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Kyle T Mandli* (kyle.mandli@columbia.edu). *Developments and Applications of a Multilayer Shallow Water Model*. Preliminary report.

The multilayer shallow water equations have often been used to model stratified fluids, in particular the ocean. Unfortunately even for two-layers the system is a stiff set of PDEs owing to the disparate wave-speeds that are present. In most ocean modeling this is avoided by splitting the barotropic and baroclinic waves apart and solving them separately. This has the drawback that the wave-speeds are not captured correctly and can lead to substantial diffusive error in their solution. Instead of taking this approach we will examine a model that can handle a few layers but is fully coupled leading to more reliably accurate wave speeds and less diffusive error. Development of the numerical method and notable applications will be discussed along with existing challenges. (Received September 12, 2015)