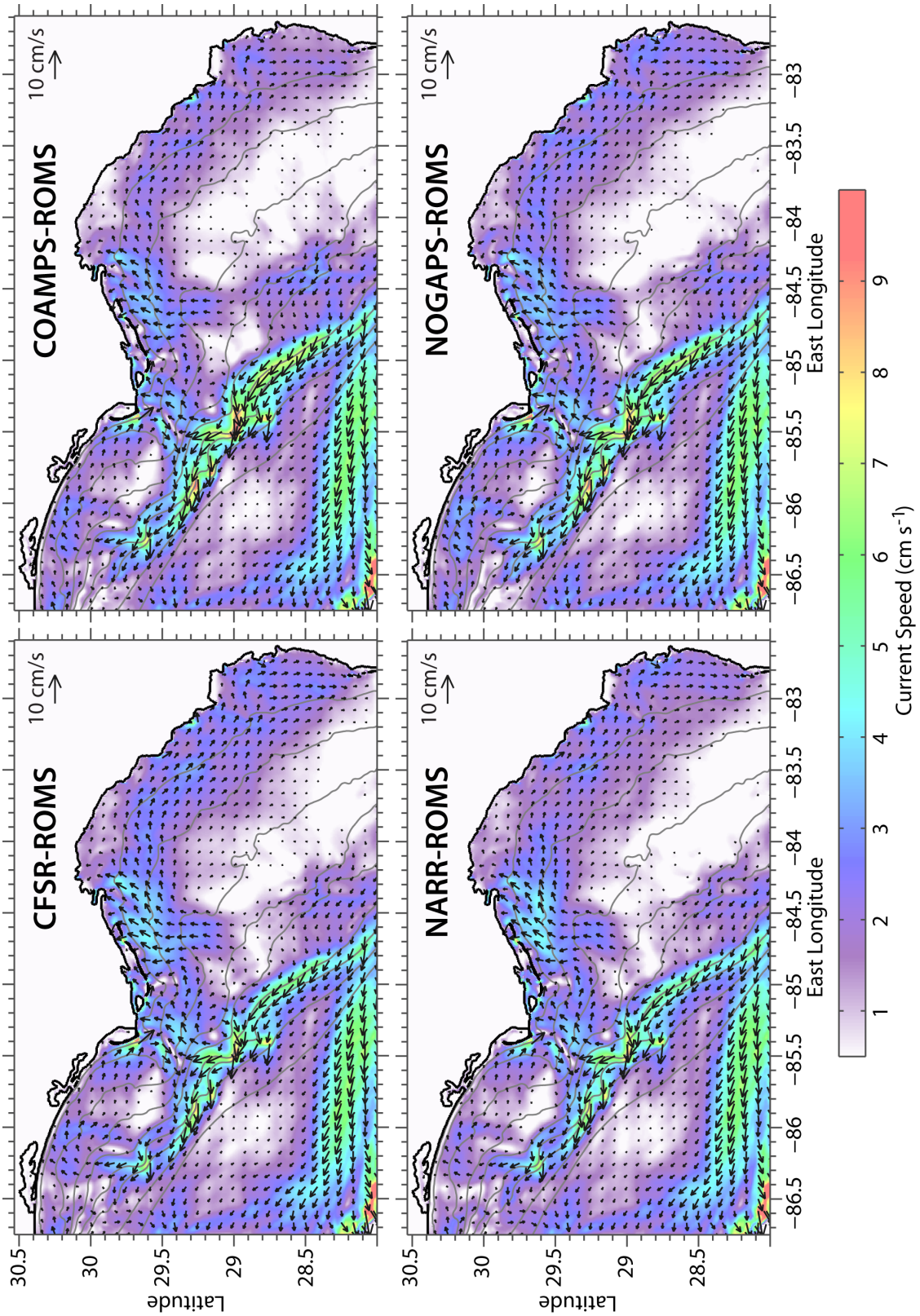

Figure 12: Same as Figure 10, except for seven-year mean near-bottom velocities.

