## Response names

response	
mean_d1	mean daily radial growth rate
max_d1	maximum daily radial growth rate
xylem	tree ring width
max_d1_d	day of the maximum daily growth rate
on_e	julian day of onset of enlargement
on_l	julian day of onset of secondary wall thickening and lignification
on_m	julian day of onset of maturation
ce_e	julian day of cessation of enlargement
ce_l	julian day of cessation of secondary wall thickening and lignification
p_e	duration of enlargement
p_l	duration of secondary wall thickening and lignification
p_grow	growth duration
GDD	growing degree days

response	r2m	r2c	shapiro	levene	power	remarks
mean_d1	0.34	0.36	0.74	0.14	1000	
max_d1	0.2	0.32	0.76	0.06	968	
xylem	0.12	0.16	0.66	0.36	788	
max_d1_d	0.14	0.3	0.04	0	887	1 influential outlier
on_e	0.02	0.62	0.1	0.92	426	1 influential outlier
on_l	0.04	0.47	0.01	0.94	490	3 influential outliers
on_m	0.32	0.58	0.27	0.44	1000	
ce_e	0.33	0.55	0.02	0.67	1000	1 influential outlier
ce_l	0.53	0.56	0.18	0.32	1000	
p_e	0.36	0.53	0.01	0.61	1000	1 influential outlier
p_l	0.39	0.52	0.96	0.42	1000	
p_grow	0.48	0.58	0.11	0.27	1000	
GDD	0.02	0.42	0.01	0.93	212	

# Model 1 - equation 2





















P\_E

Sample Quantiles



pp\$sf



P\_L

Sample Quantiles

### Normal Q–Q Plot

Histogram of residuals(m\_Imer)

pp\$sf



MAX\_D1 Normal Q-Q Plot







#### **XYLEM** Normal Q-Q Plot

### Histogram of residuals(m\_lmer)

pp\$sf

response	r2m	r2c	shapiro	levene	power
mean_d1	0.47	0.52	0.86	0.14	0.93
max_d1	0.28	0.51	0.09	0.19	0.97
xylem	0.28	0.34	0.59	0.61	0.83
max_d1_d	0.38	0.38	0.21	0.01	0.67
on_e	0.55	0.65	0.03	0.78	0.8
on_l	0.52	0.56	0.01	0.86	0.77
on_m	0.66	0.66	0.46	0.22	0.9
ce_e	0.47	0.58	0.02	0.64	0.5
ce_l	0.62	0.65	0.04	0.32	0.87
p_e	0.48	0.58	0.02	0.6	0.4
p_l	0.59	0.64	0.26	0.41	0.9
p_grow	0.63	0.66	0.26	0.35	0.9
GDD	0.33	0.54	0	0.95	0.73

# Model 2: equation 3



Normal Q-Q Plot





Normal Q-Q Plot





**Theoretical Quantiles** 

pp\$sf

ON\_E









### Normal Q-Q Plot

## Histogram of residuals(m\_Imer)





## Histogram of residuals(m\_Imer)





P\_GROW Normal Q-Q Plot

Histogram of residuals(m\_Imer)





Sample Quantiles

Histogram of residuals(m\_lmer)



#### MAX\_D1\_D Normal Q-Q Plot

Histogram of residuals(m\_lmer)





pp\$sf



XYLEM Normal Q–Q Plot

Histogram of residuals(m\_lmer)

bE	GDD	bW	bM	cE	cW	pE	pW	Х	mean rate	max rate	tmax	TRW	
	0.3	0.74	*** 0.64	-0.069	-0.4	-0.3	-0.62	-0.59	-0.022	-0.12	0.45	-0.2	bΕ
		0.11	0.098	-0.23	-0.23	* -0.29	-0.24	-0.28	-0.17	-0.19	-0.021	-0.27	GDD
/			*** 0.52	0.0049	-0.21	-0.17	-0.55	-0.36	-0.24	-0.27	0.35	-0.37	bW
/				_0.24	-0.49	-0.38	-0.61	-0.58	0.2	0.11	*** 0.62	-0.011	ЬM
<u>.</u>					*** 0.65	*** 0.97	*** 0.56	*** 0.59	-0.021	-0.09	0.078	0.19	сĒ
	1	$\frac{1}{7}$	1	/		*** 0.72	*** 0.93	*** 0.98	-0.27	-0.15	-0.23	0.064	cW
				/			*** 0.68	*** 0.71	-0.015	-0.057	-0.032	0.23 <sup>.</sup>	ΡĒ
×					/	/		*** 0.97	-0.14	-0.025	-0.32	0.19	pW
×		$\frac{1}{1}$		1		1			-0.23	-0.1	-0.31	0.1	×
		1				<u></u>		4		*** 0.83	0.22	*** 0.93	mean rate
<u> </u>	-		-		-			the second	Jan Contraction		0.2	*** 0.81	max rate
<u>.</u>				<u></u>		<u></u>		4				0.12	tmax
1	+	1							Jet 1	1			TRW