# M.R. Raupach: Publications

**Refereed or Invited Publications:**

1. Raupach, M.R. (1976). Atmospheric flux measurement by eddy correlation. Ph.D. Thesis, Flinders University, South Australia. (Reprinted as FIAMS Research Report No. 27, Flinders University, South Australia). (Raupach, 1976a)
2. Raupach, M.R. (1978). Infrared fluctuation hygrometry in the atmospheric surface layer. *Quart. J. Roy. Meteorol. Soc.* 104, 309-322. (Raupach, 1978a)
3. Raupach, M.R. (1979). Anomalies in flux-gradient relationships over forest. *Boundary-Layer Meteorol.* 16, 467-486. [CEM 424] (Raupach, 1979)
4. Raupach, M.R., Thom, A.S. and Edwards, I. (1980). A wind tunnel study turbulent flow close to regularly arrayed rough surfaces. *Boundary-Layer Meteorol.* **18**, 373-397. [CEM 436](Raupach *et al.*, 1980b)
5. Raupach, M.R. and Thom, A.S. (1981). Turbulence in and above plant canopies. *Ann. Rev. Fluid Mech*. **13**, 97-129. [CEM 451](Raupach *et al.*, 1981)
6. Raupach, M.R. (1981). Conditional statistics of Reynolds stress in rough-wall and smooth-wall turbulent boundary layers. *J. Fluid Mech*. 108, 363-382. [CEM 460](Raupach, 1981)
7. Raupach, M.R. and Shaw, R.H. (1982). Averaging procedures for flow within vegetation canopies. *Boundary-Layer Meteorol*. 22, 79-90. [CEM 469] (Raupach *et al.*, 1982)
8. Legg, B.J. and Raupach, M.R. (1982). Markov-chain simulation of particle dispersion in inhomogeneous flows: the mean drift velocity induced by a gradient in Eulerian velocity variance. *Boundary-Layer Meteorol*. 24, 3-13. [CEM 501] (Legg *et al.*, 1982)
9. Raupach, M.R. and Legg, B.J. (1983). Turbulent dispersion from an elevated line source: measurements of wind-concentration moments and budgets. *J. Fluid Mech*. 136, 111-137. [CEM 519] (Raupach *et al.*, 1983)
10. Raupach, M.R. (1983). Near-field dispersion from instantaneous sources in the atmospheric surface layer. *Boundary-Layer Meteorol*. **27**, 105-113. [CEM 529](Raupach, 1983b)
11. Banks, H.J., Longstaff, R.A. Raupach, M.R. and Finnigan, J.J. (1983). Wind-induced pressure distribution on a large grain storage shed: prediction of wind-driven ventilation rates. *J. Stored Products Res*. 19, 181-188. [CEM 513] (Banks *et al.*, 1983)
12. Raupach, M.R. and Legg, B.J. (1984). The uses and limitations of flux-gradient relationships in micrometeorology. *Agric. Water Management* 8, 119-131. [CEM 494] (Raupach *et al.*, 1984)
13. Legg, B.J., Coppin, P.A. and Raupach, M.R. (1984). A three-hot-wire anemometer for measuring two velocity components in high-intensity turbulent boundary layers. *J. Phys. E* 17, 970-976. [CEM 548] (Legg *et al.*, 1984)
14. Raupach, M.R., Coppin, P.A. and Legg, B.J. (1986). Experiments on scalar dispersion within a plant canopy, part I: the turbulence structure. *Boundary-Layer Meteorol*. **35**, 21-52. [CEM 574](Raupach *et al.*, 1986b)
15. Coppin, P.A., Raupach, M.R. and Legg, B.J. (1986). Experiments on scalar dispersion within a plant canopy, part II: an elevated plane source. *Boundary-Layer Meteorol*. **35**, 167-191. [CEM 575](Coppin *et al.*, 1986)
16. Legg, B.J., Raupach, M.R. and Coppin, P.A. (1986). Experiments on scalar dispersion within a plant canopy, part III: an elevated line source. *Boundary-Layer Meteorol*. **35**, 277-302. [CEM 583](Legg *et al.*, 1986)
