

# Curriculum Vitae

**Name:** Fredrik Lindberg

**Date of birth:** 7 August, 1974

**Citizenship:** Swedish

**Current position:** Researcher, Göteborg Urban Climate Group, Department of Earth Sciences, University of Gothenburg

**University affiliation:** University of Gothenburg, Department of Earth Sciences, Guldhedsgatan 5, 40530, Göteborg, Sweden Tel +46 (0)31 786 2606, e-mail: fredrik.lindberg@gvc.gu.se

## Doctoral degree

*Date:* September 25, 2007

*discipline/subject area:* Physical Geography/Climatology

*Title of thesis:* Spatial variation of the urban climate and its influence on thermal comfort and behaviour.

*Supervisors:* Professor Ingegärd Eliasson (main) and Professor Sofia Thorsson (co)

## Academic degree

Associate Professor (docent) in Physical Geography (January 2017)

## Post-doctoral visit

King's College London, Geography, Environmental Monitoring and Modelling group, Professor Sue Grimmond (2009-2010)

## Current post, period of appointment, time for research in the position

Researcher, Department of Earth Sciences, University of Gothenburg, 2011-, 70% time spent in research

## Teaching expertise

- Lecturer of undergraduate and graduate courses at Department of Earth Science (30% activity level), University of Gothenburg, Sweden (2015-)
- Responsible for the development of the Master program in Geography at University of Gothenburg, Sweden (2014-)
- Lecturer of undergraduate and graduate courses at Department of Earth Science (10% activity level), University of Gothenburg, Sweden (2013-2015)
- Lecturer of undergraduate and graduate courses at Department of Earth Science (30% activity level), University of Gothenburg, Sweden (2010-2013)
- Development of new web-based courses in GIS, Department of Earth Science, University of Gothenburg, Sweden (2009)
- Assistant of the graduate course "Micro- and local Climatology - theory and field measurements, 7.5 ECT", Department of Earth Science, University of Gothenburg, Sweden (2009)
- Invited lecturer on "Principles of urban climatology" for a MSc course in Architectural Engineering (Environmental Design) for the University of Bath, United Kingdom (2010)
- Lecturer (20%) of undergraduate human geography GIS courses, University of Gothenburg, Sweden (2008)

- Teaching assistant of undergraduate physical geography and geography courses (20% activity level), University of Gothenburg, Sweden (2002-2007).

### **Previous positions and periods of appointment**

- Researcher/lecturer, Physical Geography, Department of Earth Science, University of Gothenburg, Sweden (2011-2013)

- Consultant at Tyréns (10%), 2014

- Post-doctoral fellow, King's College London, Geography, Environmental Monitoring and Modelling group (2009-2010)

- Part-time lecturer, Department of Human and Economic Geography, University of Gothenburg, Sweden (2008)

- GIS-engineer, City Planning Authority, City of Göteborg, Sweden (2008)

- PhD candidate, Physical Geography, Department of Earth Science, University of Gothenburg, Sweden (2002-2007)

### **Awards and special commissions**

- Yearly GIS-award 2008 from 'GIS i Väst', 25 TSEK

- Stefan Stenlunds GIS-award 2008 from Lantmäteriet, ESRI S-GROUP and LINFO Norrbotten, 17 TSEK

### **Administration**

- Minor Field Studies officer at the Department of Earth Science (2002-2007)

- Webmaster for the Göteborg Urban Climate Group website (2002-)

- Responsible of software licensing at the Department of Earth Science (2012-)

- Post graduate education board at the Department of Earth Science (2014-)

- Advisory board for IT services at Faculty of Natural Sciences (2013-)

- Program coordinator of the Master program in Geography at the Department of Earth Science (2014-)

- Responsible of climate stations at the Department of Earth Science (2012-2015)

### **Supervision**

#### **Projects and bachelor theses**

Approximately 50-80 project supervisions in various courses and bachelor thesis within University of Gothenburg (GU) and King's College London

