

## Figures

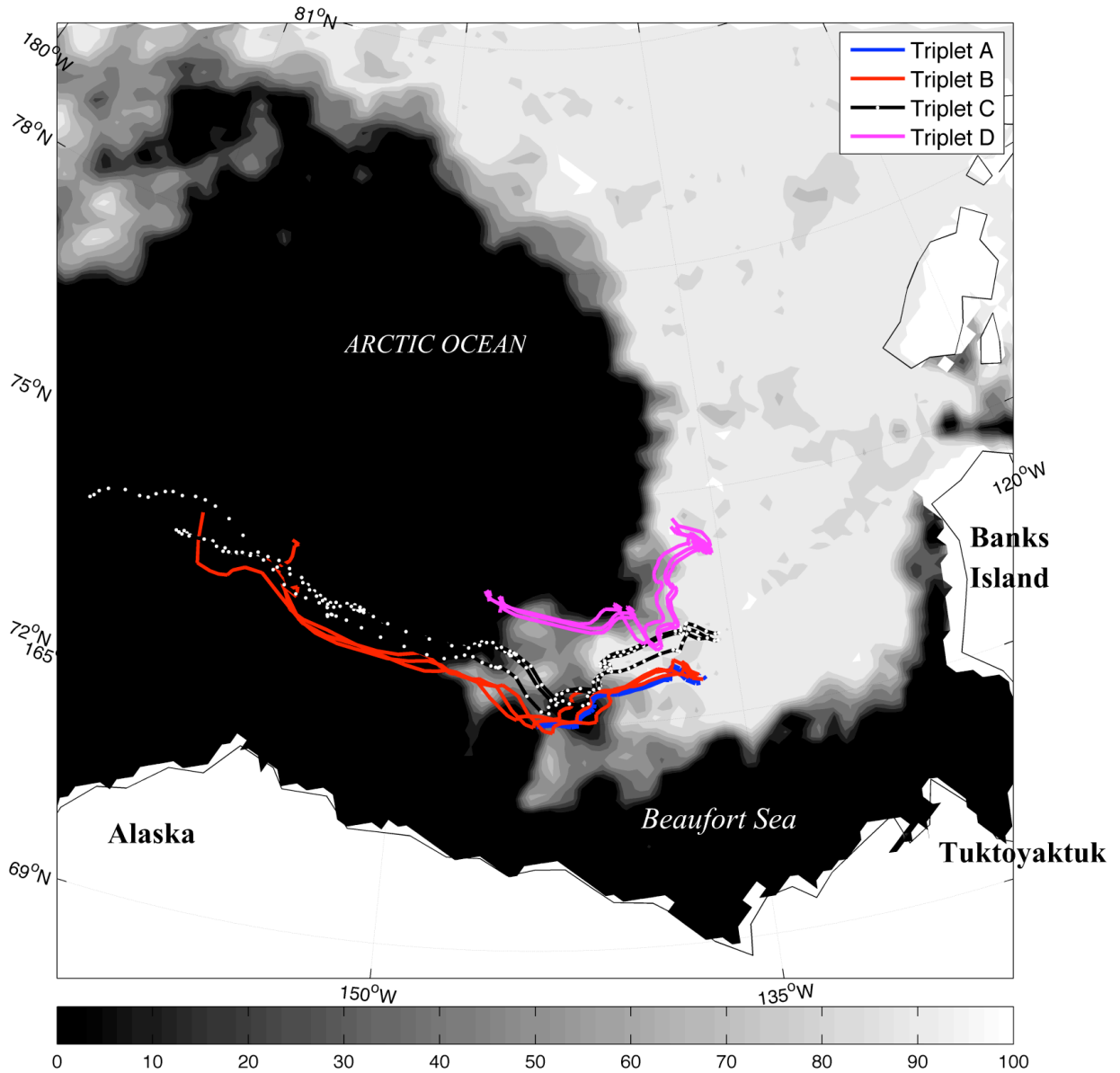


Figure 1a. Map of study area and winter 2009/10 beacon trajectories superimposed on AMSR-E sea ice concentrations for September 9<sup>th</sup>, 2009 and depicting the marginal ice zone on deployment.