17. Finnigan, J.J. and Raupach, M.R. (1987). Transfer processes in plant canopies in relation to stomatal characteristics. In: *Stomatal Function* (Eds. E. Zeiger, G.D. Farquhar and I.R. Cowan). (Stanford University Press, Stanford, CA, USA). p. 385-429. [CEM 537](Finnigan *et al.*, 1987)
18. Raupach, M.R. (1987). A Lagrangian analysis of scalar transfer in vegetation canopies. *Quart. J. Roy. Meteorol. Soc*. 113, 107-120. [CEM 591](Raupach, 1987a)

19. Raupach, M.R. (1988). Canopy transport processes. In: *Flow and transport in the natural environment: advances and applications* (Eds. W.L. Steffen and O.T. Denmead). (Springer-Verlag, Berlin). p. 95-127. [CEM 652](Raupach, 1988a)
20. Raupach, M.R. and Finnigan, J.J. (1988). Single-layer evapotranspiration models are incorrect but useful, whereas multilayer models are correct but useless: discuss*. Aust. J. Plant Physiol*. **15**, 715-726. [CEM 674](Raupach *et al.*, 1988)
21. Raupach, M.R. (1989). Turbulent transfer in plant canopies. In: *Plant canopies - their growth, form and function* (Eds. G. Russell, B. Marshall and P.G. Jarvis). (Cambridge University Press, Cambridge, U.K.). p. 41-61. [CEM 587](Raupach, 1989e)
22. Raupach, M.R. (1989). A practical Lagrangian method for relating scalar concentrations to source distributions in vegetation canopies. *Quart. J. Roy. Meteorol. Soc*. **115**, 609-632. [CEM 668](Raupach, 1989a)
23. Raupach, M.R. (1989). Applying Lagrangian fluid mechanics to infer scalar source distributions from concentration profiles in plant canopies. *Agric. Forest Meteorol*. **47**, 85-108. [CEM 676](Raupach, 1989b)
24. Raupach, M.R. (1989). Stand overstorey processes. *Phil. Trans. Roy. Soc. London B* **324**, 175-190. [CEM 660](Raupach, 1989d)
25. Raupach, M.R., Finnigan, J.J. and Brunet, Y. (1989). Coherent eddies in vegetation canopies. *Proc. Fourth Australasian Conference on Heat and Mass Transfer*, Christchurch, New Zealand, 9-12 May 1989. p. 75-90. [CEM 685] (Raupach *et al.*, 1989a)
26. Finnigan, J.J., Raupach, M.R., Bradley, E.F. and Aldis, G.K. (1990). A wind tunnel study of turbulent flow over a two-dimensional ridge. *Boundary-Layer Meteorol*. **50**, 277-317. [CEM 690](Finnigan *et al.*, 1990)
27. Raupach, M.R. and Leys, J.F. (1990). Aerodynamics of a portable wind erosion tunnel for measuring soil erodibility by wind. *Aust. J. Soil Res*. **28**, 177-191. [CEM 698](Raupach *et al.*, 1990)
28. Raupach, M.R. (1990). Similarity analysis of the interaction of bushfire plumes with ambient winds. *Mathl. Comput. Modelling* **13**, 113-121. [CEM 700](Raupach, 1990)
29. Raupach, M.R., Antonia, R.A. and Rajagopalan, S. (1991). Rough-wall turbulent boundary layers. *Appl. Mech. Revs*. **44**, 1-25. [CEM 713](Raupach *et al.*, 1991)
30. Raupach, M.R. (1991). Vegetation-atmosphere interaction in homogeneous and heterogeneous terrain: some implications of mixed-layer dynamics. *Vegetatio* **91**, 105-120. [CEM 716](Raupach, 1991c)
31. Raupach, M.R. (1991). Saltation layers, vegetation canopies and roughness lengths. *Acta Mechanica* (suppl) 1, 83-96. [CEM 736] (Raupach, 1991b)
32. Malcolm, L.P. and Raupach, M.R. (1991). Measurements in an air settling tube of the terminal velocity distribution of soil material. *J. Geophys. Res*. **96**, 15275-15286. [CEM 744](Malcolm *et al.*, 1991)
