$$
\begin{aligned}
\hat{y}_{minlat,i} &= \alpha_{minlat,sp[i]} \\
\hat{y}_{maxlat,i} &= \alpha_{maxlat,sp[i]} \\
\alpha_{minlat,sp} &\sim N(0, \sigma_{\alpha,minlat}) \\
\alpha_{maxlat,sp} &\sim N(0, \sigma_{\alpha,maxlat}) \\
y_{mins} &\sim N(\hat{y}_{mins}, \sigma_{mins,y}) \\
y_{maxs} &\sim N(\hat{y}_{maxs}, \sigma_{maxs,y})
\end{aligned}
$$

$$
\begin{aligned}
\hat{y}_{photo,i} &= \alpha_{photo,sp[i]} + \beta_{photomin_{sp[i]}} * P_i + \beta_{photomax_{sp[i]}} * P_i \\
\beta_{photomin_{sp}} &= \alpha_{photomin_{sp}} + \beta_{minlatxphoto} * \alpha_{minlat,sp} \\
\beta_{photomax_{sp}} &= \alpha_{photomax_{sp}} + \beta_{maxlatxphoto} * \alpha_{maxlat,sp} \\
\alpha_{photo,sp} &\sim N(\mu_{\alpha,photo}, \sigma_{\alpha,photo}) \\
\alpha_{photomin_{sp}} &\sim N(\mu_{\alpha,photomin}, \sigma_{\alpha,photomin}) \\
\alpha_{photomax_{sp}} &\sim N(\mu_{\alpha,photomax}, \sigma_{\alpha,photomax}) \\
y_{photo} &\sim N(\hat{y}_{photo}, \sigma_{y,photo})
\end{aligned}
$$