



Supplement of

ERA5-Land: a state-of-the-art global reanalysis dataset for land applications

Joaquín Muñoz-Sabater et al.

Correspondence to: Joaquín Muñoz-Sabater (joaquin.munoz@ecmwf.int)

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Supplementary Figures

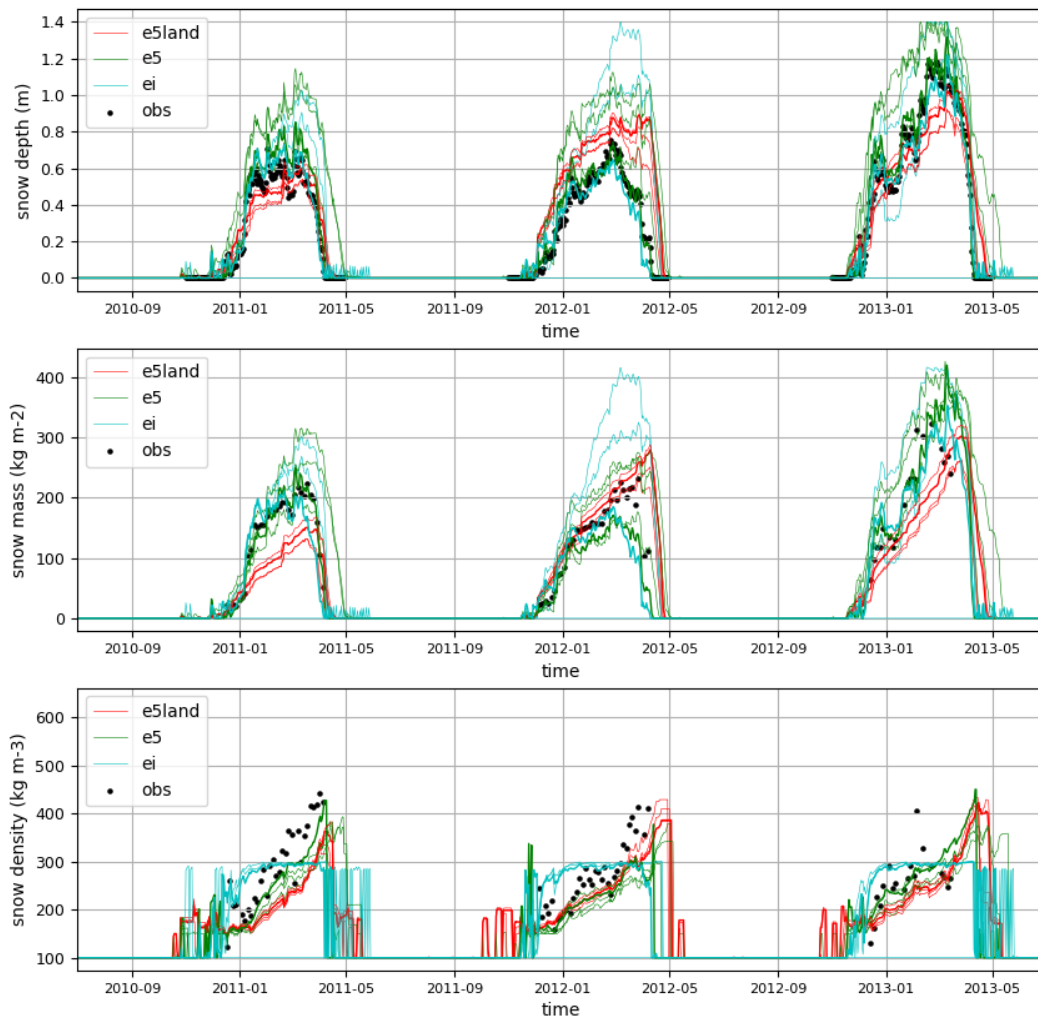


Figure S1. Time series of snow depth (top panel), mass (middle panel) and density (bottom panel) for ERA5-Land (e5land, red lines), ERA5 (e5, green lines) and ERA-Interim (ei, cyan lines) at the Sapporo ESM-SnowMIP site (see Table 3), for the period Sept 2010 to May 2013. The thicker line corresponds to the nearest point to the observations location, the thinner lines are the 3 other nearest neighbour locations.

