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N. Balci* (nubalci@indiana.edu), Institute for Mathematics and its Application, University of Minnesota, 114 Lind Hall 207 Church Street S.E., Minneapolis, MN 55455, and **C. Foias** and **M. S. Jolly**. *Vertical Averages of the RBE*. Preliminary report.

We discuss the vertical spatial averages of the Rayleigh-Benard equations from the 2D turbulence point of view, and derive analogs of some fundamental relations in the mathematical theory guided by Kraichnan's heuristic/phenomenological theory of 2D turbulence, including bounds on the dissipation range, the 2D analog of Kolmogorov's dissipation law, and the wave numbers related to the cascade phenomena. We compare the results with the 2D periodic NSE with time-dependent general forcing. (Received August 23, 2009)