Models I have run:

1 Western data: site dummy, chill dummy, with interactions

R file: bc bb analysis.R Stan mdl bc.bb.ncpphoto.ncpinter.stan Output: tbbncp dl.Rda Table: termMdlEstiDL.csv Note that the lateral analysis is for the first bud, similar to what the df data is

There were 2 divergent transitions after warmup. But neff are good (1326.783 - 13829.827) and so are Rhat (0.9995324-1.0040581)

Table 1: Model estimates

Variable	mean	sd	X2.50.	X50.	X97.50.	Rhat
Forcing	-14.05	1.19	-16.41	-14.05	-11.66	1.00
Photoperiod	-3.11	1.04	-5.17	-3.10	-1.08	1.00
Chilling	-14.56	1.43	-17.38	-14.55	-11.79	1.00
Site	3.28	2.10	-0.87	3.28	7.44	1.00
Forcing x Photoperiod	0.89	1.06	-1.22	0.90	2.94	1.00
Forcing x Chilling	6.58	1.05	4.48	6.58	8.60	1.00
Photoperiod x Chilling	-0.36	1.02	-2.32	-0.37	1.66	1.00
Forcing x Site	-2.82	1.10	-4.99	-2.82	-0.67	1.00
Photoperiod x Site	1.29	1.23	-1.08	1.27	3.75	1.00
Site x Chilling	-0.04	1.60	-3.25	-0.03	3.12	1.00

