Supplement to 'Use of multiple reference data sources to cross validate gridded snow water equivalent products over North America

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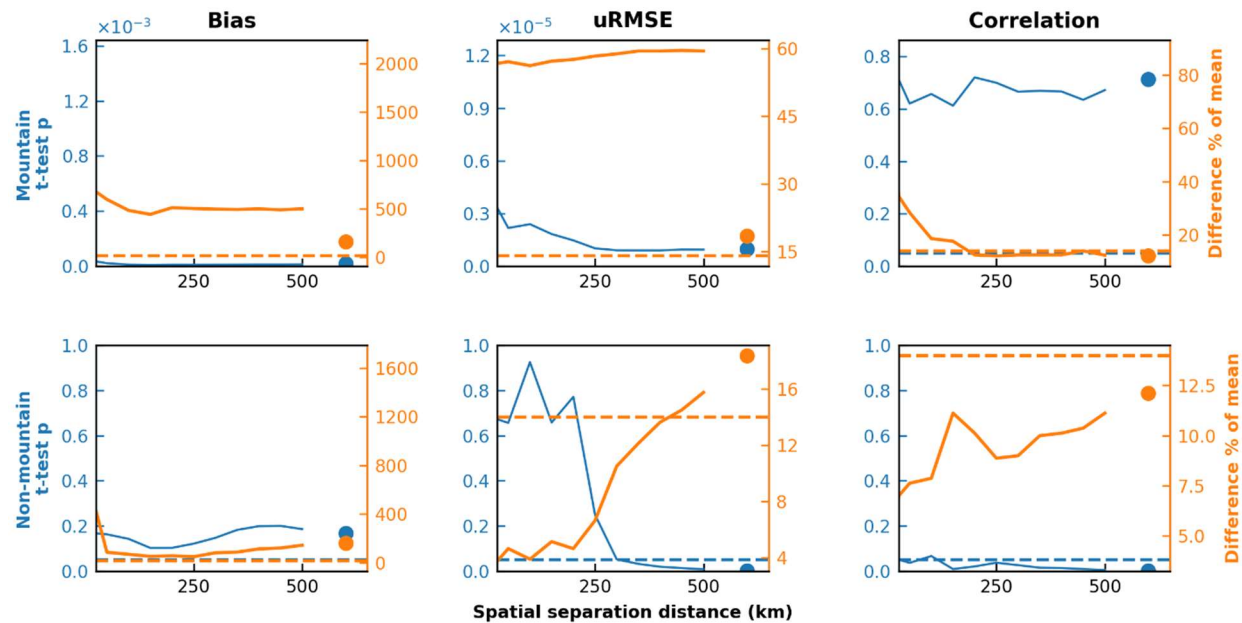*Correspondence to*: Colleen Mortimer (Colleen.Mortimer@ec.gc.ca)

Figure S1: Blue: difference of means (2-sided student t-test, Sect. 3.2) test p-value (blue) for suite of products Crocus-ERA5, Brown-
10 **ERA5, Brown-MERRA2, Brown-JRA55, ERA5, ERA5-Land, ERA5-Snow and U. Arizona calculated with snow courses versus airborne gamma reference datasets. Orange: difference (absolute value) in product metrics computed with either reference dataset expressed as a percentage of the average snow course and airborne gamma derived value. Circles: full domain. Solid lines: values for spatial subsets consisting of reference sites within 25 km to 500 km of each other (Sect. 3.2.2). Dashed blue line: 95% significance level (p = 0.05). Dashed orange line: measurement uncertainty envelope (14%) (Sect. 3.2.1). Top row: non-mountain. Bottom row:**
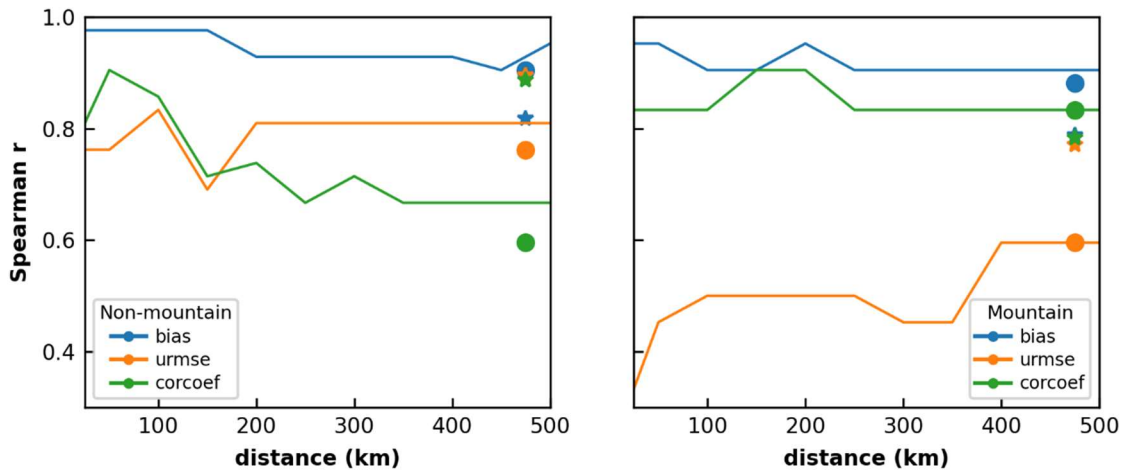15 **mountain.**