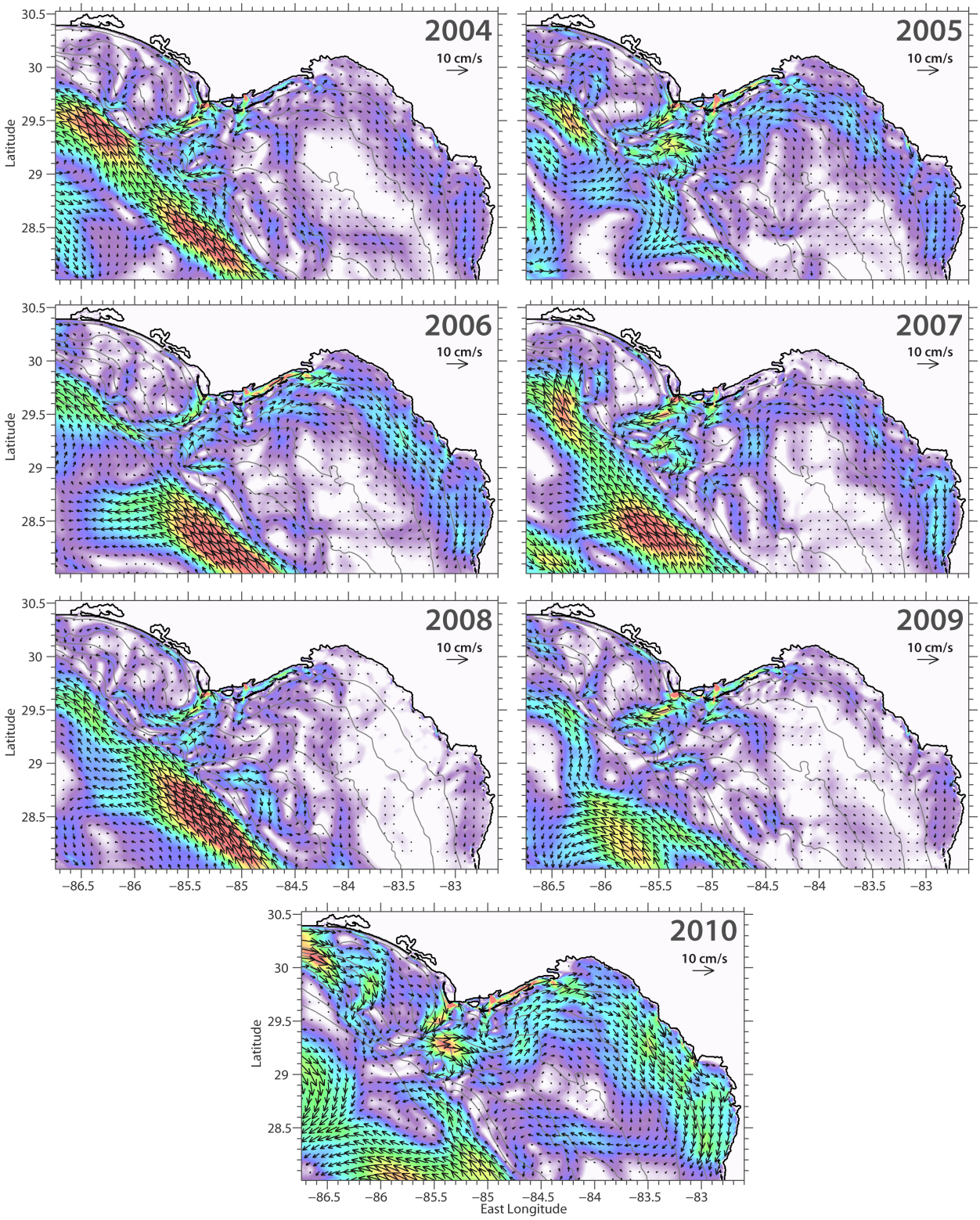

Figure 13: Similar to Figure 10, except for mean depth-averaged velocities during each spring season.

