Supplement to:
Developing and evaluating a Bayesian weather generator for UK precipitation conditioned on discrete storm types

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S1   Posterior predictive distribution

Figures S1, S2 and S3 show the posterior predictive draws (for precipitation greater than 1 mm $6h^{-1}$) for all the models. This corresponds with Figure 10 in the main manuscript which only shows the Atmospheric model.

S2   Prior predictive plots for all stations

Figures S4–S21 show the plots used to investigate the prior predictive distribution, for all models and stations, for the chosen prior distributions. These figures correspond with Figures 4 and 5 in the main manuscript which just shows the Wattisham Atmospheric model.
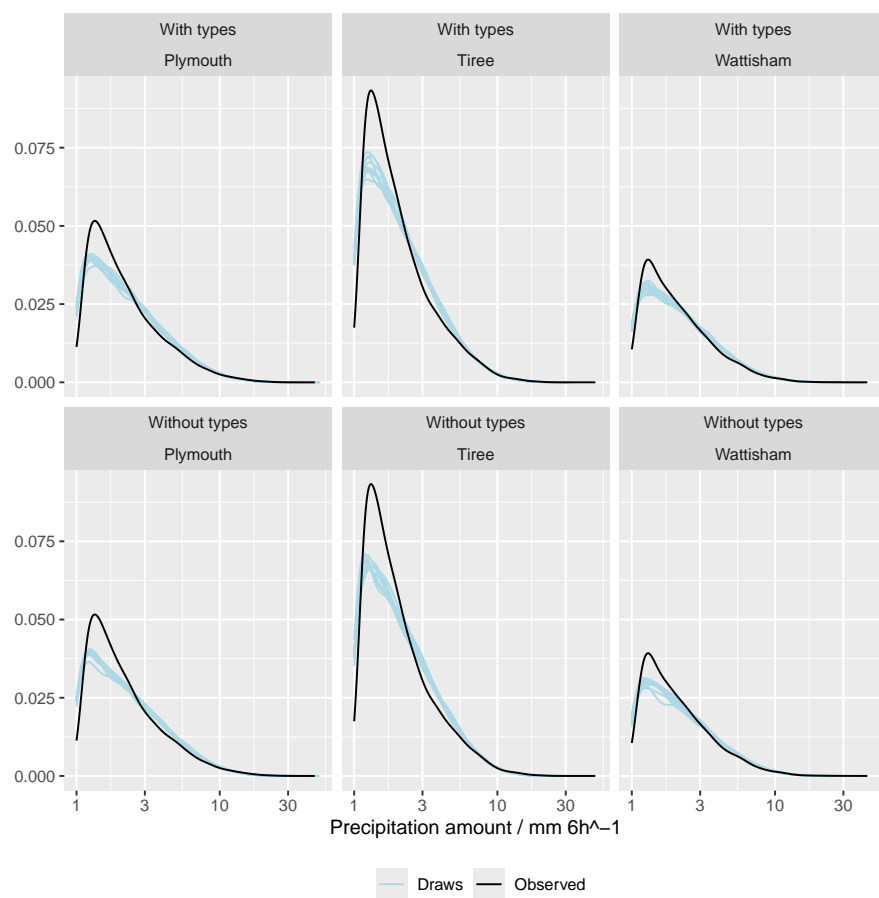
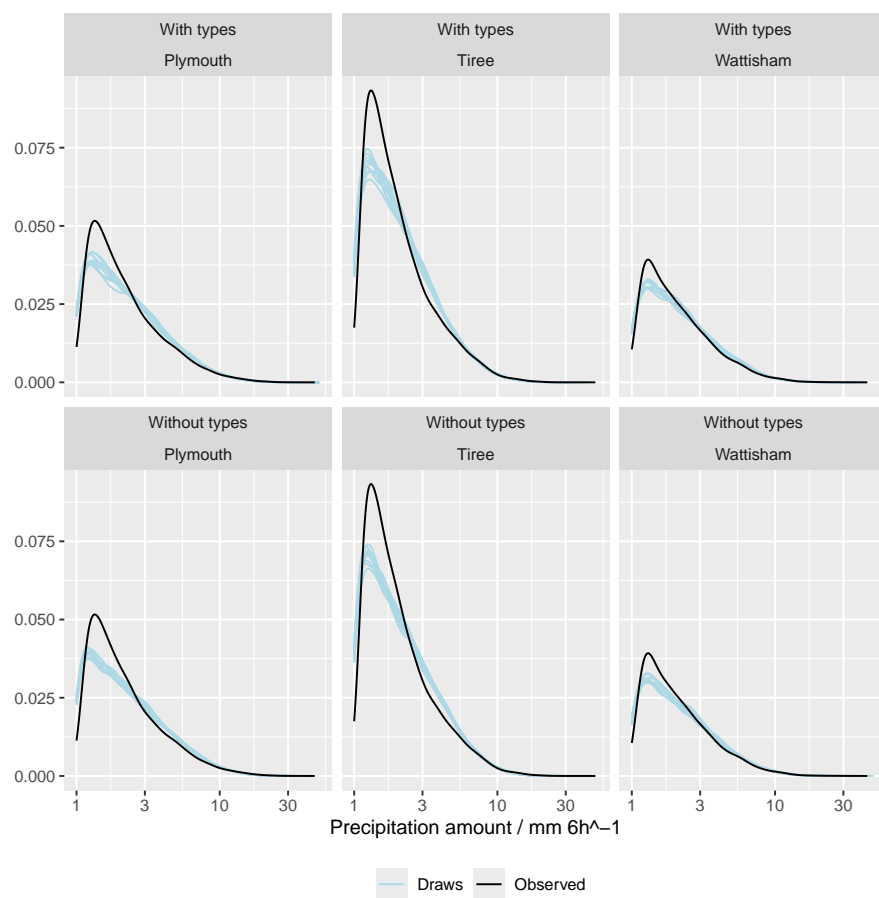Figure S1: Posterior predictive checks for the Null model