#### **Master theses**

Oskar Bäcklin, 2019, GU; Timmy Nilsson, 2019, GU; Norea Hellberg, 2019, GU; Filip Olsson, 2019, GU; Deria Abda Amin, 2017, GU; Sara Johansson, 2017, GU; Gunnar Palm, 2017, GU; Bengt Myrberg, 2016/17, GU; Charles Hansson, 2014/15, GU; Hanna Hassberg, 2014/15, Lund University (LU)/GU; Niklas Krave, 2014, LU/GU; Natalia Kuska, 2013, GU; Lars Pettersson, 2011, LU/GU; Annika Larsson, 2011, SLU/GU; Deepak Jeswani, 2008, GU; Jesper Björklund, 2008, GU

#### **PhD candidates, postdoctoral fellows and visiting researcher**

Nils Wallenberg, Ph.D. student, 2018-, GU, (Main-supervisor)

Frans Olofson, Postdoctoral fellow, 2015-2018, GU, (Main-supervisor)

Jenny Kingberg, Postdoctoral fellow, 2014-2016, GU, (Co-supervisor)

Nithiyandam Yogeswaran, PhD-student, 2014, The Hong Kong Polytechnic University, (Main-supervisor)

Yumei Hu, Ph.D. student, 2011-2018, GU, (Co-supervisor)

Kevin Lau, Postdoctoral fellow, 2013-2014, GU, (Main-supervisor)

Shiho Onomura, Ph.D, 2011-2015, GU, (Co-supervisor)

Janina Konarska, Ph.D. 2011-2015, GU, (Co-supervisor)

## Scientific funding

- ***The influence of warm weather and outdoor-environment design on preschoolers' physical activities and thermal comfort*** (FORMAS, 2019-2022 TSEK 3000), Main Applicant: Fredrik Lindberg (UG)
- ***Visualising and modelling urban air quality - influence of vegetation, building morphology and traffic emissions*** (FORMAS, 2018-2021 TSEK 8992), Main Applicant: Håkan Pleijel (UG), Co-applicants: Fredrik Lindberg and others
- ***URBANFLUXES - URban ANthropogenic heat FLUX from Earth observation Satellites*** (Horizon 2020 - Research and Innovation Programme, 2015-2017, Total/GU T€ 2687/319), Main Applicant: Nektarios Chrysoulakis (FORTH), WP-leaders: Fredrik Lindberg and others
- ***CLIMPLAN – A fast responsive, modelling system for urban climate sensitive planning applications*** (FORMAS, 2013-2018, TSEK 4787, Young researcher grant), Main applicant: Fredrik Lindberg
- ***Efficient use of land and energy in Dar es Salaam, Tanzania*** (SIDA/VR, 2013-2015, TSEK 3000), Main applicant: Erik Johansson, Co-applicants: Fredrik Lindberg, Sofia Thorsson, Maria Rasmusen
- ***Valuation of ecosystem services provided by urban greenery*** (FORMAS, 2014-2016, TSEK 8605), Main applicant: Sofia Thorsson, Co-applicants: Fredrik Lindberg, Bengt Gunnarsson, Yvonne Andersson-Sköld, Marcus Hedblom, Åsa Ode Sang, Igor Knez
- ***Infrastrukturnära vegetation*** (Trafikverket, 2012, TSEK 100), Main applicant: Fredrik Lindberg, Co-applicant: Sofia Thorsson
- ***Inventory of urban vegetation using LIDAR technology*** (Mistra Urban Futures, 2012, TSEK 198), Main applicant: Sofia Thorsson, Co-applicant: Fredrik Lindberg
- ***SOLEN – integration of solar energy calculations in the planning process*** (City of Göteborg, 2012, 150 TSEK), Main applicant: Fredrik Lindberg
- ***Solar Energy from Building Envelopes - SEBE*** (VINNOVA, 2011, 735 TSEK), Main applicant: Per Jonsson, Co-applicants: Fredrik Lindberg, Tomas Landelius, Bengt Stridh, Joakim Jeppsson
- ***Adapting cities to climate induced risks - a coordinated approach*** (FORMAS, 2011-2013, 7000 TSEK), Main applicant: Sofia Thorsson, Co-applicants: Yvonne Andersson-Sköld, Anna Jonsson, Sara Janhäll, Fredrik Lindberg, Mira Ovuka-Andersson and Ulf Moberg
- ***Potential impact of climate trends and weather extremes on outdoor thermal comfort in European cities - implications for sustainable urban design*** (UrbanNet/EU, 2010-2013, 7000 TSEK), Main applicant: Sofia Thorsson, Co-applicants: Ana Monteiro, Lutz Katzschner, Fredrik Lindberg and David Rayner
- ***Potential photovoltaic energy production on roof structures***, (SolElprogrammet/Göteborg energy/Länsstyrelsen, 2011, 528 TSEK), Main applicant: Per Jonsson, Co-applicant: Fredrik Lindberg
- ***The influence of vegetation and green spaces on human thermal comfort in urban areas – a quantitative approach***. Postdoctoral Fellowship (FORMAS, 2009-2010, 390 TSEK), Main applicant: Fredrik Lindberg
- Smaller financial support has been provided from the following scholarships summing up to 101 TSEK: SSAG - the Swedish Society of Anthropology and Geography), the Sven Lindqvist fund, the Adlerbertska research fund, the Hierta-Retzius fund and the Swedish Cartographic Society.

