A preliminary study of ^{210}Pb geochemistry in the Pearl River Estuary

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Pearl River Estuary is a drainage basin of Pearl River system. The amount of yearly average runoff is totally $3.42x10^{10}$ m^3,and the amount of annual suspended silt is 83.36 million tons, 80% of which into the Pearl River Estuary. A large area of silt-clay or sandy deposits has been formed under the interaction of the river and the sea. A suite of sediment cores, collected between June 1995 and April 1998 from Pearl River Estuary, were analyzed for ^{210}Pb activities and textural parameters. It was found that both vertical and horizontal distribution of ^{210}Pb follow certain laws in this area. The vertical distribution of ^{210}Pb in Pearl River Estuary can be divided into two types (normal type and abnormal type). The normal type consists of three region, two region and one region forms, and the abnormal type consists of parallel, upside-down and disorder forms.The normal type of ^{210}Pb in sediment core reflects the relative steady sedimentary environment and the sedimentation rates can be determined. The abnormal profile of ^{210}Pb reflects the unsteady-state sedimentary environment, some events, such as bioturbation, resuspension, dredging, dumping and sliding, may take place in these stations, different environmental events caused the origin and genesis mechanisms of different anomalous fluctuations of ^{210}Pb. Sedimentation rates were calculated using constant flux/sedimentation rate(CFS) model.