33. Leys, J.F. and Raupach, M.R. (1991). Soil flux measurements using a portable wind erosion tunnel. *Aust. J. Soil Res*. **29**, 533-552. [CEM 745](Leys *et al.*, 1991)
34. Lenschow, D.H. and Raupach, M.R. (1991). The attenuation of fluctuations in scalar concentrations through sampling tubes. *J. Geophys. Res*. **96**, 15259-15268. [CEM 751](Lenschow *et al.*, 1991)
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36. Raupach, M.R., Weng, W.S., Carruthers, D.J. and Hunt, J.C.R. (1992). Temperature and humidity fields and fluxes over low hills. *Quart. J. Roy. Meteorol. Soc*. **118**, 191-225. [CEM 761](Raupach *et al.*, 1992b)
37. Shao, Y. and Raupach, M.R. (1992). The overshoot and equilibration of saltation. *J. Geophys. Res*. **97**, 20559-20564. [CEM 788](Shao *et al.*, 1992)

38. Raupach, M.R. (1992). Drag and drag partition on rough surfaces. *Boundary-Layer Meteorol*. **60**, 375-395. [CEM 779]. [Corrigendum: *Boundary-Layer Meteorol*. **76**, 303-304 (1995)].(Raupach, 1992a)
39. Raupach, M.R., Denmead, O.T. and Dunin, F.X. (1992). Challenges in linking atmospheric CO2 concentrations to fluxes at local and regional scales. *Aust. J. Bot*. **40**, 697-716. [CEM 785](Raupach *et al.*, 1992a)
40. Denmead, O.T. and Raupach, M.R. (1993). Methods for measuring atmospheric gas transport in agricultural and forest systems. In: *Agricultural ecosystem effects on trace gases and global climate change* (Eds. D.E. Rolston, L.A. Harper, A.R. Mosier, and J.M. Duxbury). (ASA Special Publication no. 55). (American Society of Agronomy, Madison). p. 19-43. [CEM 782] (Denmead *et al.*, 1993)
41. Raupach, M.R., Gillette, D.A. and Leys, J.F. (1993). The effect of roughness elements on wind erosion threshold. *J. Geophys. Res*. 98, 3023-3029. [CEM 787](Raupach *et al.*, 1993)
42. Shao, Y., Raupach, M.R. and Findlater, P.A. (1993). Effect of saltation bombardment on the entrainment of dust by wind. *J. Geophys. Res*. 98, 12719-12726. [CEM 802](Shao *et al.*, 1993b)
43. Antonia, R.A. and Raupach, M.R. (1993). Spectral scaling in a high Reynolds number laboratory boundary layer. *Boundary-Layer Meteorol*. 65, 289-306. [CEM 832](Antonia *et al.*, 1993)
44. Shao, Y., McTainsh, G.H., Leys, J.F. and Raupach, M.R. (1993). Efficiencies of sediment samplers for wind erosion measurement. *Aust. J. Soil Res*. 31, 519-532. [CEM 817](Shao *et al.*, 1993a)
45. Raupach, M.R. (1993). The averaging of surface flux densities in heterogeneous landscapes. In: *Exchange Processes at the Land Surface for a Range of Space and Time scales* (Eds. H.-J. Bolle, R.A. Feddes and J.D. Kalma). IAHS Publ. no. 212 (IAHS Press, Wallingford, UK). p. 343-355. [CEM 826](Raupach, 1993f)
46. Raupach, M.R. (1993). Dry deposition of gases and particles to vegetation. *Clean Air* 27, 200-203. [CEM 844] (Raupach, 1993b)
47. Brunet, Y., Finnigan, J.J. and Raupach, M.R. (1994). A wind tunnel study of air flow in waving wheat: single-point velocity statistics. *Boundary-Layer Meteorol*. **70**, 95-132. [CEM 838](Brunet *et al.*, 1994)
48. Raupach, M.R. (1994). Simplified expressions for vegetation roughness length and zero-plane displacement as functions of canopy height and area index. *Boundary-Layer Meteorol*. **71**, 211-216. [CEM 848]. (Raupach, 1994b)