## Review assignments for scientific journals

Transactions in GIS; Building Information Science; Building and Environment; Climate Research; Landscape and Urban Planning; Boundary Layer Climates; Meteorologischen Zeitschrift; Advances in Meteorology; Geografica Polonica; Urban Geography; Urban Climate (*Certificate of Excellence in Reviewing, 2013*); Journal of Atmospheric and Oceanic Technology; International Journal of Climatology; Theoretical and Applied Climatology; International Journal of Biometeorology; Geophysical Research Letters; Agricultural and Forest Meteorology; Environment and Planning B: Planning and Design; Sustainable Cities and Society; Computers,

Environment and Urban Systems; Remote Sensing; Science of the Total Environment, Building Research & Information

### **Scientific meetings and conferences**

- The 10<sup>th</sup> International Conference on Urban Climate (ICUC10), New York, US, 2018 - oral presentation and workshop organizer
- AGILE 2018, 21<sup>st</sup> Conference on Geo-information science, Lund 12-15 June, Sweden – workshop organizer “Introduction to OSGeo and Python programming using PyQGIS”
- International Conference for Free and Open Source Software for Geospatial (FOSS4G), Boston, US, 2017 - oral presentation
- 21<sup>th</sup> International Congress of Biometeorology, September, 2017, Durham, UK - oral presentation
- The 9<sup>th</sup> International Conference on Urban Climate (ICUC9), Toulouse, France, 2015 - oral and poster presentation
- The 1<sup>st</sup> International QGIS Conference for Users, Educators and Developers, 18-19 May, Nodebo, Denmark
- Position 2015, 17-19 March 2015, Stockholm (Sweden)
- Symposium “Towards integrated modelling of urban systems” 15-17 October 2014, Lyon (France)
- The 8<sup>th</sup> International Conference on Urban Climate (ICUC8), Dublin, Ireland, 2012 - member of the international scientific committee, session chair, oral and poster presentation
- The 4<sup>th</sup> GAC conference on Atmospheric Science, May 2010 - oral presentation
- NCAS Urban Meteorology Workshop, Urban roughness sub layers - from measurements and CFD to predictive models, March 2009, University of Reading, UK
- Workshop on “The potential impact of climate change on heat stress in different built structures and cities across Europe”. Göteborg, Sweden, 2009 - co-organizer, oral presentation
- The 7<sup>th</sup> International Conference on Urban Climate (ICUC7), Yokohama, Japan, 2009 - member of the international scientific committee, session chair, oral and poster presentation
- Conference of Free and Open Source Software for Geospatial (FOSS4G), Cape Town, South Africa, 2008
- FORMAS conference “Urban public spaces”, Göteborg, Sweden, 2007 - organizer, oral presentation
- The 6<sup>th</sup> International Conference on Urban Climate (ICUC6), Göteborg, Sweden, 2006 - organizer, oral and poster presentation
- Nordic GIS-conference, 2004, Göteborg, Sweden - oral presentation
- The 5<sup>th</sup> International Conference on Urban Climate (ICUC5), Lodz, Poland, 2003 - oral presentation

### **Selection of invited talks**

- Technische Universität Berlin, Center for Innovation and Science on Building Greening, Germany (2018)
- Technische Universität Berlin, Department of Ecology, Germany (2013)
- Wageningen University and Research Centre, Meteorology and Air Quality Group, Netherlands (2012)
- University of Kassel, Environmental Meteorology, Germany (2011)
- University of Reading, Department of Meteorology, United Kingdom (2011)

### **Selection of experience of communicating results with stakeholders/end users**

- Participated in regional radio on the Swedish Radio (SR), 2018.