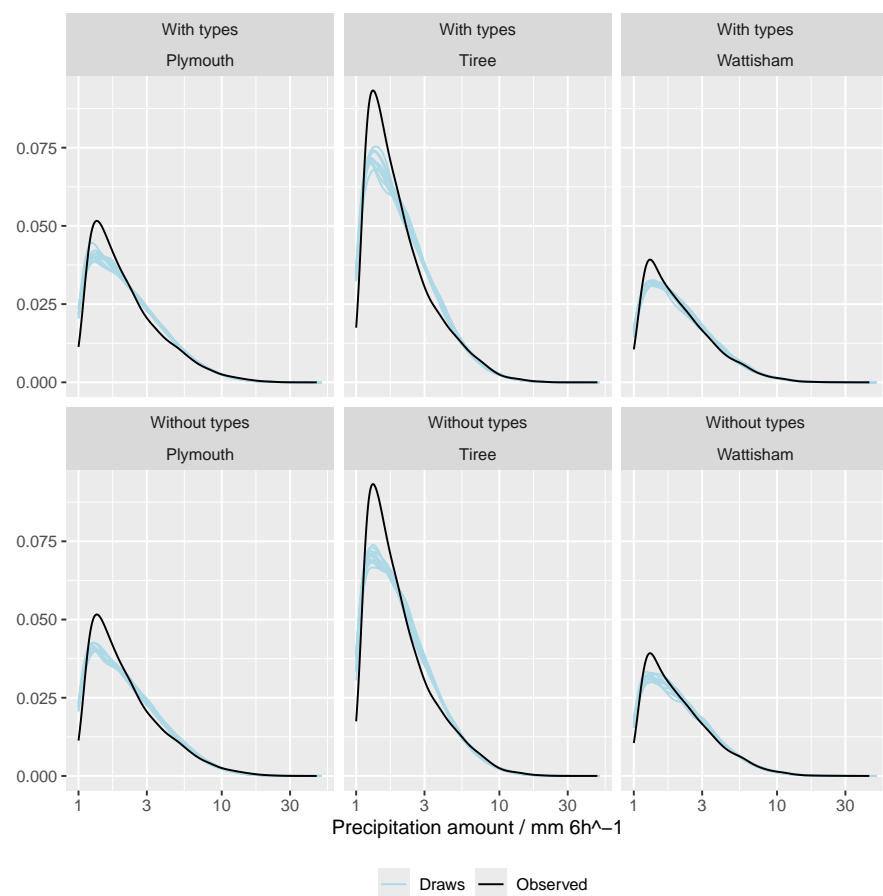Figure S2: Posterior predictive checks for the Seasonal model

