CURRICULUM VITAE AND LIST OF PUBLICATIONS

PERSONAL DETAILS

Name:	**Evyatar Erell**
Date and place of birth:	May 16, 1955. Washington, D.C., USA
Date of immigration:	March, 1961
Address at work:	Jacob Blaustein Institutes for Desert Research (BIDR), Ben-Gurion University of the Negev (BGU), Sde Boqer Campus, 8499000 Midreshet Ben-Gurion, Israel.
	Tel: (972)8-6596878, Fax: (972)8-6596881
	E-mail: erell@bgu.ac.il
Address at home:	2 Neve Zin, P.O. Box 93, 8499000 Midreshet Ben-Gurion, Israel.
	Tel: (972)8-6532277

EDUCATION

B.Arch.T.Pl.	1986 – Bachelor of Architecture and Town Planning, Technion - Israel Institute of Technology, Faculty of Architecture and Town Planning.
M.A.	1995 – Master of Arts in Geography, Ben-Gurion University of the Negev, Dept. of Geography and Environmental Planning.
	Advisor: Prof. H. Tsoar. Thesis: The Effect of Buildings on the Deposition of Dust in a Desert City.
Ph.D.	2005 – Doctor of Philosophy in Architecture, University of Adelaide, Faculty of the Professions, School of Architecture, Landscape Architecture and Urban Design.
	Advisors: Prof. T. Williamson, Dr. V. Soebarto. Thesis: Predicting Air Temperature in City Streets on the Basis of Measured Reference Data.

EMPLOYMENT HISTORY

1986-	The Jacob Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev. Current position: Associate Professor at the Bona Terra Dept. of Man in the Desert.
1999-2000	The School of Architecture, Landscape Architecture and Town Planning, The University of Adelaide, Australia: Guest lecturer (non-remunerative, on sabbatical leave from BGU).

2011-2012 Dept. of Mechanical and Material Engineering, Portland State University, OR: Associate Prof (non-remunerative, on sabbatical leave from BGU).

2015-2016 School of Architecture, Carnegie Mellon University, PA: Visiting researcher (non-remunerative, on sabbatical leave from BGU).

PROFESSIONAL ACTIVITIES

(a) Positions in academic administration

2013- Member, BGU Academic Regulations Committee

2009-2011 Member, BGU Green Council

2006-2011 Member, steering committee of the Blaustein Center for Scientific Cooperation

1998-1999 Acting Head, Center for Desert Architecture and Urban Planning, The Jacob Blaustein Institute for Desert Research, Ben-Gurion University of the Negev.

1997-1998 Member, steering committee of the Blaustein International Center

1991-1992 Acting Head, Desert Architecture Unit, The Jacob Blaustein Institute for Desert Research, Ben-Gurion University of the Negev.

(b) Professional functions outside universities/institutions

2012- head, Israel Standards Institute Expert Sub-committee 2203.05 – Energy Performance of Building Envelopes

2012- member, Association of Heating, Refrigeration and Airconditioning Engineers (ASHRAE) - Standing Standard Project Committee 169 (SSPC 169): Weather Data for Building Design Standards

2010-2011 head, Israel Standards Institute Expert Sub-committee 2203.01 – Sensible Heat Flow Calculation in Buildings

2010-2011 member, Israel Standards Institute Expert Sub-committee 1204.03 – Sustainable Building - Energy

2010- member, Israel Standards Institute Committee 2203 - Energy in Buildings

2008-2009 member, Israel Standards Institute Expert Sub-committee 113.19 – Energy Labeling of Windows

2007- member, Association of Heating, Refrigeration and Airconditioning Engineers (ASHRAE) - Technical Committee TC4.2: Climate data.

2004-2011 member, Israel Standards Institute Expert Sub-committee 1204.01 – Energy Labeling of Buildings

2002-2011 member, Israel Standards Institute Expert Sub-committee 114.02 – Insulation Properties of Building Materials

2001-2002 member, Israel Standards Institute Expert Sub-committee 114.01 – Classification of Settlements to Climate Zones

2001-2011 member, Israel Standards Institute Expert Sub-committee 114.03 – Thermal Insulation of Buildings

2001-2011 member (head, 2007-2011), Israel Standards Institute Committee 114 - Thermal Insulation of Buildings

(c) Professional consulting

2009 Shikun Ovdim. Consultant on design of downdraft cool towers in the 7th Avenue shopping mall.

2008 Israel Institute of Standards. Draft standard for energy labelling of fenestration products in buildings.

1999-2001 Israel Ministry of Construction and Housing. Climate and energy consultant for the new masterplan of Dimona (with Meir, I. and Etzion, Y.).

1999-2000 Israel Ministry of Construction and Housing. Climate and energy consultant for the new masterplan of Netivot (with Meir, I. and Etzion Y.).

1994 The Negev Tourism Development Administration. The Negev in the Peace Era - Building in the Desert. (with Etzion, Y. and Meir, I.)

1992 M.Oron Architects. Special School in Beer-Sheva - Climatic Assessment Report. (With Meir, I. and Pearlmutter, D.)

Reviewer for funding agencies

European Commission - DG Research & Innovation

Israel Science Foundation

Israel Ministry for National Infrastructures

Israel Ministry for Science, Culture and Sport

Research Grants Council, Hong Kong

(d) Editor or member of editorial board of scientific or professional journals

Member of Editorial board, The Journal of Advances on Building Energy Research. (2006 on)

Reviewer for Scientific Journals:

- Advances in Building Energy Research
- Applied Energy
- Applied Thermal Engineering
- Architectural Science Review
- Building and Environment
- Clean Air: International Journal on Energy for a Clean Environment
- Climate Research
- Energy and Buildings
- Energy Conversion and Management
- Environmental Engineering and Management Journal
- Environmental Research Letters
- Frontiers in Earth Science (Atmospheric Science)
- Geoscientific Model Development Discussions
- International Journal of Biometeorology
- International Journal of Climatology
- International Journal of Solar Energy
- Journal of Applied Meteorology and Climatology
- Journal of Arid Environments

- Journal of Atmospheric and Oceanic Technology
- Landscape and Urban Planning
- Solar Energy
- Solar Energy Materials and Solar Cells
- Theoretical and Applied Climatology
- Urban Climate
- Urban Design
- Urban Ecosystems

(e) Membership in professional/scientific societies

1989-current Registered architect, Israel.

1999-current Member, International Association of Urban Climatology (IAUC)

1999-current Member, International Solar Energy Society (ISES)

EDUCATIONAL ACTIVITIES

(a) Courses taught

2012- "Microclimate and urban planning", undergraduate, Ben Gurion University – Dept. of Geography and Environmental Development.

2008 - "Introduction to Green Building in the Desert", undergraduate, Ben Gurion University – Dept. of Geography and Environmental Development.

2001- "The Human Dimension – Living in Drylands", graduate, Ben-Gurion University - Katz School for Desert Studies.

2001- "The urban micro-climate: planning and architectural design issues", graduate, Ben-Gurion University – Katz School for Desert Studies.

2001- "Passive heating and cooling of buildings", graduate, Ben-Gurion University – Katz School for Desert Studies.

2000 "Design studio on low-energy housing", undergraduate, Adelaide University – Dept. of Architecture, Landscape Architecture and Urban Planning (with White, D.)

1998-1999 "Climatic design", undergraduate, The Hadassa Canadian-Wizo Neri Bloomfield College of Design: (jointly with Y. Etzion, I. Meir and D. Pearlmutter)

1992 "A Comprehensive Approach to Desert Architecture". Workshop of the Faculty of Architecture and Town Planning, Technion-Israel Institute of Technology held at the Sede Boqer Campus, July 13-14. (with Meir, I. and Pearlmutter, D.).

1989-90 "Introduction to Climatic Design", undergraduate, Environmental Design Dept., Bezalel-Academy of Fine Arts, Jerusalem (with Etzion, Y., Meir, I. and Pearlmutter, D.).

(b) Research students

2005 Dolev, A. – M.Sc. (co-supervised with Biryukov S.), Katz International School for Desert Studies, BGU. Topic: Dust Deposition in a Courtyard as an Indicator of Building Effects on Aeolian Dust.

2007-2008 Shashua-Bar, L. – Post-Doctoral research (co-supervised with Pearlmutter D.). Topic: The integrated thermal impact of trees and lawns on the urban microclimate in arid regions.

2009 Essa, S. – M.Sc. (co-supervised with Garb Y.). Topic: Barriers to widespread adoption of solar water heating systems in Jordan.

2010 Schweitzer, O. – M.Sc. - (co-supervised with Waisel Y.). Topic: Evaluation and suitability of plants on green roofs in Israel

2013 Kaftan, E. – PhD. Topic: Daylighting for Visual Comfort and Energy Conservation in Offices: Development of Methodologies for Research in Architectural Practice

2014 Boneh, D. – M.A. (co-supervised with Bar-Kutiel P.). Topic: Effect of high albedo materials on thermal comfort in urban spaces in warm climates.

2014 Kalman, Y. – M.A. (co-supervised with Pearlmutter D.). Topic: The impacts of increasing the height of Tel Aviv buildings on outdoor thermal comfort and building energy efficiency.

2014 Snir, K. – M.A. (co-supervised with Pearlmutter D.). Topic: The moderating effects of surface cover vegetation on microclimate in a built environment in the desert.

2014 Friedman, C. – PhD. (co-supervised with Becker N.). Topic: Retrofit of residential buildings in Israel for energy conservation.

2016 Leaf, J. – M.Sc. Topic: Modelling the effect of surface cover vegetation on the urban microclimate.

2016 Assif, M. - M.A. Topic: Motivating energy efficient behavior in homes in Israel.

2016 Goulden, S. - PhD. (co-supervised with Garb Y. and Pearlmutter D.) Topic: Green building in Israel: Networks and Discourse of Environmental Governance.

