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The Thermodynamic Equation Of Seawater – 2010 (TEOS-10): implications for observational oceanography and ocean modeling

Trevor McDougall

CSIRO, Marine Research, Hobart, Australia (trevor.mcdougall@csiro.au)

The Intergovernmental Oceanographic Commission (IOC) has endorsed a new equation of state of seawater to replace the International Equation of State of 1980. The new Thermodynamic Equation of Seawater 2010 (TEOS-10 for short) has been prepared by SCOR/IAPSO Working Group 127, and from 1st January 2010, is the new world-wide standard description of seawater. This thermodynamic description of seawater provides accurate algorithms for Absolute Salinity, density, entropy, enthalpy and many other properties. The software of the new seawater standard is available on line from www.TEOS-10.org. The talk will concentrate on three main topics, namely (i) the definition and use of a new form of salinity called Absolute Salinity which takes into account the spatial variation in the composition of seawater, (ii) a thermodynamic variable that can be used to accurately represent the transport and mixing of "heat" in the ocean, and (iii) the differences between the specific volume of TEOS-10 and that of EOS-80 (the International Equation of State of seawater that has been in use since 1980). The talk will discuss the relative improvements in the accuracy of observational oceanography and ocean models that can be expected from adopting TEOS-10.