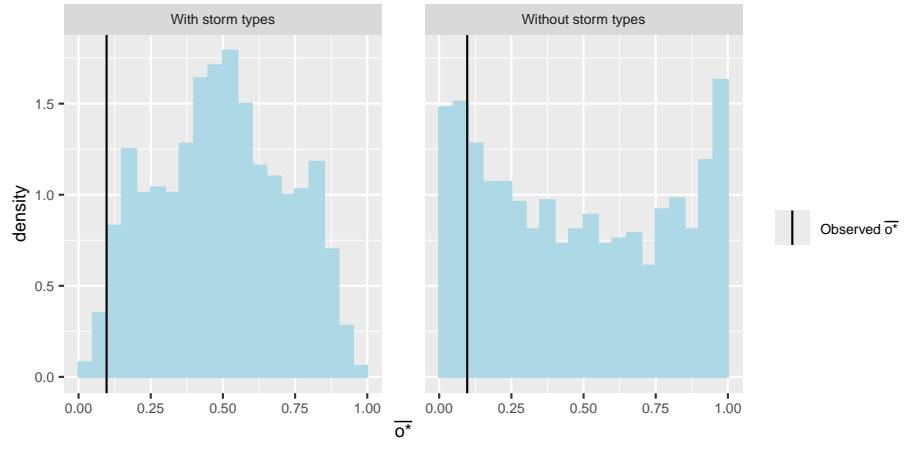Figure S3: Posterior predictive checks for the Atmospheric model

Figure S4: Prior predictive plot for the Null occurrence model for Wattisham.
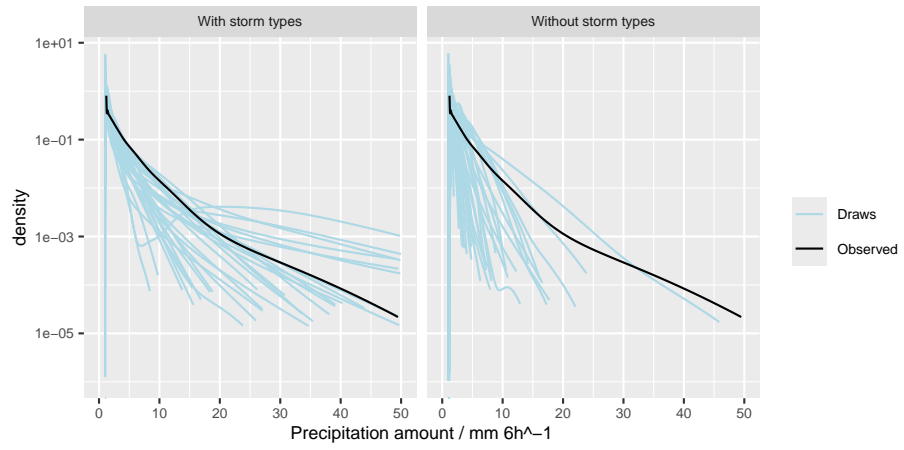

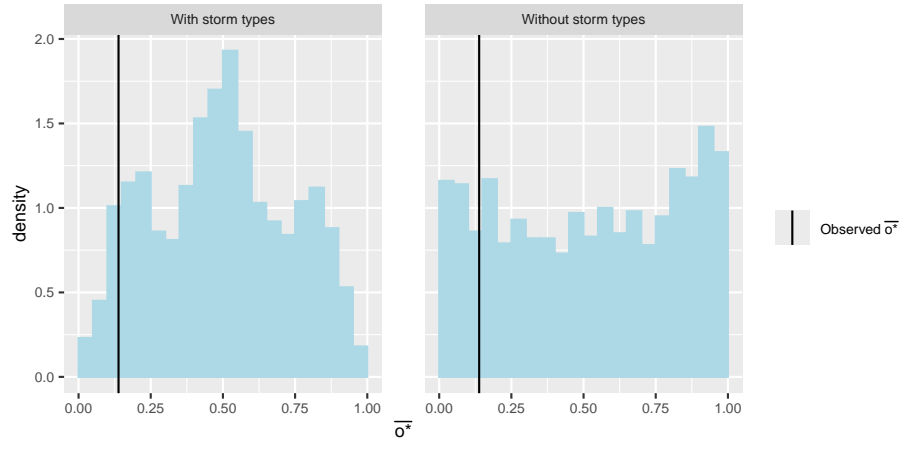Figure S5: Prior predictive plot for the Null amounts model for Wattisham.

