West Antarctic Ice Sheet temporal and spatial accumulation variability from five new snowpits and firn cores

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Five snowpits and shallow (less than 20 m) firn cores were collected along a transect across the West Antarctic Ice Sheet (WAIS) divide. Sub-annually resolved accumulation-rate records were developed by combining density, isotope and electrical conductivity datasets from each location. These new records overlap with and extend previous records in the area. The isotope record of the new core recovered from the ITASE-00-1 site (10 km from the WAIS divide deep-core site) correlates significantly with the original ITASE core, adding confidence to the utility of the new records. These new records are used to quantify the spatial and temporal patterns in accumulation, with a focus on the last decade. These results are used to re-evaluate the proposed relationship (Kaspari et al., 2004) between accumulation at WAIS and cyclonic activity in the region over the past three decades, including an evaluation of the influence of the Southern Oscillation Index and storm activity in the region.