Additional Information for the poster "Extreme warm temperatures alter forest phenology and productivity in Europe"

The Table 1 (see below) provides details of the forest types sampled for the study.

Table 1. The number of broadleaf deciduous forest (BLDF), mixed forest (MF) and needleleaf evergreen forest (NLEF) pixels randomly sampled from extreme warm spring (EWS) and extreme warm autumn (EWA) locations.

	BLDF	NLEF	MF
EWS	20	-	35
EWA	48	18	26

The following tables (Tables 2 and 3) show the results for non-significant differences not reported in the poster. The Table 2 describes the absence of lagged effects in forest productivity as a result of extreme warm spring events. On the other hand, the Table 3 delineates the observation of non-significant differences in forest productivity (no direct effect) as a result of extreme warm autumn events.

Table 2. Comparing the mean autumn productivity of broadleaf deciduous forest (BLDF) and mixed forest (MF) in a normal autumn (NA) to mean autumn productivity of the autumn that immediately followed extreme warm spring events (Aut) using integrated MTCI (I-MTCI). The increase or decrease of productivity as a result of the extreme warm spring is determined by the relative changes in per cent.

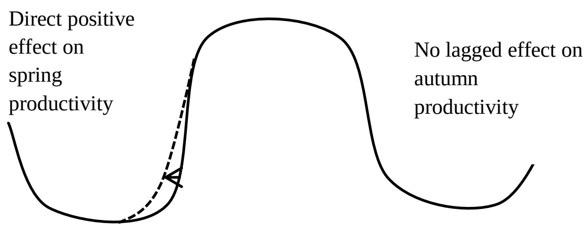
Forest types	I-MTCI, NA	I-MTCI, Aut	Relative change (%)	p- value
BLDF	167±41	166±32	-0.60	0.9558
MF	168±14	175±18	4.17	0.3083

Table 3. Comparing the mean autumn productivity of broadleaf deciduous forest (BLDF), mixed forest (MF) and needleleaf evergreen forest (NLEF) in a normal autumn (NA) to mean autumn productivity during extreme warm autumn (EWA) events using integrated MTCI (I-MTCI). The increase or decrease of productivity as a result of the extreme warm autumn is determined by the relative changes in per cent.

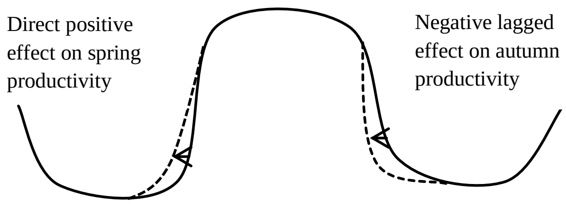
Forest types	I-MTCI, NA	I-MTCI, EWA	Relative change (%)	p- value
BLDF	194±21	199±25	2.58	0.5306
NLEF	222±22	222±18	0	0.9911
MF	146±7	156±16	6.85	0.1270

Conceptual Models

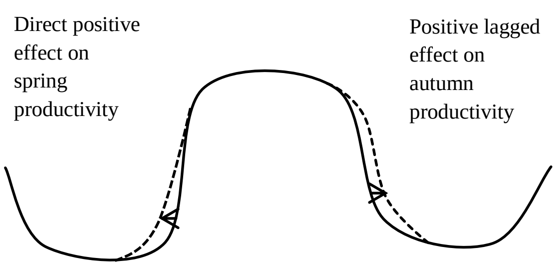
This study dwelt on certain assumptions to investigate the link between vegetation phenology, forest productivity, and changes in spring and autumn temperature (see Fig. 1 below)



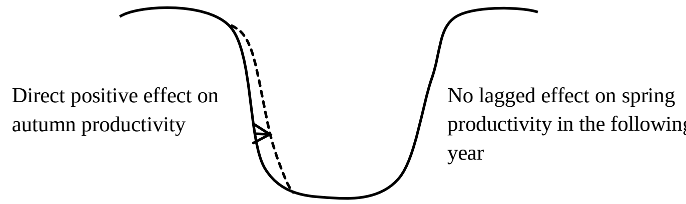
a. Extreme warm spring: No lagged effect model. This model theorizes that earlier OG in spring, as a result of extreme high temperatures, ensures direct positive effect on spring productivity which in turn may not have any lagged effect on autumn productivity. The broken lines show extreme warm spring productivity whiles the arrow depicts a shift from normal spring productivity to extreme warm spring productivity; thus indicating direct positive effect on spring productivity.



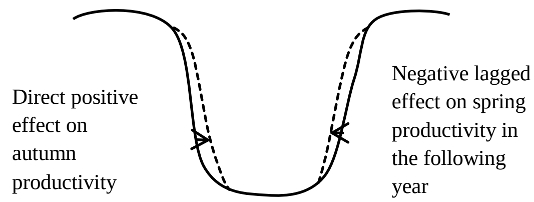
b. Extreme warm spring: Positive lagged effect model. This model indicates that direct positive effect in spring forest productivity as a result of extreme warm spring season might lead to positive lagged effect in autumn productivity. The arrow at the right hand shows a shift from normal autumn productivity to extreme warm autumn productivity in the positive direction indicating increase in autumn forest productivity when compared to normal.



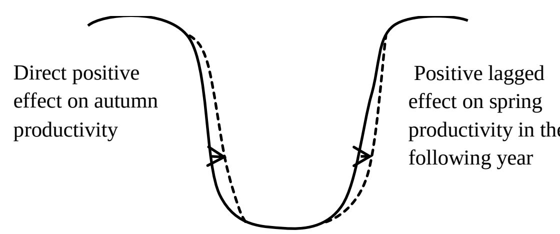
c. Extreme warm spring: Negative lagged effect. This model indicates that direct positive effect in spring forest productivity as a result of extreme warm spring season might lead to negative lagged effect in autumn productivity. The arrow at the right hand shows a shift from normal autumn productivity to extreme warm autumn productivity in the negative direction indicating decrease in autumn forest productivity when compared to normal.



d. Extreme warm autumn: No lagged effect. This model theorizes that delayed EOS in autumn, as a result of extreme high temperatures, ensures direct positive effect on autumn productivity which in turn may not have any lagged effect on subsequent spring productivity. The broken lines show extreme warm autumn productivity whiles the arrow depicts a shift from normal autumn productivity to extreme warm autumn productivity; thus indicating direct positive effect on autumn productivity but without any lagged effect on spring productivity



e. Extreme warm autumn: Positive lagged effect model. This model indicates that direct positive effect in autumn forest productivity as a result of extreme warm autumn events might lead to positive lagged effect in spring productivity. The arrow at the right hand shows a shift from normal spring productivity to extreme warm spring productivity in the positive direction indicating increase in spring forest productivity when compared to normal.



f. Extreme warm autumn- Negative lagged effect. This model indicates that direct positive effect in autumn forest productivity as a result of extreme warm autumn events might lead to negative lagged effect in spring productivity. The arrow at the right hand shows a shift from normal autumn productivity to extreme warm autumn productivity in the negative direction indicating decrease in autumn forest productivity when compared to normal.