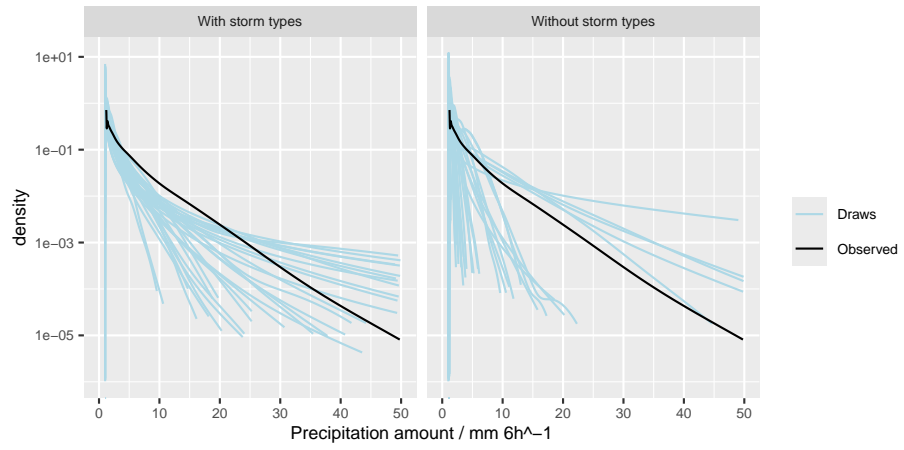Figure S6: Prior predictive plot for the Null occurrence model for Plymouth.

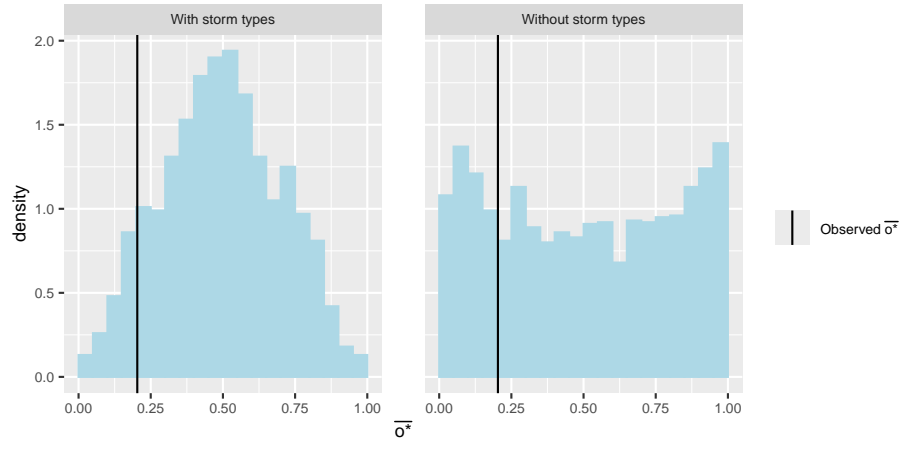Figure S7: Prior predictive plot for the Null amounts model for Plymouth.

Figure S8: Prior predictive plot for the Null occurrence model for Tiree.
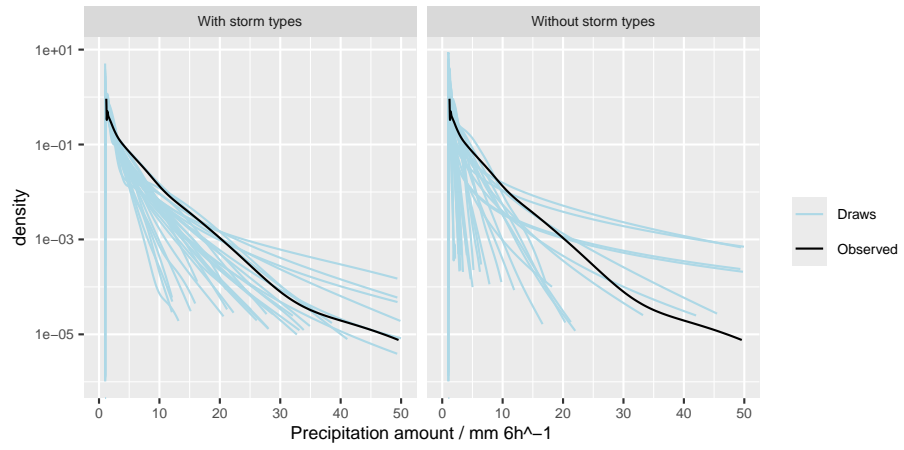