- Attended a workshop in Dar es Salaam on energy efficient and climate sensitive planning, 2016.
- Participated in regional afternoon radio show “Eftermiddag i P4” on the Swedish Radio (SR), 2015.
- Participated in regional morning radio show “P4-morgon” on the Swedish Radio (SR), 2015.
- Two Stakeholder workshops in conjunction to FORMAS-funded project “Adapting cities to climate induced risks - a coordinated approach”, 2011-2013.
- Newspaper article about urban climate and health in Göteborgs Posten, 2014-05-10.
- Participated in the regional news concerning Solar energy in Göteborg, Swedish Television (SVT), 2011.
- Participation in Workshop within Mistra Urban Futures “Climate adapted city planning”, November 2010
- “What lurks in the darkness – the use of a shadow casting algorithm in urban climatology”. Presentation at the “GIS i Väst”-meeting, 2008
- Participated in “Eftersnack” concerning local climate in Göteborg, Swedish Television (SVT), 2008.
- Participated and interviewed in the news program on the Swedish Radio (SR), Norrland, 2005.
- Participated and interviewed in the news program on TV4 Norrland, 2005.
- Newspaper article about the local climate in Luleå in Norrländska Socialdemokraten, 2005.
- Participated and interviewed in the news program at the Swedish Radio (SR), Göteborg, 2008.
- Participated and arranged working symposium “Stadens offentliga rum” in Göteborg, 2007 (FORMAS).

### Board assignments and non-academic work

- Board member in GISväst, (2013-) and QGISSweden (2016-)
- Scientific consultant at, Tyréns (2013-2014) including:
  - o *WWW.HEDEN.GO:TEBORG*, (<http://www.tyrens.se/sv/Heden/WWWHEDENGOTEBORG/>)
  - o *Bioclimatic Design Toolkit* – Tyréns UK.
  - o *Tyréns Solplan* – A tool to estimate and visualize potential sun energy production on building roofs
- White architects, Planning proposal around Central station in Göteborg, Sweden (2012)

### Professional Memberships

- International Association of Urban Climate (IAUC), Swedish Cartographic Society, GIS-Väst (board member), The Swedish Society for Anthropology and Geography (SSAG), QGIS Sweden (board member), Geografiska föreningen i Göteborg

### Publications

#### In peer-review journals:

Carlström, E., Börjesson, M., Palm, G., Thorsson, S., **Lindberg, F.**, Holmer, B., Berner, A., Örnunge, P., Luning, H., Nilson, F., Gelang, C., Khorram-Manesh, A., 2019: Medical emergencies during a half marathon contest – the influence of weather. : International Journal of Sports Medicine. In Press.

Oswald, S. M., M. Revesz, H. Trimmel, P. Weihs, S. Zamini, A. Schneider, M. Peyerl, S. Krispel, H. E. Rieder, E. Mursch-Radlgruber & **F. Lindberg** (2018) Coupling of urban energy balance model with 3-D radiation model to derive human thermal (dis)comfort. International Journal of Biometeorology. DOI 10.1007/s00484-018-1642-z

Nilson, F., **F. Lindberg**, G. Palm, L. Lundgren, D. Rayner, M. Börjesson, S. Thorsson, A. Khorram-Manesh & E. Carlström (2018) Can participants predict where ambulance-requiring cases occur at a half marathon? Scandinavian Journal of Medicine & Science in Sports, 28, 2760-2766.

Chrysoulakis N., Grimmond C.S.B, Feigenwinter C, **Lindberg F**, Gastellu-Etchegorry J., Marconcini M., Mitraka Z., Stagakis S., Crawford B., Olofson F., Landier L., Morrison W. & Parlow E. (2018) Urban energy exchanges monitoring from space. *Scientific Reports*, 8, 11498.