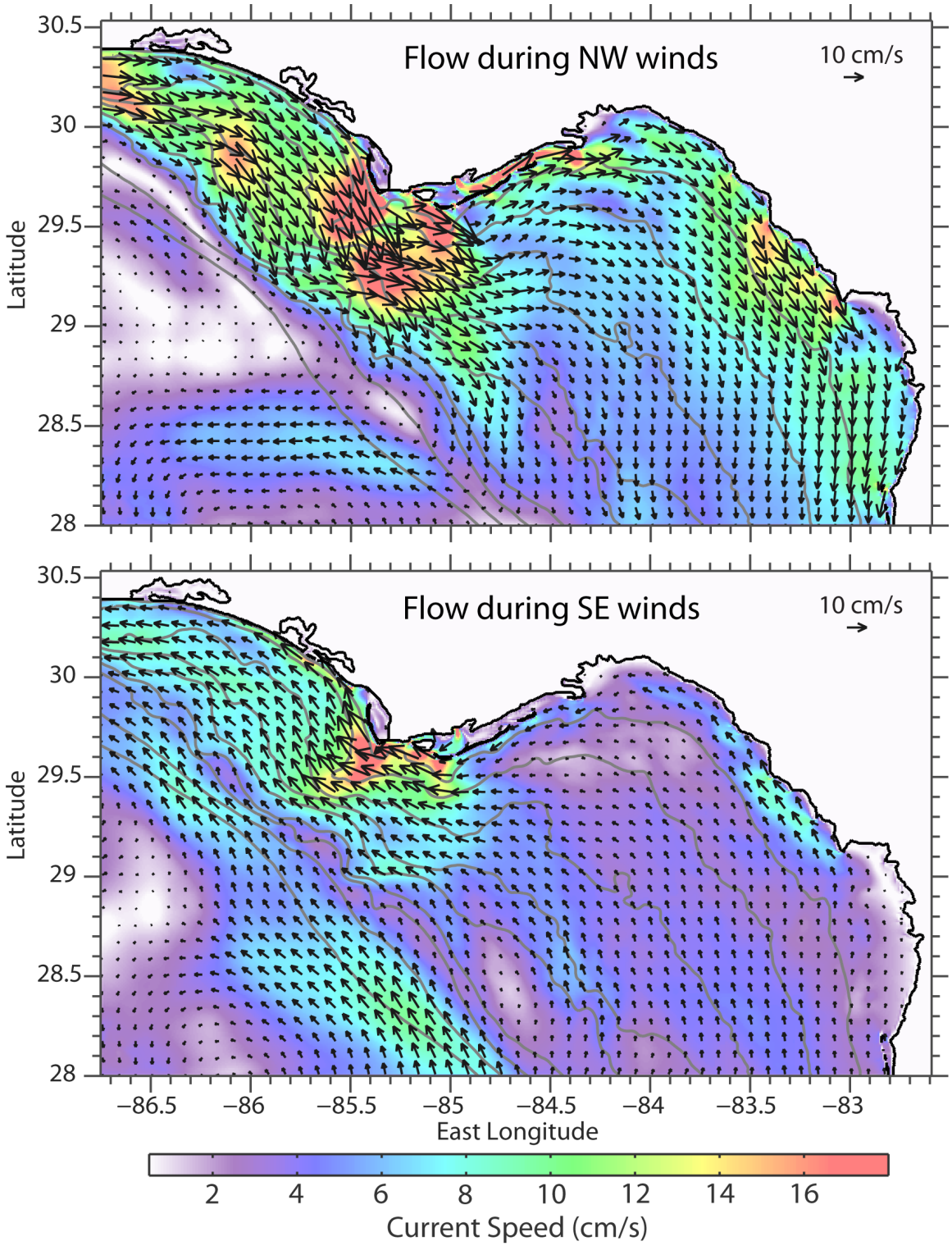

Figure 14: Vertically averaged spring velocities for the CFSR-forced BBROMS simulation. Velocities from the seven-years of simulations are conditionally averaged for springtime flow only during (top) winds that range from West to North or (bottom) during winds that range from South to East.

