Abstract View

Volume 10, Issue 2 (February 1980)

Journal of Physical Oceanography
Article: pp. 208–219 | Abstract | PDF (900K)

Selecting Record Length and Digitization Rate for Near-Bed Turbulence Measurements

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(Manuscript received January 23, 1979, in final form August 15, 1979)

DOI: 10.1175/1520-0485(1980)010<0208:SRLADR>2.0.CO;2

ABSTRACT

Measured values of turbulence parameters (such as mean, variance or covariance of velocity) will depend on the record length and digitization rate chosen for their computation. Six factors which govern the accuracy of the measurements, namely, loss of low- and high-frequency contributions, stationarity, statistical variability, sensor response and size of data set, are discussed in the context of the tidal bottom boundary layer using for reference a set of measurements made near to the sea bed over an ebb tide in Start Bay, southwest England. Estimates of the errors associated with the factors, which are of general validity for the tidal bottom boundary layer, are presented and their differing relative importance for different turbulence parameters discussed. Methods of compensating for some of the sources of error are suggested. The six factors produce conflicting requirements for record length and digitization rate, so a compromise must usually be made based on a trade-off of the calculated errors associated with each factor.