

4th Metrology for Meteorology and Climate Conference

26-30 September 2023 Torino

Scientific program

Tuesday 26	Stupinigi Palace – Sala Camini (Fireplaces hall)
13.00 – 14.00	Registration
14.00 – 15.15	MMC Opening
	<p>Welcome speeches by</p> <ul style="list-style-type: none"> • Andrea Merlone (MMC chair) • Marta Fusi (Stupinigi Palace director) • Pietro Asinari (INRiM scientific director) • Nichelino high school students • Luca Mercalli (SMI president) • Caterina Tassone (GCOS secretariat) • Krunoslav Premec (WMO secretariat) • Peter Thorne (IPCC lead author, University of Maynooth) • Jane Warne (WMO SC-MINT chair)
15.15 – 16.15	MMC Opening – Conference Partners chair A. Merlone
15.15 – 15.30	O-99: The GCOS Surface Reference Network Tilman Holfelder, Sarah Gallagher, DWD – Met IE
15.30 – 15.45	O-33: Measurement requirements for a global climate surface reference network Andrew Harper, NIWA
15.45 – 16.00	O-35: Project SoMMet – Metrology for multi-scale monitoring of soil moisture Miroslav Zboril, PTB
16.00 – 16.15	O-97: The MINKE Project Metrology for Integrated Marine Management and Knowledge-Transfer Network Rajesh Nair, OGS
16.15 – 16.45	MMC Exhibitors presentations
16.45 – 17.30	Coffee break – Mini Expo opening
17.30 – 18.30	Air temperature – CRS workshop chair A. Harper
17.30 – 17.45	O-36: Air temperature – defining the measurand Stephanie Bell, NPL
17.45 – 18.00	O-28: So what is “air temperature”? Jane Warne, Bureau of Meteorology, Australia
18.00 – 18.15	O-95: Metrological validation of the 48.8 °C European extreme air temperature record Chiara Musacchio, INRiM
18.15 – 18.30	O-94: The Air Temperature Metrology EU Project Åge Andreas Falnes Olsen, JV
	End of day 1

Wednesday 27	Stupinigi Palace: Sala Camini (Fireplaces Hall)
9.00 – 10.30	Soil moisture chair S. Bell
9.00 – 9.15	O-10: Large-footprint evaluation of soil moisture and snow-water equivalent by a single Finapp cosmic-ray neutron sensor Enrico Gazzola, Finapp s.r.l.
9.15 – 9.30	O-17: Towards a standardized ground soil moisture network over Italy based on cosmic-ray neutron sensors Gabriele Baroni, University of Bologna
9.30 – 9.45	O-16: Comparing remote sensing and cosmic-ray neutron sensing for soil moisture estimation in Northern Italy Sadra Emamalizadeh*, University of Bologna *Gabriele Baroni presenting
9.45 – 10.00	O-24: Stakeholder survey on soil moisture measurements – Results from an online questionnaire Reidun Anita Bergerud, JV
10.00 – 10.15	O-39: SI-traceable calibration facilities for point-scale soil-moisture sensors Jan Nielsen, DTI
10.30 – 11.00	Coffee break
11.00 – 12.15	Radiosondes & Humidity chair Y.-A. Roulet
11.00 – 11.15	O-11: Recent achievements and current research within the GCOS Reference Upper-Air Network (GRUAN) Fabio Madonna, University of Salerno
11.15 – 11.30	O-3: Testing radiosonde humidity sensors by laboratory setups and its application to soundings Sang-Wook Lee, KRISS
11.30 – 11.45	O-18: Assessment of the INRiM low frost-point generator and analysis of the uncertainty components between -100 °C and -20 °C Rugiada Cuccaro*, INRiM *Giulio Beltramino presenting
11.45 – 12.00	O-7: Improving radiosonde temperature measurements above cloud layers using a dual thermistor radiosonde (DTR) Yong-Yoo Kim, KRISS
12.00 – 12.15	O-26: The Hemispherical Blackbody (HSBB), a new reference for pyrgeometer-based measurements of longwave downward radiation Moritz Feierabend, PTB
12.15 – 12.40	Interlaboratory comparisons chair A. Kowal
12.15 – 12.30	O-4: Reference value analysis of interlaboratory comparison in the field of temperature, humidity and pressure Xuejing Nan, Meteorological Observation Center, China Meteorological Administration
12.30 – 12.40	P-93: Interlaboratory comparison status comparing laboratory results from WMO regional associations Gaber Beges, University of Ljubljana
12.40 – 14.00	Lunch at Stupinigi
14.00 – 15.00	Precipitation chair H. Dörschel
14.00 – 14.15	O-40: Development of calibration facility for non-catching disdrometers