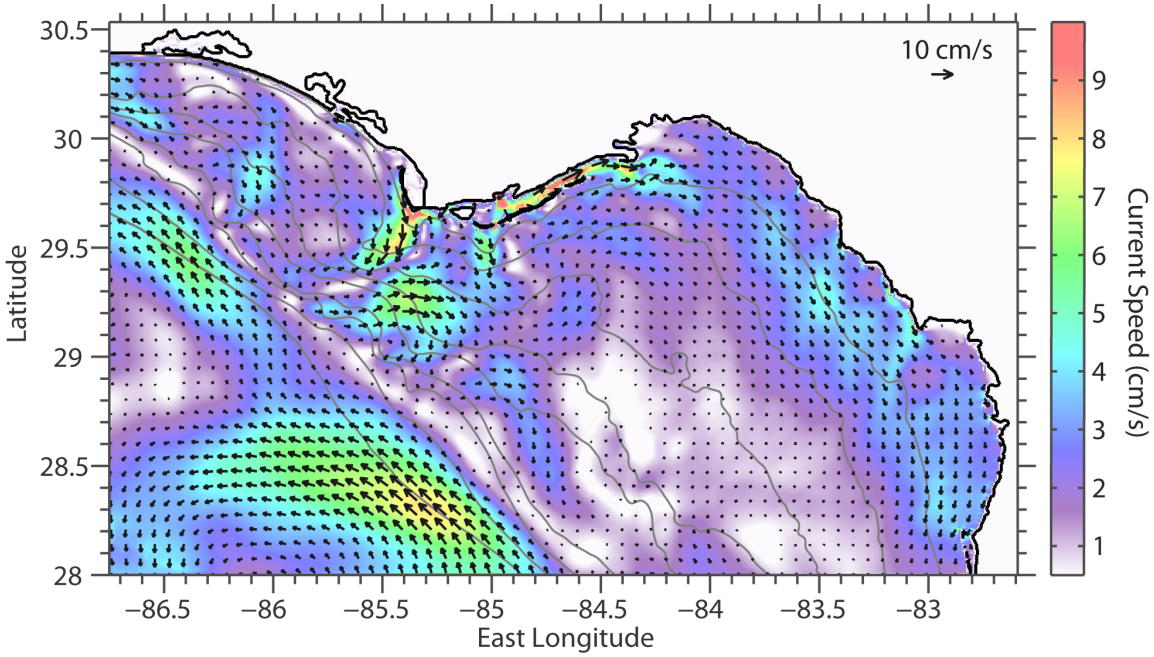

Figure 15: Vertically averaged spring velocities from the CFSR-forced BBROMS simulation. Velocities are conditionally averaged for springtime flow during winds that range either from West to North or from South to East. This figure is the average of each panel in Figure 14.