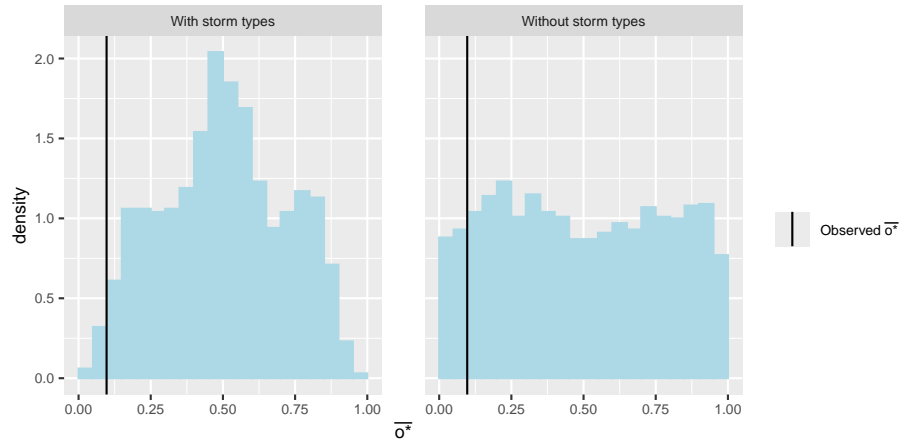Figure S9: Prior predictive plot for the Null amounts model for Tiree.

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Figure S10: Prior predictive plot for the Seasonal occurrence model for Wattisham.
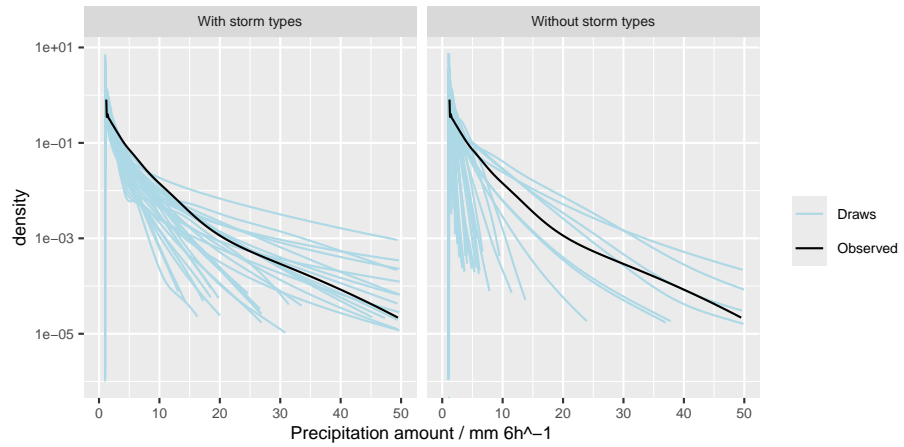

