SCCWRP Annual Report 1999-00

Comparison of sediment grain size analysis among two methods and three instruments using environmental samples

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ABSTRACT

Sediment grain size is measured using a variety of methods, but comparisons of measurement methods on environmental samples are limited. Three instruments (Coulter LS230, Horiba LA900, and SediGraph 5100) utilizing two fundamentally different operating principles were employed to measure a single set of 20 different sediment samples collected at shelf depths from the Southern California Bight. Distribution estimates were compared using the Kolmogorov-Smirnov test, mean f with analysis of variance (ANOVA), and the percent fines using Kruskall-Wallis tests. These instruments produced comparable results on all three types of grain size measurements. Within-instrument measurement variability was compared among instruments. The Coulter LS230 had the smallest measurement variance, the Horiba LA900 the next smallest variance, and the SediGraph 5100 the largest measurement variance. These results reflect improvements in technology over time.

Full Text

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