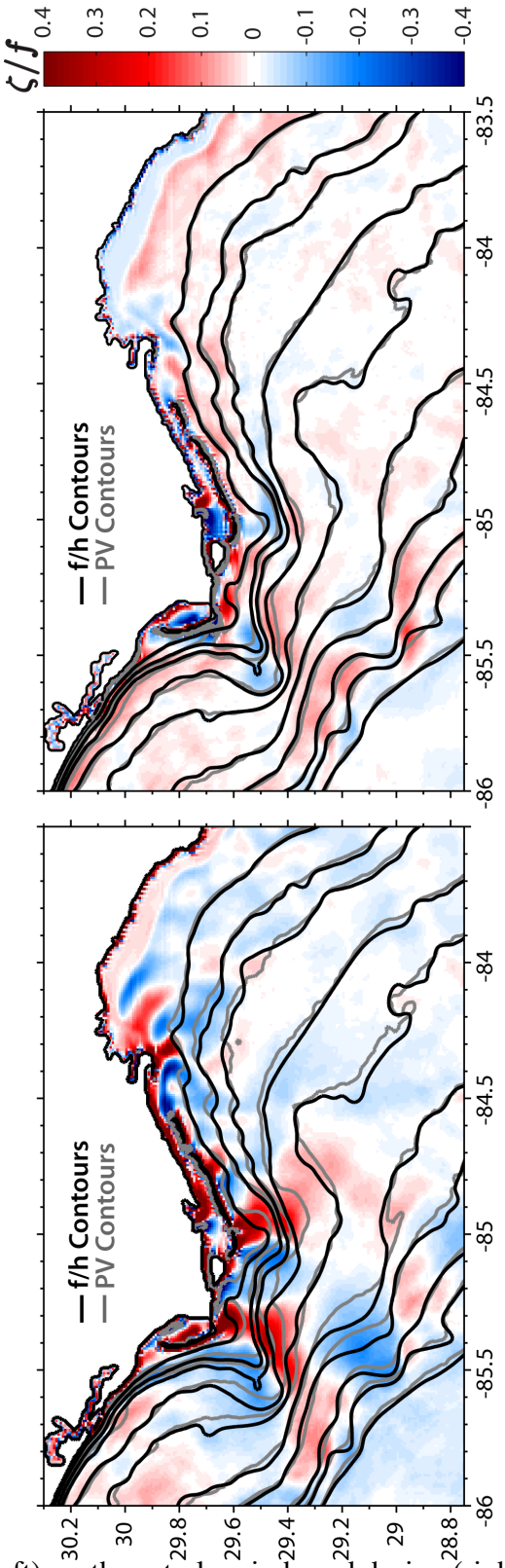

Figure 16: The ratio ζ/f for flow during (left) northwesterly winds and during (right) southeasterly winds are plotted in color, calculated from seven-year mean depth-averaged currents. Contours for both f/h and potential vorticity are drawn at 0.046×10^{-5}, 0.07×10^{-5}, 0.1×10^{-5}, 0.145×10^{-5}, 0.18×10^{-5}, 0.238×10^{-5}, 0.295×10^{-5}, 0.37×10^{-5}, 0.46×10^{-5}, and 0.7×10^{-5} $m^{-1}s^{-1}$. Areas with higher magnitudes of ζ/f, or where contours are not aligned, indicate where cross-isobath flow should occur under PV-conserving conditions.

