Geoscientific
Model Development

Supplement of

DeepPhenoMem V1.0: deep learning modelling of canopy greenness dynamics accounting for multi-variate meteorological memory effects on vegetation phenology

Guohua Liu et al.

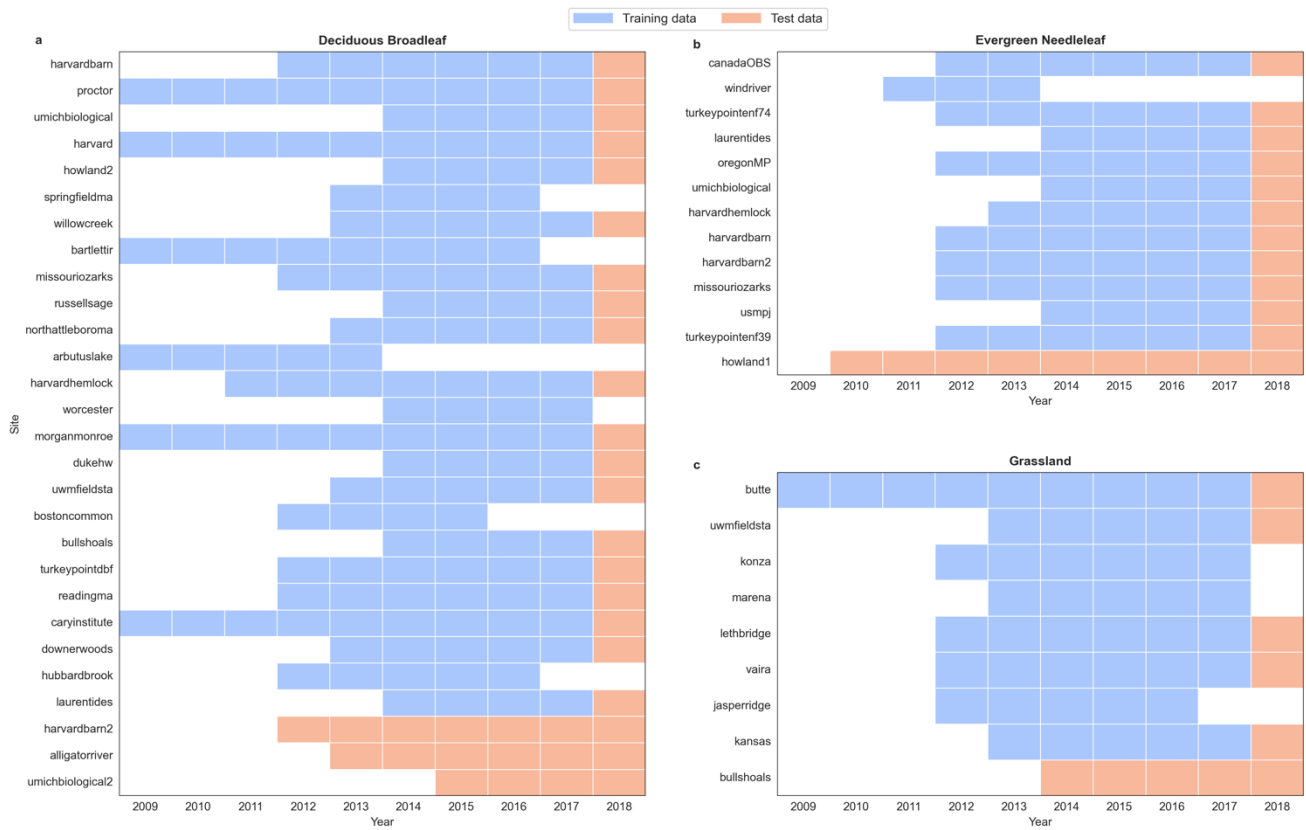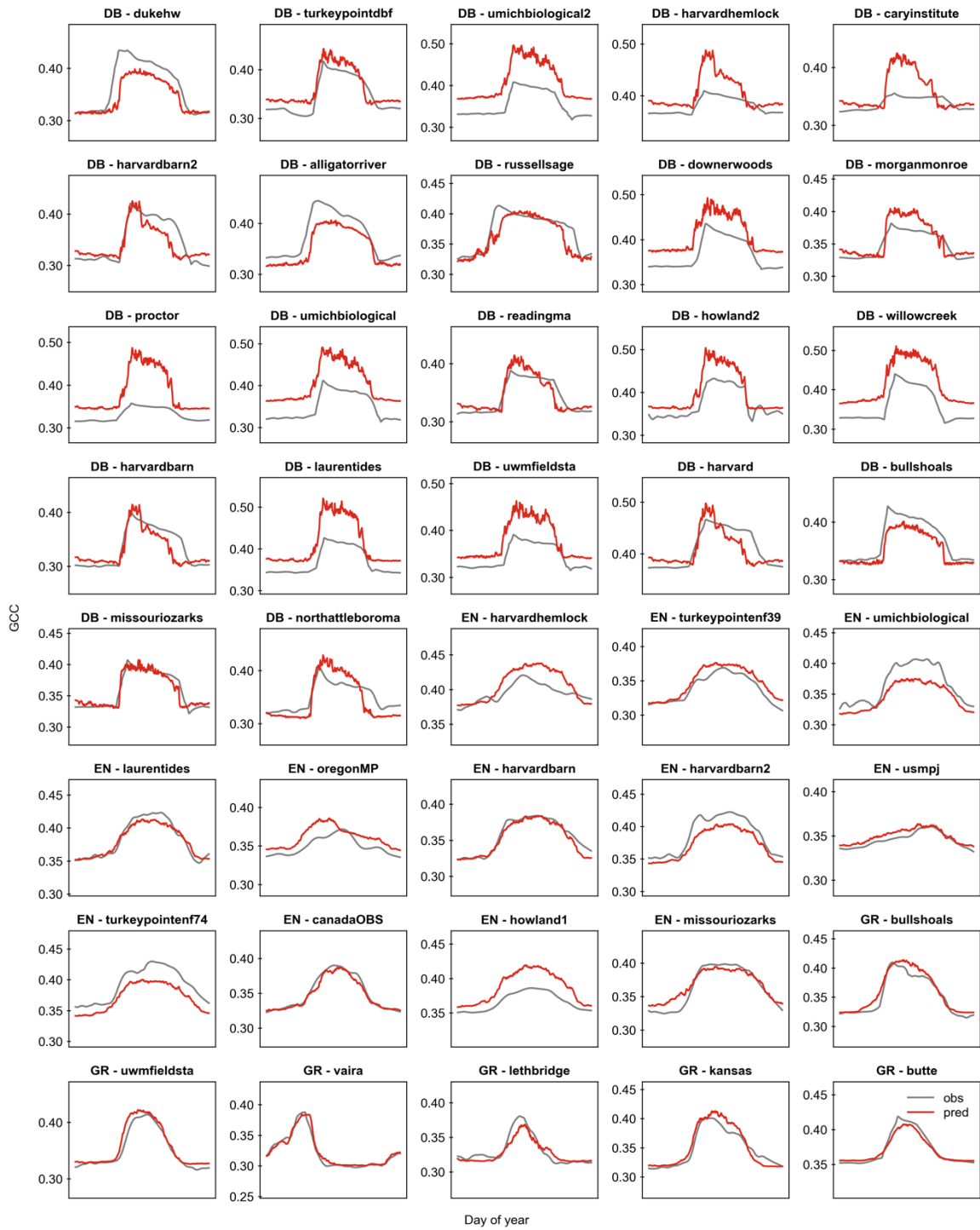*Correspondence to:* Guohua Liu (gliu@bgc-jena.mpg.de)