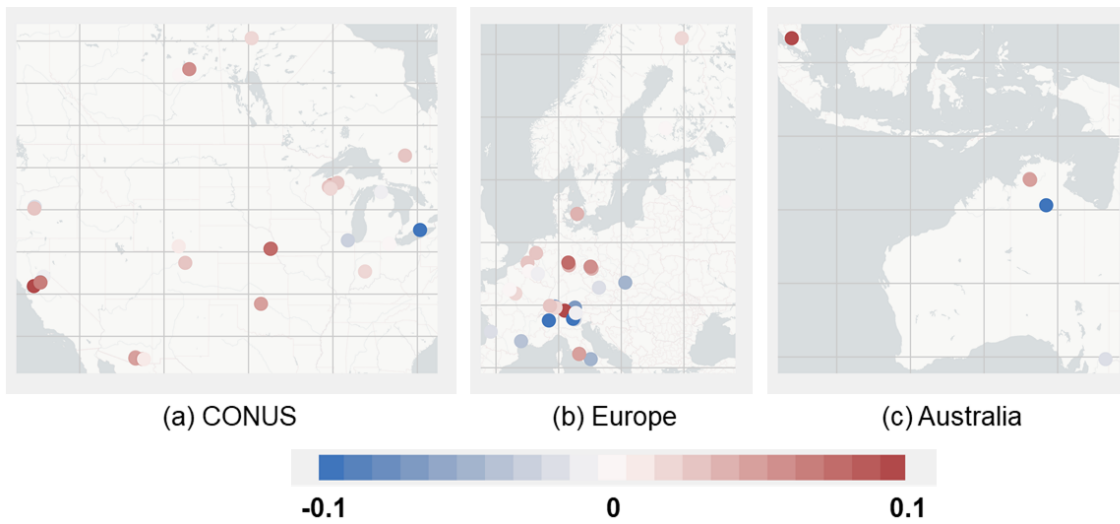


Figure S2. Standardised anomaly correlation (R_{AN}) difference of the surface sensible heat flux between ERA5-Land and ERA5 with respect to eddy-covariance data. Blue colours indicate that the anomaly correlation of ERA5-Land with respect to eddy-covariance measurements is higher than for ERA5, whereas red colours indicate the opposite.

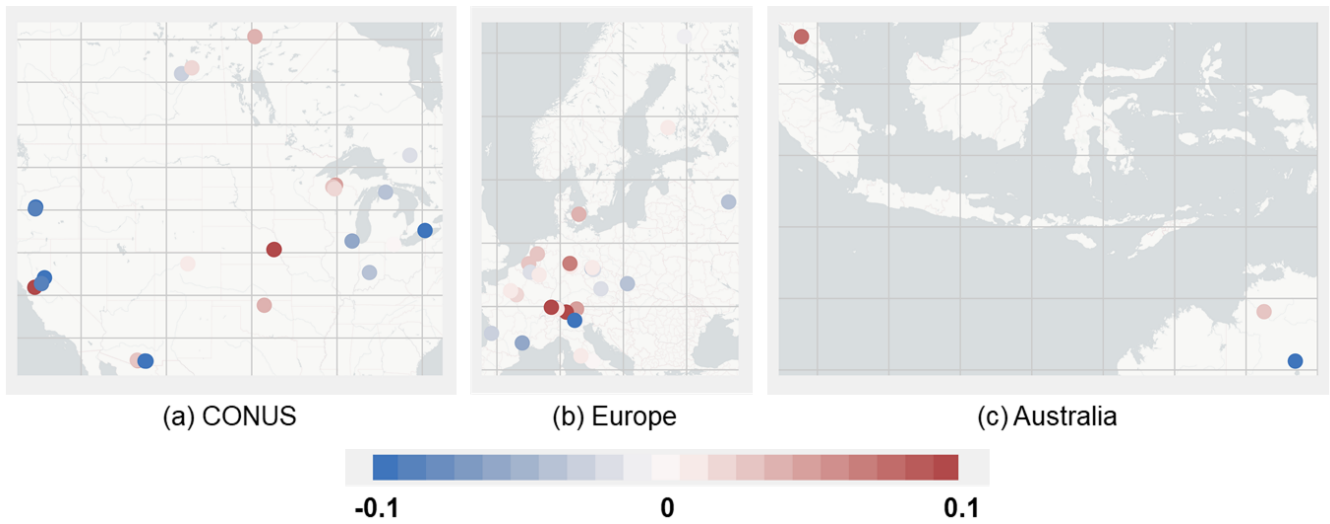


Figure S3. Standardised anomaly correlation (R_{AN}) difference of the Bowen ration between ERA5-Land and ERA5 with respect to eddy-covariance data. Blue colours indicate that the anomaly correlation of ERA5-Land with respect to eddy-covariance measurements is higher than for ERA5, whereas red colours indicate the opposite.