49. [Corrigendum: *Boundary-Layer Meteorol*. 76, 303-304 (1995)]. (Raupach, 1995a)
50. Raupach, M.R., McTainsh, G.H. and Leys, J.F. (1994). Estimates of dust mass in recent major Australian dust storms. *Aust. J. Soil and Water Conserv*. 7(3), 20-24. [CEM 860] (Raupach *et al.*, 1994b)
51. Shao, Y., Raupach, M.R. and Short, D. (1994). Preliminary assessment of wind erosion patterns in the Murray-Darling Basin. *Aust. J. Soil and Water Conserv*. 7(3), 46-51. [CEM 861] (Shao *et al.*, 1994)
52. Kelliher, F.H., Leuning, R., Raupach, M.R. and Schulze, E.-D. (1995). Maximum conductances for evaporation from global vegetation types. *Agric. For. Meteorol*. **73**, 1-16. [CEM 853](Kelliher *et al.*, 1995)
53. Raupach, M.R. (1995). Vegetation-atmosphere interaction and surface conductance at leaf, canopy and regional scales. *Agric. For. Meteorol*. **73**, 151-179. [CEM 870](Raupach, 1995b)
54. Raupach, M.R. and Finnigan, J.J. (1995). Scale issues in boundary layer meteorology: surface energy balances in heterogeneous terrain. *Hydrol. Processes* **9**, 589-612. [CEM 869](Raupach *et al.*, 1995b)
55. Shaw, R.H., Brunet, Y., Finnigan, J.J. and Raupach, M.R. (1995). A wind tunnel study of air flow in waving wheat: two point velocity statistics. *Boundary-Layer Meteorol*. **76**, 349-376. [CEM 917](Shaw *et al.*, 1995a)

56. Raupach, M.R., Finnigan, J.J and Brunet, Y. (1996). Coherent eddies and turbulence in vegetation canopies: the mixing layer analogy. *Boundary-Layer Meteorol*. **78**, 351-382. [CEM 916](Raupach *et al.*, 1996b)
57. Judd, M.J., Raupach, M.R. and Finnigan, J.J. (1996). A wind tunnel study of turbulent flow around single and multiple windbreaks, Part I: velocity fields. *Boundary-Layer Meteorol*. **80**, 127-165. [CEM 915](Judd *et al.*, 1996)
58. Denmead, O.T., Raupach, M.R., Dunin, F.X., Cleugh, H.A. and Leuning, R. (1996). Boundary layer budgets for regional estimates of scalar fluxes. *Global Change Biol.* **2**, 255-264 [CEM 909](Denmead *et al.*, 1996)
59. McNaughton, K.G. and Raupach, M.R. (1996). Responses of the convective boundary layer and the surface energy balance to large-scale heterogeneity. In: *Scaling up in Hydrology using Remote Sensing* (Eds. J.B. Stewart, E.T. Engman, R.A. Feddes and Y. Kerr). (Wiley, Chichester). p. 171-182. [CEM 918] (McNaughton *et al.*, 1996)
60. Shao, Y., Raupach, M.R. and Leys, J.F. (1996). A model for predicting aeolian sand drift and dust emission on scales from paddock to region. *Aust. J. Soil Res*. 34, 309-342. [CEM 926](Shao *et al.*, 1996)
61. Raupach, M.R. and Finnigan, J.J. (1997). The influence of topography on meteorological variables and surface-atmosphere interactions. *J. Hydrol*. 190, 182-213. [CEM 894](Raupach *et al.*, 1997c)
62. Denmead, O.T., Leuning, R. and Raupach, M.R. (1997). Inferring sources and sinks of mass and energy in plant canopies through inverse Lagrangian analysis. *J. Agric. Meteorol*. 52, 441-444. (Denmead *et al.*, 1997c)
63. Denmead, O.T., Dunin, F.X., Leuning, R. and Raupach, M.R. (1997). Measuring and modelling soil evaporation in wheat crops. *Phys. Chem. Earth* 21, 97-100. (Denmead *et al.*, 1997a)
