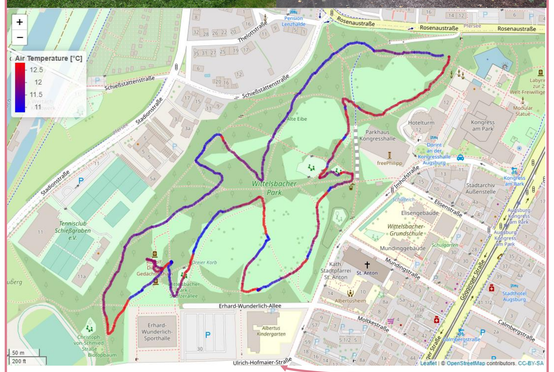
Climate and Health Effects of Different Urban Forest Structures

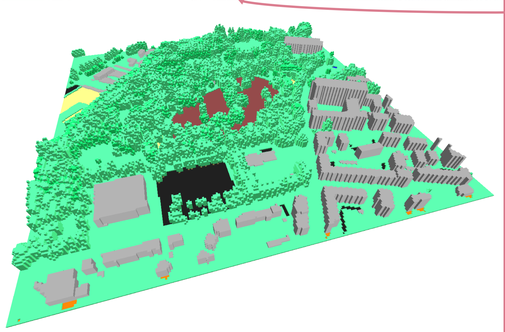
Jonathan Simon, Christoph Beck, Joachim Rathmann, Elisabeth André, Linda Becker,
Yekta Can, Alexander Heimerl, Bhargavi Mahesh, Nicolas Rohleder, and Andreas Seiderer