Figure S11: Prior predictive plot for the Seasonal amounts model for Wattisham.
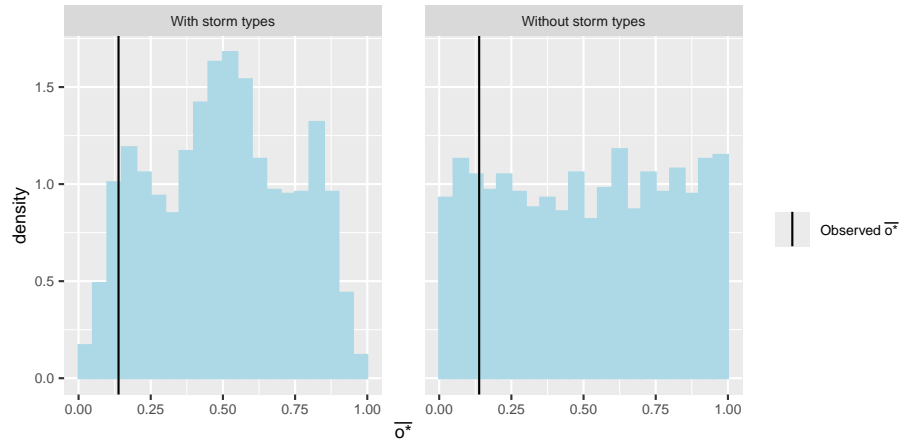
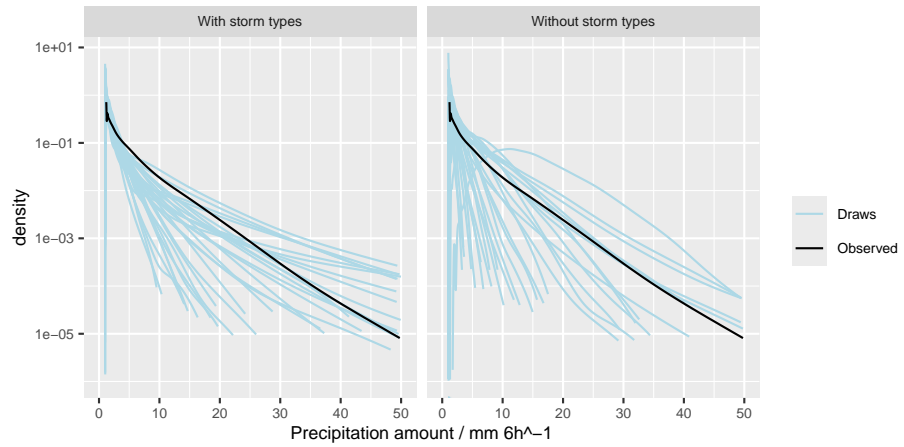Figure S12: Prior predictive plot for the Seasonal occurrence model for Plymouth.

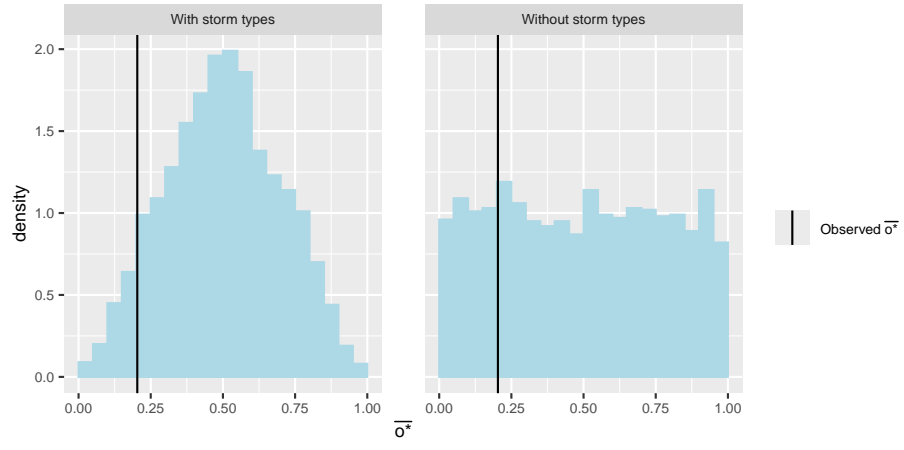Figure S13: Prior predictive plot for the Seasonal amounts model for Plymouth.

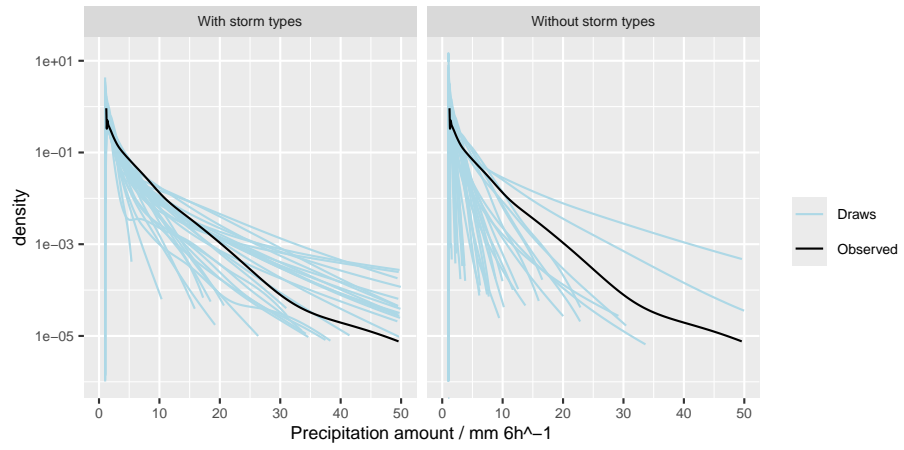Figure S14: Prior predictive plot for the Seasonal occurrence model for Tiree.