2015-16 Kaplan, S. - Post-Doctoral research. Topic: Predicting air temperature simultaneously for multiple locations in urban environments

AWARDS, CITATIONS, HONORS, FELLOWSHIPS

(a) Honors, Citation Awards

1988 The David & Paula Ben Gurion Fund - The Haim Shiba Prize, (jointly with Meir I.and Pearlmutter D.).

2000 PLEA 2000 Conference - Best Paper Award (jointly with Etzion Y. and Portnov B.), for the paper: “A GIS framework for studying post-occupancy climate-related changes in residential neighborhoods”.

2011 The Emilio Ambasz Award for Green Architecture (awarded by Architecture in Israel) – Project of the Year, Research category, 2nd place. For the “Design Manual for Bio-Climatic Construction in Israel” (jointly with D. Pearlmutter, I. Meir, Y. Etzion and Y. Rofe).

2012 The Emilio Ambasz Award for Green Architecture (awarded by Architecture in Israel) – Project of the Year, Research category. For the study on "Daylighting and Visual Comfort in Offices" (jointly with Eran Kaftan).

SCIENTIFIC PUBLICATIONS

(a) Authored books

1. Portnov B. and **Erell E.** (2001) Urban Clustering: The Benefits and Drawbacks of Location, Ashgate, Aldershot, 317p.
2. Portnov, B. and **Erell, E**. (2003) Interregional Inequalities in Israel: 1948-1995 Census Data, Israel Central Bureau of Statistics, Jerusalem, 165p.
3. Portnov, B. and **Erell, E.** (2003) Interregional Inequalities in Israel: 1948-1995 Census Data, Israel Central Bureau of Statistics, Jerusalem, 131p. (Hebrew edition)
4. Yannas, S., **Erell, E.** and Molina, J.L. (2006) Roof Cooling Techniques – A Design Handbook, James & James Science Publishers, London, 332p.
5. Pearlmutter D., **Erell E**., Etzion Y., Meir I. and Rofe Y. (2010) Design Manual for Bio-Climatic Construction in Israel. Israel Ministry for National Infrastructures, 154p. Electronic online publication (in Hebrew). http://www.bgu.ac.il/CDAUP/guidebook.pdf
6. **Erell E.**, Pearlmutter D. and Williamson T. (2011) Urban Microclimate: Designing the Spaces between Buildings. Earthscan/James & James Science Publishers, London, 266p.
7. **Erell E.** and Kaftan E. (2011) Daylighting for visual comfort and energy conservation in offices in sunny locations: Design Guidelines. Israel Ministry of National Infrastructures, 56p. Electronic online publication (in Hebrew). http://www.bgu.ac.il/CDAUP/daylighting-guidelines-hebrew.pdf
8. **Erell E.** (2015). Energy Conservation in Residential Buildings in Israel. Ben-Gurion University and the Israel Ministry of National Infrastructure, Energy and Water, 387p. (in Hebrew).

   http://energy.gov.il/subjects/energyconservation/ecexpert/documents/energy%20conservation%20in%20buildings_ev06s.pdf

(b) Editorship of collective volumes

1. Etzion Y., **Erell E.** Meir I.A. and Pearlmutter D. (1994) Architecture of the Extremes - Proceedings of the 11th PLEA International Conference, Dead Sea, Israel, July 3-8, 1994.
2. Mills G., DiSabatino S., **Erell E**. and Martilli A. (2014). Special Issue of Urban Climate devoted to ICUC8: The 8th International Conference on Urban Climate and the 10th Symposium on the Urban Environment. Volume 10 (2), Pages 201-476.

(c) Chapters in collective volumes - Conference proceedings, Festschrifte, etc.

1. Etzion Y., **Erell E.**, Meir I., Pearlmutter D., Belaish M. (1989) "The Blaustein Center for Desert Studies", in Kimura, K. (ed.) Global Environment and Architecture in the industrialized Age, Proceedings, 7th PLEA International Conference, Nara, Japan, pp. 169-171.
2. Etzion Y. and **Erell E**. (1989) "A hybrid radiative-convective cooling system for-hot arid zones", in Clean and Safe Energy Forever, Proceedings, ISES Solar World Congress, Kobe, Japan.
3. **Erell E.** and Etzion Y. (1990) "A combined hybrid radiative cooling and heating systems for arid zones", in Sayigh, A. A. M., (ed.) Energy and the Environment into the 1990's, Proceedings of the 1st World Renewable Energy Congress, Reading, United Kingdom, Sept. 1990, pp. 2723-2727.
4. Etzion Y. and **Erell E.** (1990) "The location of thermal storage mass as a parameter in radiative cooling systems", in Sayigh, A. A. M., (ed.) Energy and the Environment into the 1990's, Proceedings of the 1st World Renewable Energy Congress, Reading, United Kingdom, Sept. 1990, pp. 2356-2360.
5. **Erell E.** and Etzion Y. (1991) "The effect of convection on a roof pond cooled by radiation in a hot-arid climate", in Alvarez S., Lopez De Asiain J., Yannas S. & De Oliviera Fernandes E. (eds.) Architecture and Urban Space, Proceedings of the 9th PLEA International Conference, Seville, Spain, Sept. 1991, pp. 613-618.
6. **Erell E.**, Etzion Y., Brunold S., Rommel M., Wittwer V. (1992) "A passive cooling laboratory building for hot-arid zones", Proceedings of the 3rd International Conference - Energy and Building in Mediterranean Area, Thessaloniki, Greece, April 8-10, 1992, pp. 117-124.
7. Pearlmutter D., Erell E., Etzion Y. (1992) "Monitoring an insulated earth-bermed structure in a desert climate", Proceedings of the 5th International Conference on Underground Space and Earth Sheltered Structures, Delft, Netherlands, Aug. 1992.
8. **Erell E.** (1993) "Leading by Design: The role of academic institutions in promoting climate-conscious architecture", Proceedings of the EC-Israel Business Seminar, Jerusalem, Israel, May 9-12, 1993, pp. 99-103.
9. Etzion Y., **Erell E.**, Pearlmutter D., Tene M. (1993) "Effects of soil temperature and insulation on the behavior of an earth-sheltered desert structure", in Solar Energy in Architecture and Urban Planning, proceedings of the 3rd European Conference on Architecture, Florence, Italy, May 17-21, 1993.
10. Pearlmutter D., Di H., Etzion Y., **Erell E.** and Meir I. (1994) "The Development of an Evaporative Cooling Tower for Semi-Enclosed Spaces", in Etzion Y., **Erell E.**, Meir I. and Pearlmutter D. (eds.), Architecture of the Extremes, proceedings of the 11th PLEA International Conference, Dead Sea, Israel, July 3-8, 1994, pp. 205-212.
11. **Erell E.**, Pearlmutter D., Di H., Etzion Y. and Meir I. (1995) "The Development of an Evaporative Cool Tower for Semi-Enclosed Spaces", in Santamouris, M. and Asimakopoulous D. (eds.) Proceedings of the International Symposium on Passive Cooling of Buildings, Athens, Greece, June 19-20, 1995, pp. 271-279.

12. **Erell E.** and Tsoar H. (1996) "The effect of a city on aeolian dust deposits: a case study in Be'er Sheva, Israel", ICUC'96 International Conference on Urban Climatology, Essen, Germany, June 10-14, 1996.
13. Etzion Y. and **Erell E.** (1996) "Employing a radiative cooling system for solar heating in winter", in De Herde, A. (Ed.) Building and Urban Renewal, Proceedings of the 13th PLEA International Conference, Louvain-la-Neuve, Belgium, July 16-18, 1996, pp. 105-110.
14. **Erell E.** (1998) "A critical examination of strategies foe protection from airborne dust in the urban environment", in Maldonado E. and Yannas S. (Eds.) Environmentally Friendly Cities, proceedings of the 15th PLEA International Conference, Lisbon, Portugal, June 1-5, 1998, pp. 491-494.
15. **Erell E.** and Etzion Y. (1998) "Analysis and experimental verification of an improved cooling radiator", in Sayigh, A.A. (Ed.) Energy Efficiency, Policy and the Environment, Proceedings of World Renewable Energy Congress V, Florence, Italy, September 20-25, 1998, pp. 700-703.
16. **Erell E.** and Etzion Y. (1999) "A novel ventilated reversible glazing system", Proceedings of the 1999 ISES Solar World Congress, Jerusalem, July 4-9, 1999, pp. 205-212.
17. **Erell E.** and Etzion Y. (1999) "Controlling the transmission of radiant energy through windows: a novel, ventilated, reversible glazing system", Proceedings of the Workshop on Energy-Efficient Buildings, Ma'ale Hachamisha, Israel, March 14-15, 1999, pp. 38-41.
18. **Erell E.** and Etzion Y. (1999) "A novel glazing system for climates with hot and cold extremes", in Szokolay, S. (Ed.) Sustaining the Future: Energy – Ecology – Architecture, Proceedings of the PLEA '99 Conference, Brisbane, September 22-24, 1999, pp. 107-112. (Refereed paper).
19. Etzion Y., Pearlmutter D. **Erell E.** and Meir I. (1999) "Adaptive architecture: Integrating low-energy technologies for climate control in the desert". In: Portnov B, Hare A. (eds.) Desert Regions: Population, Migration, and Environment. Springer Verlag, Berlin etc., 332p.
20. **Erell E.** and Tsoar H. (1999) "An experimental evaluation of strategies for reducing airborne dust in desert cities". In: Portnov B, Hare A. (Eds.) Desert Regions: Population, Migration, and Environment. Springer Verlag, Berlin etc., 332p.
21. Portnov B.A. and **Erell E.** (1999) "Long-term development patterns of peripheral desert settlements". In: Portnov B, Hare A. (Eds.) Desert Regions: Population, Migration, and Environment. Springer Verlag, Berlin etc., 332p.
22. Portnov B.A. and **Erell E.** (1999) "The effect of remoteness and isolation on the development of peripheral settlements". In: Portnov B, Hare A. (eds.) Desert Regions: Population, Migration, and Environment. Springer Verlag, Berlin etc., 332p.
23. Etzion Y., Portnov B., **Erell E.**, Meir I. and Pearlmutter D. (2000) "Climate-related changes in residential neighbourhoods: analysis in a GIS framework", in Steemers K. and Yannas S. (Eds.) Architecture – City – Environment, Proceedings of the PLEA 2000 Conference, Cambridge, UK, July 4-6, 2000, pp. 781-782.