Feigenwinter, C., Vogt, R., Parlow, E., **Lindberg, F.**, Marconcini, M., Frate, F.D., et al. Spatial Distribution of Sensible and Latent Heat Flux in the City of Basel (Switzerland). *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. 2018; (99):1-7.

**Lindberg, F.**, Grimmond, C.S.B., Gabey, A., Huang, B., Kent, C.W., Sun, T., Theeuwes, N., Järvi, L., Ward, H., Capel-Timms, I., Chang, Y.Y., Jonsson, P., Krave, N., Liu, D., Meyer, D., Olofson, F., Tan, J.G., Wästberg, D., Xue, L., Zhang, Z. (2018) Urban Multi-scale Environmental Predictor (UMEP): An integrated tool for city-based climate services. *Environmental Modelling and Software*. 99, 70-87.

Andersson-Sköld, Y., Klingberg, J., Gunnarsson, B., Gustafsson, I., Hedblom, M., Knez, I., **Lindberg, F.**, Ode Sang, Å., Pleijel, H., Thorsson, P. and Thorsson, S. (2017) A framework for assessing urban greenery's effects and valuing its ecosystem services. *Journal of Environmental Management*. 205, 274-285.

Klingberg, J., Konarska, J., **Lindberg, F.**, Johansson, L. and Thorsson, S. (2017) Leaf area of urban woodlands, parks and trees in a high latitude city. *Urban Forestry and Urban Greening*. 26, 31-40.

Yahia, M., Johansson, E., Thorsson, S., **Lindberg, F.**, Rasmussen, M. (2017) Effect of urban design on microclimate and thermal comfort outdoors in warm-humid Dar es Salaam, Tanzania. *International Journal of Biometeorology*. In Press.

Thorsson, S., Rayner, D., **Lindberg, F.**, Monteiro, A., Katzschner, L., K., Lau, Campe, S., Katzschner, A., Konarska, J., Onomura, S., Velho, S., Holmer, B. (2017) Present and projected future mean radiant temperature for three European cities. *International Journal of Biometeorology*. 61, 1531–1543. DOI 10.1007/s00484-017-1332-2.

Hedblom, M., **Lindberg, F.**, Vogel, E., Wissman, J. and Ahrné, K. (2017) Estimating urban lawn cover in space and time: case studies in three Swedish cities. *Urban Ecosystem*. 20: 1109-1119.  
<https://doi.org/10.1007/s11252-017-0658-1>.

Kent, C.W., Grimmond, C.S.B., Gatey, D., Barlow, J., Kotthaus, S., **Lindberg, F.**, Halios, C.H. (2017) Evaluation of urban local-scale aerodynamic parameters: implications for modelling the vertical profile of wind and source areas. *Boundary Layer Meteorology*. 164: 183-213. <https://doi.org/10.1007/s10546-017-0248-z>

Lau, K., **Lindberg, F.**, Johansson, E., Rasmussen, M. and Thorsson, S. (2017) Investigating solar energy potential in tropical urban environment: a case study of Dar es Salaam, Tanzania. *Sustainable Cities and Society*. DOI: 10.1016/j.scs.2017.01.010.

Yunus, A., Avtar, R., Kraines, S., Yamamuro, M., **Lindberg, F.** and Grimmond C.S.B. (2016) Uncertainties in Tidally Adjusted Estimates of Sea Level Rise Flooding (Bathtub Model) for the Greater London. *Remote Sensing* 8(5), DOI:10.3390/rs8050366

**Lindberg, F.**, Lau, K., Rayner, D. and Thorsson, S. (2016) The impact of urban planning strategies on heat stress in a climate-change perspective. *Sustainable Cities and Society*. 25, 1–12.

Onomura, S., **Lindberg, F.**, Holmer, B. and Thorsson, S. (2016) Intra-urban nocturnal cooling rates: development and evaluation of the NOCRA model. *Meteorological Applications*. DOI: 10.1002/met.1558.

**Lindberg, F.**, Onomura, S. and Grimmond, C.S.B (2016) Influence of ground surface characteristics on the mean radiant temperature in urban areas. *International Journal of Biometeorology*. 60(9), 1439-1452.