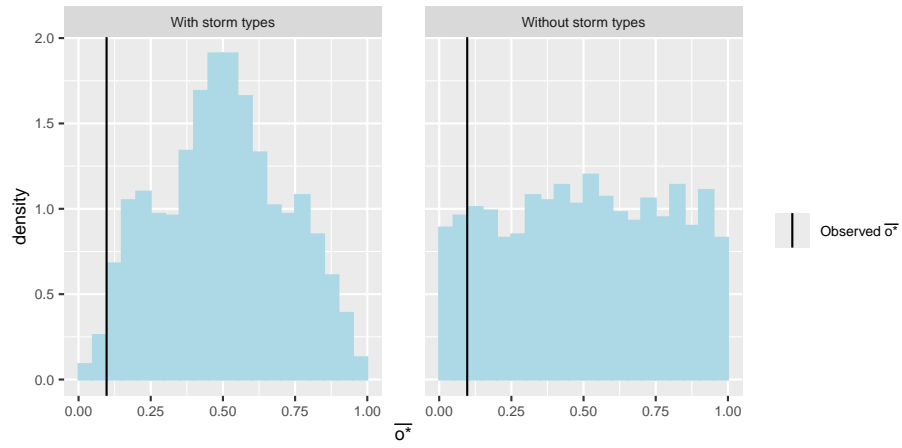Figure S15: Prior predictive plot for the Seasonal amounts model for Tiree.

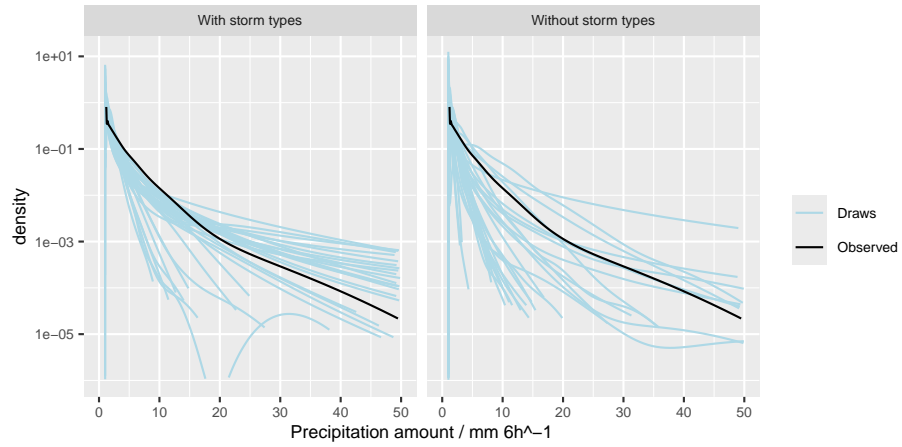Figure S16: Prior predictive plot for the Atmospheric occurrence model for Wattisham.

