Intergovernmental Oceanographic Commission
Reports of Governing and Major Subsidiary Bodies

Twenty-fifth Session of the Assembly

Paris, 16–25 June 2009

UNESCO

Resolution XXV-7

INTERNATIONAL THERMODYNAMIC EQUATION OF SEAWATER (TEOS-10)

The Intergovernmental Oceanographic Commission,

Recalling that the Executive Council at its 41st Session (Paris, 24 June–1 July 2008) reaffirmed IOC's commitment to the work on thermodynamics and the equation of state of seawater, instructed the IOC Executive Secretary to work with the SCOR–IAPSO Scientific Working Group 127 with a view to presenting to the IOC Assembly, at its 25th Session, the new Equation of State of Seawater, and invited the IOC Assembly to adopt a Resolution formally adopting this new standard,

Recalling further:

(i) Recommendation IODE-XX.4 (Beijing, 4–8 May 2009) noting the scientific importance of defining new thermophysical properties of seawater, and recommending, *inter alia*, that data centres continue to archive practical salinity, not absolute or reference salinity;

(ii) The Decision of I-GOOS-IX (Paris 10–12 June 2009) to recommend adoption of the new formulation for the thermodynamics and equation of state of seawater TEOS-10 and to endorse the related Recommendation IODE-XX.4;

Noting:

(i) That the existing EOS-80 "Practical Salinity Scale 1978 and International Equation of State of Seawater 1980" is an existing UNESCO standard published in the Technical Papers in Marine Science Series (No. 36) and is currently in wide use and among the most cited and well known publications of UNESCO in marine sciences;

(ii) That TEOS-10 was adopted as an industrial standard by the International Association for the Properties of Water and Steam (IAPWS-15, Berlin, 7–11 September, 2008);

Considering:

(i) That expressing the thermodynamic properties of seawater as a function of Absolute Salinity provides a consistent framework for future improvements in accuracy as more data on the geographically varying composition of seawater becomes available;

(ii) The importance of an accurate formulation of the thermodynamics and equation of state of seawater as a fundamental component of ocean models, in particular for climate purposes;

(iii) That the TEOS-10 allows calculation of more thermodynamic properties than does EOS-80;

(iv) That TEOS-10, unlike EOS-80, allows for mutually consistent treatment of the thermodynamics of ice and seawater,

Having considered the presentation of the Chairperson of the IAPSO/SCOR WG-127 to the 25th Session of the Assembly,

Decides to adopt the International Thermodynamic Equation of Seawater (TEOS-10) formulation that has been developed and recommended by the IAPSO/SCOR WG-127 to replace the existing EOS-80, as presented in the TEOS-10 Manual (IOC/INF-*tbd*),

Requests the IOC Executive Secretary to publish a suitably shortened and simplified version of the TEOS-10 manual in the IOC Manuals and Guides series,

Further requests the IOC Executive Secretary to continue to work closely with the IAPSO/SCOR WG-127 to ensure wide dissemination of TEOS-10 to government agencies, the scientific community, and industry;

Further requests the IOC Executive Secretary to ensure that the shortened and simplified manual contains a detailed, scheduled implementation plan allowing a traceable, stepwise implementation of the new standard,

Urges Member States to use and disseminate TEOS-10.