Patterns of forest structure and carbon storage and their responses to disturbances in Shangri-La, Yunnan

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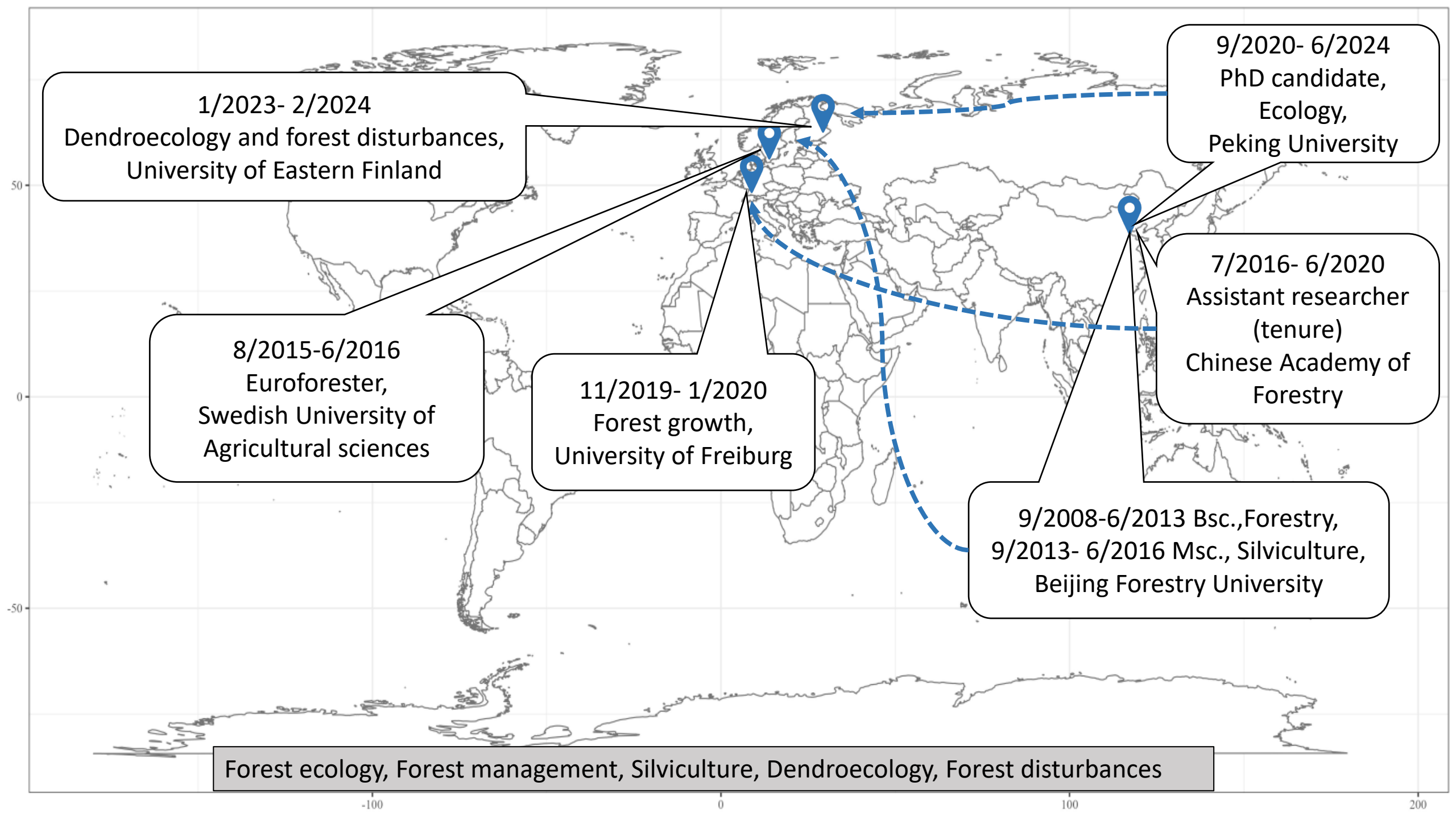
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9/2020- 6/2024
PhD candidate,
Ecology,
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8/2015-6/2016
Euroforester,
Swedish University of
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Assistant researcher
