

# Does silviculture practice affect the climate-growth relationship in spruce stands?

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## Objective

Long-term monitoring of permanent research helps predict the response of volume increment in pure Scots pine stands subject to drought stress. We hypothesized that tree species' resilience to drought will be strengthened using silvicultural treatment applications. The project aimed to identify a silvicultural management (forest tending) of Scots pine stands that ensure sustainable wood production.

## Hypothesis

H1: Thinning from below improves the growth performance of pine stands under drought stress.

H2: Scots pine growth performance during drought stress is a function of stand management and resulting stand structure.

## Methods

- Study sites: Mělník, Mladá Boleslav
- Sampling Norway spruce from stands with different silviculture management
- Measuring tree rings in the laboratory using CooRecorder
- Cross-dating of all tree ring series and their averaging within each tree, detrending using Spline (70 years wavelength)
- Creation of indexed site standard chronology for all studied categories (R soft., package dplR)
- Calculation of Pearson's correlations between indexed tree-rings widths (RWI) and monthly climatic variables in R software, package treeclim

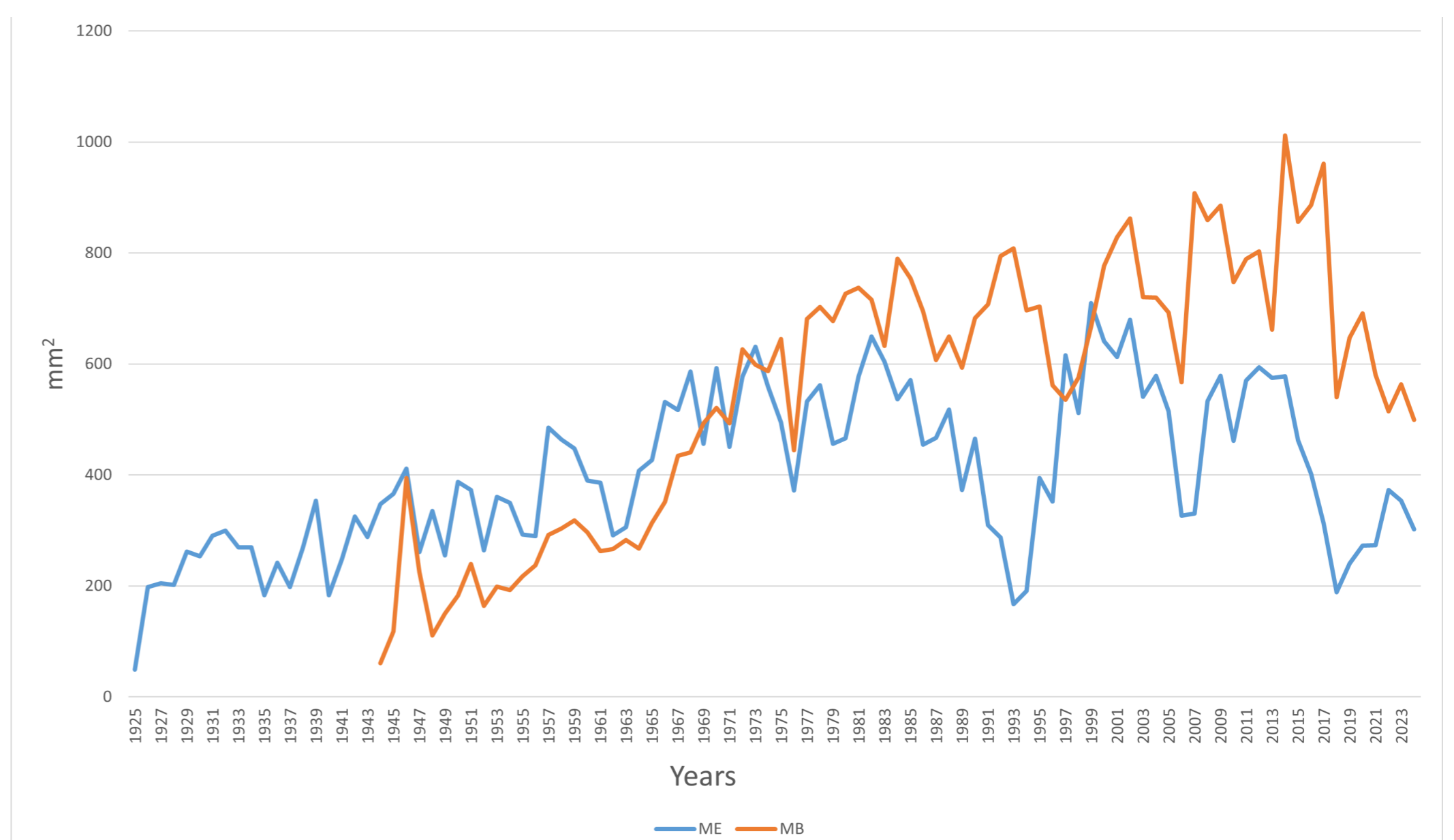


Figure 2 Basal area increment values ( $\text{mm}^2$ ) for Mělník (ME) and Mladá Boleslav (MB) sites

## Partial results and discussion

Based on the results of T<sub>fB</sub>, BAI was positively influenced mainly at MB site.