24. Etzion Y., Portnov B., **Erell E.** (2000) “A GIS framework for studying post-occupancy climate-related changes in residential neighborhoods”, in Steemers K. and Yannas S. (Eds.) Architecture – City – Environment, Proceedings of the PLEA 2000 Conference, Cambridge, UK, July 4-6, 2000, pp. 678-683. Best Paper Award.

25. Williamson, T.J. **and Erell, E.** (2001) “Thermal performance simulations and the urban micro-climate: measurement and prediction”, In Building Simulation 2001, Proceedings of the 7th International IBPSA Conference, Rio de Janeiro, Brazil, August 13-15, 2001, pp. 159-165. (Refereed paper).

26. Molina J.L., Maestre I.R., Sandberg M., Maldonado E., Leal V., **Erell E.**, Etzion Y. and Gutschker O. (2002) “Modeling the effect of ventilated air cavities in the SOLVENT prototype: A reversible solar-screen glazing system. Preliminary results”. In Energy Efficient & Healthy Buildings in Sustainable Cities, Proceedings of the 3rd European Conference on Energy Performance & Indoor Climate in Buildings and The 23rd Conference of the Air Infiltration & Ventilation Centre, Lyon, France, October 23-26, 2002, pp. 425-430.

27. **Erell E.**, Etzion Y., Carlstrom N., Sandberg M., Molina J.L., Maestre I.R., Maldonado E., Leal V. and Gutschker O. (2002) “SOLVENT: Development of a reversible solar-screen glazing system”. In Energy Efficient & Healthy Buildings in Sustainable Cities, Proceedings of the 3rd European Conference on Energy Performance & Indoor Climate in Buildings and The 23rd Conference of the Air Infiltration & Ventilation Centre, Lyon, France, October 23-26, 2002, pp. 485-490.

28. **Erell E.** and Williamson T.J. (2002) “Predicting air temperatures in the urban canopy layer from measured reference data”, in GRECO and ACAD (Eds.) Design with the Environment, Proceedings of the 19th PLEA International Conference, Toulouse, France, July 22-24, 2002, pp. 145-152.

29. Erell, E. (2002) “Energy conscious architecture in the Negev in modern times”, In: Porat, H. and Gradus, Y. (Eds.) The Negev: 50 Years of Progress – Vardimon Memorial Volume. Joe Alon Center, Kibbutz Lahav & Ariel Publishing House, Jerusalem, pp. 141-150. (In Hebrew)

30. **Erell E.**, Leal V. and Maldonado, E. (2003) “On the measurement of air temperature in the presence of strong solar radiation”. In: Klysik, K., Oke, T.R., Fortuniak, K. Grimmond C.S.B. and Wibig, J. (Eds.) Proceedings of the Fifth International Conference on Urban Climate, Lodz, Poland, September 1-5, 2003, pp. 381-384.

31. Leal V., Maldonado E., **Erell E.** and Etzion Y. (2003) “Modelling a reversible ventilated window for simulation within ESP-r: The SOLVENT case”. In Building Simulation 2003, Proceedings of the 8th International IBPSA Conference, Eindhoven, Nethelands, August 11-14, 2003, pp. 713-720. (Refereed paper).

32. **Erell E.** and Williamson T. (2004) “The CAT model: Predicting air temperature in city streets on the basis of measured reference data”, In: Bromberek, Z. (Ed.) Contexts of Architecture, Proceedings of the 38th Annual Conference of the Architectural Science Association ANZAScA and the International Building Performance Association, Australasia, Launceston, Australia, November 10-12, 2004, pp. 210-215. (Refereed paper).

33. Leal V., Sandberg, M. Maldonado E. and **Erell E.** (2004) “An analytical model for the airflow in a ventilated window with known surface temperatures”, In da Silva, M. (Ed.) Proceedings of ROOMVENT 2004 - 9th International Conference on Air Distribution in Rooms, Coimbra, Portugal, September 5-8, 2004.

34. **Erell E.**, Etzion Y., Pearlmutter D., Guetta R., Pecornik D., Zimmermann H. and Krutzler F. (2005) “A novel multi-stage down-draft evaporative cool tower for space cooling. Part 1: Aerodyanamic design”. In Santamouris, M. (Ed.) Passive and Low Energy Cooling for the Environment. Proceedings of PALENC 2005, 1st International Conference on Passive and Low Energy Cooling for the Built Environment, Santorini, Greece, May 19-21, 2005, pp. 521-528.

35. **Erell E.**, Etzion Y., Pearlmutter D., Guetta R., Pecornik D., Zimmermann H. and Krutzler F. (2005) “A novel multi-stage down-draft evaporative cool tower for space cooling. Part 2: Preliminary experiments with a water spraying system”. In Santamouris, M. (Ed.) Passive and Low Energy Cooling for the Environment, Proceedings of PALENC 2005, 1st International Conference on Passive and Low Energy Cooling for the Built Environment, Santorini, Greece, May 19-21, 2005, pp. 529-536.

36. **Erell E.** and Williamson T. (2005) “Experimental validation of a model to adapt measured data at a standard weather station to represent site-specific air temperature in an urban street canyon”. In Bloem, J. and Sutherland, G. (Eds.) Proceedings of DYNASTEE 2005 – Dynamic Analysis, Simulation and Testing applied to the Energy and Environmental performance of buildings, Athens, Greece, October 12-14 2005.

37. **Erell E.** and Williamson T. (2006) “The estimation of air temperature in an urban street canyon on the basis of measured data from a meteorological station in the region”. In Grimmond S. and Lindqvist S. (Eds.) Proceedings of ICUC6 – 6th International Conference on Urban Climate, Goteborg, Sweden, June 12-16 2006, pp.404-407.

38. **Erell E.**, Pearlmutter D. and Etzion Y. (2006) “A multi-stage down-draft evaporative cool tower for semi-enclosed spaces. Part 1: Aerodyanamic design”. In Compagnon, R., Haefeli, P. and Weber, W. (Eds.) Clever Design, Affordable Comfort - Proceedings of PLEA 2006, 23rd International Conference on Passive and Low Energy Architecture, Geneva, Switzerland, September 6-8, 2006, pp. II 559-564.

39. Pearlmutter D., Etzion Y. and **Erell E.** (2006) “A multi-stage down-draft evaporative cool tower for semi-enclosed spaces. Part 2: Water spraying system”. In Compagnon, R., Haefeli, P. and Weber, W. (Eds.) Clever Design, Affordable Comfort - Proceedings of PLEA 2006, 23rd International Conference on Passive and Low Energy Architecture, Geneva, Switzerland, September 6-8, 2006, pp. II 565-570.

40. **Erell E.**, Yannas S. and Molina J.L. (2006) “Roof cooling techniques”. In Compagnon, R., Haefeli, P. and Weber, W. (Eds.) Clever Design, Affordable Comfort - Proceedings of PLEA 2006, 23rd International Conference on Passive and Low Energy Architecture, Geneva, Switzerland, September 6-8, 2006, pp. II 571-575.

41. **Erell E.** (2007) “Evaporative cooling”. Book chapter in Santamouris, M. (Ed.) Advances in Passive Cooling, James & James Science Publishers, London. 303p.

42. **Erell E.** (2007) “Radiative cooling”. Book chapter in Santamouris, M. (Ed.) Advances in Passive Cooling, James & James Science Publishers, London. 303p.

43. **Erell E.** and Williamson T. (2007) The spatial variability of air temperature in the urban canopy layer". In Santamouris M. and Wouters P. (Eds.) Building Low Energy Cooling and Advanced Ventilation Technologies in the 21st Century. Proceedings of the 2nd PALENC Conference and 28th AIVC Conference, September 27-29 2007, Crete, Greece, pp. 304-308.

44. **Erell E.**, Soebarto V. and Williamson T. (2007) "Accounting for urban microclimate in computer simulation of building energy performance". In Wittkopf S. and Tan B. K. (Eds.) Sun, Wind and Architecture, Proceedings of PLEA 2007, 24th International Conference on Passive and Low Energy Architecture, Singapore, November 22-24, 2007, pp. 593-600.

45. Shashua-Bar L., **Erell E.** and Pearlmutter D. (2008) "The cooling effect and water use efficiency of urban landscape strategies in a hot dry climate". In Kenny P., Lewis O. And Brophy V. (Eds.) Towards Zero Energy Buildings, Proceedings of PLEA 2008, 25th International Conference on Passive and Low Energy Architecture, Dublin, October 22-24, 2008, paper 457.

46. Grimmond C.S.B, Best M., Barlow J., Baik J.J., Belcher S., Bruse M,. Calmet I., Chen F., Clark P, Dandou A, **Erell E.**, Fortuniak K., 10 Hamdi R., Kanda M., Kawai T., Kondo H., Krayenhoff S., Lee S.H., Shashua-Bar, L., Martilli A., Masson V., Miao S., Mills G., Moriwaki R., Oleson K., Porson A., Sievers U., Tombrou M., Voogt J., Williamson T. (2009) "Urban surface energy balance models: model characteristics and methodology for a comparison study." Chapter in: Baklanov A., Grimmond S., Mahura A. and Athanassiadou M. (eds.) Meteorological and Air quality Models for Urban Areas. Springer, Dordrecht – Heidelberg – London – New York. 183 p.

47. Shashua-Bar L., **Erell E.** and Pearlmutter D. (2009) "Water use considerations and cooling effects of urban landscape strategies in a hot dry region". ICUC7 - The 7th International Conference on Urban Climate, Yokohama, Japan, July 3-6 2009.

48. Shashua-Bar L., **Erell E.** and Pearlmutter D. (2009) "Microscale vegetation effects on outdoor thermal comfort in a hot-arid environment". ICUC7 - The 7th International Conference on Urban Climate, Yokohama, Japan, July 3-6 2009.