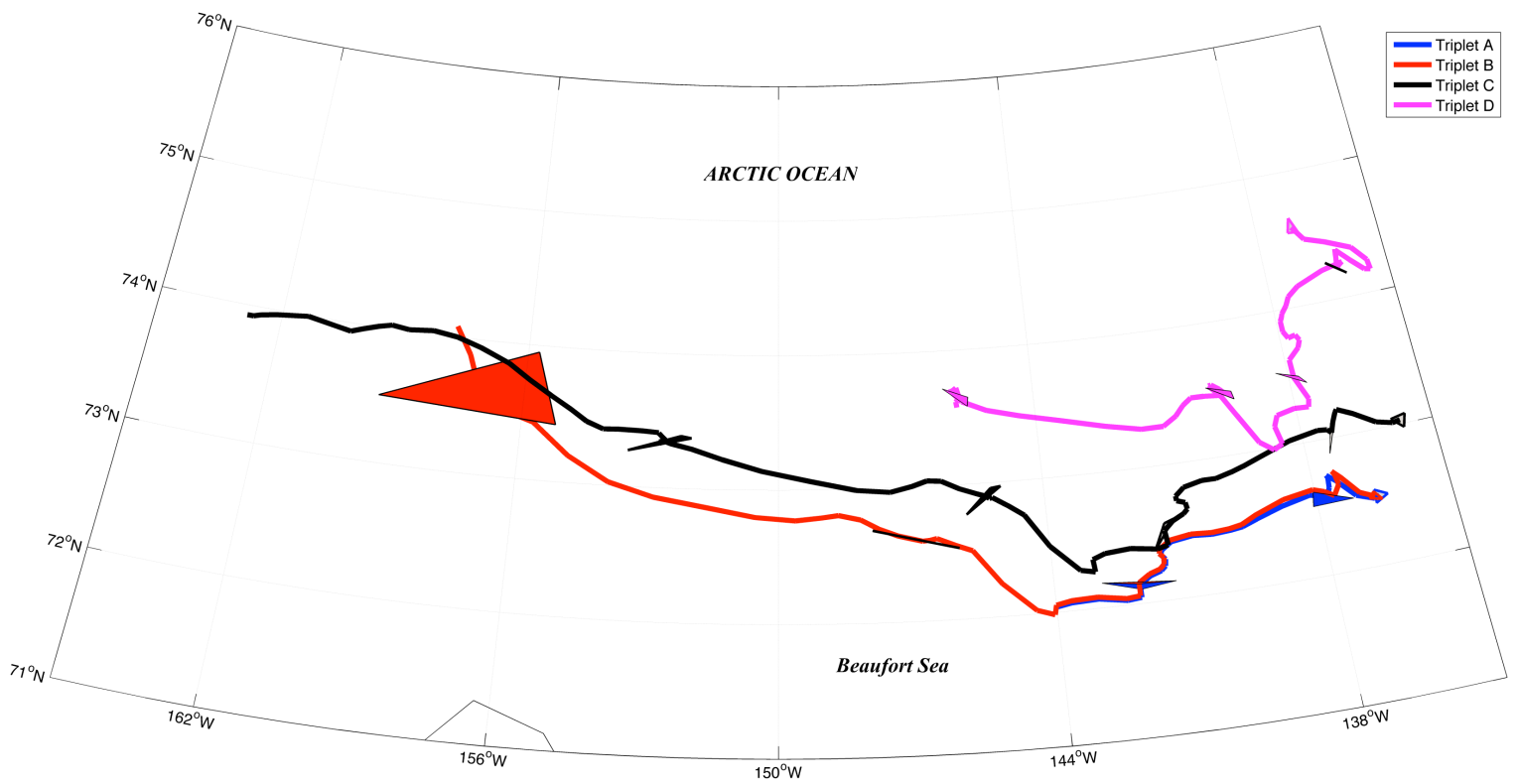


Figure 1b. Map of study area and winter 2009/10 beacon trajectories. Blue, red, black and magenta indicate triplets A, B, C, and D, respectively, with triplet A located nearest to the coastline, and triplet D located furthest from the coastline. Triangles depict triplets on deployment on September 9<sup>th</sup> and, traveling westward, on September 15<sup>th</sup>, October 1<sup>st</sup>, 15<sup>th</sup>, and November 1<sup>st</sup>, respectively, and illustrate elongation of triplets located closest to the coastline.

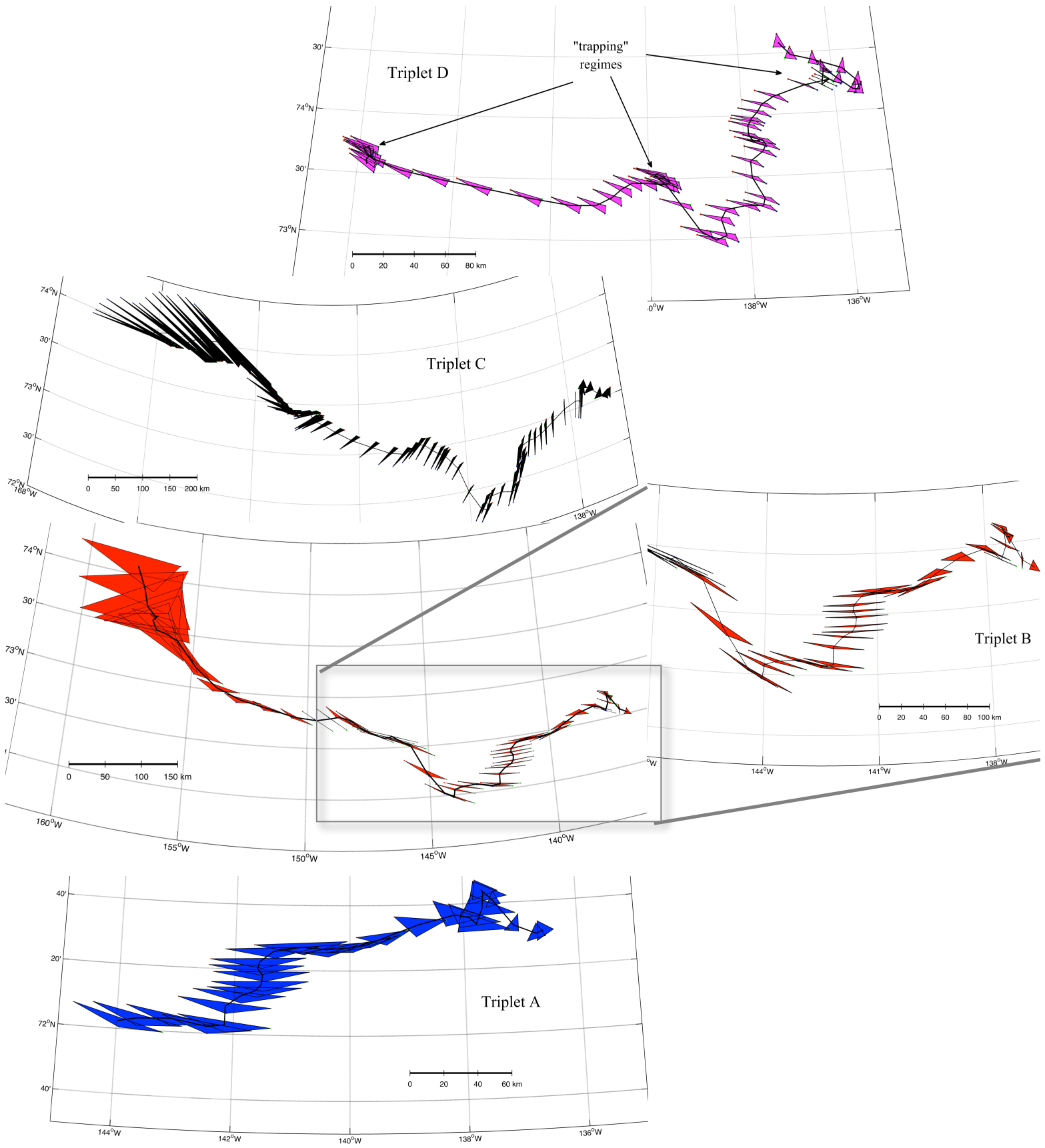


Figure 2. Ice beacon trajectories for (from bottom panel) triplets A, B, C, and D. (Note the difference in scale.) Right-hand panel in second row from bottom depicts the initial evolution in triplet B.