Konarska, J., Uddling, J., & Holmer, B., Lutz, M., **Lindberg, F.**, Pleijel, H. and Thorsson, S. (2016) Transpiration of urban trees and its cooling effect in a high latitude city. *International Journal of Biometeorology*. 60:1, 159-172.

Jänicke, B., Meier, F., **Lindberg, F.**, Schubert, S., Scherer, D. (2016) Towards city-wide, building-resolving analysis of mean radiant temperature. *Urban Climate*. 15, 83–98.

Konarska, J., Holmer, B., **Lindberg, F.**, Thorsson, S. (2015) Influence of vegetation and building geometry on the spatial variations of air temperature and cooling rates in a high latitude city. *International Journal of Climatology*. 36(5), 2379–2395

Hu, Y., Almkvist, E., **Lindberg, F.**, Bogren, J. and Gustavsson, T. (2015) The use of screening effects in modelling route-based daytime road surface temperature. *Theoretical and Applied Climatology*. 125(1), 303–319.

- Lindberg, F.**, Jonsson, P. & Honjo, T. and Wästberg, D. (2015) Solar energy on building envelopes - 3D modelling in a 2D environment. *Solar Energy*. 115 (2015) 369–378
- Andersson-Sköld, Y., Thorsson, S., Rayner, D., **Lindberg, F.**, Janhäll, S., Jonsson, A., Moback, U., Bergman, R. and Granberg, M. (2015) An integrated method for assessing climate-related risks and adaptation alternatives in urban areas. *Climate Risk Management*. 7, 31–50.
- Johansson, L., Onomura, S., **Lindberg, F.** and Seaquist, J. (2015) Towards the modelling of pedestrian wind speed using high resolution digital surface models and statistical methods. *Theoretical and Applied Climatology*. 124(1), 189–203.
- Lindberg, F.**, Grimmond, C.S.B. and Martilli, A. (2015) Sunlit fractions on urban facets - Impact of spatial resolution and approach. *Urban Climate*. 12:65-84.
- Onomura, S., Grimmond, C.S.B., **Lindberg, F.**, Holmer, B., and Thorsson, S. (2015) Meteorological forcing data for urban outdoor thermal comfort models from a coupled convective boundary layer and surface energy balance scheme. *Urban Climate*. 11:1-23.
- Rayner, D., **Lindberg, F.**, Thorsson, S. and Holmer, B. (2014) A statistical downscaling algorithm for thermal comfort applications. *Theoretical and Applied Climatology*. 122(3), 729–742.
- Lau, K., **Lindberg, F.**, Rayner, D. and Thorsson, S. (2014) The effect of urban geometry on mean radiant temperature under future climate change: a study of three European cities. *International Journal of Biometeorology*. 59(7), 799–814.
- Thorsson, S., Rocklöv, J., Konarska, J., **Lindberg, F.**, Holmer, B., Dousset, B. and Rayner, D. (2014) Mean radiant temperature - A predictor of heat related mortality. *Urban Climate* 10:2, 332-345.
- Konarska, J., **Lindberg, F.**, Larsson, A., Thorsson, S. and Holmer, B. (2013) Transmissivity of solar radiation through crowns of single urban trees—application for outdoor thermal comfort modelling. *Theoretical and Applied Climatology*. 117:363-376.
- Lindberg, F.**, Holmer, B., Thorsson, S. and Rayner, D. (2013) Characteristics of the mean radiant temperature in high latitude cities—implications for sensitive climate planning applications. *International Journal of Biometeorology* 58:5, 613-627.
- Lindberg, F.**, Grimmond, C., Yogeswaran, N., Kotthaus, S. and Allen, L. (2013) Impact of city changes and weather on anthropogenic heat flux in Europe 1995–2015. *Urban Climate* 4, 1-15.
- Loridan, T., **Lindberg, F.**, Jorba, O., Kotthaus, S., Grossman-Clarke, S. and Grimmond, C. (2013) High Resolution Simulation of the Variability of Surface Energy Balance Fluxes Across Central London with Urban Zones for Energy Partitioning. *Boundary-Layer Meteorology* 147:3, 493-523.
- Franzén, L., **Lindberg, F.**, Viklander, V. and Walther, A. (2012) The potential peatland extent and carbon sink in Sweden, as related to the Peatland / Ice Age Hypothesis. *Mires and Peat* 10:8, 1–19.
- Allen, L., **Lindberg, F.** and Grimmond, C. (2011) Global to city scale urban anthropogenic heat flux: model and variability. *International Journal of Climatology* 31:13, 1990-2005.
- Lindberg, F.**, Olvmo, M. and Bergdahl, K. (2011) Mapping areas of potential slope failures in cohesive soils using a shadow-casting algorithm – A case study from SW Sweden. *Computers and Geotechnics* 38, 791-799.
- Lindberg, F.** and Grimmond, C. (2011) Nature of vegetation and building morphology characteristics across a city: Influence on shadow patterns and mean radiant temperatures in London. *Urban Ecosystems* 14:4, 617-634.
- Lindberg, F.** and Grimmond, C. (2011) The influence of vegetation and building morphology on shadow patterns and mean radiant temperature in urban areas: model development and evaluation. *Theoretical and Applied Climatology* 105:3, 311-323.
- Lordian, T., Grimmond, C., Offerle, B., Young, D., Smith, T., Järvi, L. and **Lindberg, F.** (2011) Local-Scale Urban Meteorological Parameterization Scheme (LUMPS): longwave radiation parameterization and seasonality related developments. *Journal of Applied Meteorology and Climatology* 50, 185–202.
- Lindberg, F.** and Grimmond, C. (2010) Continuous sky view factor from high resolution urban digital elevation models. *Climate Research* 42:3, 177-183.

