The temperature-dependence of shear wave speed was determined by measurement with Virtual Touch quantification (VTq) software on a Siemens S3000 using the 6C1 curved linear array. Four phantoms (E1786-9, E2348-1, E2348-2, and E2348-3) were fully submersed in a 22L water bath connected (with constant water exchange) to a 10L constant-temperature bath. Water temperature in both baths was controlled with the constant temperature bath controller and monitored in the water bath containing the phantoms using a digital thermometer. A water pump forced continuous exchange of water between the two baths except when shear wave speed measurements were made (when the pump was turned off). Water temperature in the baths stabilized within about 20min after selecting the desired temperature. Measurements began at 18.3$\deg$C (about 3$\deg$C below room temperature). Phantoms were kept in 18.3$\pm 0.1\deg$C for 22hrs prior to SWS measurements.

To perform the SWS measurements, a phantom was placed on a block to raise the surface of the phantom 1cm above the water surface. Salt water at the same temperature as the phantom was used to fill the well at the top of the phantom providing a coupling medium between the curved transducer and flat surface of the phantom. The sound speed of sodium chloride in deionized water with salinity of 45ppt (4.5g of salt in 100mL of water) is similar to that of the phantoms (about 1540 m/s) [cite lovett1978merged]. The intent was to minimize refraction as the acoustic pulses from the curved linear array transducer travel through the coupling medium into the flat surface of the phantom (potentially causing errors in acoustic beam spacing and therefore shear wave speed estimates).

Ten consecutive measurements with the handheld transducer were performed at ten different locations around the central 1/3 of the phantom volume at a depth of 4.5cm. When measurements were completed with one phantom, it was again completely submersed in the water bath and the measurements were similarly performed in the next phantom. When measurements were complete with all four phantoms, the temperature of the bath was raised, allowed to come to equilibrium and the procedure repeated for temperatures of 18.3, 21.1, 23.8, 26.6, and 29.3$\deg$C.

Use a table to show how long the phantoms were held at a particular temperature prior to measurement?

I have the plot from the QIBA instructions that shows sound speed in saline, if you want to include that.

The equation used for saline is found in from J.R. Lovett, J. Acoust. Soc. Am. 63, 1713-1718, 1978 (equation 3).

@article{lovett1978merged,

title={Merged seawater sound-speed equations},

author={Lovett, Jack R},

journal={The Journal of the Acoustical Society of America},

volume={63},

number={6},

pages={1713--1718},

year={1978},

publisher={ASA}

}