Growth here is mainly influenced by spring and winter temperatures. In this locality, we are dealing with natural pine stand and the adequate thinning has encouraged the growth, confirmed by Novák et al. (2011). From the perspective of BAI, Mladá Boleslav is better off than Mělník. If the trend of GCC continues, the cultivation of pine its natural sites, such as Mladá Boleslav, with the adequate silvicultural treatments appears to be promising.

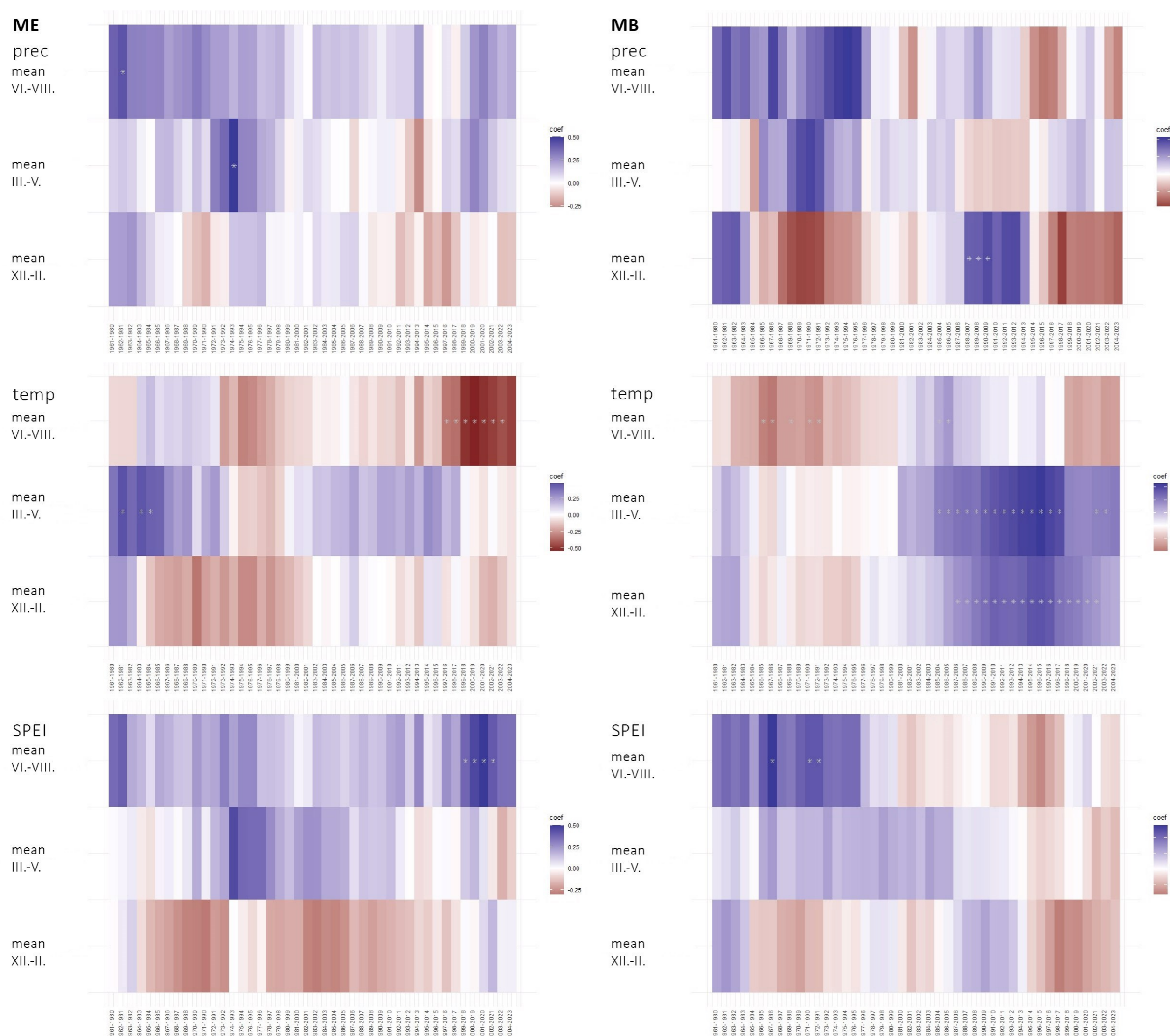


Figure 1 Moving correlation charts for Mělník (ME) and Mladá Boleslav (MB) sites

## REFERENCES

Novák, J., et al., 2011. Long-term effect of thinning on production and forest-floor characteristics in Scots pine stands in the Polabí lowland (Czech Republic). *Forestry Ideas*, 17.1: 27-33.

## ACKNOWLEDGEMENT

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