64. Raupach, M.R., Finkele, K., Briggs, P.R., Cleugh, H.A., Coppin, P.A., Leuning, R. and Graetz, R.D. (1997). Water and carbon dynamics of the Australian biosphere. In: *Climate Prediction for Agricultural and Resource Management* (Eds. R.K. Munro and L.M. Leslie). Bureau of Resource Sciences, Canberra, Australia. p. 218-229.(Raupach *et al.*, 1997a)
65. Raupach, M.R. (1998). Influences of local feedbacks on land-air exchanges of energy and carbon. *Global Change Biol.* **4**, 477-494.(Raupach, 1998a)
66. Pielke, R.A., Avissar, R., Raupach, M.R., Dolman, H., Zeng, X. and Denning, S. (1998). Interactions between the atmosphere and terrestrial ecosystems: influence on weather and climate. *Global Change Biol.* **4**, 461-475.(Pielke *et al.*, 1998)
67. Wilson, J.D., Finnigan, J.J. and Raupach, M.R. (1998). Analytical and first-order closure for disturbed plant-canopy flows, and their application to windflow through a plant canopy on a ridge. *Quart. J. Meteorol. Soc.* **124**, 705-732.(Wilson *et al.*, 1998)
68. Patton, E.G., Shaw, R.H., Judd, M.J. and Raupach, M.R. (1998). Large-eddy simulation of windbreak flow. *Boundary-Layer Meteorol*. **87**, 275-306.(Patton *et al.*, 1998)
69. Raupach, M.R. (1998). Response to Gu (1998), "Comments on 'A practical Lagrangian method for relating scalar concentrations and source distributions in plant canopies' by M.R. Raupach (1989: *Quart. J. Roy. Meteorol. Soc.* **115**, 609-632)". *Boundary-Layer Meteorol*. **87**, 525-528. (Raupach, 1998b)
70. Leys, J.F., Larney, F.J., Müller, J.F., Raupach, M.R., McTainsh, G.H. and Lynch, A.W. (1998). Anthropogenic dust and endosulfan emissions on a cotton farm in northern New South Wales, Australia. *Science of the Total Environment* **220**, 55-70.(Leys *et al.*, 1998)
71. IGBP Terrestrial Carbon Working Group (Steffen, W., Noble, I., Canadell, J., Apps, M., Schulze, E-D., Jarvis, P.G., Baldocchi, D., Ciais, P., Cramer, W., Ehleringer, J., Farquhar, G., Field, C.B., Ghazi, A., Gifford, R., Heimann, M., Houghton, R., Kabat, P., Körner, C., Lambin, E., Linder, S., Mooney, H.A., Murdiyarso, D., Post, W.M., Prentice, I.C., Raupach, M.R., Schimel, D.S., Shvidenko, A. and Valentini, R.) (1998). The terrestrial carbon cycle: implications for the Kyoto Protocol. *Science* **280**, 1393-1394. (Steffen *et al.*, 1998)

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73. Raupach, M.R., Baldocchi, D.D., Bolle, H.-J., Dümenil, L., Eugster, W., Meixner, F.X., Olejnik, J.A., Pielke, R.A., Tenhunen, J.D. and Valentini, R. (1999). Group Report: How is the atmospheric coupling of land surfaces affected by topography, complexity in landscape patterning, and the vegetation mosaic? In: *Integrating Hydrology, Ecosystem Dynamics and Biogeochemistry in Complex Landscapes* (Eds. J.D. Tenhunen and P. Kabat). (Wiley, Chichester). p. 177-196. (Raupach *et al.*, 1999a)
74. Ayotte, K.W., Finnigan, J.J. and Raupach, M.R. (1999). A second-order closure for neutrally stratified vegetative canopy flows. *Boundary-Layer Meteorol.* **90**, 189-216.(Ayotte *et al.*, 1999)
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76. Raupach, M.R. (2001). Combination theory and equilibrium evaporation. *Quart. J. Roy. Meteorol. Soc*. **127,** 1149-1181.(Raupach, 2001a)
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