Low Hurst-Kolmogorov exponents: Estimation and possible underlying phenomenology

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The present work presents an estimation of the Hurst-Kolmogorov exponent for horizontal water velocity differences in a vertical profile taken in the sea, at a water depth of up to 20m in Playa Miramar, Tamaulipas (22.307 N, 97.773 W), for a period in February-May to 2012. The existence of a single exponent is suggested by the linearity of the transversal structure function that has been estimated from the data. The vertical velocity profile has been measured every 50cm, by means of an AWAC (R) acoustic Doppler device. The results indicate low values of the estimated exponent, situated around 0.17 - 0.18, which points to a negative correlation structure between eddies, a fact that is usually not encountered in homogeneos settings, and needs a careful phenomenological analysis.