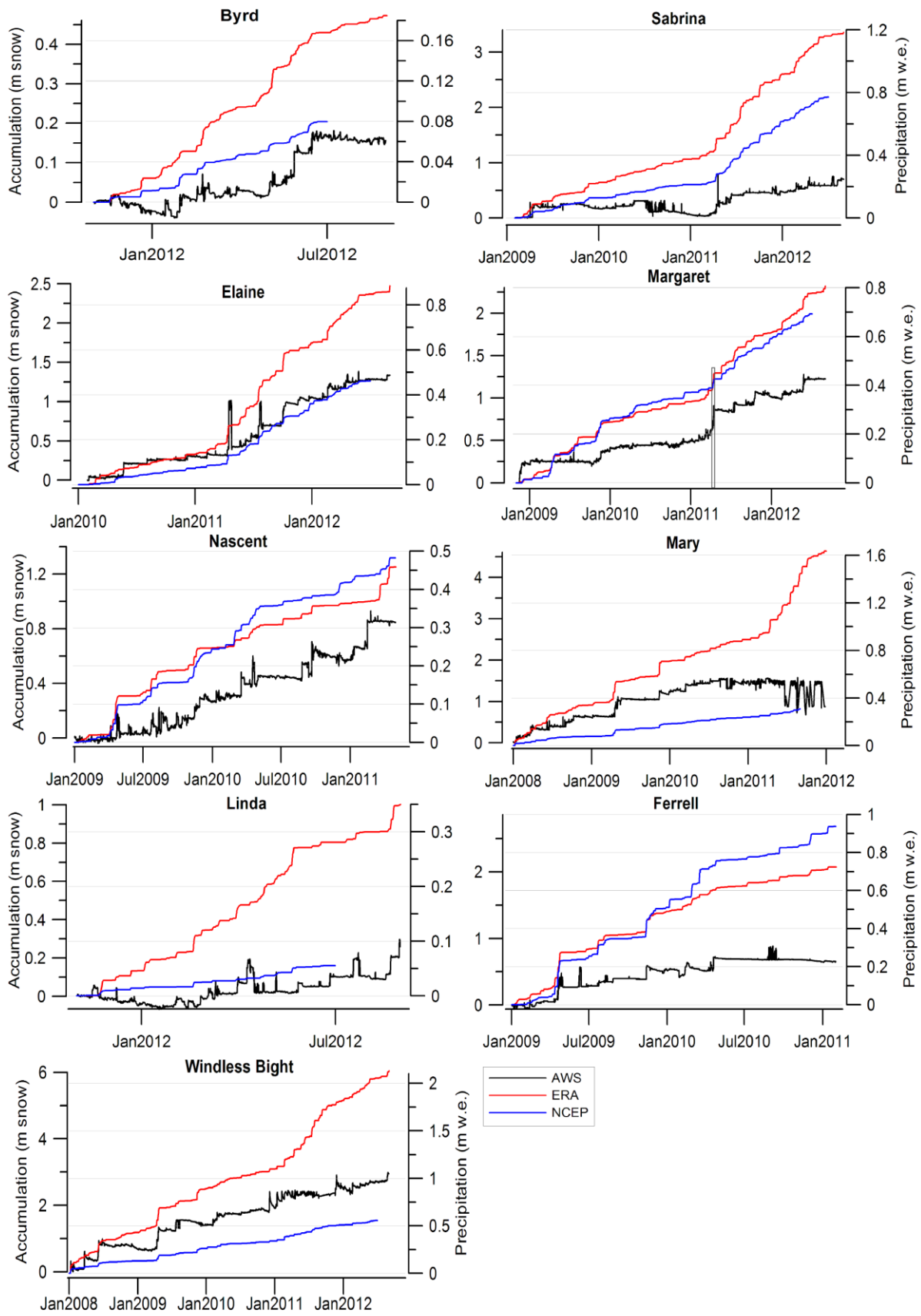
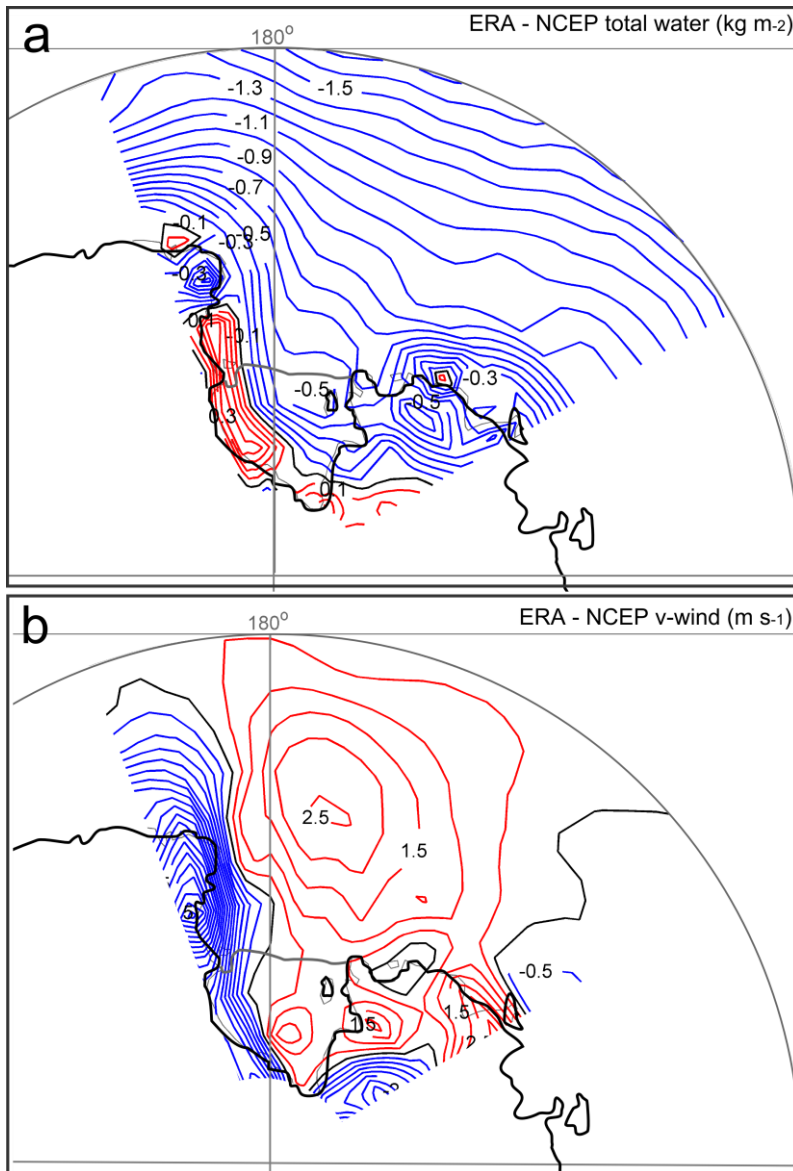