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Chinese Academy of
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Forest ecology, Forest management, Silviculture, Dendroecology, Forest disturbances
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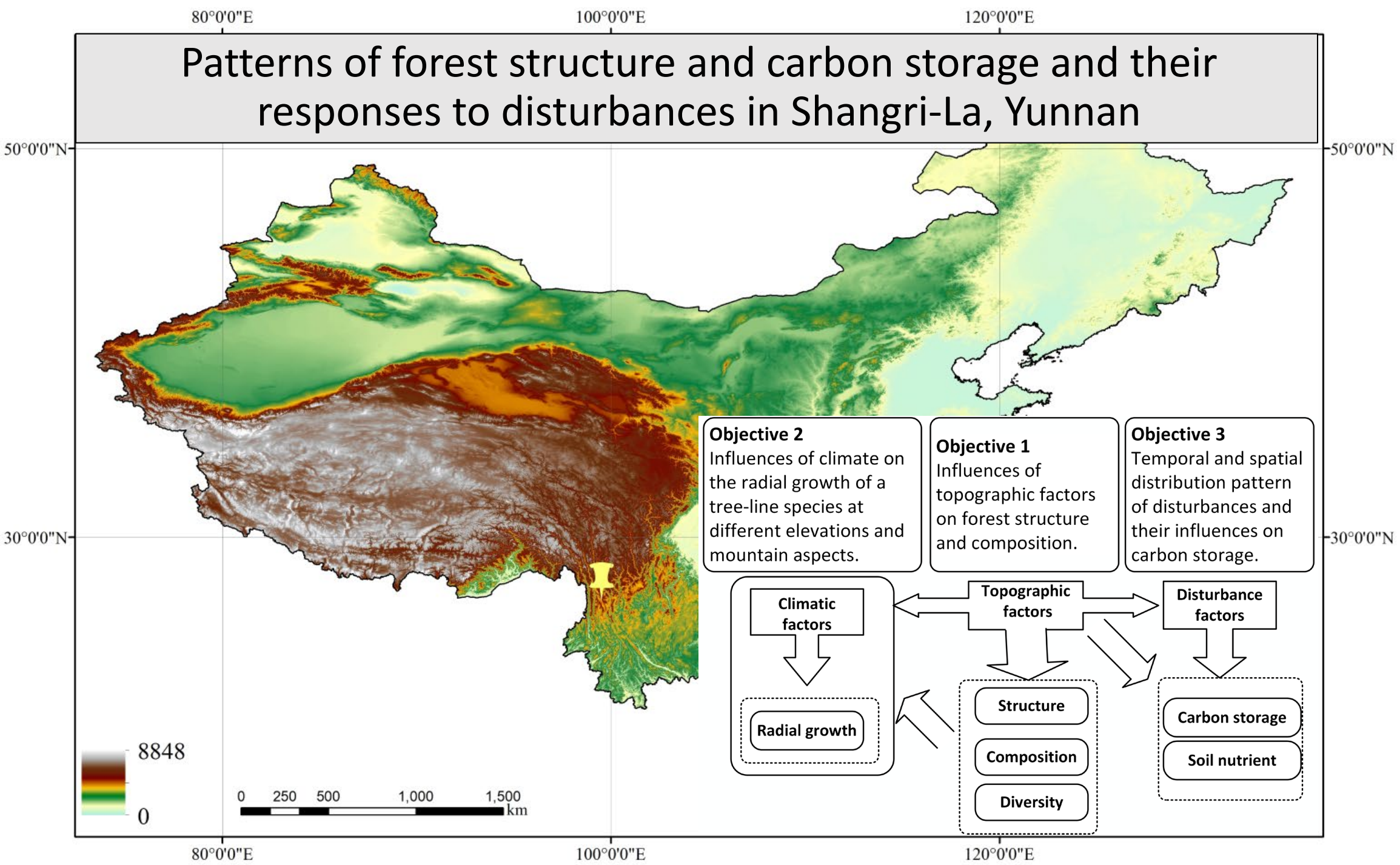
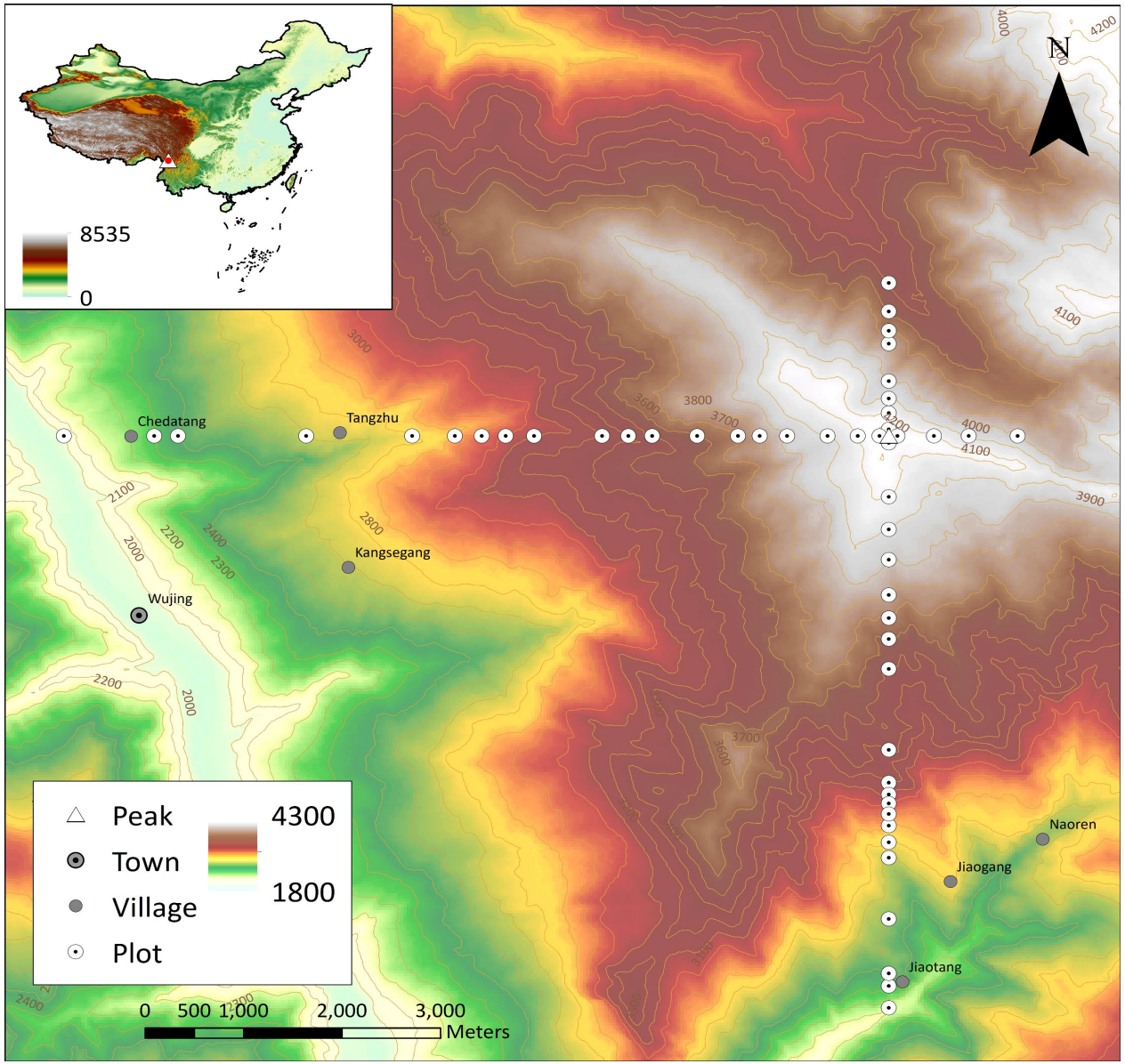
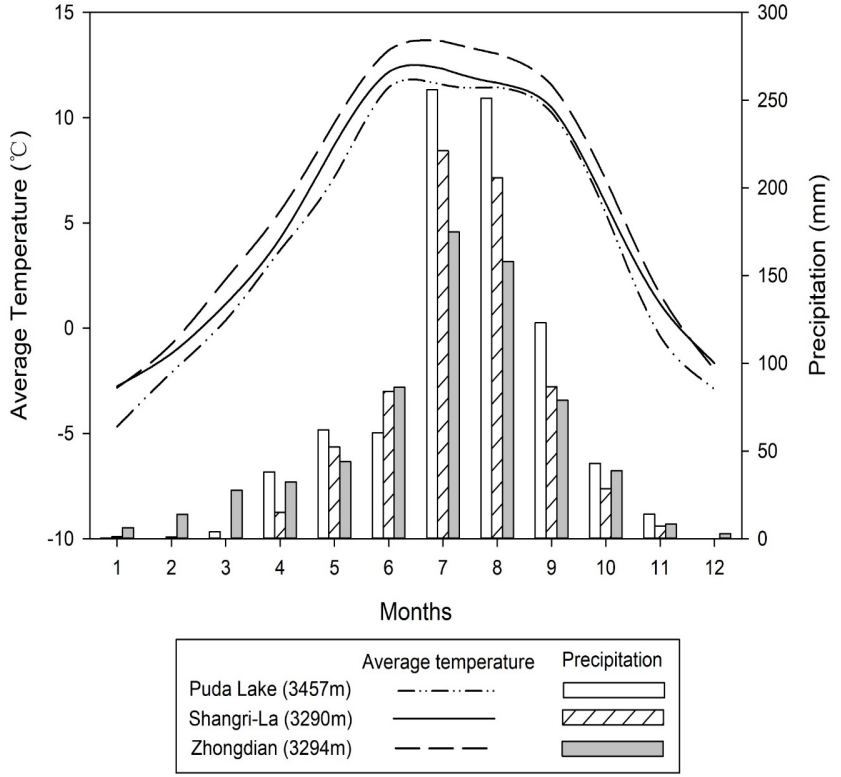
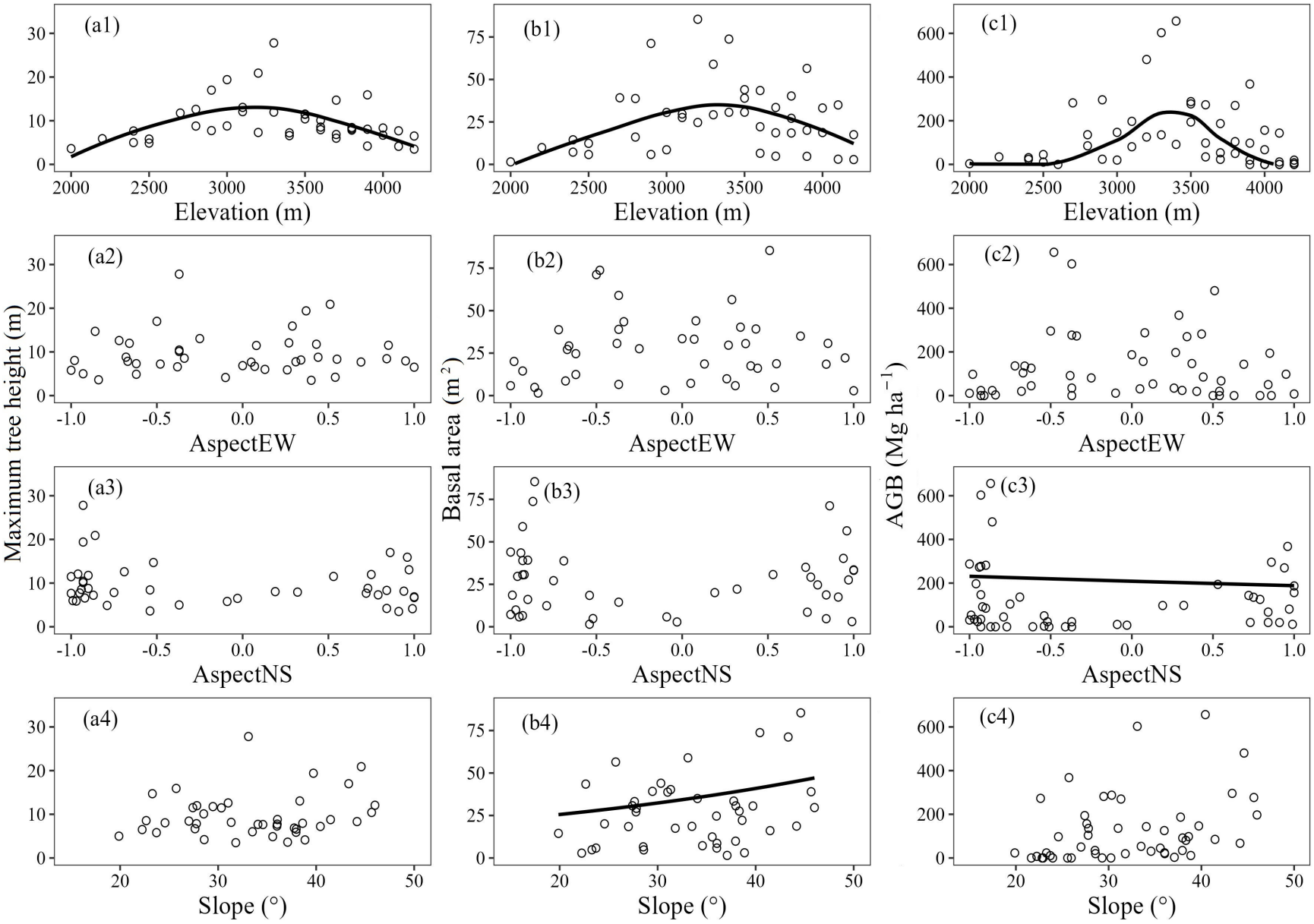


