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Dimension estimates for the global attractor of the solutions to the 2D Boussinesq equations with fractional dissipation.

It was recently obtained, by the author, existence of the global attractor for the solutions of the Boussinesq equations with fractional dissipation in 2D periodic domain, assuming that the dissipation power is greater than $\frac{1}{2}$ and the time-independent external resources are sufficiently smooth, especially it is proved that the global attractor for vorticity and temperature exists in $H^s \times H^s$ for any $s \geq 0$. In this discussion, we present estimates of fractal and Hausdorff dimensions of the global attractor, utilizing the standard framework of Lyapunov exponent in infinite dimensional function spaces which was originally established by the works of Constantin, Foias and Temam in dealing with Navier-Stokes equations. (Received September 14, 2009)