	Henrik Kjeldsen, DTI
14.15 – 14.30	O-25: A raindrop simulator for calibration of non-catching precipitation measuring instruments Enrico Chinchella, University of Genova
14.30 – 14.45	O-19: The quasi-bicentennial daily rainfall series of the University of Genova: data analysis and accuracy assessment Arianna Cauteruccio, University of Genova
14.45 – 15.00	O-22: Measuring the bad weather right – Tales about the measurement challenges in snow storms and the onset of heavy rain events from two sites in Norway Mareile Wolff, NMBU
15.00 – 15.25	Short presentations session (1)
	P-10: Recent normative developments on the calibration of non-catching precipitation measuring instruments Luca Lanza, University of Genova
	P-14: Reference rainfall measurements at the WMO Lead Centre “B. Castelli” in Vigna di Valle (Italy) Arianna Cauteruccio, University of Genova
	O-27: The wind-induced bias of non-catching precipitation measurement instruments Enrico Chinchella, University of Genova
	P-99: Metrological aspects of a humidity calibrator Adam Krovina, MicroStep-MIS
	P-98: Air Temperature Calibration System (ATCS): Development of an ATC-sub chamber for air temperature measurements in climate and environmental chambers Christina Hofstätter-Mohler, BEV
15.25 – 15.45	Remote sensing chair F. Madonna
15.25 – 15.40	O-6: Calibration and validation of FengYun satellite thermal infrared channels using unmanned surface vehicle at CRCS Lake Qinghai Yong Zhang, National Satellite Meteorological Center, China
15.40 – 15.55	O-34: Metrological traceability – provided by PTB for remote sensing, atmospheric and ocean measurements Olav Werhahn, PTB (pre-recorded)
15.55 – 16.30	Coffee break
16.30 – 18.00	Round table <i>Identify open issues and improve cooperation towards the new MeteoMet project</i>
	End of day 2

Thursday 28	Stupinigi Palace: Sala Camini (Fireplaces hall)
9.00 – 9.30	Short presentations session (2)
	P-15: Measurement of turbulent fluxes over mountainous complex terrain Alessio Golzio, University of Turin
	P-1: The importance of using sensors with known measurement uncertainty at high-elevation sites: the freeze-thaw cycles Guido Nigrelli*, CNR-IRPI *Andrea Merlone presenting
	P-18: Accuracy evaluation method of meteorological observation data based on measurement uncertainty Zeqiang Bian, Meteorological Observation Center, China Meteorological Administration

	<p>P-13: Present state and development perspectives of meteorological network for eastern Poland wetland ecosystem Kamil Szewczak, Institute of Agrophysics, Polish Academy of Sciences</p> <p>P-9: Study on the uncertainty assessment of the radiosonde meteorological parameters calibration Xiaozhu Chi, Meteorological Observation Center, China Meteorological Administration</p>
9.30 – 10.30	Ocean chair M. Sega
9.30 – 9.45	<p>Invited lecture: Uncertainty in Oceanographic measurements Christoph Waldmann, University of Bremen</p>
9.45 – 10.00	<p>O-37: Tracking a moving target – sea level Jane Warne, Bureau of Meteorology, Australia</p>
10.00 – 10.15	<p>O-8: Characteristics of a drifting buoys reference network for SST measurement Marc Le Menn, SHOM</p>
10.15 – 10.30	<p>O-29: Metrological challenges for the monitoring of the partial pressure of CO₂ in the marine environment Francesca Rolle, INRiM</p>
10.30 – 10.45	Short presentations session (3)
	<p>P-11: Temperature profiles of XBTs and ARGOs intercompared with ship-based CTDs: some further considerations about their metrological comparability in the Mediterranean Sea Giancarlo Raiteri, ENEA</p> <p>P-12: Updated uncertainties in XBT measurements in Central-Western Mediterranean Sea from in-situ comparisons (2001-2017) Franco Reseghetti, ENEA</p> <p>O-31: Challenges and strategies for overcoming radiative influence on thermometers in air Laura Bevilacqua*, NPL *Stephanie Bell presenting</p>
10.45 – 11.15	Coffee break
11.15 – 11.40	Short presentations session (4)
	<p>P-17: Analysing the dispersion of air temperature measurements when the thermometers are exposed to ambient conditions Natali Aranda, Politecnico of Torino</p> <p>P-19: Low uncertainty calibration method of temperature sensors in air Miruna Dobre, SMD</p> <p>P-4: Research and application of error calibration methods for HMP155 humidity sensors Xindi Li, Guangdong Meteorological Data Center</p>
11.40 – 12.10	Chemistry chair F. Durbiano
11.40 – 11.55	<p>O-9: Towards the development of atmospheric carbon dioxide Certified Reference Materials at known isotopic composition Michela Sega, INRiM</p>
11.55 – 12.10	<p>O-41: EO_V O₂ calibration facility: estimation of the incertitude surrounding the data Laure Chirurgien, Aix Marseille University/University of Toulon</p>
12.10 – 12.35	Short presentations session (5)
	<p>P-6: Evaluation of measurement uncertainty of evaporation sensors in automatic weather stations using Monte Carlo method Mingming Wei, Meteorological Observation Center of Jiangxi Province, China</p> <p>P-3: Studies on the effect of air ventilation on temperature sensor uncertainty Sunghun Kim, KRISS</p> <p>P-8: Building influence on air temperature measurements: siting classification Carmen Garcia Izquierdo, CEM</p>