49. **Erell E.**, Eliasson E., Grimmond S., Offerle B. and Williamson T. (2009) "Incorporating spatial and temporal variations of advected moisture in the canyon air temperature (CAT) model". ICUC7 - The 7th International Conference on Urban Climate, Yokohama, Japan, July 3-6 2009.

50. Williamson T.J., **Erell E.** and Soebarto V. (2009) "Assessing the error from failure to account for urban microclimate in computer simulation of building energy performance". In Building Simulation 2009, Proceedings of the 11th International IBPSA Conference, Glasgow, Scotland, July 27-30, 2009, pp. 497-504.

51. **Erell E.** (2010) "Designing glazing systems for people: Reconciling energy efficiency with occupants' thermal and visual comfort". Proceedings of the US-Israel Workshop on Sustainable Buildings – Materials and Energy, 12-13 July 2010, Haifa, Israel, pp. 41-42.

52. **Erell E.**, Eliasson E., Grimmond S., Offerle B. and Williamson T. (2010) "The effect of stability on estimated variations of advected moisture in the Canyon Air Temperature (CAT) model". The 9th AMS Symposium on the Urban Environment, Keystone, Co., Aug. 2-6 2010 (available online).

53. Ford B. and **Erell E.** (2010) "Component Design and Controls". Book chapter in Ford B., Schiano-Phan R. and Francis E. (Eds.) The Architecture and Engineering of Downdraught Cooling, Chapter 7, pp. 169-181. PHDC Press, UK.

54. Schweitzer O., Waisel Y. and **Erell E.** (2010) "Evaluation of green roofs in a water-scarce environment". PALENC 2010 - Passive and Low Energy Cooling for the Built Environment, Rhodes, Greece, 29 September – 1 October 2010.

55. **Erell E**., Pearlmutter D. and Williamson T. (2011) "Urban Microclimate – Designing the Spaces between Buildings". In Hebbert M., Jankovic V. and Webb B. (Eds.) City weathers: Meteorology and Urban design 1950-2010. Proceedings of workshop at The University of Manchester, June 23-24 2011, pp.127-133.

56. Sailor D., **Erell E**., Kang D. and Botham, D. (2012) "Building Energy Use Implications of Ground Level Albedo Modification". ICUC8 - The 8th International Conference on Urban Climate, Dublin, Ireland, August 6-10 2012.

57. **Erell E.**, Pearlmutter D. and Boneh D. (2012) "Effect of high-albedo materials on pedestrian thermal comfort in urban canyons". ICUC8 - The 8th International Conference on Urban Climate, Dublin, Ireland, August 6-10 2012.

58. Friedman C., **Erell E.** and Becker N. (2013) "Cost Benefit Analysis of Retrofit of Residential Buildings in Israel". Proceedings of the 6th International Conference on Sustainable Energy & Environmental Protection (SEEP), 20-23 August 2013, Maribor, Slovenia.

59. **Erell E.**, Pearlmutter D., Boneh D. and Bar-Kutiel, P. (2013) "Effect of high-albedo materials on pedestrian thermal sensation in urban street canyons in hot climates". Proceedings of the 29th PLEA International Conference – Sustainable Architecture for a Renewable Future, Munich, Germany, Sept. 10-12 2013.

60. Kalman Y., Pearlmutter D. and **Erell E.** (2013). "Impact of increasing the height of Tel Aviv buildings on pedestrian comfort and building energy efficiency". Proceedings of the 29th PLEA International Conference – Sustainable Architecture for a Renewable Future, Munich, Germany, Sept. 10-12 2013.

61. Snir K., Pearlmutter D. and **Erell E.** (2013). "The moderating effects of desert ground cover plants on pedestrian thermal sensation". Proceedings of the 29th PLEA International Conference – Sustainable Architecture for a Renewable Future, Munich, Germany, Sept. 10-12 2013.

62. **Erell E.** and Kalman Y. (2014). "The impact of increasing the height of Tel Aviv buildings on building heating and cooling demands". Proceedings of the US-Israel workshop on Industrial Ecology in Multi-Scale Design and Construction of Sustainable Built Environments, Tel Aviv, Israel, March 10-11 2014, pp.41-42.

63. Giordano D.E., **Erell E.** and Kruger E. (2014). "Effect of albedo on urban street canyons in medium-sized Brazilian cities". Proceedings of ENTAC 2014, pp. 608-617 (in Portuguese with English abstract). Ponta Verde, Brazil, Nov. 12-14 2014. http://doi.org/10.17012/entac2014.373.

64. **Erell E.**, Kaftan E. and Garb Y. (2014). "Daylighting for Visual Comfort and Energy Conservation in Offices in Sunny Regions". Proceedings of the 30th PLEA International Conference – Sustainable Habitat for Developing Societies, Ahmedabad, India, Dec. 16-18 2014.

65. **Erell E.** and Kalman Y. (2015). "Impact of increasing the depth of urban street canyons on building heating and cooling loads in Tel Aviv, Israel". ICUC9 - The 9th International Conference on Urban Climate, Toulouse, France, July 20-24 2015.
66. Leaf J. and **Erell E.** (2015). "Modelling the effect of surface cover vegetation on the urban microclimate". Architecture in (R)Evolution - Proceedings of the 31st PLEA International Conference, Bologna, Italy, Sept. 9-11 2015.
67. Assif M. and **Erell E.** (2015). "Is occupant motivation the key for energy-efficient behaviour in homes?". Architecture in (R)Evolution - Proceedings of the 31st PLEA International Conference, Bologna, Italy, Sept. 9-11 2015.

(d) Refereed articles and refereed letters in scientific journals

1. Etzion Y., **Erell E.**, (1991) "The thermal behavior of a concrete "finned" wall in hot-arid zone", *Energy and Buildings*, **17**(4):331-335.
2. Etzion Y., **Erell E.**, (1991) "Thermal storage mass in radiative cooling systems", *Building and Environment*, **26**(4):389-394.
3. Mathews E. H., Etzion Y., **Erell E.**, Richards P. G., Rousseau P. G., (1992) "Simplified analysis of naturally ventilated desert buildings", *Building and Environment*, **27**(4):423-432.
4. **Erell E.**, Etzion Y. (1992) "A radiative cooling system using water as a heat exchange medium", *Architectural Science Review*, **35**(2):39-49.
5. Pearlmutter D., **Erell E.**, Etzion Y. (1993) "Monitoring the thermal performance of an insulated earth-sheltered structure: A hot-arid zone case study", *Architectural Science Review*, **36**(1): 3-12.
6. Tsoar H. and **Erell E.** (1995) "The effect of a desert city on aeolian dust deposition", *Journal of Arid Land Studies*, **5S**:115-118.
7. Freidin, K. and **Erell E.** (1995) "Bricks made of coal fly-ash and slag, cured in the open air", *Cement and Concrete Composites*, **17**:289-300.
8. **Erell E.** and Etzion Y. (1996) "Heating experiments with a radiative cooling system", *Building and Environment*, **31**(6):509-517.
9. Pearlmutter D., **Erell E.**, Etzion Y., Meir I.A. and Di H. (1996) "Refining the use of evaporation in an experimental down-draft cool tower", *Energy and Buildings*, **23**(3):191-197.
10. Meir, I.A., **Erell E.**, Etzion Y. and Pearlmutter D. (1996) "Are design ideas competitions hitting the target? Comments on the design ideas competition for a resort hotel by the Dead Sea, Israel", *Energy and Buildings*, **23**(3):299-306.
11. Etzion Y., Pearlmutter D. **Erell E.** And Meir I. (1997) "Adaptive architecture: Integrating low-energy technologies for climate control in the desert", *Automation in Construction*, **6**:417-425.
12. Mathews E. H., Etzion Y., Weggelaar S., Van Heerden E., **Erell E.**, Meir I. and Pearlmutter D. (1997) "A novel thermal simulation model and its application on naturally ventilated desert buildings", *Building and Environment*, **32**(5):447-456.
13. **Erell E.** and Tsoar H. (1997) "An experimental evaluation of strategies for reducing airborne dust in desert cities", *Building & Environment*, **32**(3):225-236.

14. Portnov B. and **Erell E.** (1998) "Clustering of the urban field as a precondition for sustainable population growth in peripheral areas: The case of Israel", *Review of Urban and Regional Development Studies*, **10**(2):123-141.

15. **Erell E.** and Etzion Y. (1999) "Analysis and experimental verification of an improved cooling radiator", *Renewable Energy*, **16**:700-703.

16. Portnov B. and **Erell E.** (1998) "Development peculiarities of peripheral desert settlements: The case of Israel", *International Journal of Urban and Regional Research*, **22**(2):216-232.

17. Etzion Y. and **Erell E.** (1999) "Low-cost long-wave radiators for passive cooling of buildings", *Architectural Science Review*, **42**:79-86.

18. **Erell E.** and Tsoar H. (1999) "Spatial variations in the aeolian deposition of dust - the effect of a city: A case study in Be'er Sheva, Israel", *Atmospheric Environment*, **33**:4049-4055.

19. Portnov B., **Erell E.**, Bivan R. & Nilsen A. (2000) "Investigating the effect of clustering of the urban field on sustainable population growth of centrally located and peripheral towns," *International Journal of Population Geography*, **6**:1-22.

20. Etzion Y. and **Erell E.** (2000) "Controlling the transmission of radiant energy through windows: A novel ventilated reversible glazing system", *Building & Environment*, **35**(5):433-444.

21. **Erell E.** and Etzion Y. (2000) "Radiative cooling of buildings with flat-plate solar collectors", *Building & Environment*, **35**(4):297-305.

22. Etzion Y., Portnov B. and **Erell E.** (2001) "An open GIS framework for recording and analyzing post-occupancy changes in residential buildings", *Building & Environment* **36**(10):1075-1090.

23. Runsheng T., Etzion Y. and **Erell E.** (2003) "Experimental studies on a novel roof pond configuration for the cooling of buildings", *Renewable Energy* **28**(10):1513-1522.

24. **Erell E.**, Portnov B. and Etzion, E. (2003) "Mapping the potential for climate-conscious design of buildings", *Building & Environment* **38** (2):271-281.

