

# Supplementary Materials: Validation and Application of European Beech Phenological Metrics Derived from MODIS Data along an Altitudinal Gradient

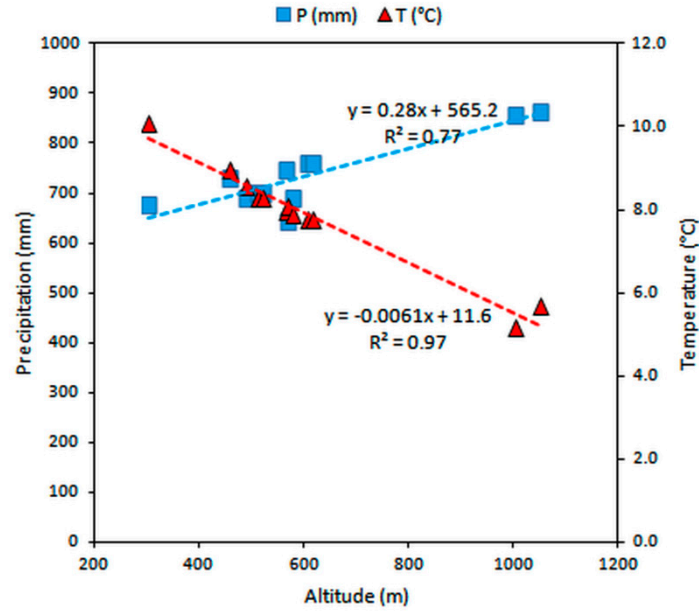
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**Table S1.** Average cover of ground vegetation in stands U1–U5. Cover of ground vegetation was observed visually as a percentage on a five square sample plots in each beech stand U1–U5. The distance between the sample plots was 50 meters and the area of single plot was 100 m<sup>2</sup>. The estimated percentage cover was rounded to 5%.

DOY	Stand				
	U1	U2	U3	U4	U5
102	5	5	14	5	6
107	7	12	20	10	12
117	15	14	26	15	17
124	15	17	30	19	19

**Table S2.** Average transition days of phenological metrics S2 and A2, and the growing season length with the temperature and precipitation normal. The average GSL of the 12 study stands was considered from the climatic aspect using the normal temperatures and precipitation. The longest growing season (188–193 days) with the early onset of LO\_10 (S2) and the latest LC\_80 (A2) was at the lowest altitudes <500 m a.s.l.. The stands situated from 500 to 700 m a.s.l. had the GSL between 181–185 days. The shortest growing seasons (170–174 days) with the latest LO\_10 (S2) were found in the stands located at the highest altitudes >1000 m a.s.l..

Stand	Altitude	Normal P (mm)	Normal T (°C)	GSL	S2_Stands	A2_Stands
ZS	304	675	10.1	193	108	300
MY	457	729	9.0	191	112	303
U1	490	691	8.6	188	114	302
U5	512	700	8.3	183	114	297
U2	522	700	8.3	185	113	298
ZV	566	745	8.0	182	115	297
KC	570	644	8.1	182	116	298
MU	579	689	7.9	182	115	296
U4	607	760	7.8	181	113	294
U3	615	760	7.8	182	114	296
CS	1003	857	5.2	174	124	299
PO	1051	863	5.7	170	123	293



**Figure S1.** The relationship between altitude and normal temperature and precipitation on the study stands. The normal temperature of stands increased linearly with altitude by 0.61 °C for every 100 m increase in altitude. The  $R^2 = 0.97$  indicated a very strong correlation between altitude and normal temperature. The rate of change in the normal precipitation with increasing altitude was 28 mm with 100 m of the lift. Study stands were situated in moderate moist to moist climatic areas and the absolute difference in precipitation between the beech stands at the lowest and the highest altitude was only 188 mm. The relationship between altitude and precipitation was strong with  $R^2 = 0.77$ .