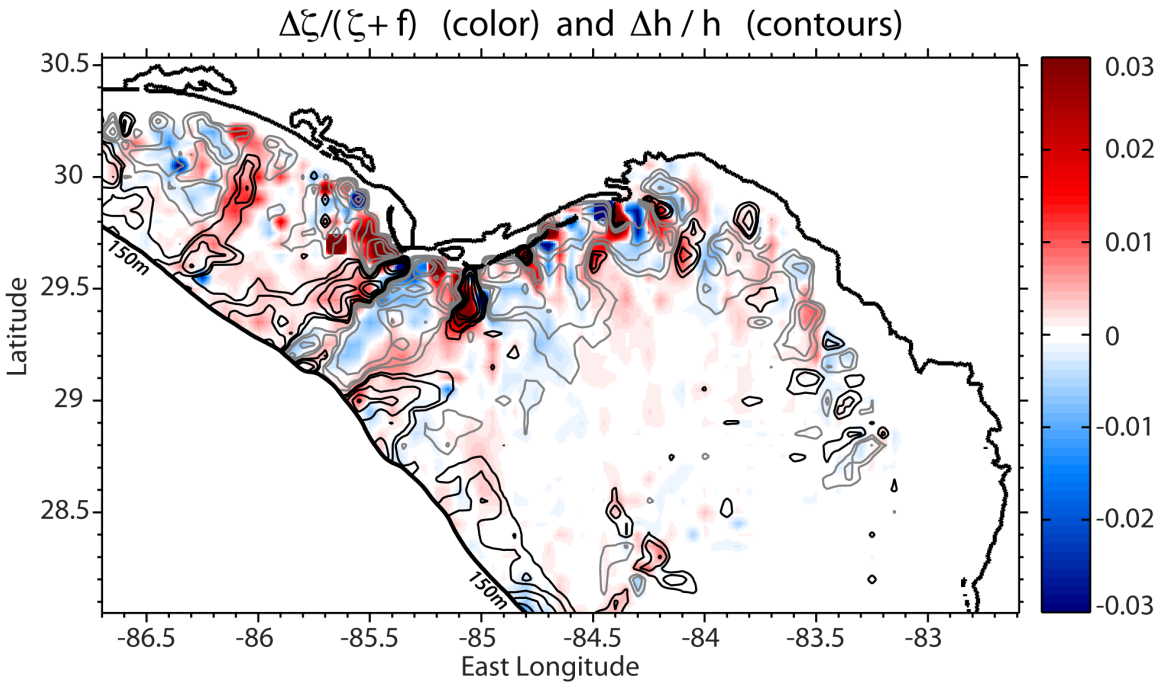

Figure 17: Contours depict the mean change in particle depth from one time step to the next ($\Delta h/h$) at each location, with contour intervals at ±0.0025, ±0.005, and every 0.002 from ±0.01 to ±0.03. Colors depict the mean change in particle relative vorticity between time steps over the absolute vorticity at the particle location from the previous time step ($\Delta\zeta/(\zeta+f)$).