Thorsson, S., **Lindberg, F.**, Björklund, J., Holmer, B. and Rayner, D. (2010) Potential changes in outdoor thermal comfort conditions in Gothenburg, Sweden due to climate change: the influence of urban geometry. *International Journal of Climatology* 31:2, 324–335.

Gal, T., **Lindberg, F.** and Unger, J. (2009) Computing continuous sky view factors using 3D urban raster and vector databases: comparison and application to urban climate. *Theoretical and Applied Climatology* 95:1-2, 111-123.

Knez, I., Thorsson, S., Eliasson, I. and **Lindberg, F.** (2009) Psychological mechanisms in outdoor place and weather assessment: towards a conceptual model. *International Journal of Biometeorology* 53:1, 101-111.

**Lindberg, F.**, Holmer, B. and Thorsson, S. (2008) SOLWEIG 1.0 – Modelling spatial variations of 3D radiant fluxes and mean radiant temperature in complex urban settings. *International Journal of Biometeorology* 52, 697–713.

Eliasson, I., Knez, I., Westerberg, U., Thorsson, S. and **Lindberg, F.** (2007) Climate and behaviour in a Nordic city. *Landscape and Urban Planning* 82:1-2, 72-84.

**Lindberg, F.** (2007) Modelling the urban climate using a local governmental database. *Meteorological Applications* 14:3, 263-273.

Thorsson, S., **Lindberg, F.**, Eliasson, I. and Holmer, B. (2007) Different methods for estimating the mean radiant temperature in an outdoor setting. *International Journal of Climatology* 27:14, 1983-1993.

Thorsson, S., Honjo, T., **Lindberg, F.**, Eliasson, I. and Lim, E. (2006) Thermal comfort and outdoor activity in Japanese urban public places. *Environment and Behavior* 39:5, 660-684.

**Lindberg, F.** (2005) Towards the use of local governmental 3-d data within urban climatology studies. *Mapping and Image Science* 2, 4-9.

#### **Tools:**

*UMEP* – **U**niversal **M**ulti-scale **E**nvironmental **P**redictor. An open source climate sensitive planning tools for practitioners and researchers. Available as a QGIS-plugin at <https://umep-docs.readthedocs.io>

*SOLWEIG 2018a* – **S**olar and **L**ong**W**ave **E**nvironmental **I**rradiance **G**eometry model. A tool that calculates radiant fluxes and mean radiant temperature in complex urban settings. Available through UMEP.

*The Lucy Model V2014a* - **L**arge scale **U**rban **C**onsumption of energy **Y** model. A model that estimates anthropogenic heat fluxes on any location on Earth. Available through UMEP and as stand-alone.