25. Leal V., **Erell E.**, Maldonado E. and Etzion E. (2004) "Modelling the SOLVENT ventilated window for whole building simulation", *Building Services Engineering Research & Technology* **25**(3):183-195.

26. Portnov B., **Erell E.** (2004) "Interregional inequalities in Israel, 1948-1995: divergence or convergence?" *Socio-economic Planning Sciences* **38**(4):255-289.

27. **Erell E.**, Etzion Y., Carlstrom N., Sandberg M., Molina J., Maestre I., Maldonado E., Leal V. and Gutschker O. (2004) "SOLVENT: Development of a reversible solar-screen glazing system", *Energy and Buildings* **36**:468-480.

28. **Erell E.**, Leal V. and Maldonado E. (2005) "Measurement of air temperature in the presence of a large radiant flux: An assessment of passively ventilated thermometer screens", *Boundary Layer Meteorology* **114**:205-231.

29. **Erell E.** and Williamson T. (2006) "Comments on the correct specification of the analytical CTTC model for predicting the urban canopy layer temperature". *Energy and Buildings*, **38**:1015-1021.

30. **Erell E.** and Williamson T. (2006) “Simulating air temperature in an urban street canyon in all weather conditions using measured data at a reference meteorological station”, *International Journal of Climatology*, **26**(12):1671-1694.

31. **Erell E.** and Williamson T. (2007) “Intra-urban differences in canopy layer air temperature at a mid-latitude city”. *International Journal of Climatology*, **27**:1243-1255.

32. **Erell E.**, Pearlmutter D. and Etzion Y. (2008) “A Multi-Stage Down-Draft Evaporative Cool Tower for Semi-Enclosed Spaces: Aerodynamic Performance”. *Solar Energy*, **82**(5):420-429.

33. Pearlmutter D., **Erell E.** and Etzion Y. (2008) “A Multi-Stage Down-Draft Evaporative Cool Tower for Semi-Enclosed Spaces: Experiments with a water spraying system”, *Solar Energy*, **82**(5):430-440.

34. Williamson T. and **Erell E.** (2008). “The Implications for Building Ventilation of the Spatial and Temporal Variability of Air Temperature in the Urban Canopy Layer”. *International Journal of Ventilation*, **7**(1):23-35.

35. **Erell E.** (2008) “The application of urban climate research in the design of cities”, *Advances in Building Energy Research*, **2**:95-121.

36. Shashua-Bar L., Pearlmutter D. and **Erell E.** (2009). "The cooling efficiency of urban landscape strategies in a hot dry climate". *Landscape and Urban Planning*, **92**(3-4):179-186.

37. Mills G., Cleugh H., Emmanuel R., Endlicher W., **Erell E.**, McGranahan G., Ng E., Nickson A., Rosenthal J. and Steemer K. (2010) "Climate Information for Improved Planning and Management of Mega Cities (needs perspective)". *Procedia Environmental Sciences*, **1**:228-246.

38. Shashua-Bar L., Pearlmutter D. and **Erell E.** (2011). "The influence of trees and grass on outdoor thermal comfort in a hot-arid environment". *International Journal of Climatology*, **31**(10): 1498–1506.

39. Lemonsu A., Masson V., Shashua-Bar L., **Erell E.** and Pearlmutter D. (2012) “Inclusion of vegetation in the Town Energy Balance model for modelling urban green areas”. *Geoscientific Model Development*, **5**:1377-1393.

40. Schweitzer O. and **Erell E.** (2014) "Evaluation of the energy performance and irrigation requirements of extensive green roofs in a water-scarce Mediterranean climate". *Energy and Buildings*, 68:25–32.

41. **Friedman C.**, Becker N. and **Erell E**. (2014). "Energy retrofit of residential buildings in Israel: a cost-benefit analysis”. *Energy*, **77**:183-193.
DOI: 10.1016/j.energy.2014.06.019

42. **Erell E.**, Boneh D., Bar (Kutiel) P. and Pearlmutter D. (2014) “Effect of high-albedo materials on pedestrian thermal stress in urban street canyons”. *Urban Climate*, (10): 367-386. http://www.sciencedirect.com/science/article/pii/S2212095513000539

43. Goulden S., Garb Y., Pearlmutter D. and **Erell E**. (2015). "Green building standards as socio-technical actors in municipal environmental policy". *Building Research and Information*, accepted for publication. DOI: 10.1080/09613218.2015.1116844

44. Snir K., Pearlmutter D. and **Erell E.** (2016). The moderating effect of water-efficient ground cover vegetation on pedestrian thermal stress. *Landscape and Urban Planning* **152**: 1-12.
45. **Erell E.** (2016). Should we be concerned about urban heat islands? *Ecology and Environment*, accepted. (in Hebrew)
46. Kaplan S., Peeters A. and **Erell E.** (2016). Predicting air temperature simultaneously for multiple locations in an urban environment: a bottom up approach. *Applied Geography*, **76**:62-74.

(e) Published scientific reports and technical papers

1. Etzion Y., **Erell E.**, Pearlmutter D., (1991) Monitoring the Performance of an Earth Sheltered Structure in the Negev Highland, report to the Israeli Ministry of Energy and Infrastructure, Research and Development Division (in Hebrew).
2. Tsoar H., **Erell E.** (1992) The Effect of Buildings on the Deposition of Dust in a Desert City, report to the Ministry of Energy and Infrastructure, Earth Sciences Administration (in Hebrew).
3. Etzion Y., **Erell E.**, (1993) Radiative Cooling of Buildings, Final Research Report, National Research and Development Agency, Israel.
4. Etzion Y., Meir I. and **Erell E.** (1994) The Negev in Peace - Building in the Desert, Masterplan for the Development of the Negev, First Stage Report submitted to the Negev Tourism Development Administration (in Hebrew).
5. **Erell, E**. (1995) The Effect of Buildings on the Deposition of Dust in a Desert City, M.A. thesis, Ben-Gurion University of the Negev, Be'er Sheva.
6. Portnov B. A., **Erell E.** and Pearlmutter D. (1997) Development Peculiarities of Urban Settlements in the Negev: Cross-Regional Analysis, Negev Center for Regional Development - Working Paper No. 9, Ben-Gurion University of the Negev, Be'er Sheva, 31pp.
7. Etzion Y., Portnov B., **Erell E.**, Meir I. and Pearlmutter P. (2000) A Computerized System for Tracking Modifications to Housing in Ministry of Housing Neighborhoods, final research report to the Israel Ministry for Housing. (in Hebrew)
8. Etzion Y., **Erell E.** and Portnov B. (2000) Mapping the Potential for "Green Construction" in Israel, final research report to the Israel Ministry for the Environment. (in Hebrew)
9. **Erell E.** and Etzion Y. (2002) SOLVENT – Development of a Ventilated, Solar-screen Glazing System, final research report to the European Commission, ENERGIE Program.
10. Portnov B. and **Erell E.** (2002) Interregional Inequalities in Israel 1948-1995: Divergence or Convergence?. Final research report to the Israel Foundation Trustees.
11. Yannas S., **Erell E.** and Molina, J. (2003) Roof Cooling Techniques – A Design Handbook, final report to the European Commission, ALTENER Program.
12. **Erell E.** (2005) Predicting Air Temperature in City Streets on the Basis of Measured Reference Data, Ph.D. thesis, The University of Adelaide, Adelaide.

13. **Erell E.**, Etzion E. Pearlmutter D. and Mutzafi-Haller W. (2006) Multi-stage Down-Draft Evaporative Cool Tower for Large Closed and Semi-enclosed Spaces. Final research report submitted to the BMBF (Germany) and Ministry of Science and Technology, Israel.
14. **Erell E.**, Kaftan E. and Motzafi-Haller W. (2011) Daylighting for visual comfort and energy conservation in offices in sunny locations. Final research report to the Israel Ministry of National Infrastructures. (Partly in Hebrew)
15. **Erell E.**, Friedman C. and Becker N. (2013) Energy retrofit of residential buildings in Israel. Final research report to the Israel Ministry of Energy and Water. Publication number RD-05-13 (in Hebrew).
16. Garb Y., Becker N., Pearlmutter D., Goulden S. and **Erell E.** (2015). Survey of green building incentives and their adaptation to Israel. Final Research report to the Israel Ministry for Environmental Protection. 84p.
17. **Erell E.**, Assif M. and Portnov B. (2016). Promoting energy saving behaviour in residential buildings in Israel. Final research report to the Israel Ministry of Infrastucture, Energy and Water. Publication number RD-19-16 (in Hebrew).

(f) Unrefereed professional articles and publications

1. Etzion Y., **Erell E.**, Meir I., Pearlmutter D. and Belaish M. (1993). "The International Center for Desert Studies Building at the Desert Research Institute", The Building Centre of Israel Bulletin, 32:17-22 (in Hebrew).
2. **Erell E.** (1999). “Energy conservation in buildings in Israel”, Mivnim, 198:34-48. (in Hebrew).
3. **Erell E.** (1999). “A reversible glazing system”. Mivnim, 198:49-55. (in Hebrew).
4. **Erell E.** (2008). “Green Building in Blue and White”, Perspectiva – Journal of the United Architects Association in Israel, 27:44-48. (in Hebrew)
5. **Erell E.** (2008). “Exploring Low Energy Building – A review of the book ‘A Handbook on Low-Energy Building and District Heating Systems’, by D. Harvey”. Reforesting Scotland 37:39.
6. **Erell E.** (2015). "The importance of updating standard SI 1045 – thermal insulation of buildings". Mivnim 315:46-48 (Part 1); Mivnim 316:xx-xx (Part 2). (in Hebrew)

LECTURES AND PRESENTATIONS AT MEETINGS AND INVITED SEMINARS NOT FOLLOWED BY PUBLISHED PROCEEDINGS

(a) Invited plenary lectures at conferences/meetings

International:

1. **Erell E.** (2011) “Implementing Urban Climatology in the 'Real World' - Theory and Practice”. Croucher Advanced Study Institute 2011-2012: Urban Climatology in Tropical and Sub-Tropical Regions. 5-10 Dec 2011, The Chinese University of Hong Kong, Hong Kong.
2. **Erell E.** (2013) “Microclimate in Urban Planning”. Conference on Energy Efficiency Strategies for Buildings. Tallinn University of Technology, October 9-11 2013.