	P-7: Amateur weather station compared with operational instrumentation of Meteorological Service on mountain environment Samuel Buisan, AEMET
	P-2: Calibration and uncertainty evaluation of radiosonde thermistors in a climate chamber for accurate temperature measurements in upper air Young-Suk Lee, KRISS
12.35 – 14.00	Lunch at Stupinigi
	Introduction to scientific visit
14.00 – 14.30	A GSRN-affiliated research facility Andrea Merlone (INRiM) Welcome from hosts <ul style="list-style-type: none"> • Luigi Chiappero (Ente Parchi Reali president) • Alessandro Azzolina (city of Nichelino councillor to ecology and education)
	Scientific and cultural visit
14.30 – 14.45	Bus to Scientific visit
14.45 – 16.00	INRiM Climate Reference Station Research site (with greetings by city of Nichelino mayor Giampiero Tolardo)
16.00 – 16.15	Bus to Stupinigi Palace
16.30 – 18.00	Guided tours to Stupinigi Palace and Park
18.30	Bus to Cascina Gorgia
19.00 – 22.00	MMC Social dinner at Cascina Gorgia
22.00 – 22.15	Bus back to Tram n. 4 final stop
	End of day 3

Friday 29	Stupinigi Palace: Sala Camini (Fireplaces hall)
9.00 – 10.15	Thermometers chair Y.-G. Kim
9.00 – 9.15	O-30: Study of radiative effects on thermometers in air in calibration environments Stephanie Bell, NPL
9.15 – 9.30	O-2: Climate reference station thermometer characterization Peter Pavlasek, SMU
9.30 – 9.45	O-5: A novel method for Callendar-Van Dusen regression of temperature calibration points Graziano Coppa, INRiM
9.45 – 10.00	O-13: Intercomparison of thermometers and radiation shields in polar climate. COAT project Carmen Garcia Izquierdo, CEM
10.00 – 10.15	O-23: Optimization and characterization of a solar radiation shield design Davide Botturi, University of Brescia
10.15 – 10.45	Coffee break
10.45 – 11.40	Networks and services Chair P. Pavlasek
10.45 – 11.00	O-32: Meteonetwork: weather data by citizen-scientists Alessandro Ceppi, Meteonetwork
11.00 – 11.15	O-15: Air temperature renewal activities in the Meteorological Service of Canada Jeffery Hoover, Environment and Climate Change Canada
11.15 – 11.25	O-20: Evaluation of reliability and use of data from sensors on board of vehicles in meteorology and environmental observations

	Marcio Santana*, Instituto Nacional de Pesquisas Espaciais (INPE) *Graziano Coppa presenting
	WMO Pre-closing remarks
11.25 – 11.40	<u>O-90: WMO Rolling Review of Observational Requirements - What role metrology community could play?</u> Krunoslav Premec, WMO
11.40 – 12.00	MMC Closing
	End of day 4

Saturday 30	Visit to Bossea caves
8.30	Meeting point at tram n. 4 final stop
8.40 – 10.00	Bus trip to Bossea
10.00 – 10.30	Welcome and coffee – Short introduction to the scientific research and measurements at Bossea caves.
10.30 – 12.30	Visit to the caves and underground laboratories
12.30 – 12.50	Bus to Restaurant
13.00 – 14.30	Lunch
14.30 – 16.00	Bus back to Torino
	End of day 5