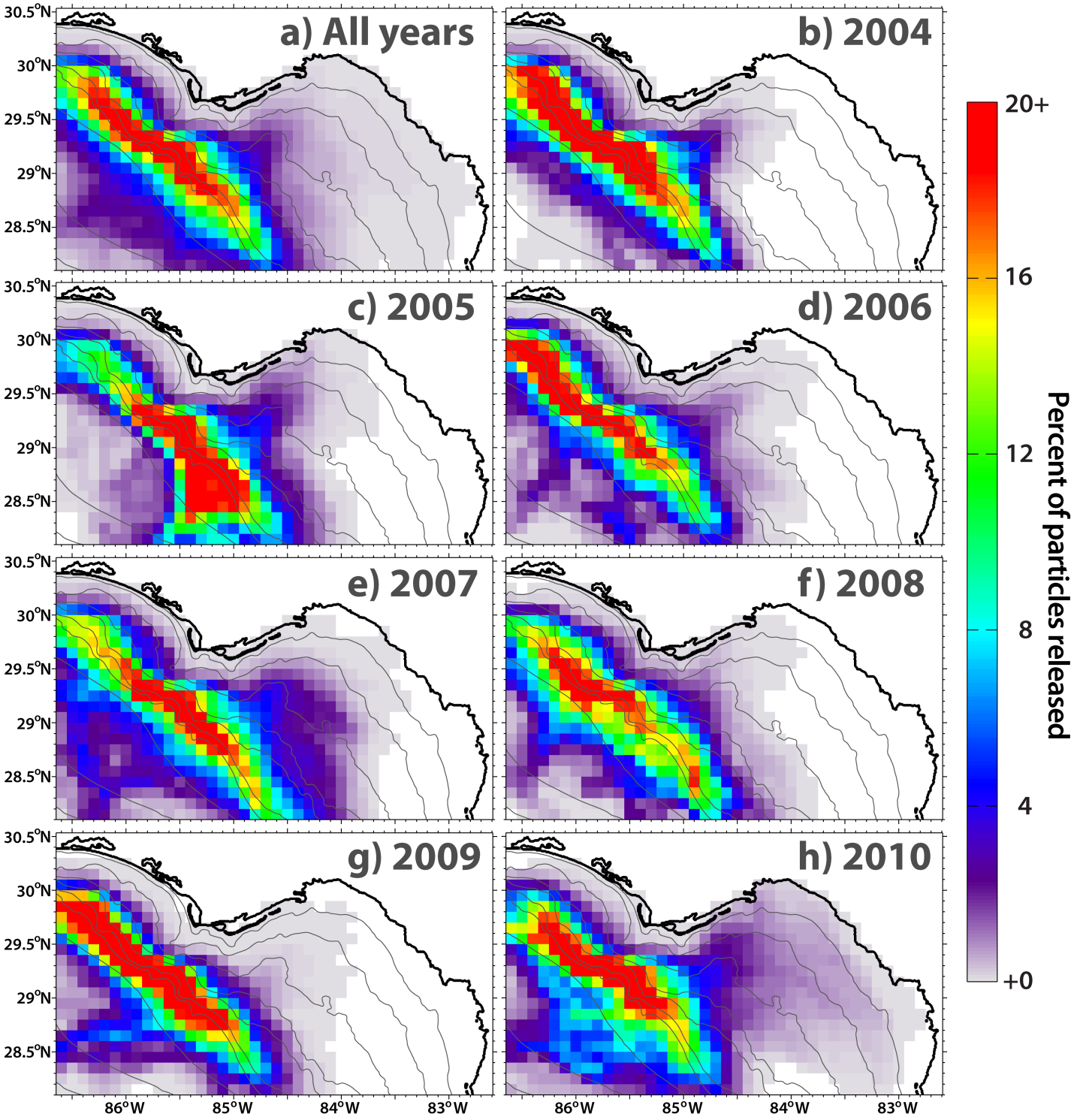

Figure 18: Particle track density for a) all particles released over the seven-year advection period (percentage of all 733,824 particles), and b)—h) calculated for each year (percentage of 104,832 particles released during that year). Particles are advected in the depth-averaged velocities from the CFSR-forced BBROMS simulation.