*SEBE 2015a* – **S**olar **E**nergy on **B**uilding **E**nvelopes. A tool that simulates spatial variations of potential photovoltaic energy production on building envelopes in urban areas. Available through UMEP.

*SEES 1.2* – **S**olar **E**nergy from **E**xisting **S**tructures. A tool that simulates spatial variations of potential photovoltaic energy production on roof structures in urban areas. Available for download from the Göteborg Urban Climate Group webpage (<http://www.gvc.gu.se/english/research/climate/urban-climate/>).

*SkyViewFactorCalculator 1.1* – A tool calculates sky view factor for digital hemispherical fish eye photos. Available for download from the Göteborg Urban Climate Group webpage (<http://www.gvc.gu.se/english/research/climate/urban-climate/>).

*PlanAreaIndexCalculator 1.0* – A tool calculates Plan area index for unreferenced maps (<http://www.gvc.gu.se/english/research/climate/urban-climate/>).

#### **Conference abstracts:**

Sofia Thorsson, G. Palm, **F. Lindberg**, D. Rayner, E. Carlström, M. Börjesson, F. Nilson, A. Khorram Manesh, and B. Holmer. 8B.2: Is the Wet-Bulb Globe Temperature (WBGT) Index the Best Screening Tool for the Assessment of Heat Stress during a City Half-Marathon? 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, US, August 2018.

Nektarios Chrysoulakis, C. S. B. Grimmond, C. Feigenwinter, **F. Lindberg**, J. P. Gastellu-Etchegorry, M. Marconcini, F. del Frate, J. Klostermann, Z. Mitraka, S. Stagakis, F. Olofson, L. Landier, A. M. Gabey, B. Crawford, W. Morrison, T. Sun, C. W. Kent, T. Esch, and E. Parlow. 7E.3: Urban Energy Balance from Space: the



URBANFLUXES Project. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, US, August 2018

Nils Wallenberg, **F. Lindberg**, S. Thorsson, and B. Holmer. 9B.8: The Influence of Anisotropic Diffuse Radiation on Mean Radiant Temperature in Outdoor Urban Environments. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, US, August 2018

Niki Gaitani, **F. Lindberg**, T. Thiis, and I. Burud. 12A.2: Validation of the SOLWEIG model with High Resolution Spatial Measurements of Surface Temperatures. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, US, August 2018

Sandro M. Oswald, H. Trimmel, M. Revesz, P. Weihs, S. Zamini, A. Schneider, M. Peyerl, S. Krispel, and **F. Lindberg**. 77: Coupling of SOLWEIG and TEB to derive human thermal (dis)comfort. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, US, August 2018

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Christoph W Kent, C. S. B. Grimmond, D. Gatey, J. F. Barlow, S. Kotthaus, **F. Lindberg**, C. H. Halios, K. Lee, H. C. Ward, J. W. Hong, and J. Hong. 4A.4: Urban Aerodynamic Roughness Parameters and Implications for Modelling the Vertical Profile of Wind Speed. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, US, August 2018

**Lindberg, F.**, Grimmond, C.S.B., Kent, C.W., Solecki, W., Link, H. 4B.1: Urban Planning Strategies and Their Effect on Mitigating Heat Waves for New York City (Invited Presentation). 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, US, August 2018

Nilson F, **Lindberg F**, Palm G, et al PA 13-2-0532 Testing a novel method for identifying where serious medical encounters occur at marathons in order to improve medical preparedness and runners' safety Injury Prevention 2018;24:A29.

**Lindberg F**, Grimmond, C.S.B., Gabey, A., Huang, B., Kent, C.W., Sun, T., Theeuwes, N., Järvi, L., Ward, H., Capel-Timms, I., Chang, Y.Y., Jonsson, P., Krave, N., Liu, D., Meyer, D., Olofson, F., Tan, J.G., Wästberg, D., Xue, L., Zhang, Z. (2017) UMEP - An integrated tool for city-based climate services. 21<sup>th</sup> International Congress of Biometeorology, Extended Abstracts. 50-54.

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Introduction to OSGeo and Python programming using PyQGIS – AGILE 2018. 21<sup>st</sup> Conference on Geo-information science. Lund 12-15 June, Sweden, 2018

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