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Evaluation of the Appropriate Land-Surface Resolution for Climate Models

FINAL REPORT

by:

Roni Avissar
Professor and Chair
Department of Environmental Sciences
Cook College, Rutgers University
14 College Farm Road
New Brunswick, NJ 08901-8551
Tel: 732 932-9520
Fax: 732 932-3562
E-mail: avissar@gaia.rutgers.edu

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5.2 Articles in Peer-Reviewed Books and Proceedings

Avissar, R., 1992. Bridging the Gap Between Microscale Land-Surface Processes and Land-Atmosphere Interactions at the Scale of General Circulation Models. In *The World at Risk: Natural Hazards and Climate Change*, R.L. Bras, Ed., American Institute of Physics (AIP) Conference Proceedings 277, pp. 156-167.

Avissar, R., 1993. The relevance of geographic information systems of landscape characteristics for hydroclimatological models. *Proc. HydroGIS 93*, International Association of Hydrological Sciences (IAHS), Baden (Vienna), Austria, April 19-22, 1993.

5.3 Other Publications¹

Avissar, R., 1992. Scaling up leaf stomatal conductance for the parameterization of land surface in hydrometeorological models. *EOS, Trans. Amer. Geophys. Union*, **73(14)**:109.

Avissar, R., 1992. Potential Effects of Vegetation on the Thermal Environment of Urban Areas. *Proc. Conference on Urban Thermal Environment*, Tohwa University, Fukuoka, Japan, September 7-10, 1992.

Avissar, R., 1993. Scaling Issues in Land-Atmosphere Interactions. *Proc. Workshop on Scale Issues in Hydrological/Environmental Modelling*, Robertson, New South Wales, Australia, November 30 - December 2, 1993.

Avissar, R. and F. Chen, 1993. A method to bridge the gap between microscale land-surface processes and land-atmosphere interactions at regional and continental scales. *Abstracts of the International Association of Meteorology and Atmospheric Physics (IAMAP) and International Association of Hydrological Sciences (IAHS) joint meeting*, Yokohama, Japan, July 11-23, 1993.

Avissar, R., D.C. Collins, and B. Li, 1993. Which Land-Surface Characteristics are Important for Atmospheric Models: Implications to Observing Systems. *Abstracts of the International*

¹A total of 31 presentations were made at various conferences, workshops, symposiums, and seminars during this award period, in which the research conducted under this project was described and discussed. Several presentations were invited as "keynote speaker".

Association of Meteorology and Atmospheric Physics (IAMAP) and International Association of Hydrological Sciences (IAHS) joint meeting, Yokohama, Japan, July 11-23, 1993.

Avissar, R., F. Chen, B. Li, B.H Lynn, T. Schmidt, and F. Zeng, 1994. Using RAMS to Develop Parameterizations of Subgrid-Scales Processes in GCMs. *Proc. Second RAMS Users Workshop*, Fort Collins, Colorado, February 15-17, 1994.

5.4 Theses Supported by this Award

Collins, D.C., M.S. Thesis: "*An Evaluation with the Fourier Amplitude Sensitivity Test (FAST) of Which Land-Surface Parameters are of Greatest Importance for Atmospheric Models*", 1992.

Li, B., M.S. Thesis: "*The Impact of Spatial Variability of Land-Surface Characteristics on Land-Surface Energy Fluxes*", 1993.

Schmidt, Tatyana, Ph.D. Thesis: "*A Study of Turbulence over Heterogeneous Landscape with a Large Eddy Simulation Model*", 1997.

Zeng, Fanrong, M.S. Thesis: "*A Large-Eddy Simulation Study of the Convective Boundary Layer in Complex Terrain: Implications for Subgrid-Scale Parameterizations in GCMs*", 1994.

6 Appendices

Reprint

Appendix 1: Avissar, R., 1995. Scaling of land-atmosphere interactions: An atmospheric modelling perspective. *Hydrol. Processes*, **9**:679-695 (This paper was chosen for the "10th Anniversary Issue" of the journal and reprinted on pages 3-19 of this special issue).

Reprint

Appendix 2: Avissar, R., 1996. Potential effects of vegetation on the thermal environment of urban areas. *Atmos. Environ.*, **30**:437-448.

Reprint

Appendix 3: Avissar, R., 1995. Recent Advances in the Representation of Land-Atmosphere Interactions in Global Climate Models. *Rev. Geophys.*, **33**:1005-1010 (Supplement, U.S.

National Report to International Union of Geodesy and Geophysics) Also available on the Web at: <http://www.agu.org/revgeophys>.

Reprint

Appendix 4: Collins, D.C., and R. Avissar, 1994. An evaluation with the Fourier Amplitude Sensitivity Test (FAST) of which land-surface parameters are of greatest importance for atmospheric modelling. *J. Climate*, 7:681-703.

Reprint

Appendix 5: Li, B., and R. Avissar, 1994. The impact of spatial variability of land-surface characteristics on land-surface heat fluxes. *J. Climate*, 7:527-537.

Reprint

Appendix 6: Lynn, B.H., D. Rind, and R. Avissar, 1995. The importance of subgrid-scale mesoscale circulations generated by landscape heterogeneity in general circulation models (GCMs). *J. Climate*, 8:191-205.

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