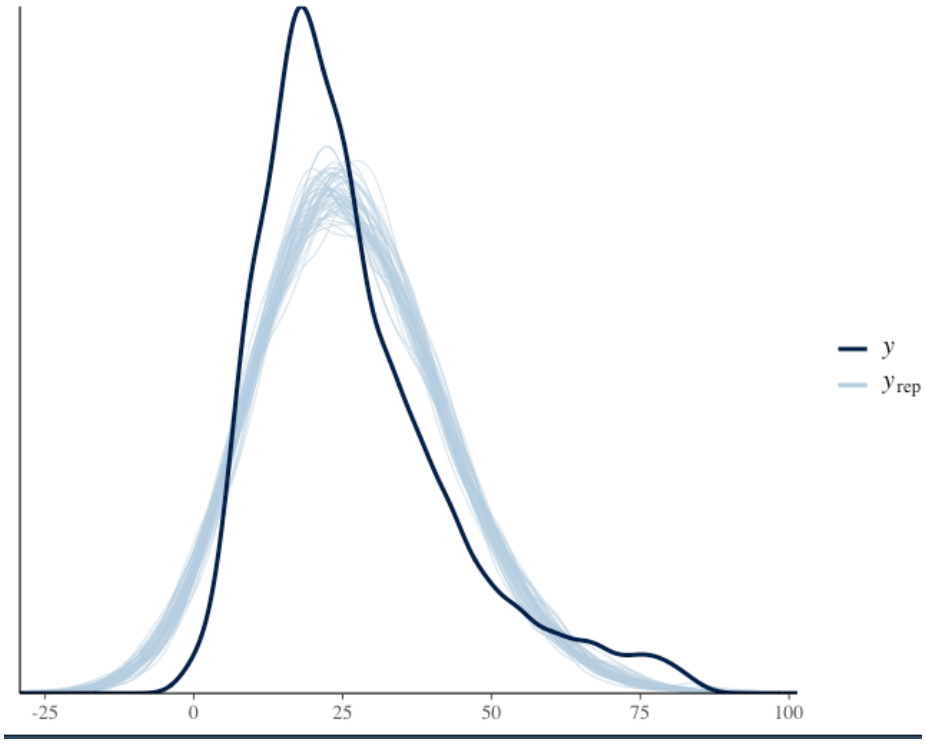

Figure 1: Model fit of y vs ypred

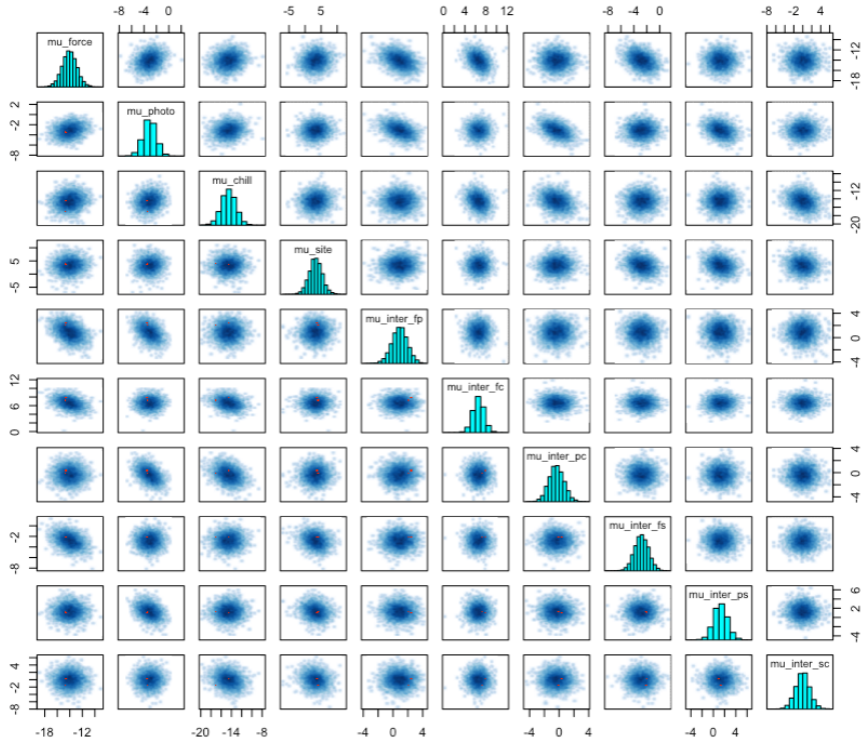

Figure 2: Model pairs plot

2 Western data: site dummy, chill continuous, with interactions

R file: bc bb analysis dldf.R
Stan mdl: bc.bb.ncpphoto.ncpinter.newpriors.stan
Output: tbb ncp chillportions zsc dl.Rda

For this model, the cues were transformed and z scored, ie hf changed to 20, lf changed to 15 and these values (not the 0 or 1) were z scored. Both the neff (1540.02 to 14999.45) and Rhat (0.999 to 1.003) look good.

Table 2: Model estimates

Variable	mean	sd	X2.50.	X50.	X97.50.	Rhat
Forcing	-4.23	0.53	-5.27	-4.22	-3.19	1.00
Photoperiod	-1.49	0.39	-2.27	-1.48	-0.73	1.00
Chilling	-6.37	0.73	-7.85	-6.36	-4.93	1.00
Site	8.16	1.78	4.67	8.18	11.67	1.00
Forcing x Photoperiod	0.26	0.29	-0.32	0.26	0.84	1.00
Forcing x Chilling	1.86	0.31	1.24	1.86	2.47	1.00
Photoperiod x Chilling	-0.01	0.36	-0.71	-0.02	0.71	1.00
Forcing x Site	-3.06	0.65	-4.33	-3.07	-1.76	1.00
Photoperiod x Site	0.70	0.66	-0.60	0.70	1.99	1.00
Site x Chilling	-0.04	1.01	-2.02	-0.05	1.95	1.00

3 Western data: site dummy (0/1), chill continuous but with force.n and photo.n and chill standardized by 2sd, with interactions

For this model the site effects were left as 0/1, but the three cues were standardized using the methods from Gelman's paper.

The model produces no warnings and has good neff (1870 - 23127) and Rhat.

Table 3: Model estimates

	mean	sd	X2.5.	X50.	X97.5.	Rhat
Forcing	-11.52	0.93	-13.40	-11.52	-9.72	1.00
Photoperiod	-2.11	0.58	-3.28	-2.10	-0.98	1.00
Chilling	-11.44	1.39	-14.17	-11.43	-8.66	1.00
Site	2.75	1.67	-0.58	2.77	6.02	1.00
Forcing x Photoperiod	1.03	1.17	-1.28	1.03	3.35	1.00
Forcing x Chilling	6.62	1.19	4.23	6.62	8.95	1.00
Photoperiod x Chilling	-0.09	1.20	-2.39	-0.11	2.34	1.00
Forcing x Site	-2.88	1.24	-5.25	-2.90	-0.37	1.00
Photoperiod x Site	1.11	1.57	-2.08	1.11	4.17	1.00
Site x Chilling	0.40	1.79	-3.17	0.43	3.88	1.00