Fig. S1 The training (light blue box) and testing (light orange box) site-year for deciduous broadleaf (**a**), evergreen needleleaf (**b**) and grassland (**c**).

Fig. S2 Observed (obs, grey) and predicted (pred, red) daily canopy greenness (GCC) for each site of deciduous broadleaf (DB), evergreen needleleaf (EN) and grassland (GR) in 2018.
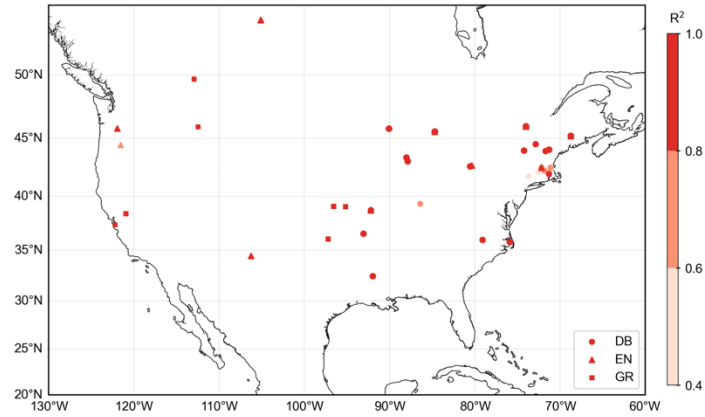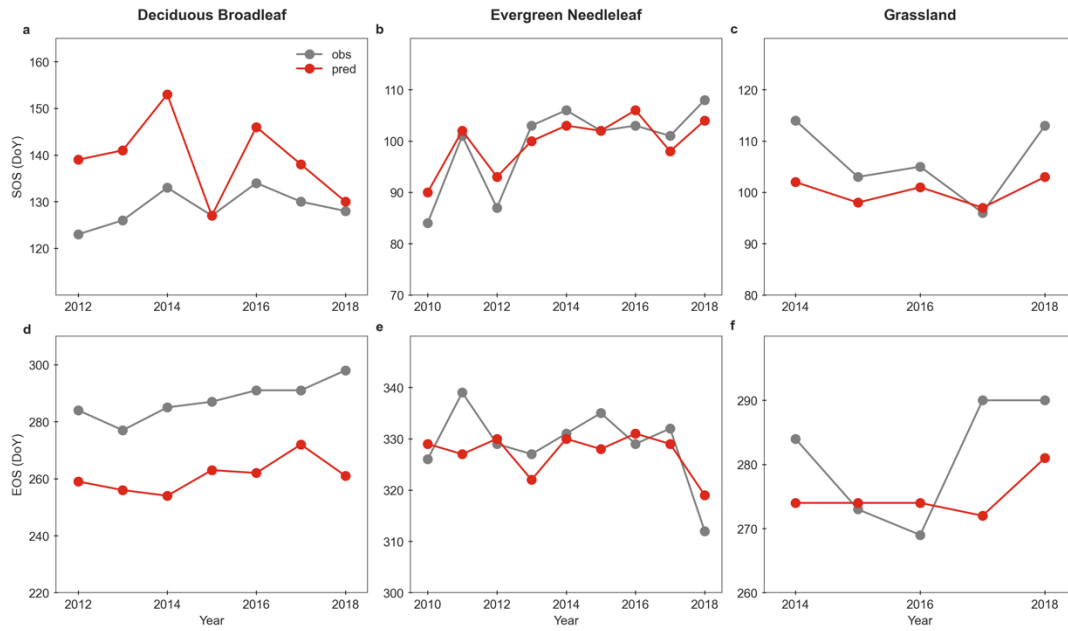
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Fig. S3 The spatial distributions of R^2 from M_{full} for deciduous broadleaf (DB, circle), evergreen needleleaf (EN, triangle) and grassland (GR, square).

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Fig. S4 Observed (obs, grey line) and predicted (pred, red line) the interannual variability in start of season (SOS, **a**, **b**, **c**) and end of season (EOS, **d**, **e**, **f**) for deciduous broadleaf, evergreen needleleaf and grassland in unseen sites (DB: harvardbarn2, EN: howland1, GR: bullshoals).