Doctoral research site and plots layout





(1) Influences of topographic factors on forest structure and composition



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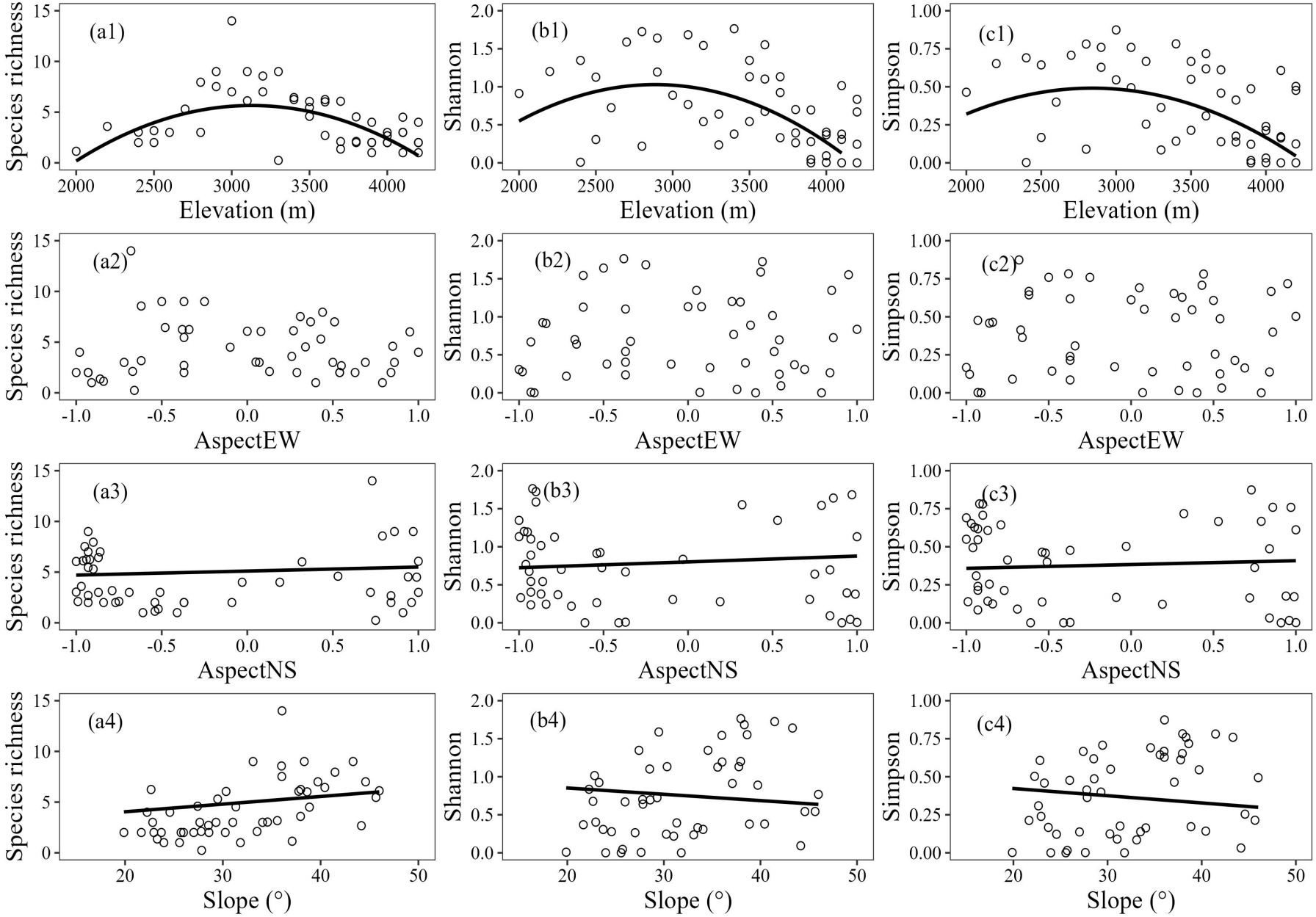