3. **Erell E.** (2013) “Retrofitting to nZEB”. Conference on Energy Efficiency Strategies for Buildings. Tallinn University of Technology, October 9-11 2013.
4. **Erell E.** 2016) "Renewable Energy and Urban Form". Smart and Sustainable Cities Conference, UCLA Institute of the Environment and Sustainability, Los Angeles, May 19 2016.

In Israel:

1. **Erell E.** (2007) “Shading solutions for high-rise residential buildings”. Seminar on Green buildings: Application of climatic design guidelines in high-rise residential construction in the Dan region, Tel Aviv, September 4 2007.
2. **Erell E.** (2008) “ Israel Standard 5282 and the design of energy conserving buildings in the Negev”. Seminar on Green Building and Sustainable Development: Principles, technologies and Standards, Midreshet Ben Gurion, March 4 2008.
3. **Erell E.** (2008) “How can local authorities in Israel promote green building?”. Seminar on Environmental Protection by Local Authorities”, Israel State Comptroller and Ombudsman, Tel Aviv, July 23 2008.
4. **Erell E.** (2010) "Computer simulation of building energy performance: Is standard weather data sufficient?" World Meteorological Day Seminar, Israel Meteorological Service, Tel Aviv, March 23, 2010.
5. **Erell E.** (2013) “Seeing the light – visual comfort and energy conservation in buildings”. Seminar on Sustainable Building in the Southern Region, Israel Ministry of Environmental Protection and Ministry of Interior, Beer Sheva, February 27 2013.
6. **Erell E.** and Kaftan E. (2013) “Visual comfort and energy conservation in daylit office buildings”. Annual meeting of the Israel Society for Lighting Engineers. Tel Aviv, March 6 2013.

(b) Presentation of papers at conferences/meetings

1. **Erell E.** and Tsoar H. (1992) Dust in Beer-Sheva - man made or a curse of nature? Annual Conference of the Israel Geographical Association, Beer-Sheva, Dec. 21-22, 1992.
2. **Erell E.** and Tsoar H. (1992) The Effect of buildings on the deposition of dust in a desert city. The Geomorphological Meeting, Dept. of Geography, Ben-Gurion University of the Negev, Beer Sheva, January 1992.
3. Tsoar H. and **Erell E.** (1995) The Effect of a desert city on aeolian dust deposition. Desert Technology III Conference, Yamanashi, Japan, Oct. 15-20, 1995.
4. Portnov. B. A. and **Erell E.** (1998) Sustainability of Urban Growth in Peripheral Areas: The Case of Israel. Urban Development: A Challenge for Frontier Regions, 2nd International Conference, Be’er Sheva, Israel, April 5-7, 1998.
5. Etzion Y., **Erell E.**, Pearlmutter D., Guetta R., Pecornik D., Zimmermann H. and Krutzler F. (2005) “A novel multi-stage down-draft evaporative cool tower for space cooling”. Annual meeting of the Israel Chapter of ISES, Tel Aviv, Israel, May 19 2005.

6. Dolev A., Biryukov S. and **Erell E.** (2005) Dust deposition in a courtyard as an indicator of the effect of buildings on coarse aeolian particles. 19th Annual Meeting of the Israeli Association for Aerosol Research. Tel Aviv, December 29, 2005.
7. **Erell E.** and Williamson T. (2006) "A computer model for predicting air temperature in urban street canyons from measured data at a standard weather station". Annual meeting of ASHRAE, Quebec City, Canada, June 24-28 2006.
8. **Erell E.** (2007) "Israel Standard 5282 – Energy rating of buildings". 1st International Conference on Sustainable Energy as a Catalyst for Regional Development, Eilat, Israel, June 5-7 2007.
9. **Erell E.** (2007) "Climate-conscious architecture in the desert". 1st International Conference on Sustainable Energy as a Catalyst for Regional Development, Eilat, Israel, June 5-7 2007.
10. **Erell E.** (2008) "Microclimatic issues in the planning of a modern city in a desert environment". Annual meeting of the American Association for the Advancement of Science, Boston, MA, February 14-18 2008.
11. **Erell E.** (2008) "Effects of Density and Vegetation on the Microclimate of a Modern City in a Desert Environment". The second conference on Deserts, Drylands and Desertification, Sde Boqer, Israel, December 14-17 2008.
12. **Erell E.** (2009) "Green Building in blue and white: a critical look at policies for environmentally friendly construction in Israel". Eilat-Eilot International Renewable Energy Conference & Exhibition, Eilat, Israel, February 17-19 2009.
13. Cleugh H., Emmanuel R., Endlicher W., **Erell E.**, McGranahan G., Mills G., Ng E., Nickson A., Rosenthal J. and Steemer K. (2009) "Climate Information for Improved Planning and Management of Mega Cities". World Climate Conference 3 – Better Information for a Better Future. Geneva, Switzerland, 31 August-4 September 2009.
14. Garb Y. Essa S. and **Erell E.** (2010) "The dynamics of solar water heating adoption: comparing Amman and Ramallah". 16th Sede Boqer Symposium on Solar Electricity Production, February 14-16, 2010.
15. Shashua-Bar L., Pearlmutter D. and **Erell E.** (2010) "Assessing the water consumption of landscape strategies in arid regions and their contribution to thermal comfort in small urban spaces". Bridging Diversity in a Globalizing World – Regional Conference of the International Geographical Union, Tel Aviv, July 12-16 2010.
16. **Erell, E.** (2012) "Accounting for urban microclimate in computer simulation of building energy performance". Seminar on Impacts of Environmental Change on Building Design and the HVAC Systems, ASHRAE Annual Conference, San Antonio, Tx., June 23-27 2012.
17. **Erell, E.** (2012) "Water-sensitive urban design: Effect of surface moisture and vegetation on thermal comfort in desert cities". 4th International Conference on Drylands, Deserts & Desertification, Sde Boqer, November 12-15 2012.
18. **Erell E.** and Williamson, T. (2014). "A 'green sol-air' temperature to estimate the radiation effect of ground cover vegetation on pedestrian thermal comfort in hot climates". 20th Internation Congress of Biometeorology, Cleveland, Ohio, September 28-October 1 2014.

(c) Presentations at informal international seminars and workshops

1. Etzion Y., **Erell E.** (1994) Summer Cooling and Winter Heating With a Single System. Business Seminar on Advanced Heating and Cooling Technologies for Buildings in the Mediterranean Countries, Nicosia, Cyprus, June 21-22, 1994.
2. **Erell E.** (1998) Energy in buildings: selected research projects. Innovations in Energy – Business Opportunities for Industry and Building Construction, Tel Aviv, July 28, 1998.
3. **Erell E.** and Etzion Y. (2001) Progress in Development of a Reversible, Solar-screen Glazing System (SOLVENT). Building Energy Research, Joint FP5 ENERGIE Info-day and ENERBUILD RTD Project Meeting, Malmo, Sweden, September 6-7, 2001.
4. **Erell E.** and Etzion Y. (2002) Implementation of the SOLVENT glazing system: A user-friendly design tool. ENERBUILD RTD project meeting, Lyon, France, October 22-23, 2002.
5. **Erell E.** (2003) Legislation vs. innovation: Are they compatible? A case study: The design of the Blaustein International Center for Desert Studies Building. Symposium on Energy-saving Legislation in Buildings, EU and Israel, Tel Aviv, September 15 2003.
6. **Erell E.** and Etzion Y. (2003) SOLVENT: Development of a reversible, solar-screen glazing system. Symposium on Energy-saving Legislation in Buildings, EU and Israel, Tel Aviv, September 15 2003.
7. **Erell E.** (2003) Cooling through the roof. Symposium on Natural Cooling by Design, London, UK, March 21-22, 2003.
8. **Erell E.** and Meir, I. (2004) Learning from solar buildings at Sde Boqer. Workshop on Solar Thermal Energy, Tel Aviv, May 24 2004.
9. **Erell E.** (2005) "Principles of sustainable building in deserts". Green Building Workshop, Tel Aviv, Israel, September 4-6 2005.
10. **Erell E.** (2007) "Israel Standard 5282 – Energy rating of buildings". MED-ENEC Capacity Building Workshop: "Political and Economic Framework Conditions for Energy Efficiency in and Renewable Energies in Buildings", Cairo, Egypt, May 22-23 2007.
11. **Erell E.** (2008) "Principles of urban design and microclimate in modern desert cities". MED-ENEC Capacity Building Workshop: "Energy Efficient Buildings and Green Cities: Success Factors and Policy/Planning Tools", Aqaba, Jordan, April 16-17 2008.
12. **Erell E.** (2008) "Passive or hybrid downdraft cooling (PHDC) at the Blaustein Institutes for Desert Research administration building, Sde Boqer, Israel". Symposium on **'**Passive Hybrid Evaporative Cooling in Buildings: Project PHDC' , Instituto de Ciencias de la Construcción Eduardo Torroja, Madrid, Spain, November 13, 2008.
13. **Erell E.** (2010) "Understanding Urban Microclimate and its implications for planning and design". Israel Meteorological Service: International Workshop on the Application of Meteorological Information to Green Energy and Green Building. Midreshet Ben Gurion, November 24, 2010.
14. **Erell E.** (2011) "Getting the most 'bang for the bucket': The role of vegetation in microclimatic design of dry cities". The Jewish National Fund (KKL) and Monash University, Melbourne: Workshop on Creating Water Sensitive Cities in Israel. Ramat Gan, Israel, April 4-5 2011.

15. **Erell E.** (2015). "Urban microclimate and equity in planning and design". Radcliffe Institute for Advanced Study, Harvard University: seminar on Climate Justice: Understanding Disparities in Climate-Health Outcomes and Fostering Equity in Planning and Design, Cambridge, MA, January 20-21 2015.