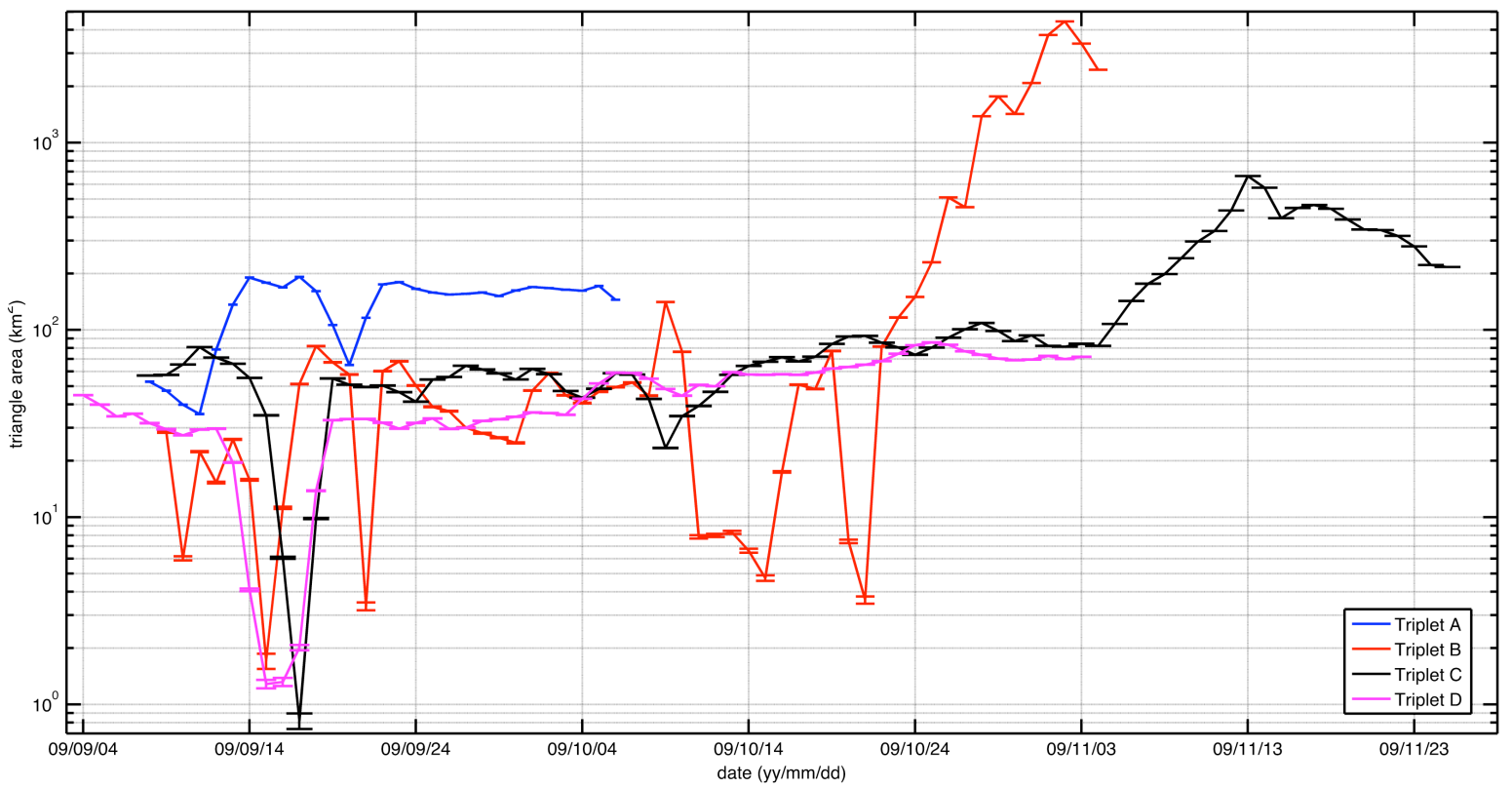


Figure 3. Semilog plot of triangular area by date for ice beacon triplets A to D.



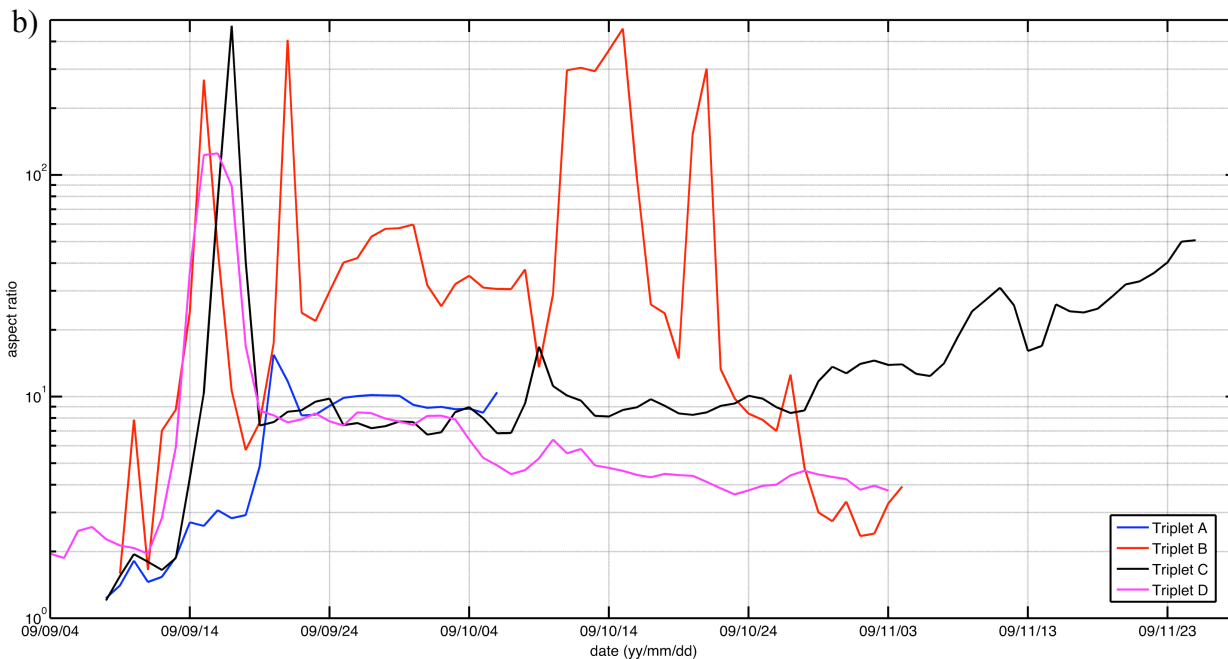
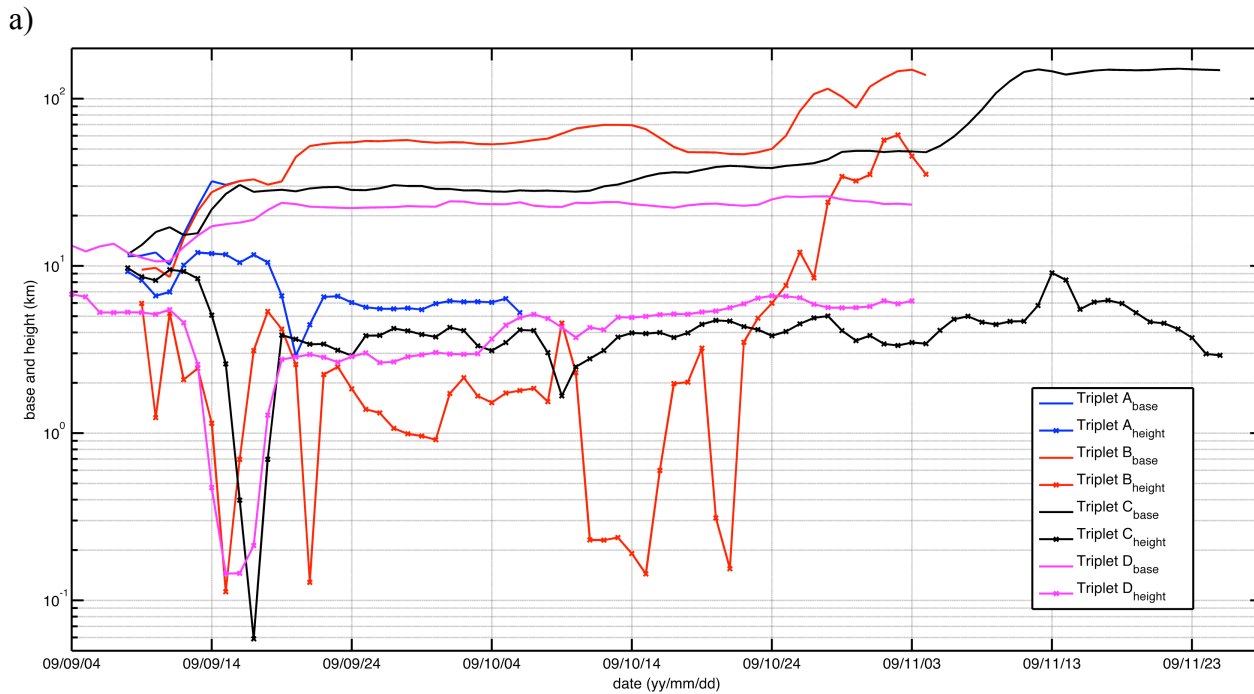