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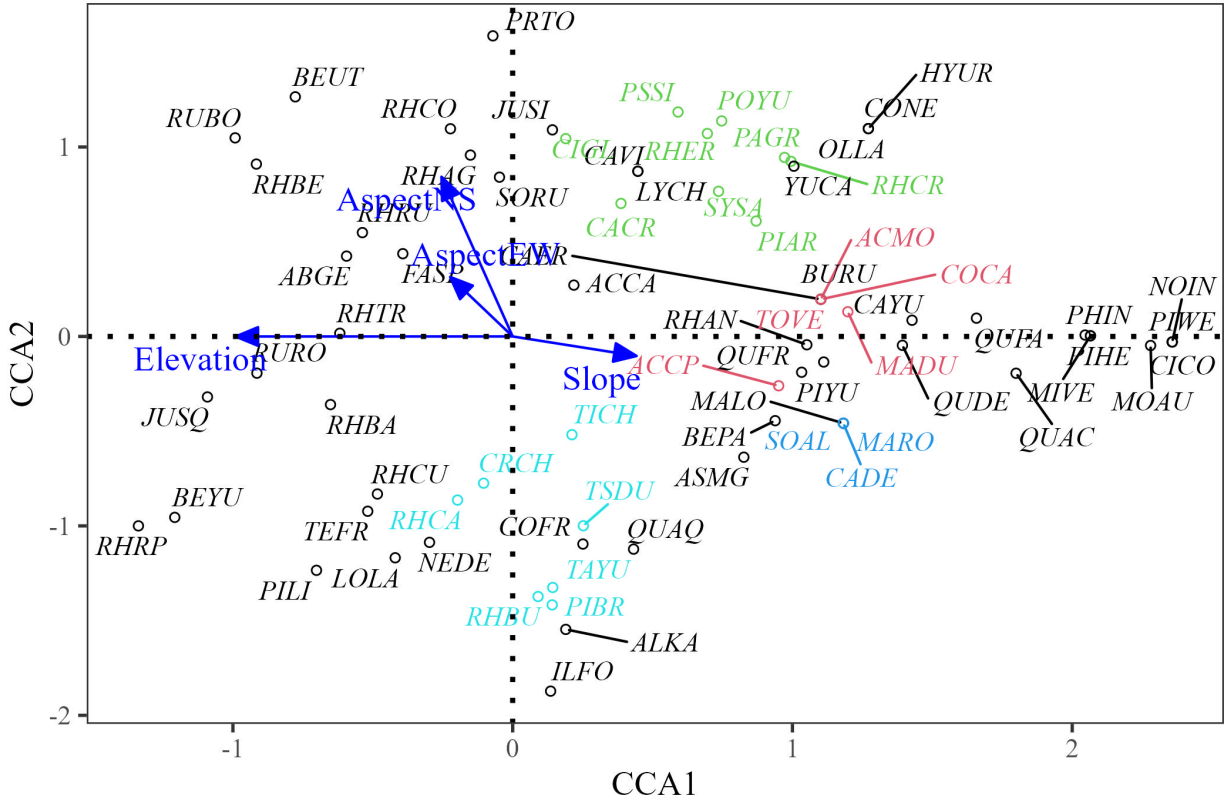
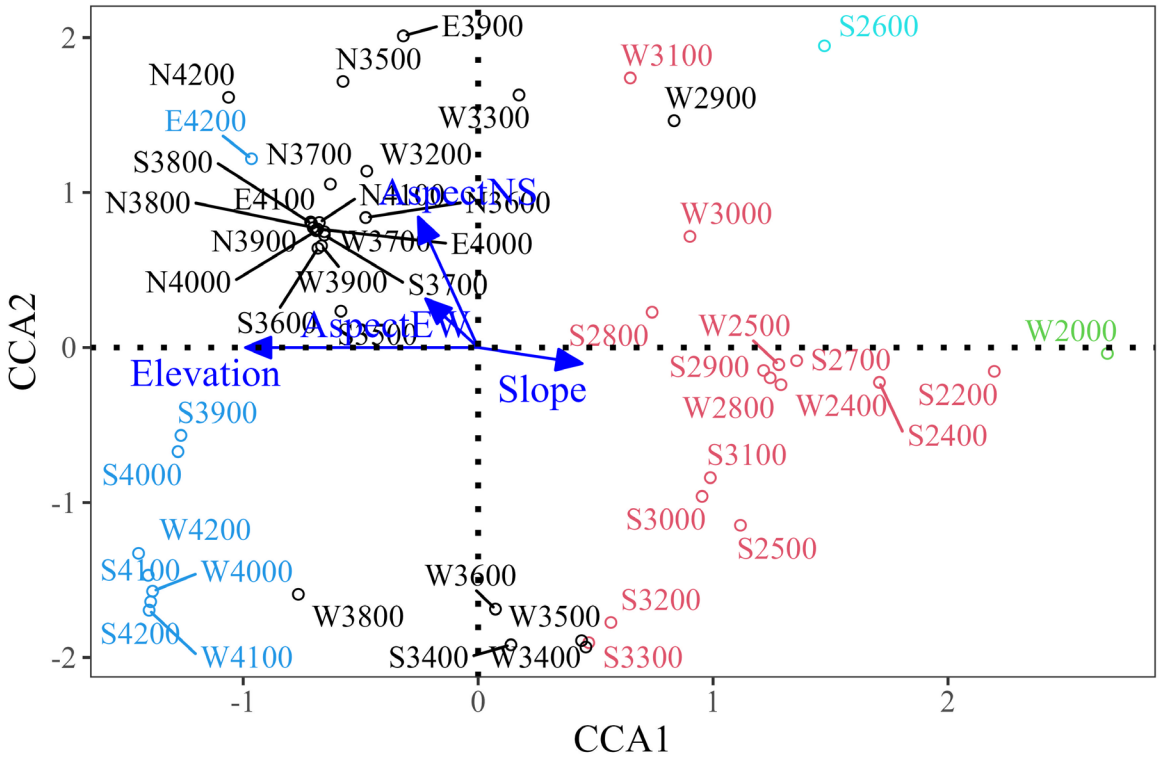
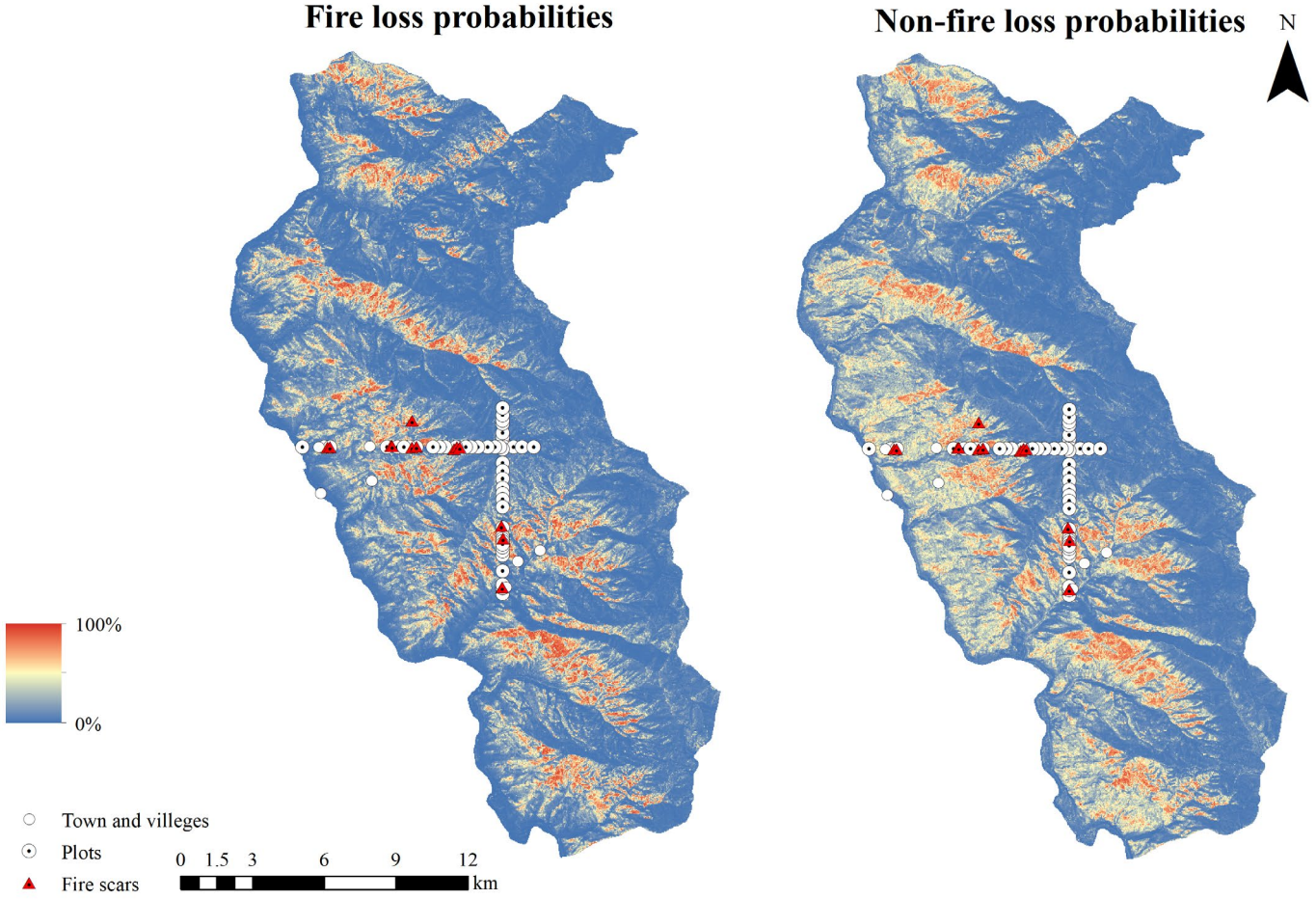