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Figure S2: Spearman correlation coefficient for the products Crocus-ERA5, Brown-ERA5, Brown-MERRA2, Brown-JRA55, ERA5, ERA5-Land, ERA5-Snow and U. Arizona evaluated using snow courses versus airborne gamma over the full spatial and temporal domain (solid circle) and for various spatial subsets consisting of reference sites within 25 km to 500 km of each other (lines). Star: same as circles but for all products in Table 1.
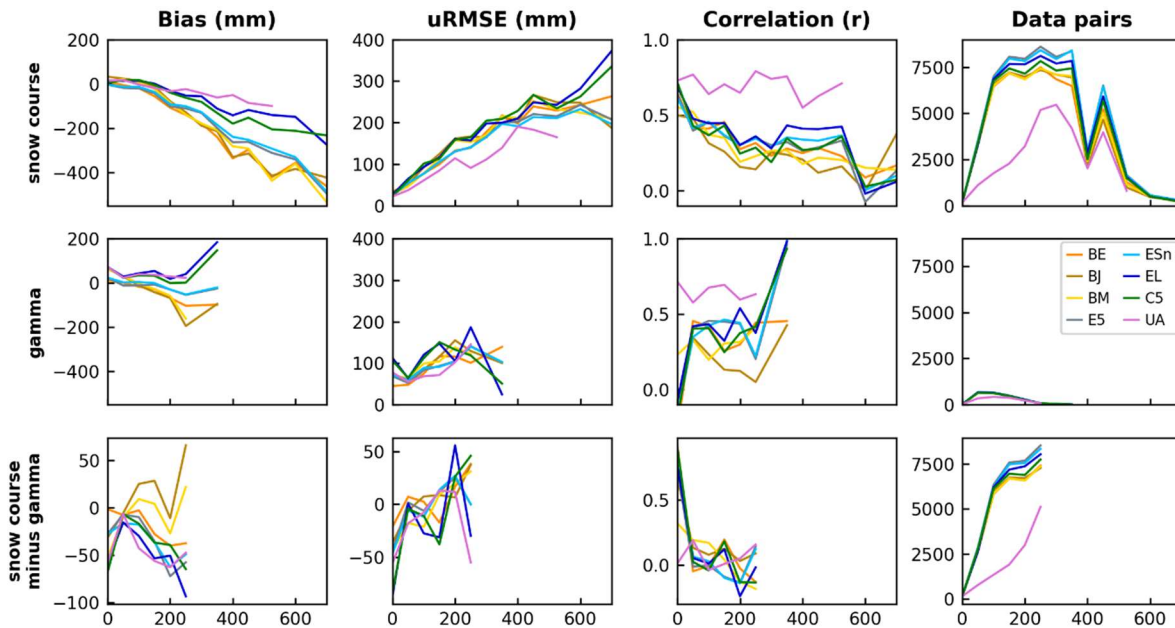

Figure S3. Same as Fig. 8 but for the full spatial and temporal domain. Mountain product performance for sequential 50 mm SWE bins. Bottom row shows the difference between snow course and gamma derived metrics for each product and bin. Product metrics shown are limited to 200 mm and 500 mm and below for gamma and snow course, respectively, due to limited number of data pairs above these thresholds.