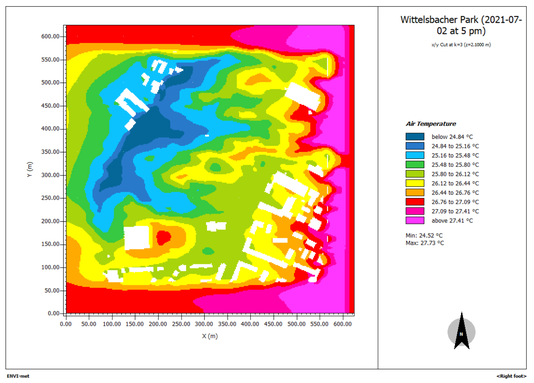
Universität Augsburg University

Sharing is encouraged

Wittelsbacher Park

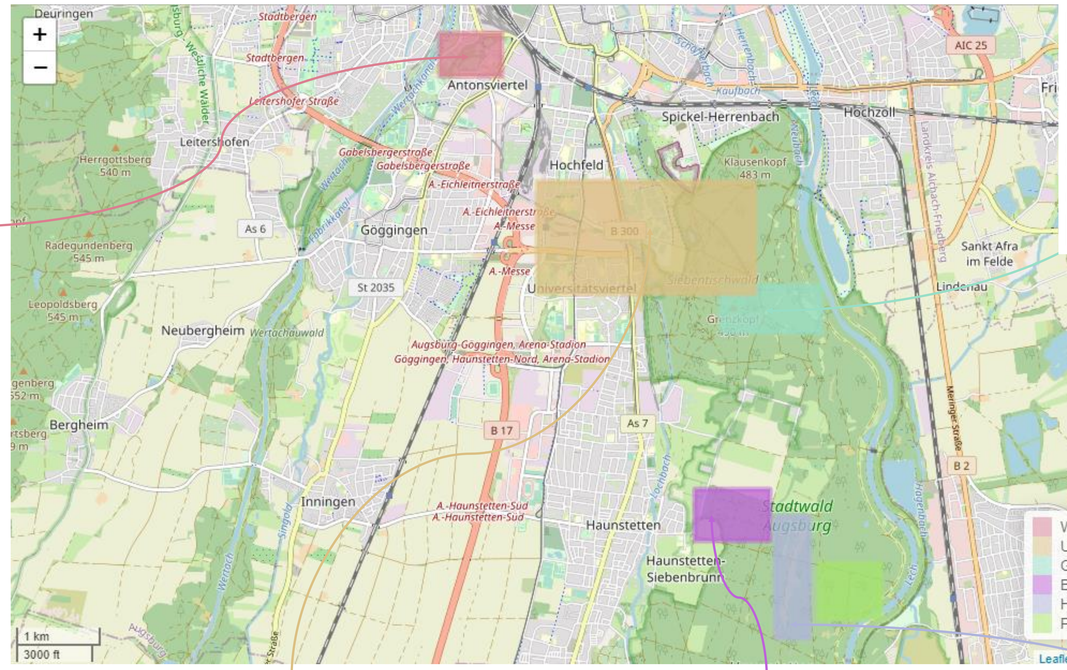




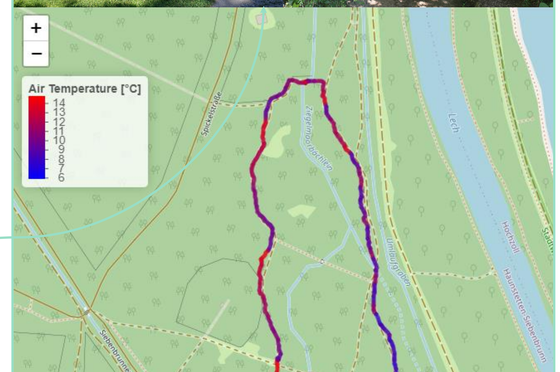


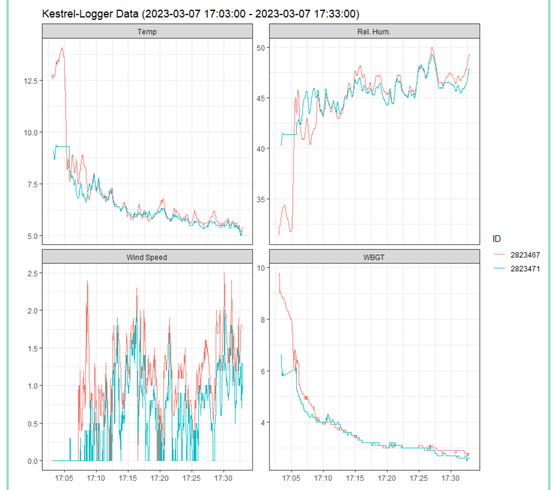
©Jonathan Simon (preliminary research results)

Measurement & Modelling	Physiology & AI	Survey & Wellbeing
✓ **Quantification** of **climatic and human bioclimatic** effects of diff. urban forest structures [1, 2]	✓ How can recorded **user** and **environmental data** be used to create **computer models** of the relationship between forest structure and well-being?	✓ Assessing the **physiological, psychological** and **social well-being** of different urban forest structures [5]
✓ Numerical climate simulation with **ENVI-met** [3] and development of **silvicultural scenarios** taking into account the **climatic and social effects** of forest structures in the context of **climate change**	✓ What **physical effects** can be quantified in relation to forest and open land environments [4]?	✓ Which **concept** is appropriate to address **health promotion** and **recreation** in relation to forests (e.g. place attachment, sense of place, topophilia, solastalgia)?
	✓ Develop **smartphone application**	



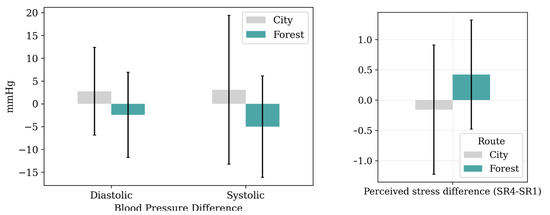
Galgenablass





©Jonathan Simon (preliminary research results)

Urban district and deciduous forest



[6]

Beech deciduous forest

©Jonathan Simon

Heath

©Jonathan Simon

Contact

Jonathan Simon (M.Sc.), Physical Geography and Climate Science, University Augsburg
E-Mail: jonathan.simon@uni-a.de; Phone: +49 821 598 2655

Prof Dr. Christoph Beck, Physical Geography and Climate Science, University Augsburg
E-Mail: christoph.beck@geo.uni-augsburg.de; Phone: +49 821 598 2129

Dr. Joachim Rathmann, Physical Geography and Climate Science, University Augsburg
E-Mail: joachim.rathmann@geo.uni-augsburg.de; Phone: +49 821 598 2670

Prof. Dr. Elisabeth Andrè, Chair for Human-Centered Artificial Intelligence, University Augsburg
E-Mail: andre@informatik.uni-augsburg.de; Phone: +49 821 598 2340

References

[1] Grilli, G., & Sacchelli, S. (2020). Health benefits derived from forest: A review. International journal of environmental research and public health, 17(17), 6125.
[2] Liu, Q., Wang, X., Liu, J., An, C., Liu, Y., Fan, X., & Hu, Y. (2021). Physiological and psychological effects of nature experiences in different forests on young people. Forests, 12(10), 1391.
[3] Bruse, M. (2018): ENVI_MET a holistic microclimate model. http://www.envi-met.info
[4] Flutura, S., Seiderer, A., Aslan, I., Dietz, M., Schiller, D., Beck, C., ... & André, E. (2019, September). Mobile sensing for wellbeing estimation of urban green using physiological signals. In Proceedings of the 5th EAI International Conference on Smart Objects and Technologies for Social Good (pp. 249-254).
[5] Rathmann, J., Beck, C., Flutura, S., Seiderer, A., Aslan, I., & André, E. (2020). Towards quantifying forest recreation: Exploring outdoor thermal physiology and human well-being along exemplary pathways in a central European urban forest (Augsburg, SE-Germany). Urban Forestry & Urban Greening, 49, 126622.
[6] Investigating Physiological and Psychological Effects of Forest Walking: A Machine Learning Approach (2023; in review)