

Flocculation or Drift?

While testing a LISST-ABS in the laboratory with field samples, Dr. Benjamin van der Waal of Rhodes University in South Africa noticed an apparent instrument drift. He was using samples extracted from a river for this testing, so that the samples were likely a mixture of cohesive sediments.

In a test lasting over a week, he noticed a steady drift of the instrument output (top, right). After the Sequoia team eliminated all possible sources of instrumental drift, a suggestion was made that flocculation may be the cause. Dr. van der Waal proceeded to disrupt flocculation with an ultrasonic probe. The LISST-ABS showed an immediate drop in backscatter signal strength, indicating break-up of flocs. This is displayed in figures on right, courtesy of Dr. van der Waal. Lower figure shows detail, also confirming drift-free operation in the short term.

We remind readers that whereas optical turbidity sensors are less sensitive to large grains and would have reported an apparent

reduction in turbidity, acoustic backscatter from the LISST-ABS increases in sensitivity for grains below about 60 microns (Rayleigh region). In this size range, as particles stick together, their apparent size increases and signal strength increases.

Obviously, it is worth remembering that natural sediments may complicate calibrations due to flocculation, both in turbidity and aboustic systems. This applies also to the particle sizing instruments, LISST-200X, and the older LISST-100X.

