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Analysis of meteorological conditions leading to high net ecosystem production of mountain spruce forest: Can „optimal weather“ be defined?

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Contribution deals with impact of meteorological conditions on mountain spruce forest ecosystem productivity in Experimental Ecological Study Site (EESS) Bílý Kříž (Moravian-Silesian Beskydy Mountains). For this purpose eddy covariance data and microclimatological data (air temperature, photosynthetic active radiation and vapor pressure deficit) from period 2006 – 2009 (central part of the season, May – August) were used. Firstly, a production potential (NEPpot) was found and then highly productive days ($\geq$ 95 % NEPpot) were selected. These days were used in wider time context and analysed. The causes of high productivity were divided into two categories: a, high production day came after rainy day (period); b, high production day came after dry day (period). It was found that after rainy day (period) increase of PAR often followed by increase of temperature and VPD is becoming a main driving factor. On the contrary, after a dry day (period), decrease of two main factors (PAR, temperature) or decrease of PAR only causes high production.
Using the fact that ecosystem production potential is given not only by actual state of meteorological factors at a chosen day but also by their history (previous days conditions), we found that combination of specific meteorological factors leads to different production in the dependence of ecosystem condition and meteorological factor values in previous days.

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