Figure S17: Prior predictive plot for the Atmospheric amounts model for Wattisham.
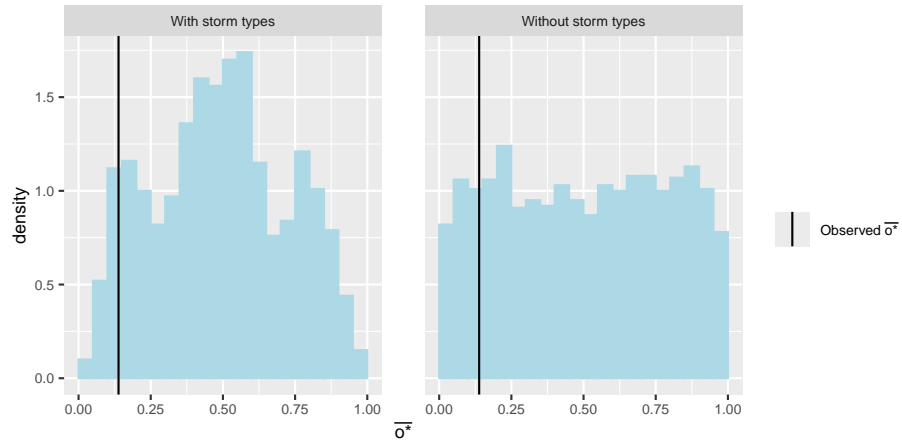
Figure S18: Prior predictive plot for the Atmospheric occurrence model for Plymouth.
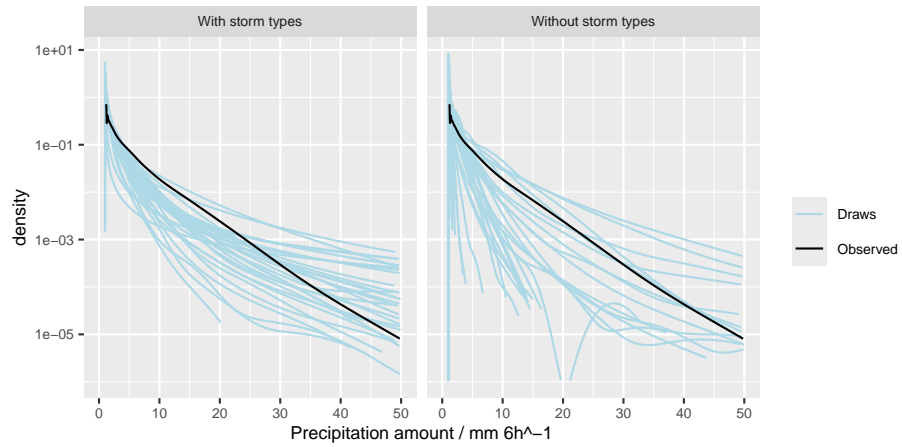

Figure S19: Prior predictive plot for the Atmospheric amounts model for Plymouth.
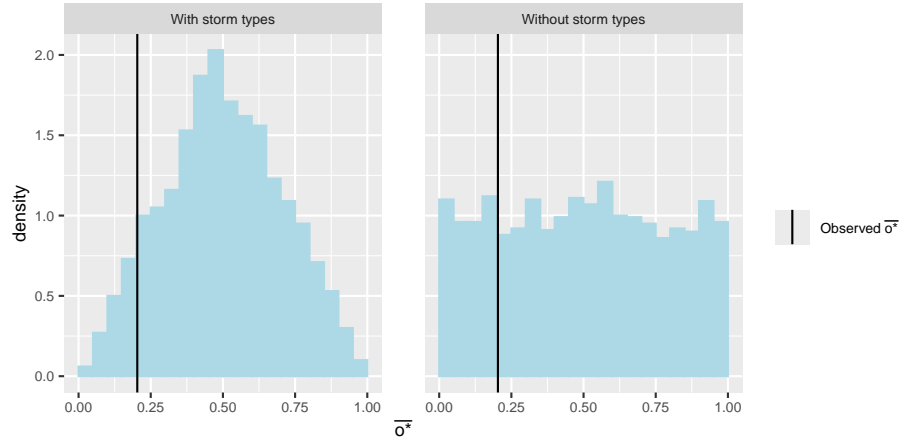
Figure S20: Prior predictive plot for the Atmospheric occurrence model for Tiree.
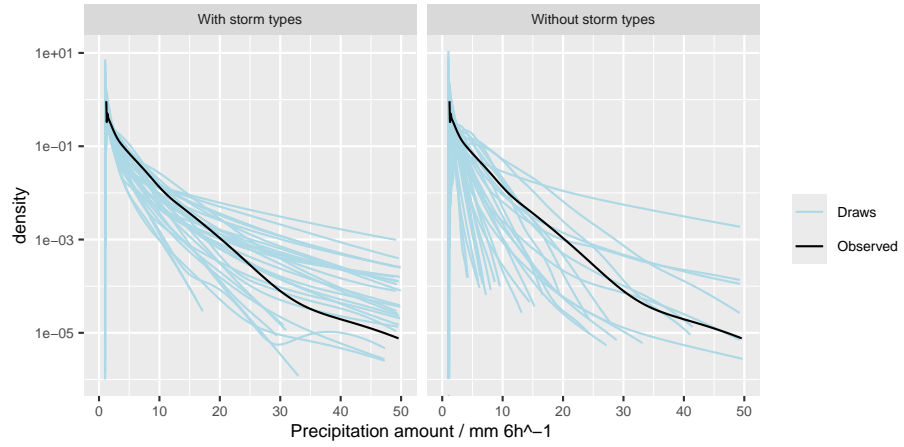

Figure S21: Prior predictive plot for the Atmospheric amounts model for Tiree.