dry valley shrubs below 2100 m on the western slope;
abandoned cropland at 2600 m on the southern slope;
pine forests at 2400- 3000 m on the western slope;
mixed pine and fir forests at 2800- 3300 m on both western and southern slopes;
mixed conifer and broad-leaved forests below 2700 m on the southern slope;
mixed maple and broad-leaved forests at 3400- 3700 m;
mixed fir and rhododendron forests at 3300- 3600 m on both western and southern slope;
mixed oak forests at 3300- 3600 m on the southern slope;
fir forests above 3800 m;
high-elevation shrubs and meadows above 3900 m on both western and southern slopes.

(2) Temporal and spatial distribution pattern of disturbances and their influences on carbon storage



Topographic factors	Fire loss	Non-fire loss
Elevation	31.25	28.51
AspectNS	31.03	27.18
AspectEW	8.07	4.83
Slope	9.64	8.19
TWI	9.25	4.70
TPI	10.77	26.61

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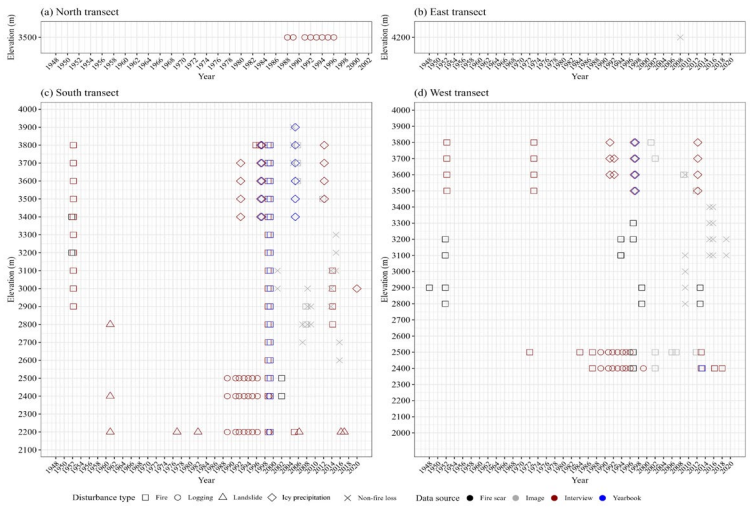