(d) Invited seminar presentations at universities and institutions

International:

1. **Erell E.** (1999). The Effect of buildings on the deposition of dust in a desert city. Research Symposium '99, The University of Adelaide, School of Architecture, Landscape Architecture and Urban Planning.
2. **Erell E.** (2004). Predicting Air Temperature in City Streets on the Basis of Measured Reference Data. The University of Adelaide, School of Architecture, Landscape Architecture and Urban Planning.
3. **Erell E.** (2010). Net Zero Energy Footprint: Buildings Shaped by Climate - Modern Desert Architecture in Israel. Public lecture, University of Oklahoma, USA.
4. **Erell E.** (2010). Weather data – are users getting what they really need? Simulating urban microclimate for building design. The School of Meteorology and The National Weather Center, Univresity of Oklahoma, USA.
5. **Erell E.** (2010). In pursuit of the net zero energy house: Lessons learned from architectural design and urban planning in the Negev Desert. Dream Course lecture at the School of Aerospace and Mechanical Engineering, University of Oklahoma.
6. **Erell E.** (2011). Application of urban climate modelling in building energy simulation and outdoor thermal comfort studies. Portland State University, Mechanical and Materials Engineering Seminar, Turbulence and Wind Energy Series.
7. **Erell E.** (2012). In Pursuit of the Net Zero Energy House: Lessons learned from architectural design and urban planning in the Negev Desert. Portland State University, Mechanical and Materials Engineering Seminar Series.
8. **Erell E.** (2013). Implementing Urban Climatology in the 'Real World': Theory and Practice. National Centre for Meteorological Research (CNRM), Toulouse, France, Nov. 7 2013.
9. **Erell E.** (2014). Urban microclimate and urban planning: The difficulties faced by architects, planners and students of arch in applying the knowledge of climatologists. Graduate School of Design, Harvard University, Oct. 7 2014.
10. **Erell E.** (2014). Urban microclimate and urban design: the effects of landscaping and vegetation on pedestrian thermal comfort. Karlsruhe Institute of Technology, Germany, as part of seminar series Karlsruher Vortragsreihe - Forschung und Praxis in Wasserbau und Wasserwirtschaft, jointly organized by the Institute for Hydromechanics and Institute for Water and River Basin Management, Oct. 9 2014.
11. **Erell E.** (2016). How important is urban air temperature? The annual Malcolm L. Comeaux Lecture, School of Geographical Sciances and Urban Planning, Arizona State University, March 18 2016.

In Israel:

1. **Erell E.** (2006). CAT: A model for predicting air temperature in city streets from measured reference data. Tel Aviv University, Dept. of Geography.

2. **Erell E.** (2008). Predicting air temperature in city streets from measured reference data in the region. Ben Gurion University, Dept. of Geography and Environmental Development.
3. **Erell E.** (2010). Urban microclimate and urban planning: The difficulties faced by architects, planners and students of architecture in applying the knowledge and insights of climatologists. Technion - Israel Institute of Technology, Faculty of Architecture and Town Planning: The fourth seminar on teaching architecture as a means of promoting sustainability.
4. **Erell E.** (2014). Impact of Increasing the Height of Tel Aviv Buildings on Pedestrian Comfort and Building Energy Efficiency. Ben Gurion University, Dept. of Geography and Environmental Development.
5. **Erell E.** (2015). How important is urban air temperature? Ben Gurion University, Alexandre Yersin Department of Solar Energy and Environmental Physics seminar series.

RESEARCH GRANTS

(All grants are from competitive calls for proposals, except where indicated by '**')

2016 Israel Ministry for National Infrastructures, Energy and Water: **Erell E.** (PI) and Kloog, I. (PI): “The potential for PV installation in residential buildings in dense urban areas”, 36 months, NIS 320,971.

2015 Jewish National Fund: **Erell E.** (PI): “Exploring urban design solutions for water sensitive innovations”, 48 months, NIS 755,780. **

(The project is part of consortium for “Creating Water Sensitive Cities in Israel”, with partners in several other universities in Israel.)

2013 Israel Ministry for Energy and Water: **Erell E.** (PI): “Energy Conservation in Residential Buildings – a design manual”, 12 months, NIS 278,429.

2013 Israel Ministry for Energy and Water: **Erell E.** (PI) and Boris Portnov (PI): “Promoting Energy-Saving Behaviour in Residential Buildings in Israel”, 36 months, NIS 297,820.

2011 Israel Ministry for Environmental Protection: Garb Y. (PI), Pearlmutter D. (PI), **Erell E.** (PI) and Nir Becker (PI): “Survey of green building incentives and their adaptation to Israel”, 36 months, NIS 299,805.

2009 Israel Ministry for National Infrastructures: **Erell E.** (PI) and Nir Becker (PI): “Retrofit of Residential Buildings in Israel for Energy Conservation”, 36 months, NIS 268,863.

2008 EU: **Erell E.** (subcontractor) "Promotion and Dissemination of Passive and Hybrid Down-draught Cooling in buildings (PHDC)", 24 months, Euro 9,500. **

2006 Israel Ministry for National Infrastructures: **Erell E.** (PI): “Daylighting for visual comfort and energy conservation in offices in sunny locations”, 36 months, NIS 379,618.

2004 Israel Ministry for National Infrastructures: Etzion Y. (PI), Meir I. (PI), **Erell E.** (PI) and Pearlmutter D. (PI): "Design Manual for Bio-Climatic Construction", 24 months, NIS322,000.

2001 Israel Ministry of Science, Culture and Sport: Etzion Y. (PI), Tambour Y.(PI) **Erell E.** (PI) and Pearlmutter D. (PI): "Multi Stage Down Draft Evaporative Cooling Tower for Cooling Large Enclosed and Semi-Enclosed Spaces", 36 months, DM294,122.

2001 EU – DG XVII, ALTENER II Energy Program: **Erell, E.** (PI): "Roof Designs for Natural Cooling: Design Handbook and Applicability Maps." Subcontractor to Architectural Association Graduate School, London, 24 months, Euro17,040.

2000 Israel Foundations Trustees: Portnov B.(PI) and **Erell E.** (PI) "Interregional Inequalities in Israel in 1948-95: Convergence or Divergence", 24 months, $23,600.

1999 EU – DG XII: **Erell E.**(PI) and Etzion Y.(PI): "SOLVENT – a ventilated solar screen window". Primary contractor and project coordinator, 30 months, Euro 128,000 (total value of project involving research teams from 6 institutions - Euro 561,000).

1999 Mifal Ha'Pais – Pinhas Sapir Fund - Meir, I. A., **Erell, E.** and Portnov, B. "Tracking Post-Occupancy Changes in Neighborhoods and Buildings: Development of a Computerized System for Municipal Use". NIS 86,940.

1998 Israel Ministry of the Environment: Etzion Y.(PI) and **Erell E.**(PI) "Mapping the potential for "green construction" in Israel", 24 months, NIS150,000.

1997 Israel Ministry of Energy and Infrastructure: Etzion Y. (PI), **Erell E.**, Pearlmutter D., Meir, I. "Monitoring Climatic Aspects of the Design and Construction of the New Town of Modi'in", 6 months, NIS 70,000. **

1996 EU - DG XII, under the Joule-Thermie Program: Etzion Y. (PI) and **Erell E.** (PI) (with teams from 6 other research institutions): ROOSOL - Roof Solutions for natural cooling, 26 months, ECU 134,560.

1990 The Joe Allon Regional Study Center: **Erell E.**(PI) "The Effect of Buildings on the Deposition of Dust in a Desert City", 12 months - $1000. **

1989 Israel Ministry of Energy and Infrastructure: Etzion Y.(PI), **Erell E.**, Pearlmutter D. "Monitoring Temperatures and Backup Heating Requirements in an Earth-Bermed Building in Sde-Boqer", 18 months - $35,000.

SYNOPSIS OF RESEARCH
(including reference to publications and grants in above lists)

Architecture is usually perceived as an art or a profession, rather than as academic field. There is little research in architecture as an academic discipline per se, and research in architecture generally seeks to apply relevant insights from other fields. Architecture also differs from other disciplines in that expertise cannot be applied in isolation: Successful designs for the built environment cannot be achieved through focused excellence in any one aspect alone. My research over the years reflects this unique characteristic of architecture: it has addressed many facets of **energy in the built environment**, but with few exceptions has dealt with

flows of energy at different scales, and how they affect the spaces we inhabit, both indoors and outside.

My research career began with work on passive heating, and, especially, passive cooling of buildings. Roofs are a primary source of undesirable energy absorption, leading to overheating of buildings in hot climates. Current techniques try to minimize the problem by insulation. However, the roof is also the best place for installing various cooling systems. Experiments were carried out for nearly ten years in a project aimed at cooling buildings by **nocturnal long-wave radiation**. A system was developed which consists of a shallow roof pond, insulated from the environment with flat plate collectors exposed to the sky, through which the water circulated at night is cooled by long-wave radiation and convection. Since the temperature of the radiator was close to that of the water in the roof pond and warmer than that of the ambient dry bulb temperature for at least part of the time, fairly high cooling rates could be maintained throughout the night. The system was installed and monitored in a building of approx. 75 m^2. It provided a mean nightly cooling rate of 80-100 W m^{-2} of radiator (Erell and Etzion, 1992). Preliminary investigations indicated that the radiative cooling system using roof ponds, with no physical modifications, could supply a significant portion of winter heating requirements in areas where summers are hot, yet winters cold enough to require heating systems (Etzion and Erell, 1996). The system's heat output averaged 370 W m^{-2} of collector under cool, sunny conditions, though on windy, overcast days the system was inoperative. Heat output is determined primarily by the intensity of solar radiation on the collectors, wind speed, and temperature difference between the water in the roof pond and the ambient air. Further modifications to the radiative cooling system (Etzion and Erell, 1999; Erell and Etzion, 2000), and an innovative evaporative cooling system, were tested within the framework of the ROOFSOL (Roof Solutions for Natural Cooling) project, funded by the European Union and carried out in collaboration with researchers from six other research institutions in Europe. This project was aimed at developing and testing roof systems suitable for use in Mediterranean or desert climates, which use natural cooling techniques to extract unwanted heat from buildings.