Figure 4. Semilog plot of the triangle a) height and base, and the b) aspect (base-to-height) ratio as a function of date for triplets A to D.

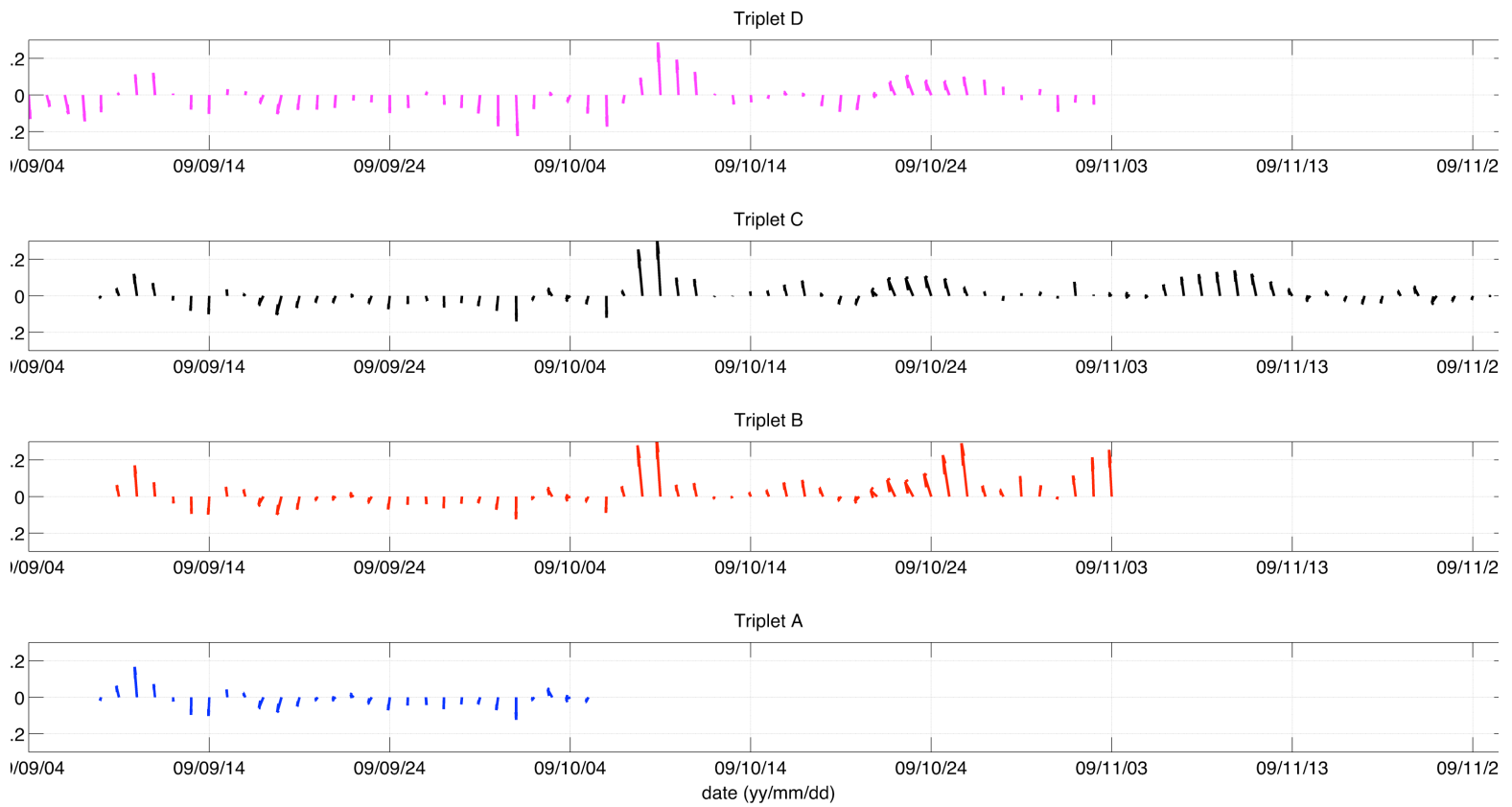


Figure 5. Centroid ice drift velocity (in m/s) as a function of date for triplets A (bottom) to D (top).

