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Conference on Meteorological and
Environmental Instruments and Methods
of Observation (CIMO TECO-2018)

“Towards fit-for-purpose environmental measurements”

8 - 11 October 2018, Amsterdam, the Netherlands



WORLD
METEOROLOGICAL
ORGANIZATION

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¹ GWEC stands for Global Weather Enterprise Conference.

TOPIC 1:	CHARACTERIZATION AND STANDARDIZATION OF ENVIRONMENTAL MEASUREMENTS – TRACEABILITY ASSURANCE
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Oral presentations:

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O1(1)	Weather radar data representation supporting the emergence of weather radar as a global resource Dr Daniel Michelson (Canada) et al.	[pdf]
O1(2)	Traceability and Calibration of Weather Radar Reflectivity Measurements by Means of a Target Simulator Dr Marc Schneebeli (Switzerland) et al.	[pdf]
O1(3)	Comparing DEVG & EDR Aircraft Turbulence Metrics Dr Douglas Body (Australia)	[pdf]
O1(4)	Air temperature measurement uncertainty associated to a mounting configuration temperature sensor-radiation shield Dr Miruna Dobre (Belgium) et al.	[pdf]
O1(5)	Specification and evaluation of present weather sensors Dr Wiel Wauben (Netherlands) et al.	[pdf]
O1(6)	Development of upper-air simulator for the calibration of radiosondes Dr Yong-Gyoo Kim (Republic of Korea)	[pdf]
O1(7)	Can commercial PRTs meet WMO CIMO response time specifications? Mr Stephen Burt (United Kingdom of Great Britain and Northern Ireland)	[pdf]
O1(8)	WIGOS & OSCAR: Where Observational Requirements Meet Observational Capabilities Dr Jörg Klausen (Switzerland) et al.	[pdf]
O1(9)	Regional instrument centres: towards new roles for even better measures Dr Rabia Merrouchi (Morocco)	[pdf]
O1(10)	Interlaboratory Comparison (ILC) in RA-II, V and VI Mr Kouichi Nakashima (Japan) et al.	[pdf]
O1(11)	Efforts to develop a quantitative definition of cloud base height for aviation Dr Ulrich Görtsdorf (Germany) et al.	[pdf]
O1(12)	A new WMO Guide for the Measurement of Cryospheric Variables Mr Craig D. Smith (Canada) et al.	[pdf]
O1(13)	Improving the WMO Guide n.8. Results on the experimental evaluation of the effect of presence of obstacles in the vicinity of sites hosting near surface meteorological measurement - The case of the road Dr Graziano Coppa (Italy) et al.	[pdf]

TOPIC 1:	CHARACTERIZATION AND STANDARDIZATION OF ENVIRONMENTAL MEASUREMENTS – TRACEABILITY ASSURANCE
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Poster presentations:

No.	Title and authors	Pres
P1(1)	Towards automated CIMO siting classification using geospatial datasets Mr Jelle Stuurman (Netherlands) et al.	[pdf]
P1(2)	The QUATRAM Campaign: QUALity and TRaceabiliy of Atmospheric aerosol Measurements Dr Monica Campanelli (Italy) et al.	[pdf]
P1(4)	Results of WMO RA VI laboratory inter-comparison Mr Drago Groselj (Slovenia) et al.	[pdf]
P1(5)	Assessing the metrological performances, the uncertainty, the repeatability and the stability of wind measurements of Coherent Doppler LIDARS Dr Ludovic Thobois (France) et al.	[pdf]
P1(7)	A multi-year comparison between screened and aspirated air temperature measurements Mr Stephen Burt (United Kingdom of Great Britain and Northern Ireland)	
P1(8)	Intercomparison of Vaisala RS92 and RS41 sondes under controlled laboratory conditions Dr Graziano Coppa (Italy) et al.	[pdf]
P1(9)	Calibration of the new Precipitation Gauge Lambrecht rain[e] H3 at Deutscher Wetterdienst (DWD) Mr Holger Doerschel (Germany) et al.	[pdf]
P1(10)	Metrological evaluation of the building influence on air temperature measurements Dr Carmen Garcia Izquierdo (Spain) et al.	[pdf]
P1(12)	Effect of snow-reflected radiation in near surface air temperature measurements Dr Chiara Musacchio (Italy) et al.	[pdf]
P1(13)	Quantifying and Mitigating Wind-Induced Undercatch in Rainfall Measurements Mr Michael Pollock (United Kingdom of Great Britain and Northern Ireland) et al.	[pdf]
P1(14)	Calibration services at the Laboratory of the Deutscher Wetterdienst (DWD) to assure traceability Dr Tilman Holfelder (Germany) et al.	[pdf]
P1(18)	A method for correcting and determining uncertainties of measurements by the EE-33 humidity sensor for climate reference measurements in Germany Dr Sven Brinckmann (Germany) et al.	[pdf]