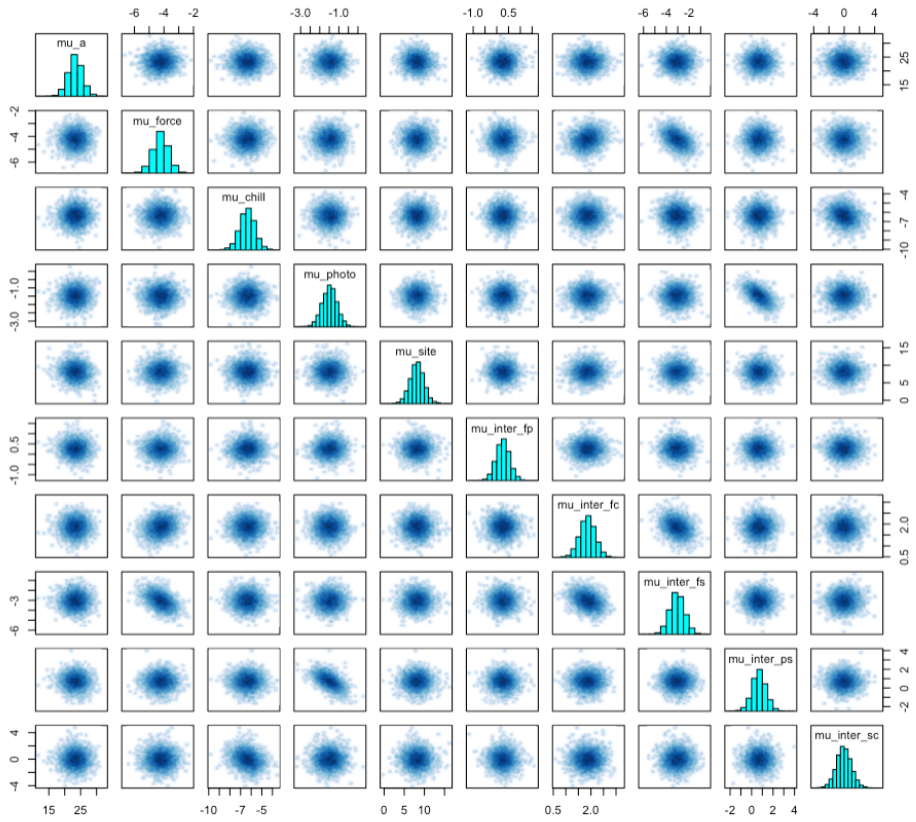

Figure 3: Model pairs plot

4 Western data: site as a random effect, chilling as a dummy variable

5 All data: site as a random effect, chilling as a dummy variable, variables standardized

6 All data: site dummy, chill continuous, no interactions

R file: bc bb analysis dldf standardize.R Stan model faith realdata.stan Output: realDummSite.Rda Table: termDummAll.csv

The model runs but does not produce the best neff (937 to 21876), but the Rhat are good.