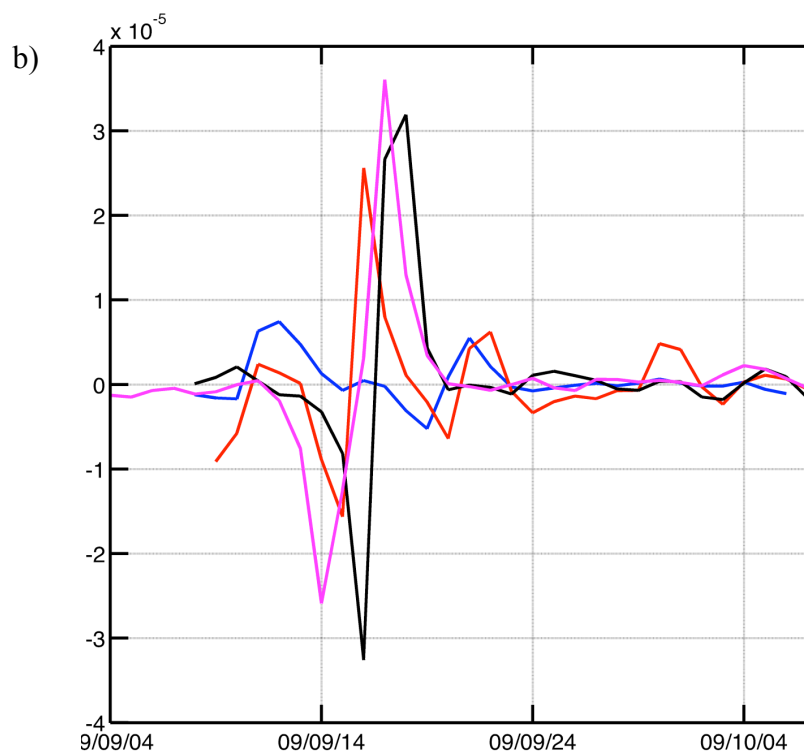
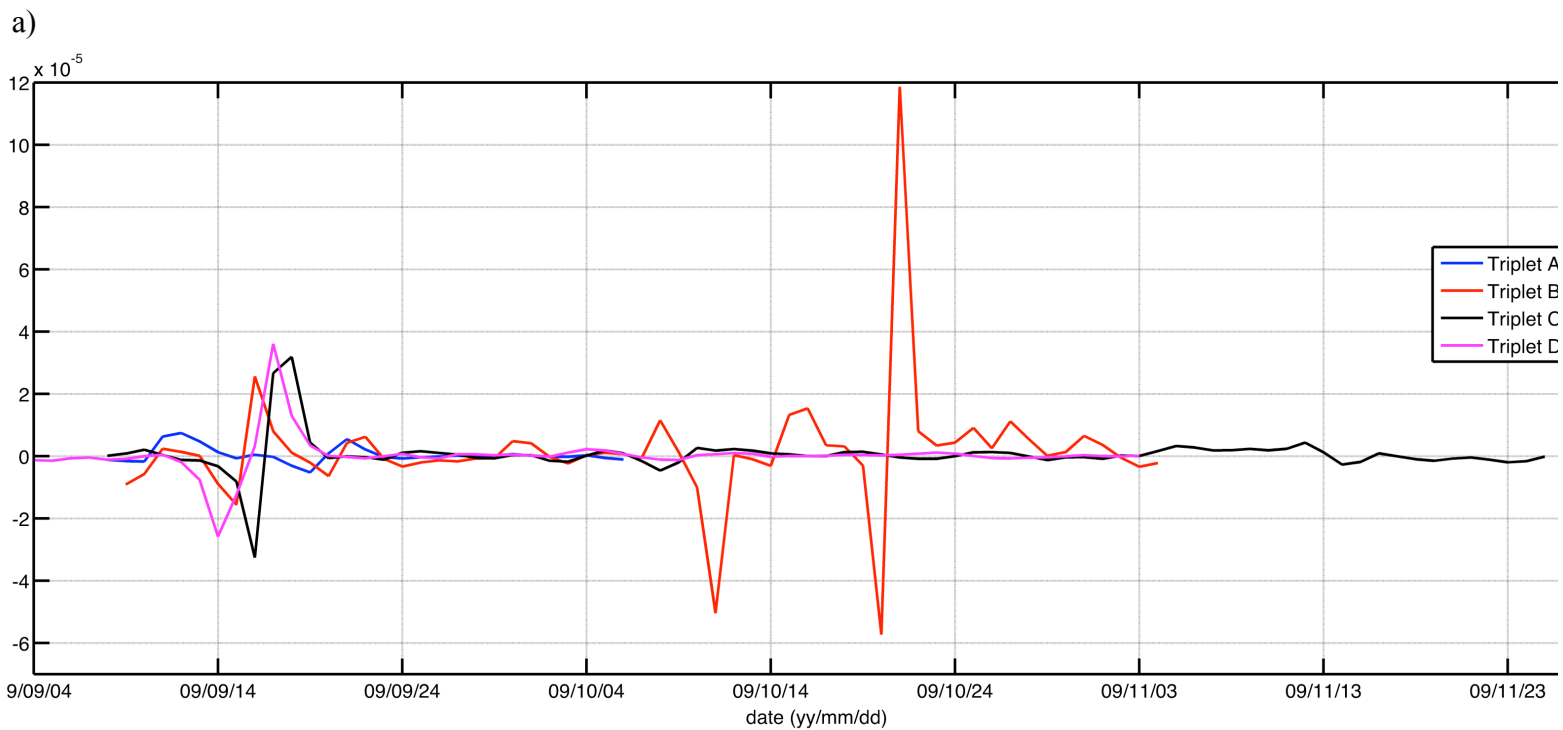


Figure 6. Evolution in sea ice divergence and convergence for triplets A to D from a) September 9, 2009 to November 12, 2009 and b) September 9, 2009 to October 4, 2009.