In contemporary architecture in hot dry locations, **evaporative cooling** of interiors is usually carried out with mechanical equipment. In order to demonstrate the application of evaporative cooling to exterior or large semi-enclosed spaces, a down-draft evaporative cooling tower was designed and integrated it into a 500 m^2 glazed courtyard in a multi-use building complex at the Sde-Boqer Campus (Etzion *et al.*, 1997). Performance analysis of this tower showed dry bulb temperature reductions of up to 14^{o}C, a peak cooling output of over 100 kW with a cooling efficiency of 85-90% during all hours of operation, and a water consumption of 1-2 m^3/day. Subsequently research was carried out on the design a wind capture mechanism to increase the air supply and reduce reliance on mechanical circulation (Pearlmutter *et al.*, 1996). The cool tower was subsequently modified to accommodate two inlets, to allow greater efficiency of water use when cooling semi-enclosed spaces (Erell *et al*, 2008; Pearlmutter *et al*, 2008).

It soon became apparent to me that large glazed areas incorporated for passive heating also affected **visual comfort**. This eventually led to the development of a a novel glazing system (Etzion and Erell, 2000) that provides improved visual and thermal performance in buildings with large glazed areas. The glazing system is based on the concept of converting short-wave solar radiation to convective heat and long wave radiation, which in winter is used for heating the interior space behind the opening, and in summer is exhausted outwards. Development of the concept was supported by a grant from the EU in the SOLVENT project (Erell *et al*, 2003). Further study, funded by the Israel Ministry of Energy, was intiated to improve energy efficiency and increase productivity in office buildings by making better use of the potential

for daylighting. Artificial lighting comprises approximately one third of energy consumed in modern office buildings. In sunny regions such as Israel, substantial savings may be realized by daylighting – but only if this is done appropriately. However, in Israel most offices employ artificial lighting extensively even when natural daylight can provide adequate illumination in work areas. Simply installing large glazed areas is not enough: Intense glare and high mean radiant temperatures often result in windows being blocked off entirely. In such cases, large glazed areas cause an increase in cooling loads without providing the benefits of daylighting. This study focuses on glare in working areas near the windows, and its effect on the occupants of the office. The effect of various internal and external shading devices and advanced control mechanisms were observed in a field survey and in controlled experiments in a laboratory at Sde Boqer. An empirical index to predict the response of occupants to the changing visual environment was tested and calibrated in the highly luminous conditions often found in Israel (Erell and Kaftan, 2013; Erell et al, 2014).

The energy performance of buildings is affected by their exposure to the environment. In cities, the unique microclimate of built-up areas may have a substantial effect on the behaviour of building systems. This aspect of design has only recently begun to receive the attention of researchers, but practical implementation is still in its infancy. My research first focused on the **microclimate of an urban street canyon**, culminating in a complete model of all energy exchanges in such spaces which allows detailed predictions of temperature, humidity and airflow on the basis of measured data from a reference weather station in the region (Erell & Williamson, 2006; 2007). This model was later extended to allow partial description of the effects of moisture and vegetation (Erell et al 2009, 2010), and to examine the effect of different landscaping strategies in desert areas on microclimate and thermal comfort (Shashua-Bar et al, 2009; 2011).

Architects do not often consult acamic publications in peer-reviewed journals. To reach this audience and to promote the dissemination of my research results beyond the narrow research community, I have collaborated or led in the publication of several books addressed to both the professional design community and to students. My work on roof-mounted passive cooling, especially with respect to radiative cooling, comprises a substantial part of a book funded by the EU within the ALTENER program, titled “Roof Designs for Natural Cooling: Design Handbook and Applicability Maps” (Yannas *et al*., 2005). I co-authored a design manual in Hebrew on green building, funded by the Israel Ministry for National Infrastructures (Pearlmutter et al, 2010), and am currently nearing completion of a comprehensive guide to energy conservation in residential buildings, also funded by the same Ministry. A book titled Urban Microclimate – Designing the Spaces between Buildings (Erell *et al*, 2010) seeks to address the gap between research and application.

PRESENT ACADEMIC ACTIVITIES

(a) Research in progress

Exploring Urban Design Solutions for Water Sensitive Innovations

To achieve substantial environmental benefits from storm water runoff in Israeli cities, solutions must be found to adapt the infrastructure of existing urban areas. When new neighbourhoods are planned, a hierarchy of flow paths can be designed to link catchment areas at different physical scales to collection areas where the water may be stored (as groundwater by aquifer recharge or alternatively as above ground storage). In existing built-up areas, such pathways may not be easily discernible, and there may be no suitable collection

areas at the appropriate scale. This project will seek to promote water-sensitive planning by developing and demonstrating a methodology that addresses two questions: a) How can an integrated and comprehensive network of water pathways, collection areas and storage be identified and mapped onto an existing urban area, incorporating novel storm water harvesting and treatment systems (e.g. biofilters, modular systems) and adjacent aquifer recharge measures? b) What are the most effective patterns of implementing water sensitive urban design (WSUD) elements in existing areas in terms of improvement of pedestrian thermal comfort and reduction of energy demand of buildings? These questions will be explored in the context of dense urban development, characterizing Israeli cities where exposed land is relatively scarce and green open space is limited. GIS will be used to analyze typical urban typologies in conjunction with existing infrastructure and sub-surface hydrology to demonstrate how storm water harvesting may be applied to a selected urban location in a city on the coastal plain. The effect on microclimate of different patterns of vegetation associated with storm water harvesting and treatment elements, as appropriate to the respective urban typologies, will then be studied by means of computer simulation. The outputs of this simulation may then be used to generate detailed data for computer modelling of pedestrian thermal comfort and building energy performance.

Promoting Energy-Saving Behaviour in Residential Buildings in Israel (with B. Portnov, University of Haifa).

Residential buildings in Israel contribute to some 30% of annual domestic electricity consumption, with seasonal increases of 8 % in winter and about 35% in summer being attributed to space heating and air conditioning, respectively. The conventional energy-saving paradigm suggests that if building envelopes are constructed to a higher standard, following precise technical guidelines laid out in standards, buildings will consume less energy. This assumption, which ignores the role (and responsibility) of building' residents, is likely to be misleading. In particular, over-confidence in building standards and regulations means that other, more effective measures of achieving energy-saving policy objectives might be left unexplored. We hypothesize that substantial energy savings may be achieved by modifying the behavior of home occupants – but that such savings are contingent on appropriate measures to educate and motivate them.

Survey of green building incentives and their adaptation to Israel (with D. Pearlmutter and Y. Garb).

It is widely recognized that buildings need to be constructed and retrofitted in accordance with green criteria, and a not a month passes without the introduction of new incentives for encouraging these in countries worldwide. Israel, where green building approaches are in their infancy and are still scarcely implemented, is seeking to benefit from international experience as a source of ideas and models, and as a kind of "virtual laboratory" for intended measures.

We propose contributing to this effort through a critical survey and analysis of international experience that focuses on these questions: (1) what are the range of measures that have been attempted to incentivize green building? (2) what works best abroad, and what has failed? (3) what are the circumstances that promoted or hindered the policies? (4) what should the highest-leverage targets for Israeli green building efforts be—that is, what are the most resource-intensive aspects of existing and new buildings, and which are most amenable to changes? (5) what are the unique aspects of the Israeli policy, economic, and construction-supply landscape (6) which measures from abroad can be adopted and adapted to Israel's unique circumstances? (7) and what must be done to facilitate and support the adaptation process?

Retrofit of Residential Buildings in Israel for Energy Conservation (with Becker, N., *Tel Hai College)*

The design features of energy-efficient residential buildings in Israel are well-known, for all climate regions. However, even if all construction were to be carried out according to best practice, many years would pass before the improvement in building construction would be translated into a substantial reduction in the requirement for energy at a national level, because new buildings in any given year comprise only a tiny proportion of the building stock. To achieve a substantial saving in energy, a large proportion of existing buildings must be renovated, too. The aim of the research, funded by the Israel Ministry of National Infrastructure, is to investigate the feasibility of energy conservation through the retrofit of existing residential buildings. The significance of this study is that it brings together expertise from diverse fields to create added value, both in terms of scientific research and in framing future policy actions.

The research methodology comprises three levels:

a. Analysis of the economic benefits to the individual of refurbishing an existing building (Friedman et al, 2014)
b. Examination of the social and environmental aspects of building retrofit, and their effects on the willingness of the individual to pay for the renovation
c. A study of the means for promoting energy retrofit of existing residential buildings, and drafting a proposal for government policy in the field

ADDITIONAL INFORMATION

(a) Experimental architecture and design projects

2000-2009 Etzion Y., Meir I. and **Erell E.**, “Detailed town plan, Ramot Neighborhood, Be’er Sheva”, under contract from the Ministry of Housing, Israel.

1994-1999 Etzion Y., **Erell E.**, Meir I.A., Pearlmutter D., Binder M. and Belaish M., "Jewish National Fund Youth Camp at Beer Ora", under contract from the Jewish National Fund (not built).

1992-1994 Etzion Y., **Erell E.**, Arbel A., Belaish M., Meir I., Pearlmutter D., "Energy Conserving Apartment House in Jaffa" - experimental design and demonstration project, under contract from Israel Ministry of Energy and Infrastructure (not built).

1991-1992 Meir I., Arbel A., Belaish M., **Erell E.**, Pearlmutter D. "Kibbutz Samar - library".

1991-1992 **Erell E.**, Pearlmutter D., Meir I., Arbel A. "The Miriam and Ed Vickar Demonstration Center for Reclamation of the Desert at Sde-Boqer".

1988-1990 Etzion Y., **Erell E.**, Pearlmutter D., Meir, I., Belaish M. "A Solar Nursery School”, Netivot, under contract from the Ministry of Housing, Israel.

1989-1990 Etzion Y., **Erell E.**, Meir I., Pearlmutter D., "The Jacob Blaustein International Center for Desert Studies Building", Sde-Boqer.

1987-1988 Weingarten D., Etzion Y., **Erell E.**, "The Zuckerman Community Center", Sde-Boqer.