Xia *et al.* Reply: The preceding Comment [1] argues that the energy dissipation in our experiment exceeds the energy flux which we derive from the third-order structure function. To see that most of the energy passing through the inertial interval reaches the largest energy-containing scale, one needs to compare the flux with the energy dissipation by the bottom friction. Using Kolmogorov-Kraichnan phenomenology in Fourier space, as in Eq. (2) of the Comment, is poorly suited for evaluating this (large-scale) quantity. Also, the integral $E = \int E(k)dk$ depends on a precise definition of k, which may lead to an ambiguity in the value of the Kolmogorov constant (see, e.g., [2]). To avoid problems with different definitions of the wave numbers ($1/L$, $2\pi/L$, or π/L as in [3]), we present here all of the results in the physical space. The energy density is calculated as $E_0 = (2N^2)^{-1} \sum_{i=1}^{N} \sum_{j=1}^{N} v_{i,j}^2$, where N is the velocity grid size. The time evolution of E_0 during the turbulence decay after the force is switched off is shown in Fig. 1(a). The damping rate α is determined from the exponential energy decay. The energy dissipation rate is given by $\epsilon_d \approx \alpha E_0$, which for the data of Fig. 1(a) results in $\alpha = 0.3\ \mathrm{s}^{-1}$, $E_0 = 2.3 \times 10^{-5}\ \mathrm{m}^2\,\mathrm{s}^{-2}$, and $\epsilon_d = 6.9 \times 10^{-6}\ \mathrm{m}^2\,\mathrm{s}^{-3}$. It is almost 5 times smaller than the respective estimate in the Comment.

The energy flux in the inertial interval is determined from the third-order structure function S_3 shown in Fig. 1(b) and gives $\Pi = S_3/r = 7 \times 10^{-6}\ \mathrm{m}^2\,\mathrm{s}^{-3}$. This value is in excellent agreement with the above estimate of the energy dissipation rate due to the bottom drag. The energy flux which inversely cascades through the inertial range is dissipated by the spectral condensate due to the bottom friction.

The viscous dissipation ϵ_b given by Eq. (1) is presented in the Comment as that *in the inertial interval*. Apparently, it is not, despite the choice of the lower limit of integration in the inertial interval. This lower limit can be also chosen the inverse size of the building since the integral is practically independent of it. The integral of a power function between the limits that are far apart is determined by one limit only. Therefore, the estimate is that of the viscous dissipation *at the forcing scale,* and it is indeed comparable to the energy input rate in most experiments on the inverse cascades in shallow layers [4]. It does not matter whether all of the energy that is injected into the flow goes into the inverse cascade (in fact, it does not). What matters is whether the energy that does go there reaches the destination (the condensate in our case). Apparently, it does, as the above comparison between Π and αE_0 shows.

It is also useful to double check the value of the Kolmogorov constant using the physical space parameters. Following Ref. [5], we compute the longitudinal structure function of the second order S_{2L} in the inertial range and the corresponding structure function constant $C_{2L} = S_{2L}(r)/(\Pi r)^{2/3}$. The Kolmogorov constant is related to this quantity as $C_{2L} = 2.14C$ (see [5] for details). In our experiment, $C_{2L} \approx 12.5$ in the inertial range which gives the Kolmogorov constant of $C = 5.8$, very close to the one reported in [3].

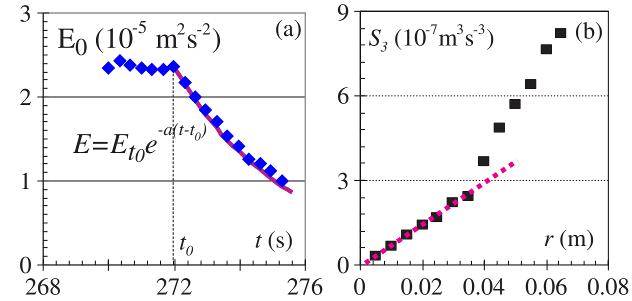

FIG. 1 (color online). (a) Time evolution of the energy density during turbulence decay. (b) Third-order structure function as a function of scale.

In summary, all results reported in Ref. [3] are perfectly consistent internally and also agree with previous experiments in thin stratified layers, numerical simulations, and the theory of the two-dimensional turbulence. Incidentally, the observation of the inertial-range spectra of an inverse cascade was not a goal of our Letter, since it has been done before [4]. Our main subject was the modification of the turbulence statistics by the condensate vortex, in particular, the sign change of the third moment which puts in doubt the results on the energy flux in the mesoscale atmospheric turbulence obtained in [6].

H. Xia, M. G. Shats, and H. Punzmann
Research School of Physics and Engineering
The Australian National University
Canberra, Australia

G. Falkovich
Physics of Complex Systems
Weizmann Institute of Science
Rehovot, Israel

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