Landscape Research Institute

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Jakub Kašpar

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Research focus: Exploring species-specific tree growth responses to climate change and disturbances.

Employer: Landscape Reseach Institute, Department of Forest Ecology, Lidická 25/27, Brno, Czechia

Education:

- 2017 – Doctoral degree (Ph.D.) in Physical Geography and Geoecology, Faculty of Science, Charles University
- 2013 – Master degree (Mgr.) in Physical Geography and Geoecology, Faculty of Science, Charles University

Jobs and positions:

- Since 2017 – Landscape Research Institute, p.r.i.; Department of Forest Ecology, Brno – post-doc.
- International internship
- II-VI 2016 – TESAF, University of Padova, supervised by Tomasso Anfodillo. Working on paper Kašpar et al. (2019, Trees)

Research interest: dendrochronology; wood anatomy; tree-growth dynamics; climate-growth relationship, tree growth modelling, tree ecophysiology.

Skills: TLS, dendrometer, dendrochronological, wood anatomy, xylogenesis data collection and processing; programming in R

Publication record: 29 papers in journal with IF, cited 664 times, H-index 11 (WoS, 31th Mar. 2025)

Absolved workshops:

- 2024 – Joint Training School on forest ecosystems, Secocin Stary, Poland
- 2023 – 11th Training school of Life SySTEMiC and EVOLTREE Summer School on Scientific Writing, Reviewing, and Publishing: "Measures to protect and monitor forest genetic diversity"; Krjanska Gora, Slovenia
- 2015 – 2nd International Training school: “Quantitative wood anatomy – from sample to data”; San-Vito di Cadore, Italy
- 2015 – 26th European Dendroecological Fieldweek; Zawoja, Poland

Selected scientific activities:

- Principal investigator: “The effect of the summit syndrome on tree growth in treeline ecotone in Central European mountains” GAUK;

- Principal investigator: “Imprint of wind disturbance in wood anatomy”; open call of AI4life Horizon Europe; ongoing project;
- Co-principal investigator: “Tree-ring database as a tool for description and prediction of the main forest tree species to climate change”; TAČR; under eval;
- Member of research team of:
  - “Center for Landscape and Biodeversity”; TAČR; p.i. Dušan Romportl; ongoing project;
  - “A global model of treethrow forms and the role of tree mortality in carbon storage”; GAČR; p.i. Pavel Šamonil; ongoing;
  - “How traits mediate tree interactions with neighbours, enemies and mutualists…”; GAČR; p.i. David Janík; ongoing;
  - “The mystery of biogenic soil creep…”; GAČR; pi. Pavel Šamonil; eval. Excellent;
  - “Ecosystem engineering and soil complexity in old-growth temperate forests”; GAČR; p.i. Pavel Šamonil; eval. Excellent;
  - “Physiological, morphological and growth response of fir and beech along the geographical gradient”; GAČR lead agency, pi. Kamil Král; under eval.;
  - “Understanding structure and dynamics of temperate forests of Norther Hemisphere”; MŠMT; p.i. Kamil Král;. Accomplished;
- Active participation in the TRACE conferences (2016 – poster presentation, 2017 – oral presentation; 2018 – poster presentation r; 2019 – poster presentation; 2022 – poster and oral presentation; 2023 – poster and oral presentation; 2024 – poster presentation and oral presentation).
- Reviewer of:
  - two dissertations (Jakob Pawlin – sup. Miroslav Svoboda; and Yumei Jiang sup. Miloš Rydval
  - 7 scientific mauscripts (including journals as Plant, Cell & Environment or PNAS; source Web of Science).

Significant field experiences:

- 2011-2015 – xylogenesis sampling in Krkonoše Mountains;
- 2018 – managing dendrochronological sampling of dead trees after Herward windstorm (sampling 1000 trees);
- 2022 – Terestrial Laser Scanning in the USA SERC (MD) and SCBI (VI); 14 days;

International collaboration:

- Involved in xylogenesis initiative (participation in six paper published in PNAS, GCB etc.).
- Involved in ETBRN database (participation in one research paper published in GCB).

Selected papers in scientific journals:

- **Kašpar J**, et al., 2025. Climate growth limitations of European beech and silver fir along the Carpathian arc – the recent state and future prospects. Agricultural and Forest Meteorology 361, 110323. DOI: 10.1016/j.agrformet.2024.110323
- Oulehle F, et al. 2025. Growth and Assemblage Dynamics of Temperate Forest Tree Species Match Physiological Resilience to Changes in Atmospheric Chemistry. Global Change Biology 31: e70147. DOI: 10.1111/gcb.70147
- Zhang Y, et al. 2025. Soil nitrogen drives inverse acclimation of xylem growth cessation to rising temperature in Northern Hemisphere conifers. Proceedings of the National Academy of Sciences 122: e2421834122. DOI: 10.1073/pnas.2421834122
- **Kašpar J**, et al. 2024. The effects of solar radiation on daily and seasonal stem increment of canopy trees in European temperate old-growth forests. New Phytologist 243, 662–673. DOI: 10.1111/nph.19852
- **Kaspar J**, et al. 2024. Major tree species of Central European forests differ in their proportion of positive, negative, and nonstationary growth trends. Global Change Biology 30, e17146. DOI: 10.1111/gcb.17146
- Klesse S, et al. 2024. No future growth enhancement expected at the northern edge for European beech due to continued water limitation. Global Change Biology 30, e17546. DOI: 10.1111/gcb.17546
- Mašek J, et al. 2024. Shifting climatic responses of tree rings and NDVI along environmental gradients. Science of The Total Environment 908: 168275. DOI: 10.1016/j.scitotenv.2023.168275
- Zhang Y, et al. 2024. High preseason temperature variability drives convergence of xylem phenology in the Northern Hemisphere conifers. Current Biology 34: 1161-1167.e3. DOI: 10.1016/j.cub.2024.01.039
- Huang J-G, et al. 2023. A critical thermal transition driving spring phenology of Northern Hemisphere conifers. Global Change Biology 29, 1606–1617. DOI: 10.1111/gcb.16543
- Anderson-Teixeira, K.J., et al., 2022. Joint effects of climate, tree size, and year on annual tree growth derived from tree-ring records of ten globally distributed forests. Global Change Biology 28, 245–266. DOI: 10.1111/gcb.15934,
- **Kašpar J**, et al. 2021. Hillslope processes affect vessel lumen area and tree dimensions. Frontiers in Plant Science 12: 2736. DOI: 10.3389/fpls.2021.778802
- **Kašpar J**, et al. 2021. Species-specific climate–growth interactions determine tree species dynamics in mixed Central European mountain forests. Environmental Research Letters 16: 034039. DOI: 10.1088/1748-9326/abd8fb
- **Kašpar J**, et al. 2020. Woody species-specific disturbance regimes and strategies in mixed mountain temperate forests in the Šumava Mts., Czech Republic. European Journal of Forest Research 139: 97–109. DOI: 10.1007/s10342-019-01252-9
- **Kašpar J**, et al. 2019. Tree size mostly drives the variation of xylem traits at the treeline ecotone. Trees 33, 1657–1665. DOI: 10.1007/s00468-019-01887-6