



## Abstract View

[Volume 5, Issue 3 \(July 1975\)](#)

### Journal of Physical Oceanography

Article: pp. 499–505 | [Abstract](#) | [PDF \(330K\)](#)

# The Rate of Dissipation of Turbulent Energy in the Upper Layer of the Ocean

**V.S. Belyaev, M.M. Lubimtzev, and R.V. Ozmidov**

*P.P. Shirshov Institute of Oceanology, USSR Academy of Sciences, Moscow*

(Manuscript received May 14, 1974, in final form March 11, 1975)

DOI: 10.1175/1520-0485(1975)005<0499:TRODOT>2.0.CO;2

### ABSTRACT

Based on empirical data for the upper layer of the ocean, estimates of the rate of turbulent energy dissipation  $\epsilon$  are obtained. The calculations of  $\epsilon$  were made in four ways. The slope of the spectra  $E_1^{(\epsilon)}$  of fluctuations of  $\epsilon$  determines the universal constant of the refined theory of the locally isotropic turbulence  $u=0.56\pm 0.11$ . The large departure from normality of the  $\epsilon$  distributions indicates the strong intermittency of the small-scale fluctuations of the current velocity. Using the slopes of the high-order structure functions  $Dp(r)=\langle |u(x+r)-u(x)|^p \rangle$ ,  $P=1,2,\dots,8$ , the universal constants  $u_p$  characterizing the momenta of the rate of the dissipation of turbulent energy  $\epsilon_r$ , averaged over the sphere with a radius  $r/2$  are determined.

#### Options:

- [Create Reference](#)
- [Email this Article](#)
- [Add to MyArchive](#)
- [Search AMS Glossary](#)

#### Search CrossRef for:

- [Articles Citing This Article](#)

#### Search Google Scholar for:

- [V.S. Belyaev](#)
- [M.M. Lubimtzev](#)
- [R.V. Ozmidov](#)

top ▲