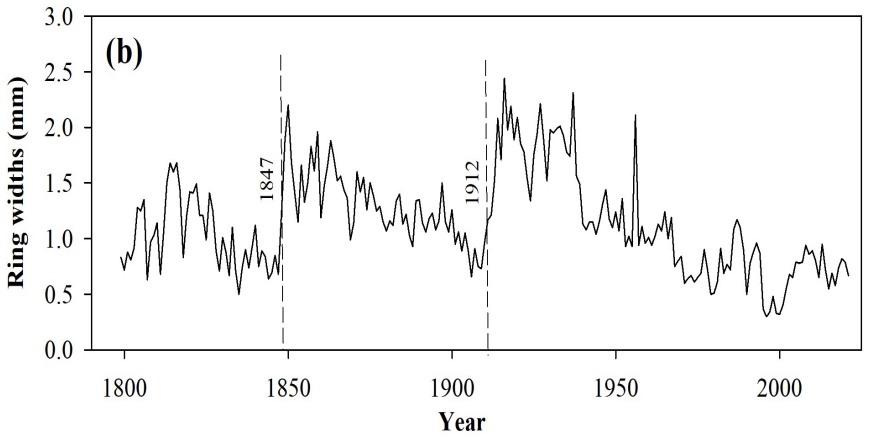

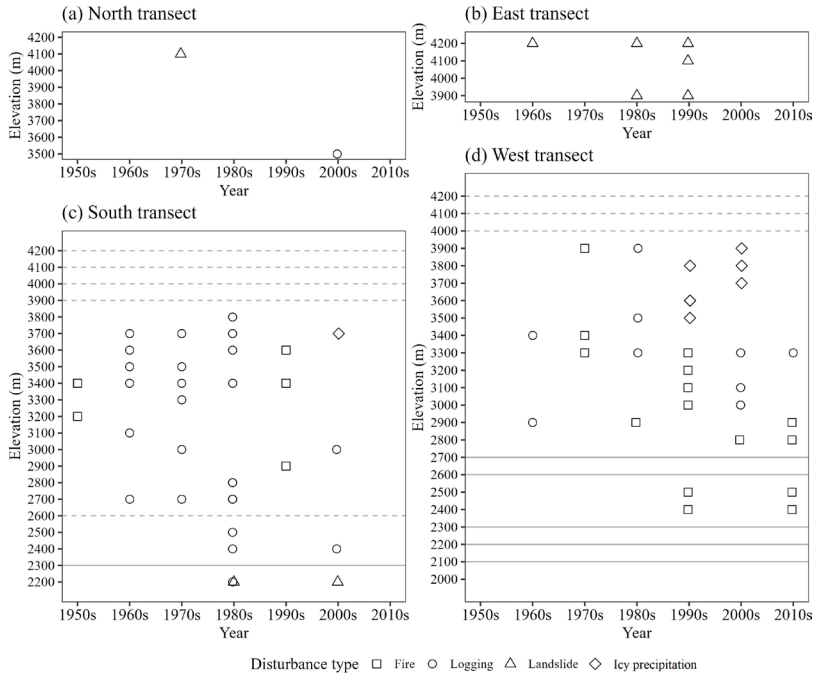

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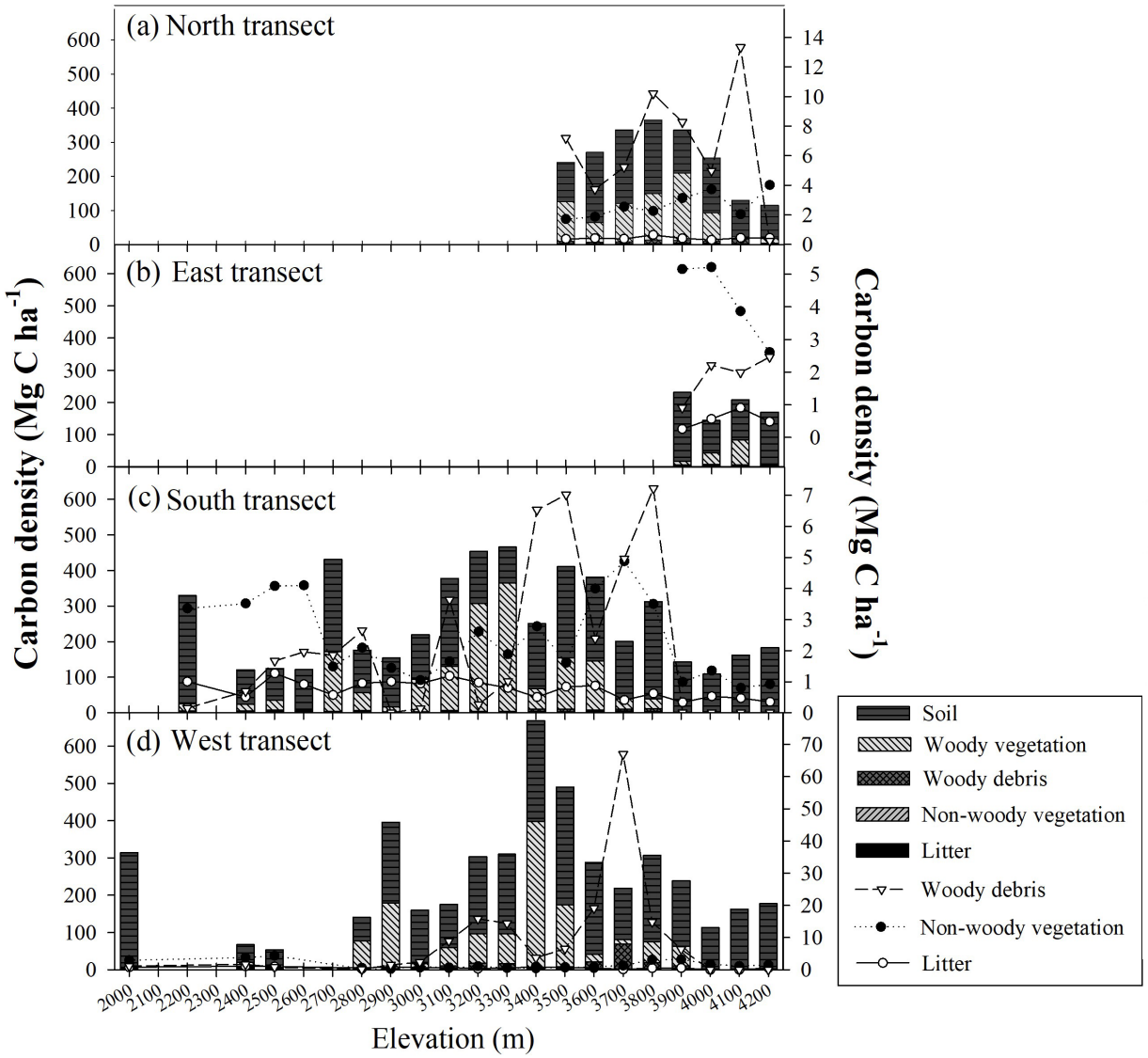