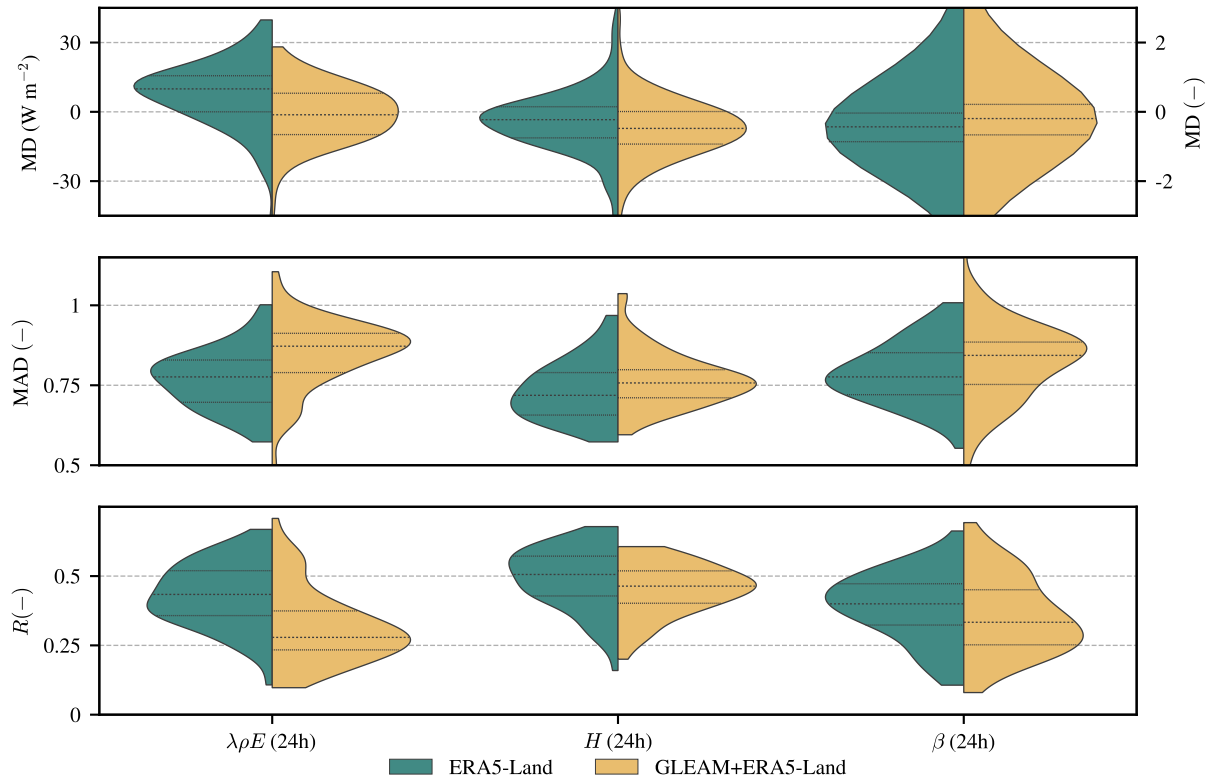
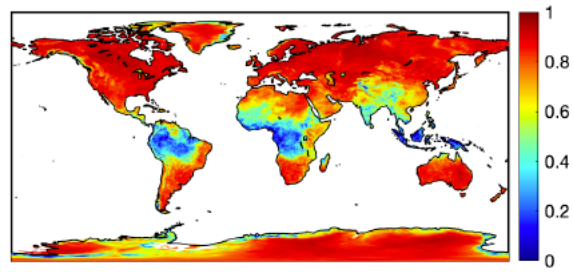
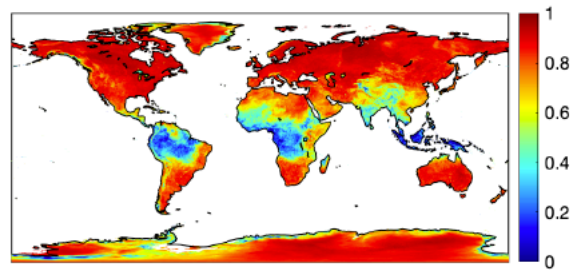


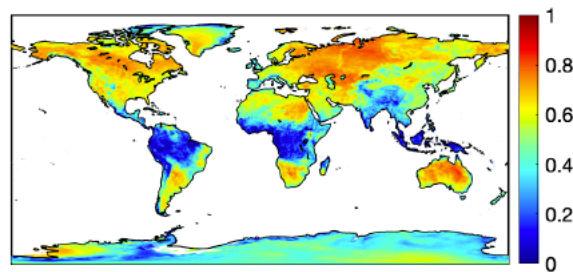
Figure S4. Violin plots showing the temporally and spatially averaged statistics of the surface latent heat flux ($\lambda\rho E$), surface sensible heat flux (H), and Bowen ratio (β) from ERA5-Land (green) and GLEAM+ERA5-Land (yellow). Statistics are calculated with respect to in situ eddy-covariance measurements at daily (24 h) temporal resolution. Violin plots represent the distribution of the individual validation statistics with indication of the median and inter-quartile range, and are calculated using a kernel density estimation approach. Statistics include the Bias, Mean Absolute Error (MAE), and the anomaly correlation coefficient (R_{AN}). The scale used to show the bias distribution of β is that of the right y-axis on the top row.



(a) R_{AN} : ERA5-Land vs MODIS LST



(b) R_{AN} : ERA5 vs MODIS LST



(c) R_{AN} : ERA-Interim vs MODIS LST

Figure S5. Global anomaly correlation coefficient (R_{AN}) maps of ERA5-Land (a), ERA5 (b) and ERA-Interim (c) versus MODIS LST average ensemble for the time period 2003–2018.