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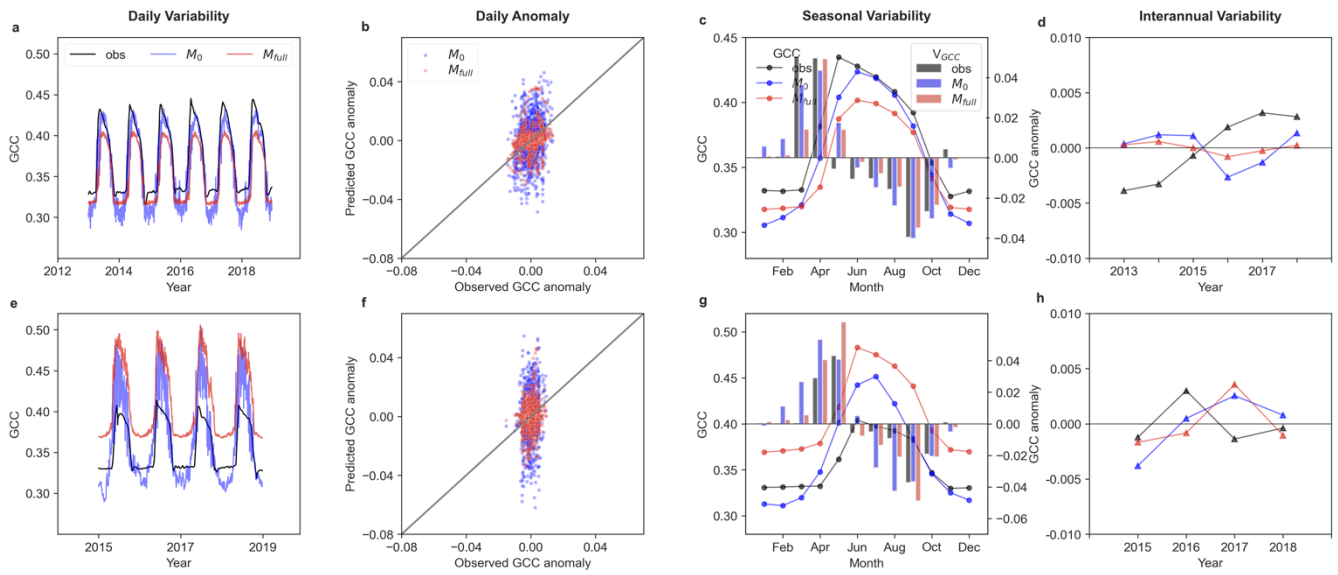
Fig. S5 Observed (obs, grey) and predicted (M0: blue, Mfull: red) daily (a, e), seasonal (c, g), and interannual (d, h) variability of canopy greenness (GCC) and daily GCC anomaly (b, f) for deciduous broadleaf (DB) at two unseen sites alligatorriver (a, b, c, d) and umichbiological2 (e, f, g, h)
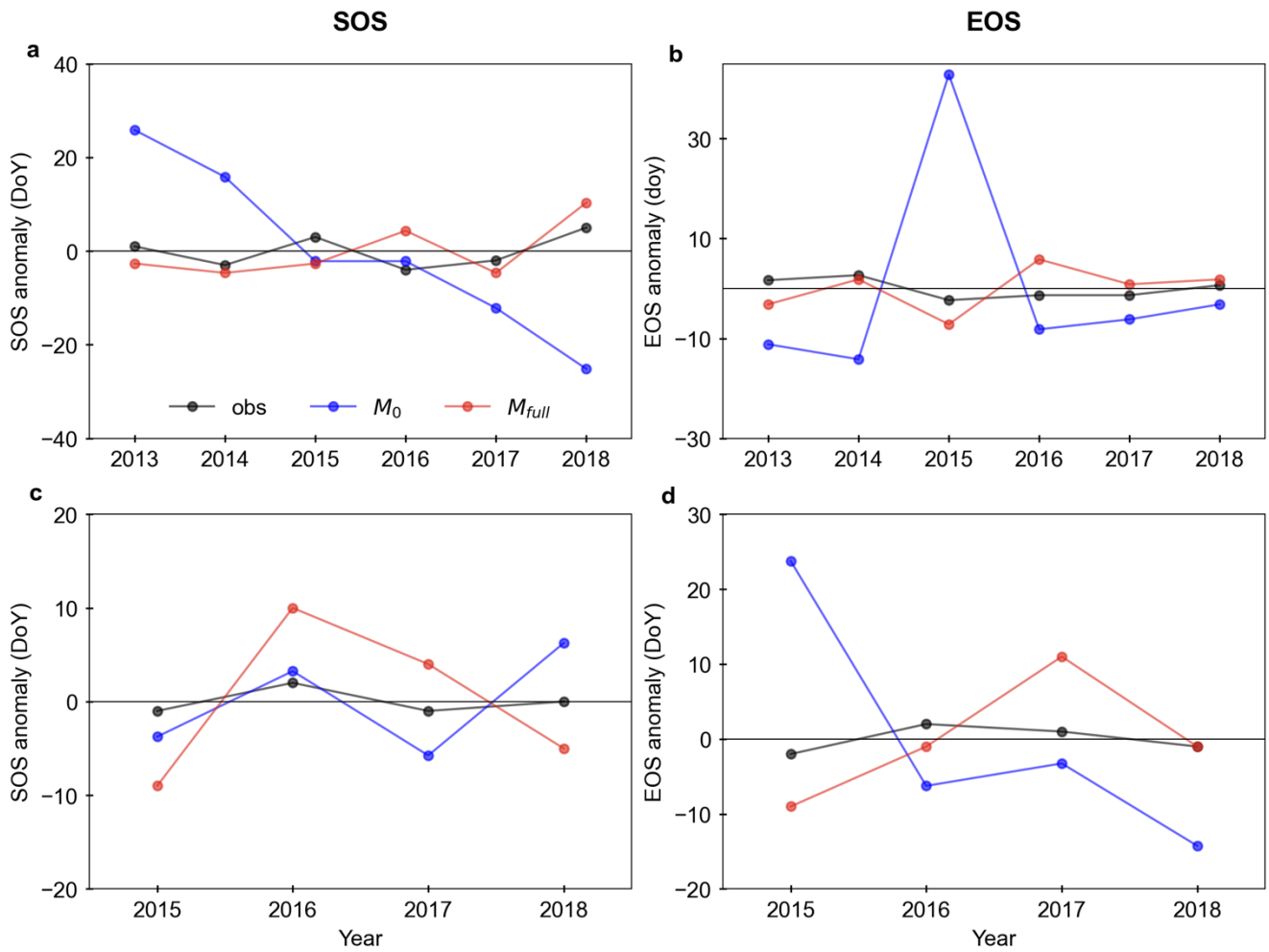
Fig. S6 Observed (obs, black line) and predicted (M0: blue, Mfull: red) the interannual variability in anomaly of start of season (SOS, a, c) and end of season (EOS, b, d) for deciduous broadleaf at two unseen sites alligatorriver (a, b) and umichbiological2 (c, d)