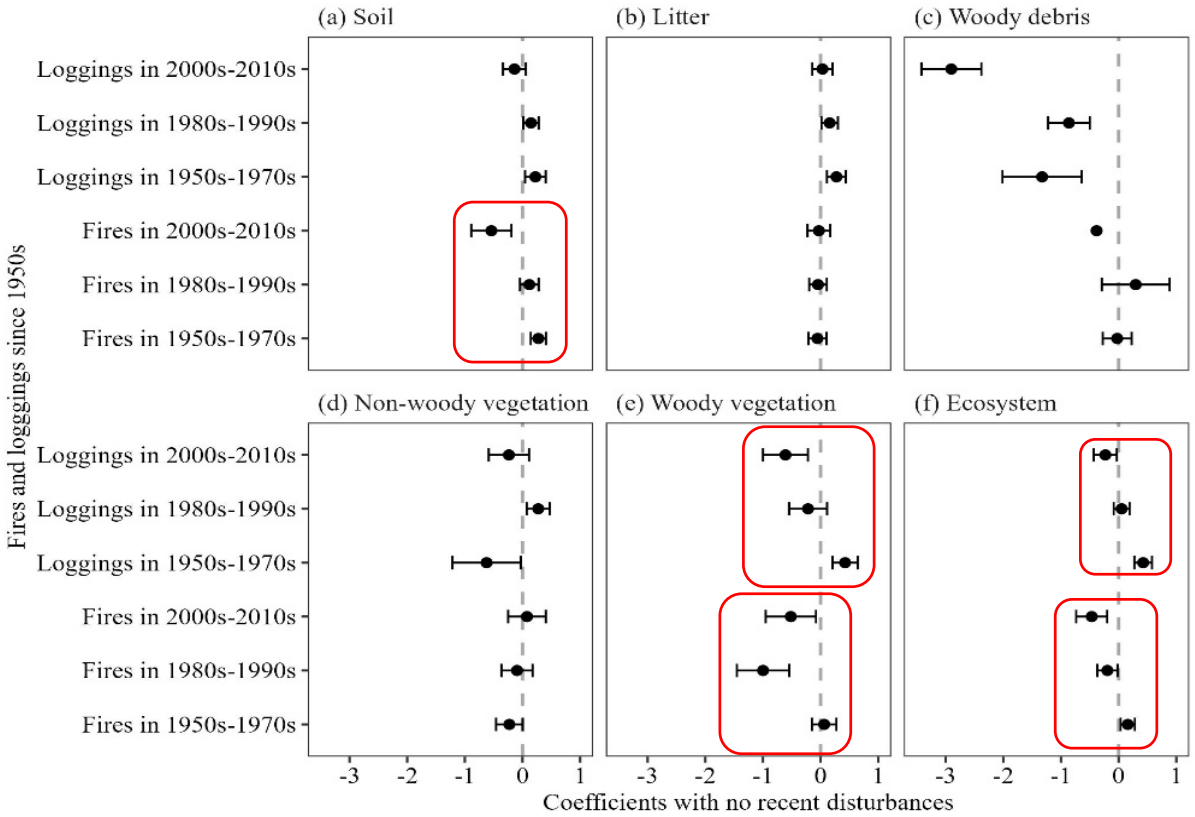
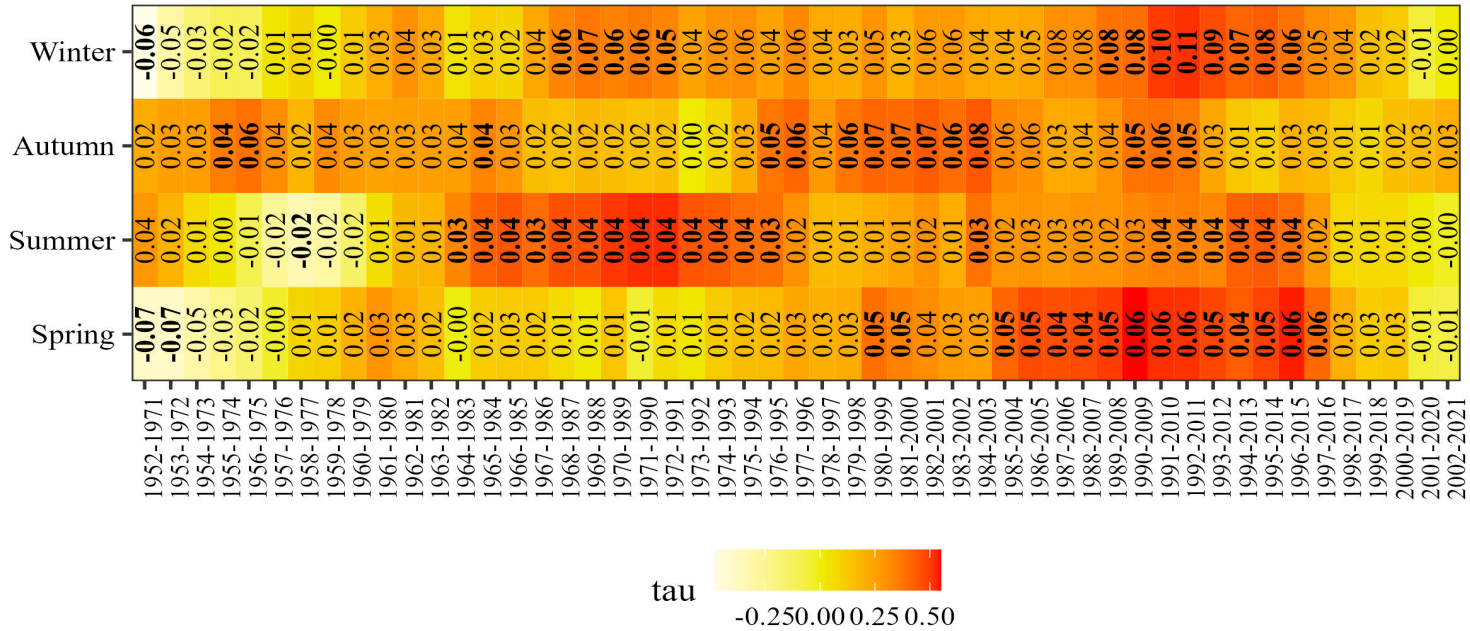
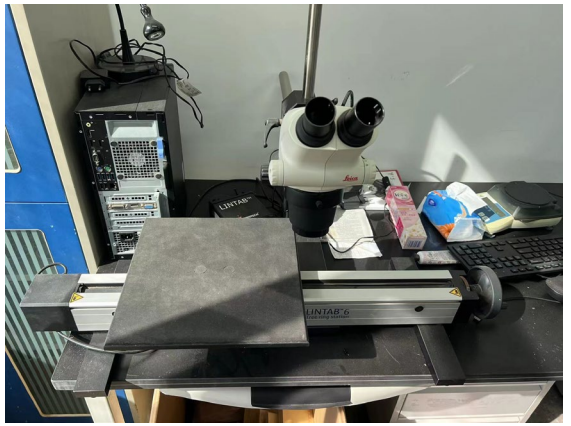
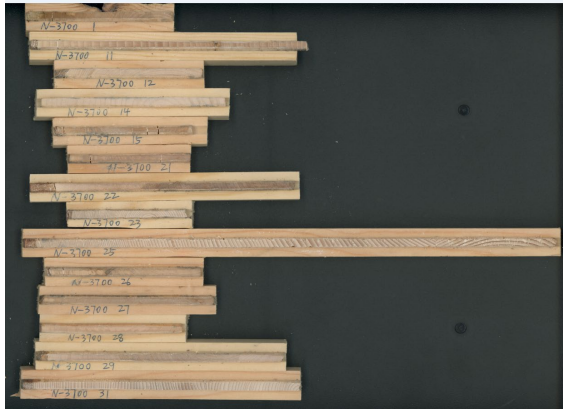