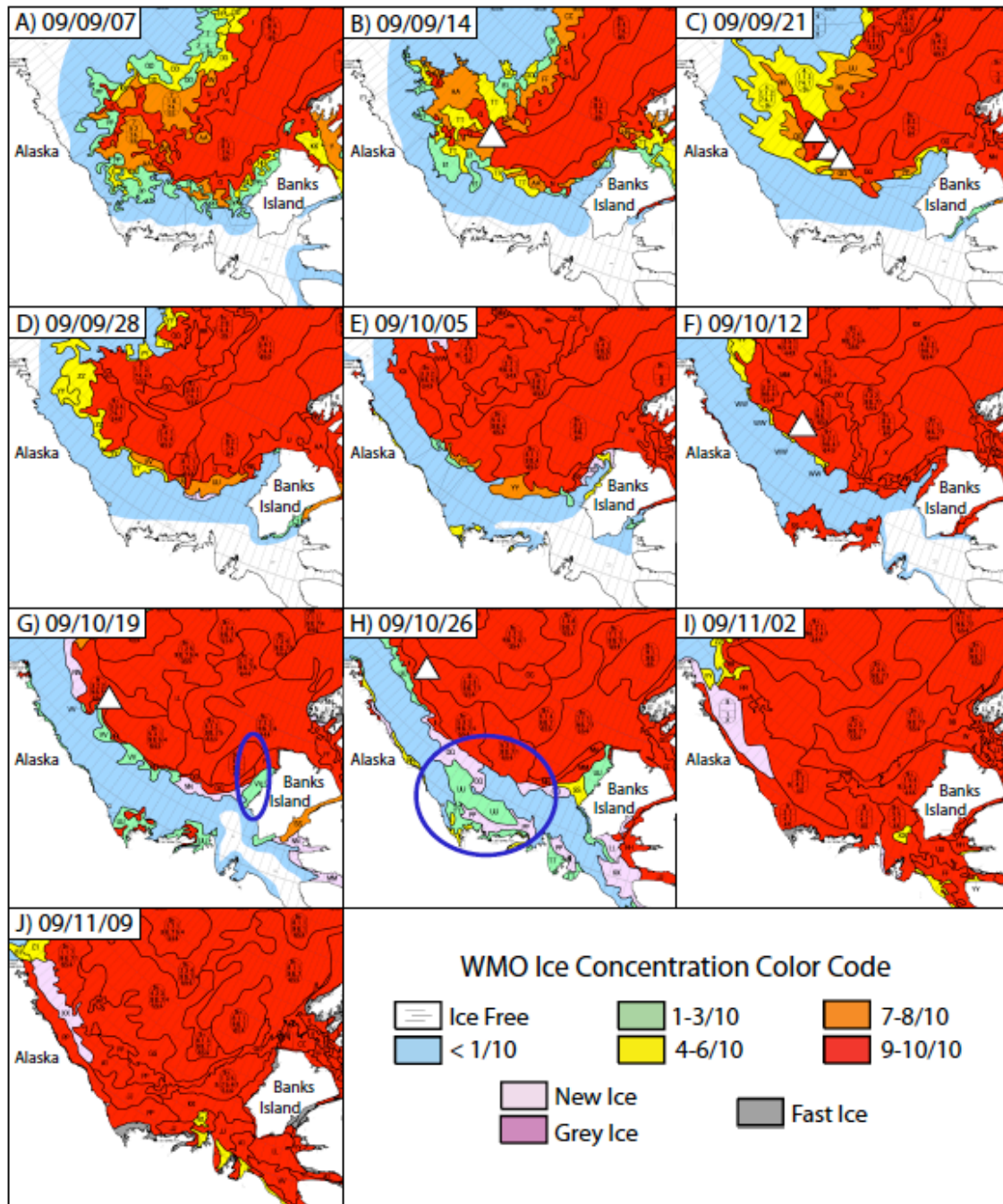


Figure 7a) Canadian Ice Service (CIS) weekly ice charts from September 7, 2009 to November 9, 2009. Ellipses depict the consolidation of marginal ice to the coast and perennial ice pack on October 19<sup>th</sup> and 26<sup>th</sup>. Triangles depict the approximate location of triplet centroids during intervals of enhanced divergence/convergence.

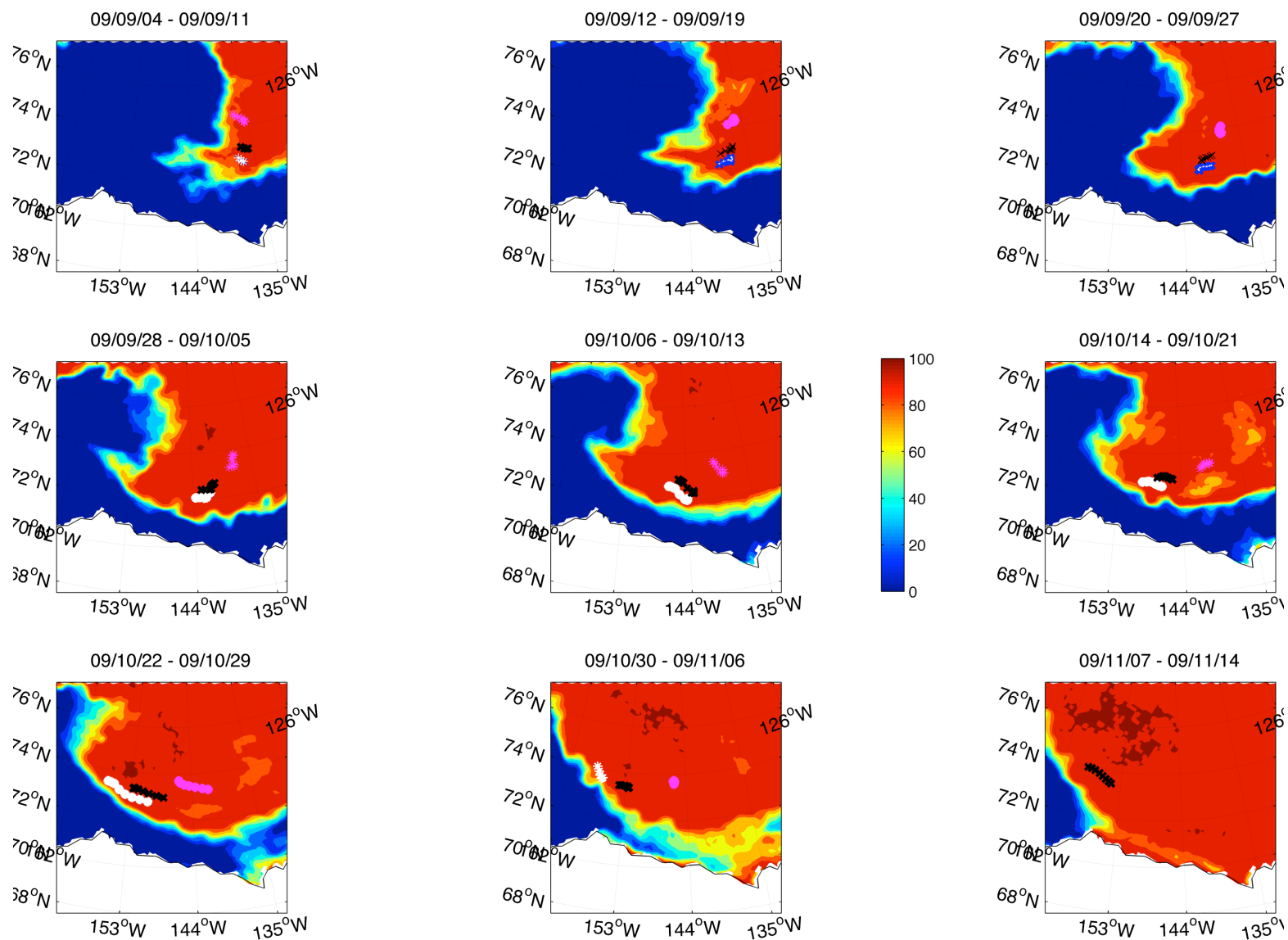


Figure 7b) Maps of weekly AMSR-E sea ice concentrations in addition to weekly evolution in triplet centroids showing proximity of triplets to the ice edge from September 4<sup>th</sup>, 2009 to November 14<sup>th</sup>, 2009. Note that triplet B centroids are depicted by white markers to distinguish beacon paths from 100% ice concentrations.