567

568 Figure 1. Locations of the automatic weather stations (AWS) used in this study and  
 569 corresponding gridpoint locations for ERA-Interim (red) and NCEP-2 (blue) reanalyses. Wind  
 570 vectors show the climatological surface wind regime (850 hPa) over the RIS and Ross Sea  
 571 (from ERA-Interim monthly data averaged over 2008–2012).

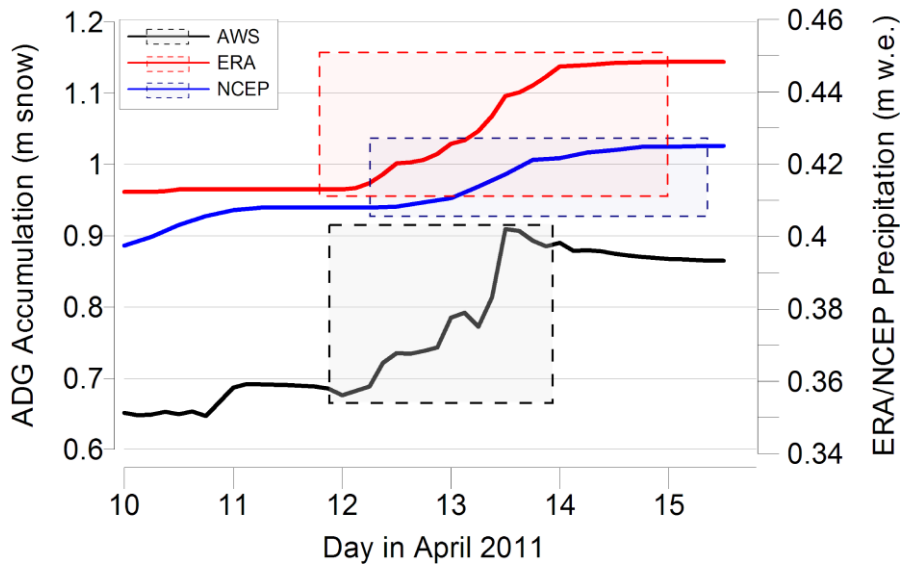


573 Figure 2. Total accumulation and precipitation over time for each station (note different time  
574 periods). ADG accumulation is in m snow (left axes) and ERA and NCEP reanalyses is in m  
575 w.e. (right axes), with axes offset by 35% (approximate density of surface snow on RIS). A  
576 close up of the time period outlined by the grey box in the Margaret plot is shown in Figure 4.  
577