(3) Influences of climate on the radial growth of a tree-line species at different elevations and mountain aspects







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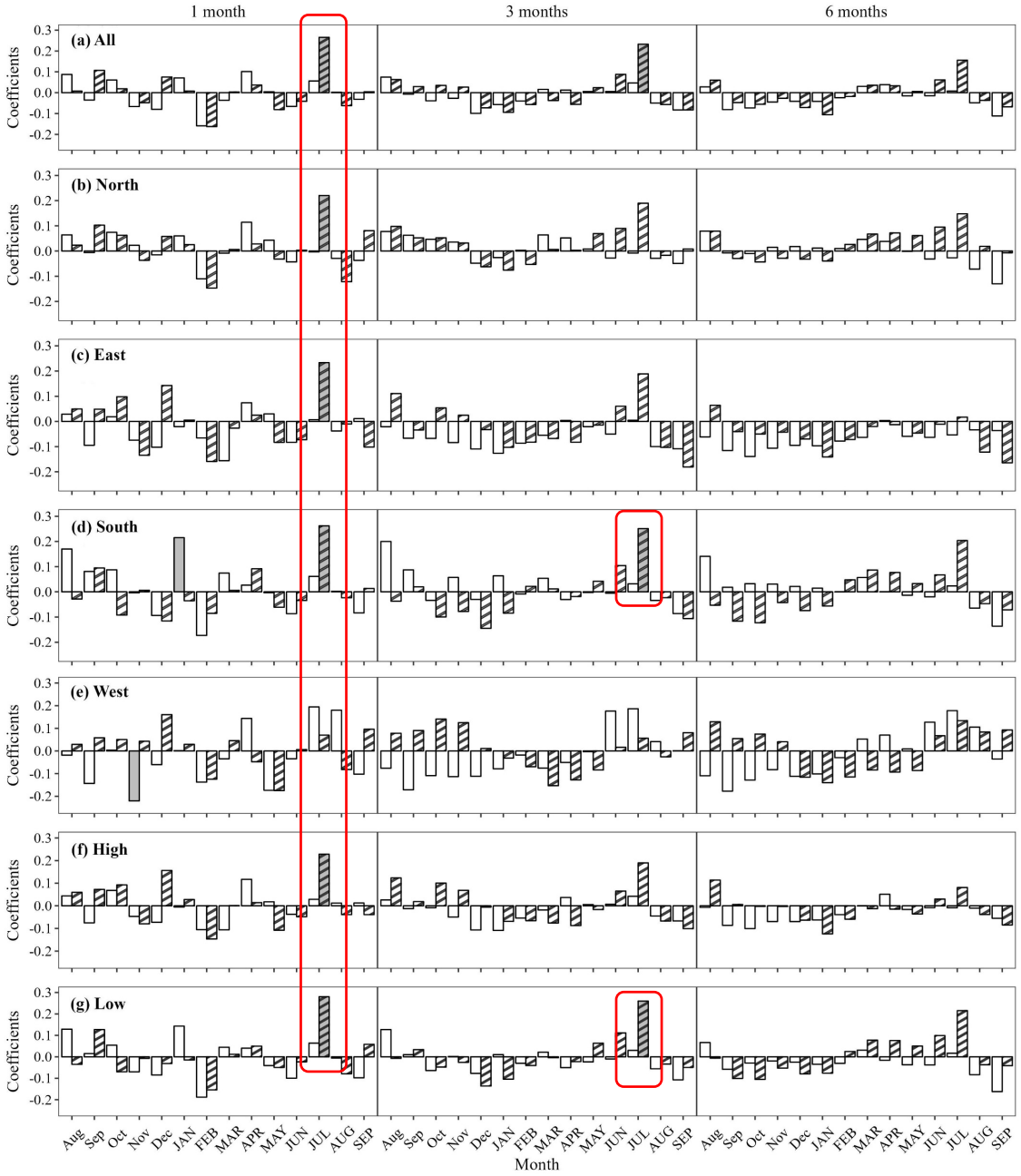
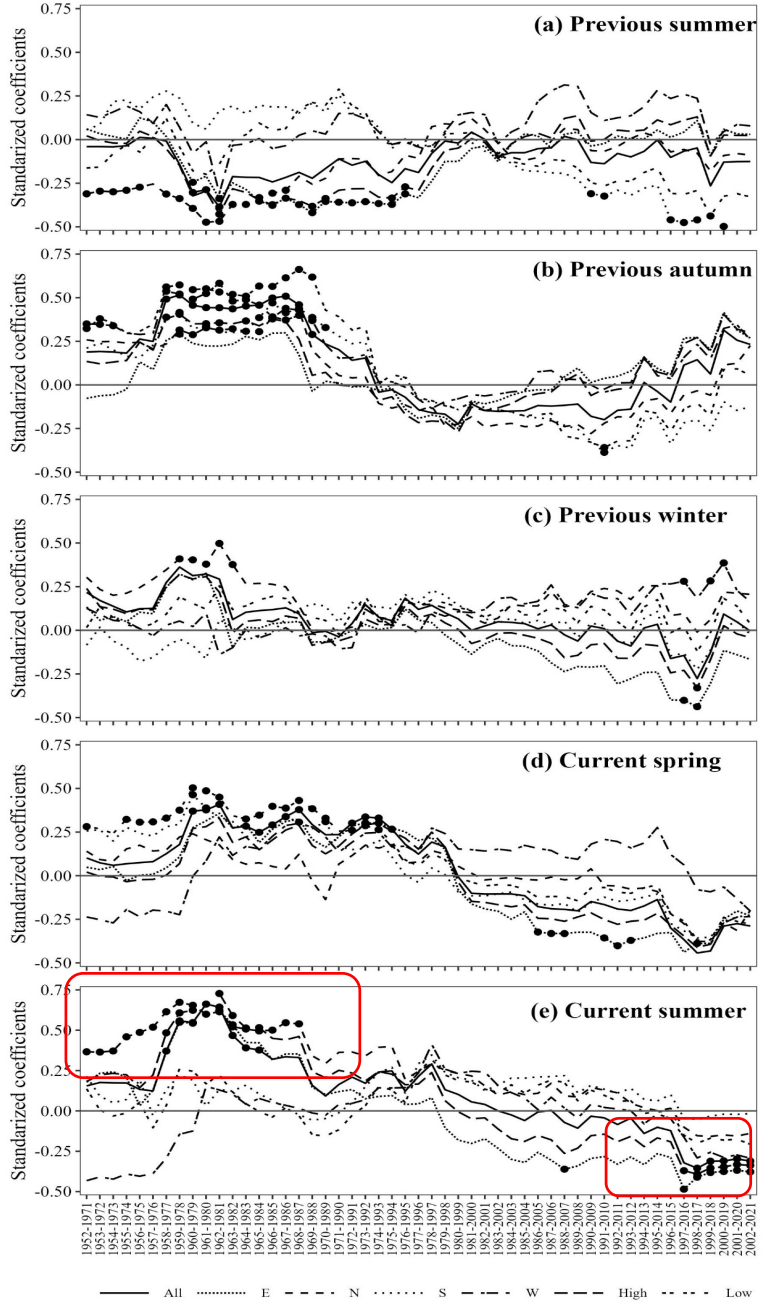
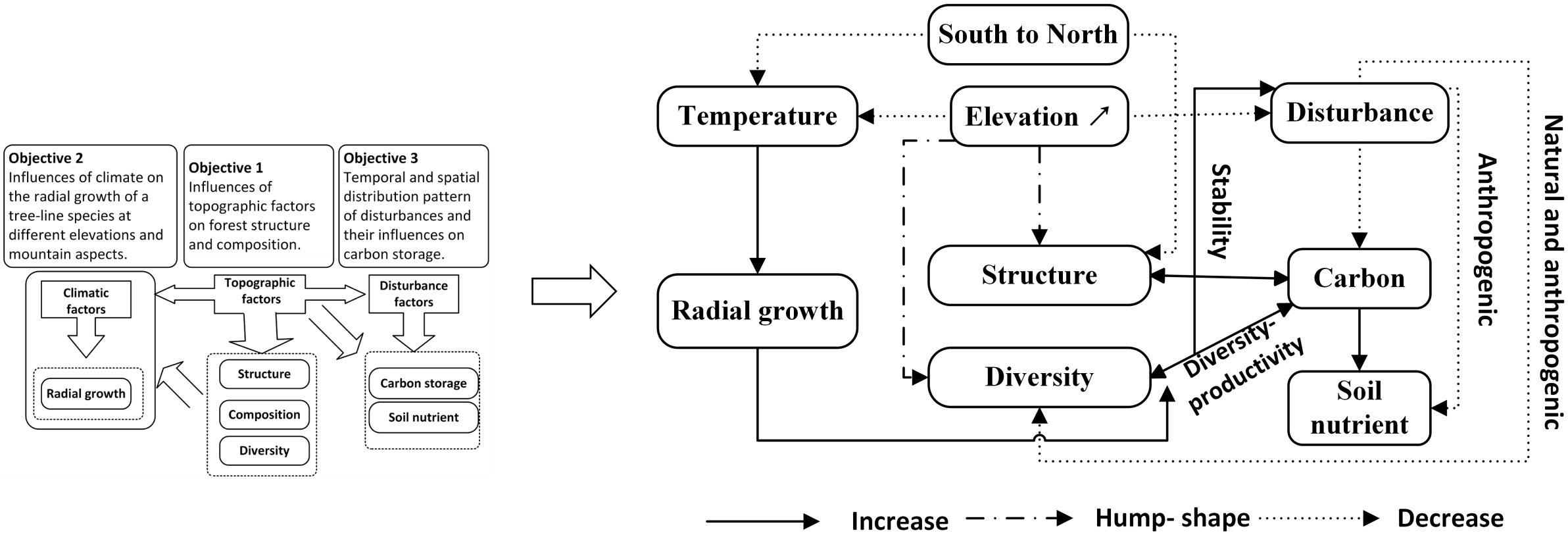




Take home messages



Multiple environmental factors drive forest dynamics

Future research

- 1) Investigating the **complexity** among various disturbances and their **interactive impacts** on forest dynamics.
- 2) **Tipping points** of response of trees to warming over time.
- 3) Highlighting the principle that the success of forest **restoration** is inherently linked to disturbance regimes.

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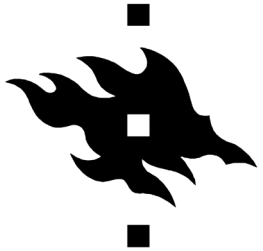

HELSINGIN YLIOPISTO

Thanks!

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