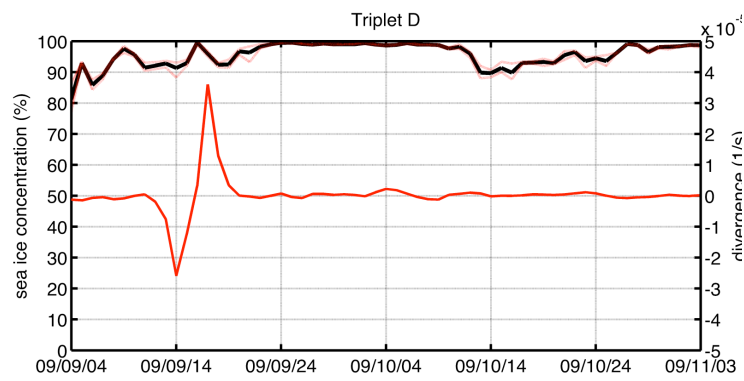
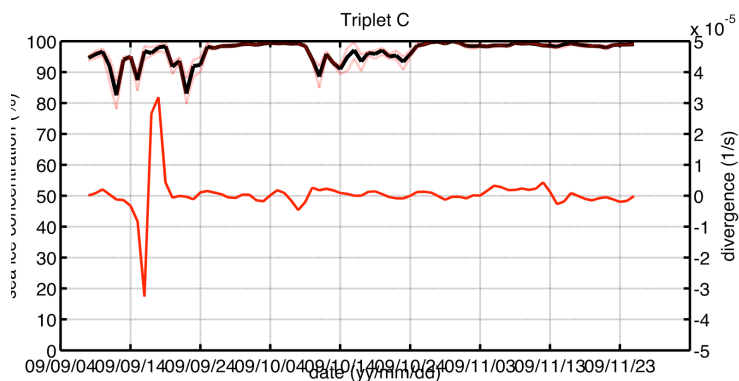
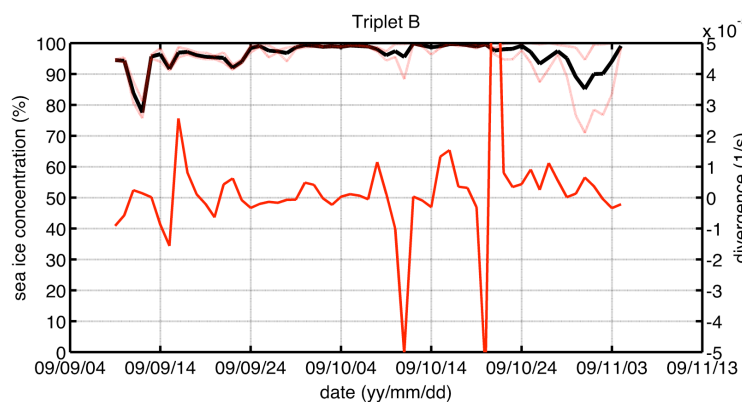
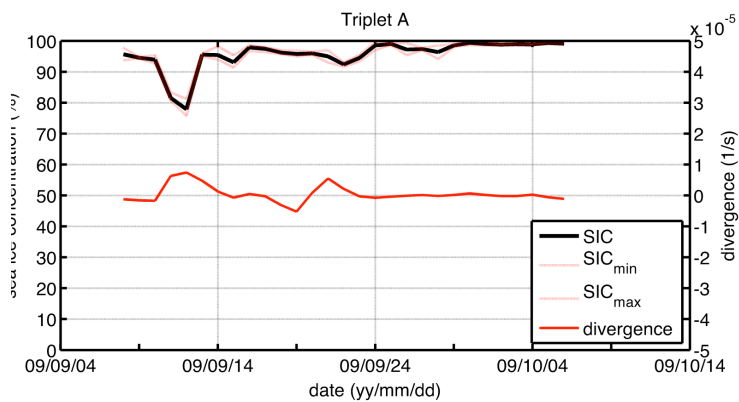


Figure 8. Evolution in mean (black solid line), minimum and maximum (red dashed line, left axis) sea ice concentrations, and divergence (red solid line, right-axis) within a  $\sim 25$  km triplet centroid radius for triplets A to D.