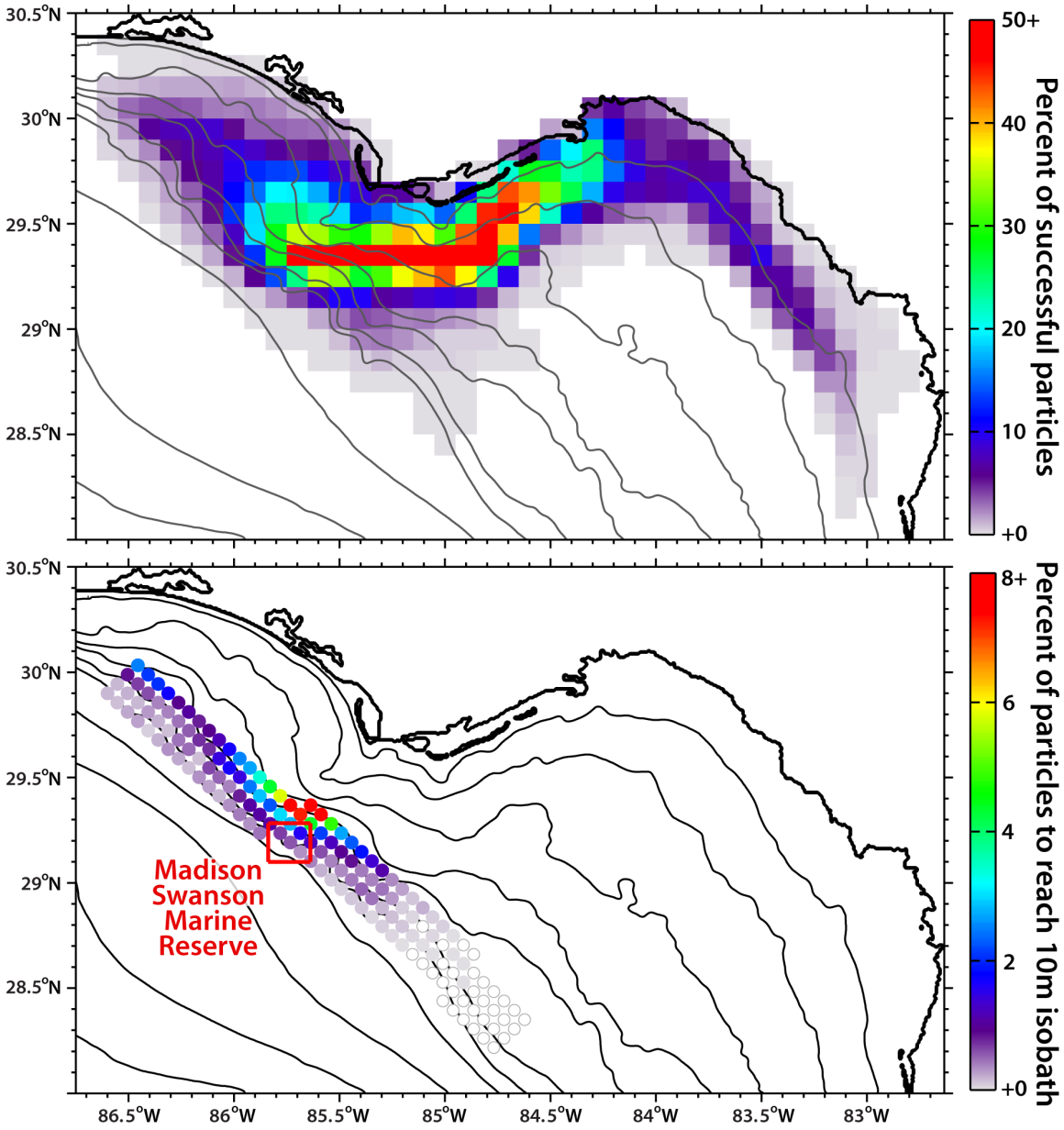

Figure 19: (top) Particle track density of all particles that reached the 10m isobath during their advection period and (bottom) the origins of particles that successfully reached the 10m isobath during their advection. Circles are colored by the percentage of successful particles originating from that location, where open circles indicate zero particles to arrive inshore.

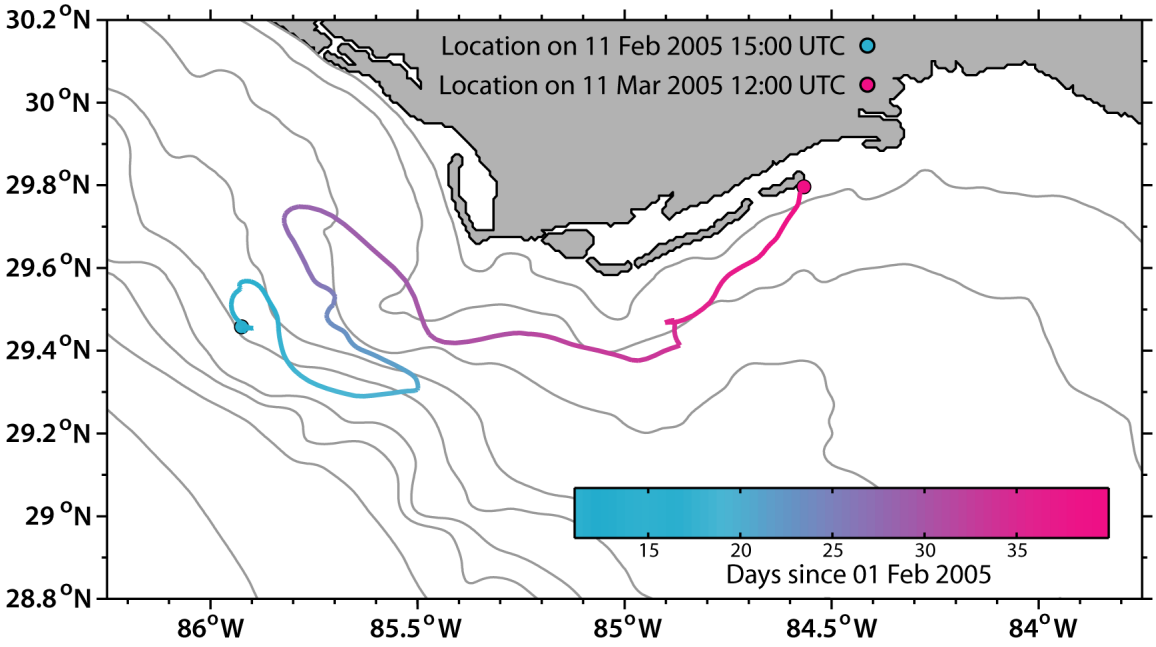

Figure 20: Trajectory of a particle released at 15:00 UTC on 11 February 2005. The color of the particle's path indicates the time during the particle's advection to the nearshore region around Apalachicola Bay on 11 March 2005 at 12:00 UTC.