Summary of the document

The 41st Executive Council of the IOC instructed the Executive Secretary to present to the Assembly, at its 25th session, the new equation of state of seawater that has been developmed by SCOR-IAPSO working group 127 and to invite the Assembly to consider adopting a resolution formally adopting this new standard. One of the implications of the new formulation is adoption of a new variable ‘Absolute Salinity’. There are substantial potential implications associated with adopting the new standard for long term continuity of records and national data centers.

WG127 has recommended the adoption of Absolute Salinity to be used in journals to describe the salinity of seawater and to be used as the salinity argument to algorithms that give the various thermodynamic properties of seawater. This recommendation deviates from the current practice of working with Practical Salinity and typically treating it as the best estimate of Absolute Salinity. At the same time, the WG strongly recommend that the salinity that is reported to national oceanographic data centers remain Practical Salinity as determined on the Practical Salinity Scale of 1978 (suitably updated to ITS-90 temperatures).

Appendices: [full technical documentation, executive summaries of meetings,... can be attached as appendices – length should be less than 10 pages]

DRAFT TEXT FOR INCLUSION IN THE SUMMARY REPORT

The members appreciated the report on TEOS-80 provided by the secretariat. They noted that there are three very good reasons for continuing to store Practical Salinity rather than Absolute Salinity in National Oceanographic Data Centers. First, Practical Salinity is an (almost) directly measured quantity whereas Absolute Salinity (the mass fraction of sea salt in seawater) is generally a derived quantity. That is, we calculate Practical Salinity from measurements of conductivity, temperature and pressure, whereas to date we derive Absolute Salinity from a combination of these measurements plus other measurements and correlations that are not yet well established. Calculated Practical Salinity is preferred over the actually measured in-situ conductivity value because of its conservative nature with respect to changes of temperature or pressure. Second, it is imperative that confusion is not created in national data bases where a change in the reporting of salinity may be mishandled at some stage and later be misinterpreted as a real increase in the ocean’s salinity. This second point argues strongly for no change in present practice in the storage of Practical Salinity SP in national data bases of oceanographic data. Thirdly, the algorithm for determining the "best" estimate of Absolute Salinity is immature and will undoubtedly change in the future so we cannot recommend storing Absolute Salinity in national data bases. Storage of a more robust intermediate value, the Reference Salinity, would also introduce the possibility of misuse of salinity data without providing any real advantage over storing Practical Salinity so we also avoid this possibility.

DRAFT RESOLUTION OR RECOMMENDATION

Noting ...

The members of IODE,

supported the proposed adoption of the new Thermodynamics and Equation of State of Seawater by the 25th IOC Assembly.

Agreed to continue to store practical salinity, not absolute or reference salinity, at national data centers.