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Determination of physical and dynamic properties of suspended particles in water column with ultrasonic scanning in between the water surface and stable sediment layer.

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The behavior of seafloor sediment with its water column should be known against any occurrences of anoxic or oxic conditions. The most important ones of these conditions are possible leakage of natural gas or escape of liquids from sediment.
On the basis of combined solid/liquid flow dynamics in sedimentation, such kind of events can change, even in an effective manner, the dynamic movements of molecules and their cumulative mass of particules, i.e. the suspended materials.

The deployment of suitable sediment traps or ultrasonic transducers somewhere in the water column are not easy attempts in order to obtain useful information about the state of suspended materials during sedimentation. These are usually bulky instruments; therefore they may behave like an anti-move suppresser on the particles moving in the float direction, in oxic and anoxic manner. These instruments, on the other hand, may cover the effects of diffusive flow or bubble formed gas and fluid escape from the sediment surface into the water column.
Ultrasonic scanners, however, are able to make observations in a remote manner, without affecting such artificial events. Our field trials were successfully completed at the historical estuary called Halic of Marmara sea . The physical properties; such as the velocity of particles, their travel directions, their dimensions and the ability to observe anti-compositor crushes of shock waves of the bubbles are only a few of these observations in natural ambience.
The most important problem solved about water pressure during 3 atmosphere . The sensor has been tested successfully few times.
We used the ”High voltage electric isolator oil filling” to the inside of the scanner for pressure equalization between outer side and inner body of probe at a depth of (20 meters) beneath the sea surface . The transmitted signals by the planar crystal of the transducer become weaker under the pressure of overlying water column in depths. Our efforts are now focused on the improved performance of transducer at higher than over 3 atm pressure.

Keywords: ultrasonic , flow , particle , Sediment , Cumulative mass