Physical properties of ODP Leg 122, Site 762: A comparison of shipboard and shore-based laboratory results

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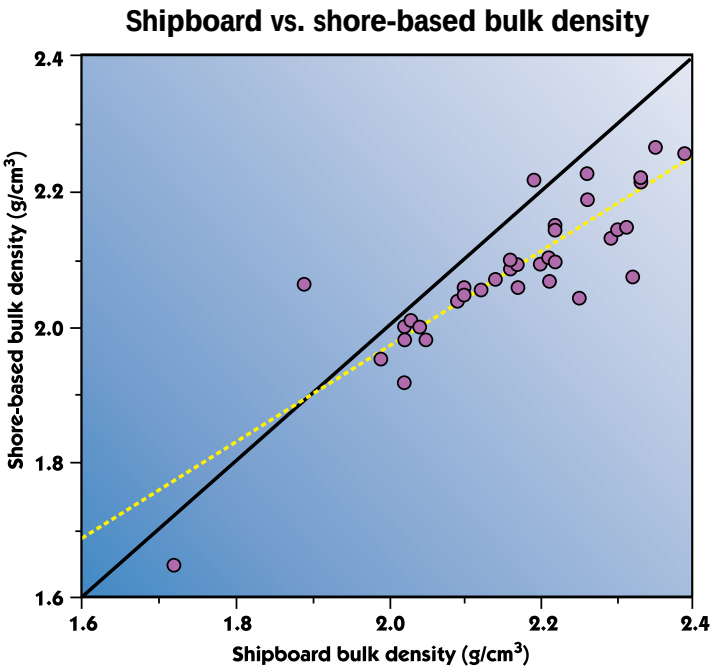

Solid line indicates the relation Y=X. Dashed line is the linear regression of the data and has the equation Y = 0.7032X + 0.5608. Shipboard bulk densities are consistently higher than shore-based data because shipboard bulk densities incorporate volumes determined from wet samples in a helium-displacement pycnometer. Pycnometer volume data from wet samples are systematically too low, which result in bulk densities that are too high.

Compressional velocity, shear velocity, compressional quality factor, electrical resistivity, bulk density, grain density, and porosity were measured in our shore-based laboratory for 49 consolidated sediment samples from ODP Leg 122, Hole 762C. The results are compared with shipboard data. Shore-based compressional velocity agree well with shipboard data except in the range of 670-820 meters below seafloor (mbsf), where a shipboard calibration problem occurred. Shipboard sonic log data are an average of 0.3 km/s higher than shore-based compressional velocity values because of *in situ* overburden pressure.

Shore-based grain density and porosity values are generally in agreement with shipboard data. However, shipboard bulk density values are consistently higher than shore-based data. This discrepancy is because the helium-displacement pycnometer used aboard ship gives erroneously low volumes for wet samples, which are then used in bulk density calculations. Correct shipboard wet sample volumes can be calculated by adding the difference between the wet and dry sample weights to the dry sample volume. The corrected shipboard bulk density values are in agreement with shore-based data. We recommend that the Ocean Drilling Program use this calculation in place of the pycnometer wet volumes.

The chalks show a negative velocity gradient between 600-720 mbsf, though there is no apparent change in lithology. In absence of overpressuring and mineralogical changes, the negative gradient is probably caused by increasing porosity due to the change in microstructure of the sediment over this depth interval.