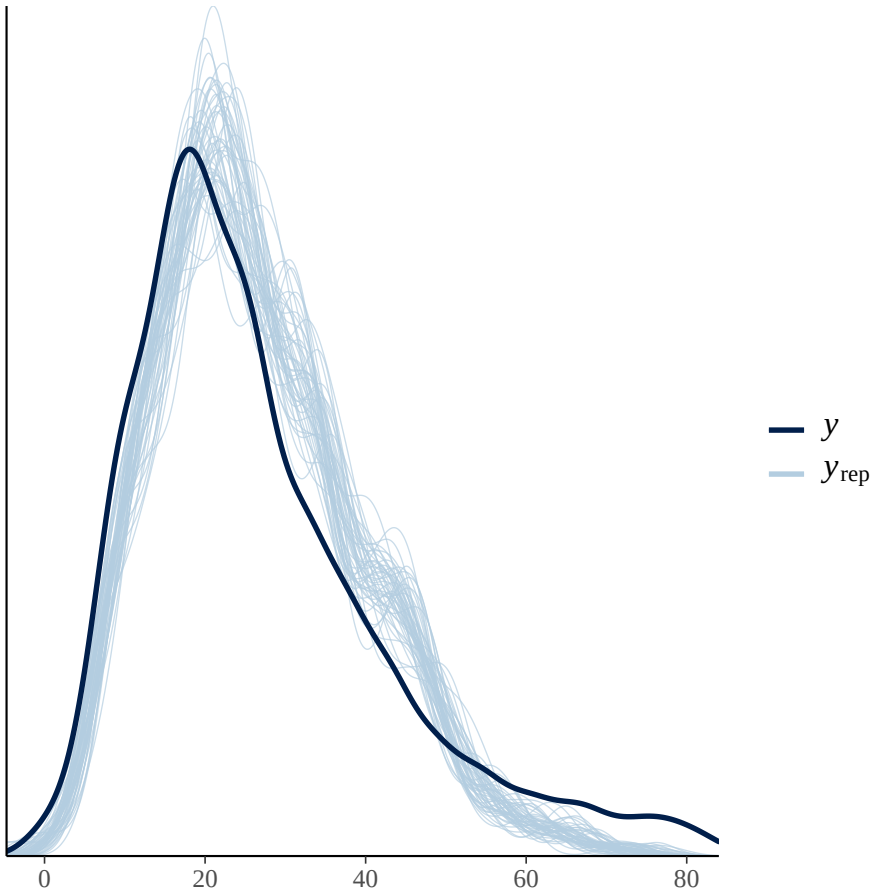

Figure 4: Model fit y vs ypred

```
> setwd("~/Documents/github/pheno_bc")
> require(xtable)
> mdl.out <- read.csv("output/termDummAll.csv")
> make.mdl.out <- xtable(mdl.out, caption="Model estimates")
> print(make.mdl.out,include.rownames=T, caption.placement="top", hline.after=c(-1,0))

% latex table generated in R 3.6.3 by xtable 1.8-4 package
% Thu Feb 10 17:20:18 2022
\begin{table}[ht]
\centering
\caption{Model estimates}
\begin{tabular}{rrrrrrr}
  \hline
 & mean & sd & X2.5. & X50. & X97.5. & Rhat \\
```

Table 4: Model estimates

	mean	sd	X2.5.	X50.	X97.5.	Rhat
mu_grand	28.86	1.90	25.10	28.87	32.67	1.00
Forcing	-9.10	0.77	-10.67	-9.09	-7.61	1.00
Photoperiod	-3.93	0.53	-4.96	-3.93	-2.86	1.00
Chilling	-0.39	2.65	-5.52	-0.41	4.80	1.00
Site2	2.89	0.50	1.89	2.88	3.88	1.00
Site3	4.95	2.40	0.16	4.97	9.59	1.00
Site4	10.90	2.45	5.97	10.92	15.60	1.00

```
  \hline
mu\_grand & 28.86 & 1.90 & 25.10 & 28.87 & 32.67 & 1.00 \\
  Forcing & -9.10 & 0.77 & -10.67 & -9.09 & -7.61 & 1.00 \\
  Photoperiod & -3.93 & 0.53 & -4.96 & -3.93 & -2.86 & 1.00 \\
  Chilling & -0.39 & 2.65 & -5.52 & -0.41 & 4.80 & 1.00 \\
  Site2 & 2.89 & 0.50 & 1.89 & 2.88 & 3.88 & 1.00 \\
  Site3 & 4.95 & 2.40 & 0.16 & 4.97 & 9.59 & 1.00 \\
  Site4 & 10.90 & 2.45 & 5.97 & 10.92 & 15.60 & 1.00 \\
  \end{tabular}
\end{table}

>
```

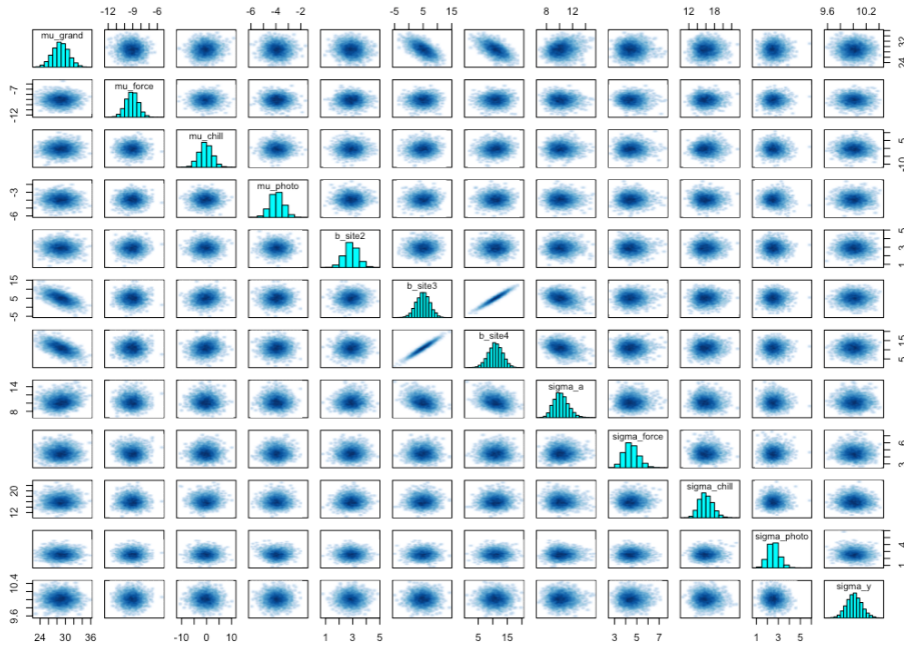

Figure 5: Model fit y vs ypred