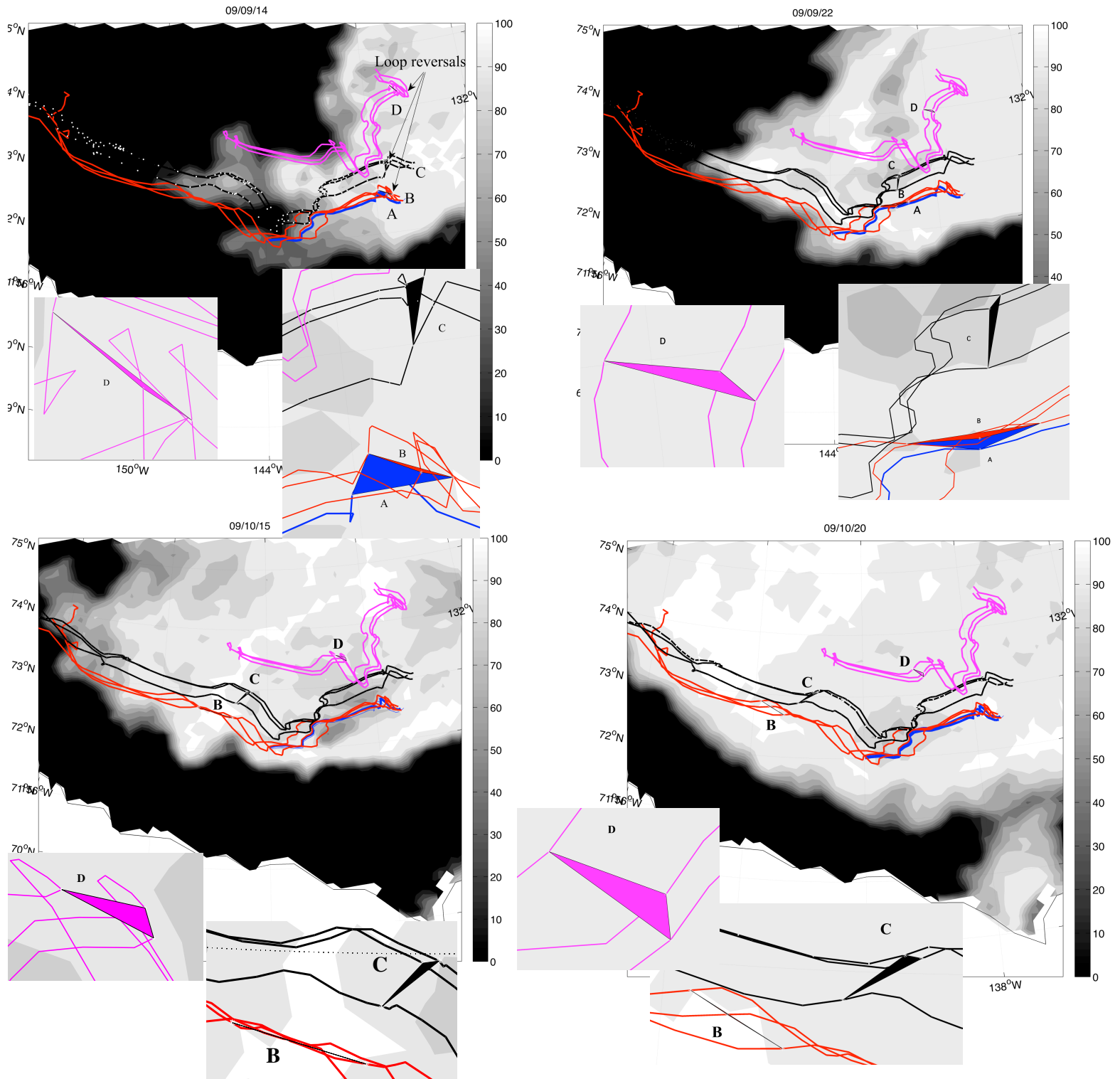


Figure 9. Ice beacon triplet trajectories superimposed on selected daily maps of SIC during intervals of enhanced divergence/convergence (September 14<sup>th</sup> and 22<sup>nd</sup>, and October 15<sup>th</sup> and 20<sup>th</sup>, 2009). Note that the trajectory colour for triplet B is red in September and blue-grey in October to distinguish beacon paths from 100% sea ice concentrations.

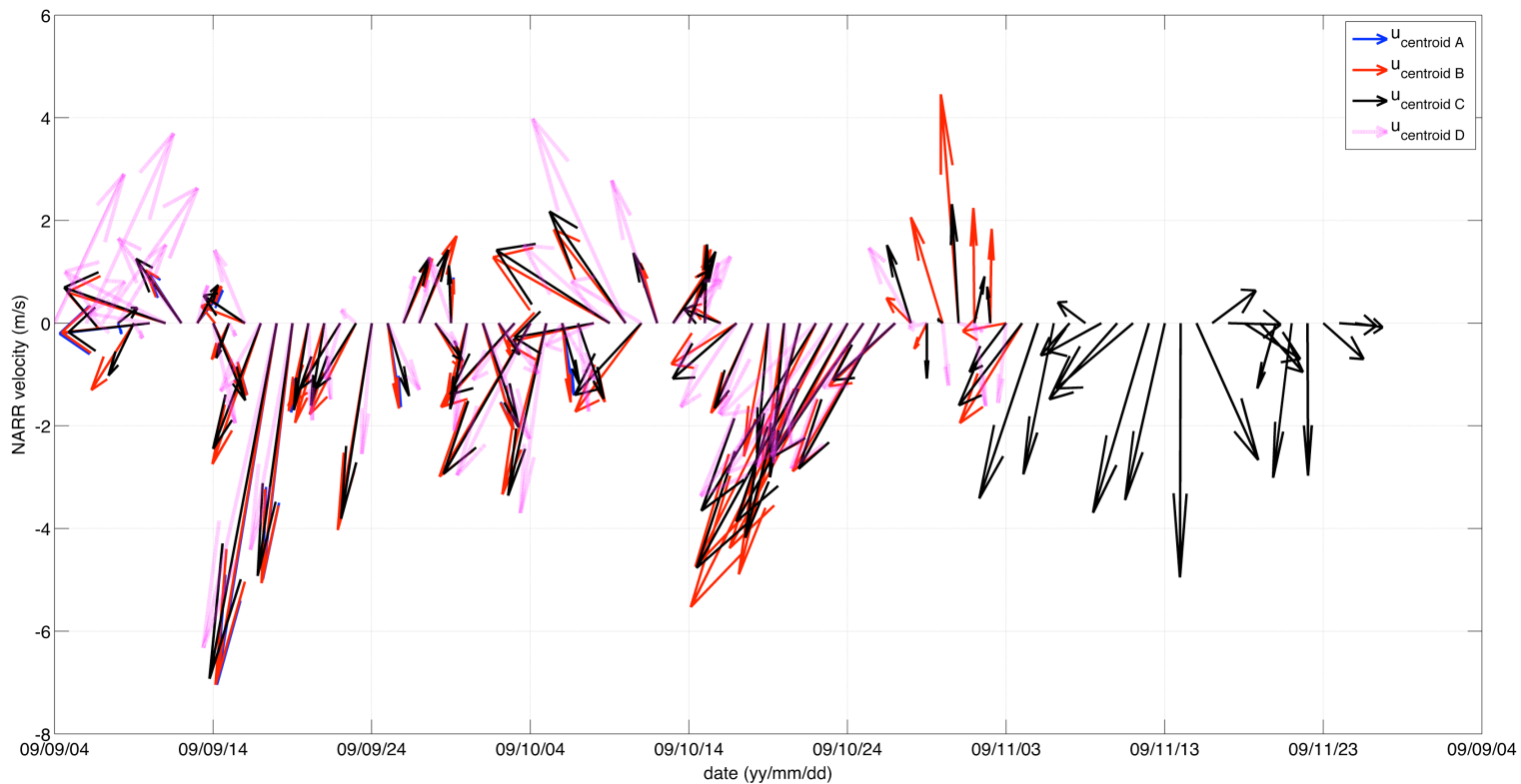


Figure 10. Daily local NARR wind vectors for the area surrounding the triplet centroids from September to November, 2009.