

Joint SCOR/IAPWS/IAPSO Committee on the Properties of Seawater (JCS)

Report to SCOR on JCS Activities May 2020-Sep 2021

JCS Executive	
Rich Pawlowicz (Chair)	Canada
Rainer Feistel (Vice-chair)	Germany
Steffen Seitz (Vice-chair)	Germany
Salinity/Density Taskgroup	
(Rich Pawlowicz) (Chair)	
Frank J. Millero	USA
(Steffen Seitz)	
Hiroshi Uchida	Japan
Youngchao Pang	China
Ryan Woosley	USA
Yohei Kayukawa	Japan
pH Taskgroup	
Andrew Dickson (Chair)	USA
Maria Filomena Camoes	Portugal
Daniela Stoica	France
Simon Clegg	UK
Frank Bastkowski	Germany
Relative Humidity Taskgroup	
Olaf Hellmuth (Chair)	Germany
Jeremy Lovell-Smith	New Zealand
(Rainer Feistel)	
Stephanie Bell	UK
Expert subgroup: Thermodynamics	
(Rainer Feistel)	
Expert subgroup: Numerical Modelling and Applications	
Trevor J. McDougall	Australia
Expert subgroup: Software	
Paul Barker	Australia
Industry Representatives	
Richard Williams (OSIL)	UK
Barbara Laky (Anton Paar)	Austria

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(member Stefan Weinreben retired 2021)

Meetings

As for everyone else, COVID-19 has disrupted global collaboration in JCS. A planned “virtual” meeting was to have happened summer 2021, will now be in fall 2021. The pH subgroup continues its work (under the aegis of SCOR WG 145).

Web site

JCS maintains a web site at www.teos-10.org. This site gets 750-1300 visitors per month (9,007 in the past year, with 73311 “unique views¹” since Oct 2010). Annual downloads are stable.

Web site Item	Unique downloads June 2011-June 2013	Unique downloads June 2013-June 2014	Unique downloads June 2014-June 2015	Unique downloads June 2015-June 2016	Unique downloads June 2016-June 2017	Unique downloads June 2017-June 2018	Unique downloads June 2018-Apr 2019	Unique downloads May 2019-May 2020	Unique downloads May 2020-June 2021
Manual	920	360	535	552	418	427	349	472	479
Getting Started	879	362	558	547	427	475	349	444	460
Slides	704	284	374	318	219	248	204	272	272
Primer	584	197	289	297	222	217	187	253	260
Thermodynamics Lecture Notes								22	34
Thermodynamics Overview								24	27
GSW MATLAB_v3_0	1920	1102	1485	1814	1235	1552	1233	1556	1504
GSW FORTRAN_v3_	366	222	171	162	127	116	82	98	83
GSW_C_v3_0	202	84	133	151	85	96	59	81	58
GSW_PHP	-	55	61	43	29	60	28	52	22
SIA_VB	72	100	46	45	45	48	43	47	47
SIA_FORTRAN	59	118	58	44	36	42	37	42	31

Web site hosting changes in October 2020.

The hosting of TEOS-10 continues to be with webcentral in Australia (formerly called Netregistry) but the hosting plan was changed to one that is about 50 % cheaper; costs are now being covered by

¹ The method of computing “unique views” changed in 2019.

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IAPSO. Users should not experience any changes to the site or download speeds.

Other Progress

- 1) Work related to making progress in the pH taskgroup is being carried out under the auspices of SCOR WG 145, which ends soon (but, as usual, there is still plenty of stuff to be done).
- 2) SC is preparing several manuscripts on modelling speciation in seawater and the marine “total” pH scale.
- 3) FC and others have been busy with their UnipHied project, implementing the concept of absolute pH of seawater, and publications are coming out soon (which may make recommendation on seawater pH measurements).
- 4) HU continues density and refractive index measurements on WHP P01 (summer 2021), and has offered to analyze samples from an Arctic cruise from the Nansen Basin
- 5) RP is (still) working on understanding the diffusion of seawater and possible fractionations that result from this (MSc thesis completed fall 2019, paper in progress)
- 6) AD is planning forwards for retirement, which includes the problem of handing over responsibility for his DIC CRM to some other organization.
- 7) RF/JL/OH are writing a manuscript on a full-range definition of relative fugacity
- 8) Relative humidity issues have been included in a guidance document for CCT (BIPM)

Papers published

- 1) P. Lodeiro, D. R. Turner, E. P. Achterberg, F. K. A. Gregson, J. P. Reid, and S. L. Clegg (2021) Solid-Liquid Equilibria in Aqueous Solutions of Tris, Tris-NaCl, Tris-TrisHCl, and Tris-(TrisH)₂SO₄ at Temperatures from 5 to 45 °C. *J. Chem. & Eng. Data* **66**, 437-455. (<https://dx.doi.org/10.1021/acs.jced.0c00744>)
- 2) F. Ji, R. Pawlowicz and X. Xiong, (2021), Estimating the Absolute Salinity of Chinese offshore waters using nutrients and inorganic carbon data, *Ocean Sci*, 17, 909-918, <https://doi.org/10.5194/os-17-909-2021>
- 3) T. J. McDougall, P. M. Barker, R. M. Holmes, R. Pawlowicz, S. M. Griffies, and P. J. Durack (2021), The interpretation of temperature and salinity variables in numerical ocean model output, and the calculation of heat fluxes and heat content, *Geosci. Model Development*, in press.
- 4) Uchida, H., Kawano, T., Nakano, T., Wakita, M., Tanaka, T., & Tanihara, S. (2020). An expanded batch-to-batch correction for IAPSO standard seawater. *Journal of Atmospheric and Oceanic Technology*, 37(8), 1507-1520.

R. Pawlowicz

JCS chair, Oct 13 2021