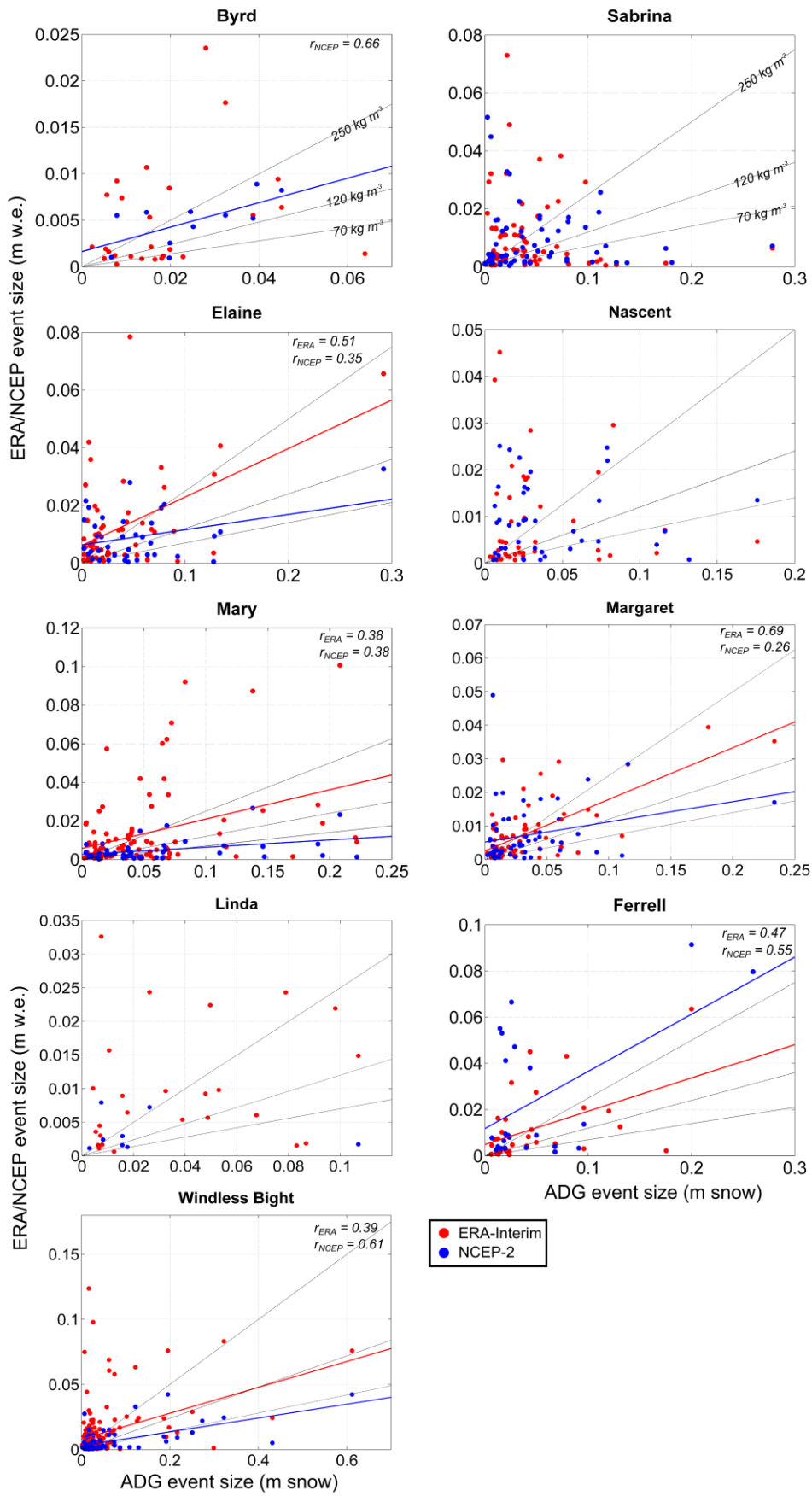
578

579 Figure 3. Differences between ERA and NCEP reanalyses (ERA minus NCEP) from 2008–  
 580 2012 over the Ross Sea and RIS region (60°S to 85°S, 160°E to 240°E) for **a**) total  
 581 precipitable water (total column water) (kg m<sup>-2</sup>) and **b**) 850 hPa meridional winds (m s<sup>-1</sup>). Red  
 582 contours are positive (ERA larger than NCEP), blue contours are negative (NCEP larger than  
 583 ERA), grey line is zero. Total precipitable water contours are 0.1 kg m<sup>-2</sup>, wind contours are  
 584 0.5 m s<sup>-1</sup>.

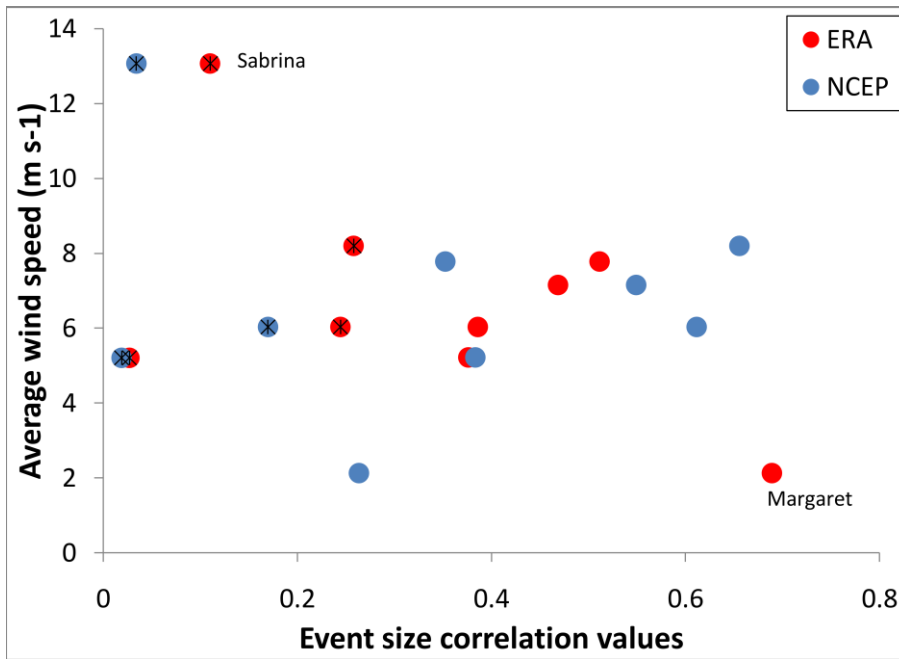


585

586 Figure 4. Zoomed-in section of the Margaret accumulation plot (corresponding to the grey  
 587 box in Margaret in Figure 2) showing the characteristics typical of a coincident event. ADG  
 588 snow accumulation is on the left y-axis and ERA/NCEP precipitation is on the right y-axis as  
 589 in Figure 2 (note axes are different scales for clarity). The dashed boxes indicate the different  
 590 durations of the coincident event (defined as  $> 5 \text{ mm snow day}^{-1}$  and  $> 0.5 \text{ mm w.e. day}^{-1}$ ) for  
 591 each dataset.



593 Figure 5. Comparison of event sizes for all coincident events. ADG event sizes are m snow;  
594 reanalyses event sizes are m w.e. Regression lines and  $r$ -values are shown for correlations at  
595 90% significance level. Black lines indicate the slope of the regression that would be expected  
596 for snow densities at various ranges (freshly fallen snow,  $\rho = 70 - 120 \text{ kg m}^{-3}$ ; wind-  
597 redistributed snow,  $\rho = 250 \text{ kg m}^{-3}$ ).  
598



599

600 Figure 6. Relationship between near-surface wind speed and event size correlation values  
 601 (from Figure 5), including those not significant at > 90% level (indicated with asterisk). Wind  
 602 speed values are derived from ERA-Interim 850 hPa monthly averages (750 hPa for Byrd),  
 603 averaged over the period of this study (2008–2012). Stations with the highest wind speed  
 604 (Sabrina) and lowest (Margaret) are labeled.