No.	Title and authors	Pres
P1(19)	An assessment of the impact of a single-Alter windshield on snowfall accumulation reported by a heated tipping bucket gauge Dr Samuel T. Buisan (Spain) et al.	[pdf]
P1(20)	Automatic Weather Station Architecture Mr Luis Ca (Guinea-Bissau)	
P1(21)	Assurance of the traceability of meteorological measurements in the Ministry of the Environment of El Salvador Prof Saul Canjura (El Salvador)	
P1(22)	High quality sustainable monitoring in cities for climatological services Mr Savino Curci (Italy) et al.	[pdf]
P1(23)	Air Temperature Measurement: The effect of sensor diameter Dr Michael de Podesta (United Kingdom of Great Britain and Northern Ireland) et al.	[pdf]
P1(25)	Feasibility study for automated GRUAN radiosoundings Dr Christian Félix (Switzerland) et al.	[pdf]
P1(26)	Intercomparison of Shelters in the RMI AWS Network Mr Luis González Sotelino (Belgium) et al.	
P1(28)	Using GRUAN radiosonde data to estimate biases in NWP fields and satellite radiances Mr Bruce Ingleby (United Kingdom of Great Britain and Northern Ireland) et al.	[pdf]
P1(30)	Desktop siting classification Ms Nina Elisabeth Larsgård (Norway) et al.	
P1(31)	Evaluation of the Performance of Present Weather Sensors Dr Jan Lenkeit (Germany) et al.	[pdf]
P1(36)	Wooden and plastic screen intercomparison in a Mediterranean climate - The case of Barcelona Mr Ricard Ripoll (Spain)	[pdf]
P1(37)	Microclimate impact on daily minimum and maximum air temperatures Ms Elina Rudovska (Latvia) et al.	[pdf]
P1(38)	Siting Classification Implementation in Observing Network of TSMS Mr Selçuk Şahin (Turkey) et al.	[pdf]
P1(39)	Assessment of Propagation Effects and Radar Data Quality with Dual-Pol Target Simulator during the Olympic Winter Games Dr Marc Schneebeli (Switzerland) et al.	
P1(40)	Study on the Effect of Vertical Wind Components on Compact Ultrasonic Anemometers Mr Karsten Schubotz (Germany) et al.	[pdf]

No.	Title and authors	Pres
P1(41)	Calibration of scatterometers using a reference transmissometer in Korea Dr Park Seongchong (Republic of Korea) et al.	
P1(42)	Snow depth maps in Catalonia Mr Aleix Serra (Spain) et al.	[pdf]
P1(43)	Dynamic calibration of two catching type drop-counting rain gauges Dr Mattia Stagnaro (Italy) et al.	[pdf]
P1(44)	Calibration of non-catching type rain gauges: preliminary tests on an optical disdrometer Dr Mattia Stagnaro (Italy) et al.	[pdf]
P1(45)	Towards a Reference Climate Data Management System Mr Denis Stuber (France)	[pdf]
P1(46)	Calibration facilities, Standards available at IMD's renowned calibration Lab Mr Uday Shende (India) et al.	[pdf]
P1(47)	Measurement Characterisation, the reasons we should bother! Dr Jane Warne (Australia)	
P1(48)	Recent results from siting classification in the Nordic countries and Baltic states, applying a common metadata scheme for air temperature measurements Dr Mareile A. Wolff (Norway) et al.	

TOPIC 2:	EMERGING MEASUREMENT TECHNOLOGIES: FROM DEVELOPMENT TO OPERATION
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Oral presentations:

No.	Title and authors	Pres
O2(1)	A Breakthrough in 24/7 Operational Observations of Lower Tropospheric Thermodynamic Profiles with High Temporal and Vertical Resolutions by Means of Raman Lidar Prof Volker Wulfmeyer (Germany) et al.	[pdf]
O2(2)	A field assessment of a novel rain measurement system based on earth-to-satellite microwave links Dr Matteo Colli (Italy) et al.	[pdf]
O2(3)	Rainfall retrieval from commercial microwave links: from a validated potential towards worldwide operational applications (?) Dr Marielle Gosset (France) et al.	[pdf]
O2(4)	Last activities and results of the WMO-CIMO Testbed for Aerosols and Water Vapor Remote Sensing Instruments (Izaña, Spain) Dr Emilio Cuevas (Spain) et al.	[pdf]
O2(5)	Operational use of Aircraft Derived Data for meteorology and other applications Dr Paul Mark Alexander de Jong (Netherlands) et al.	[pdf]
O2(6)	Possibilities of atmosphere optical characteristics measurement during aerological sounding Dr Alexander Kochin (Russian Federation)	[pdf]
O2(7)	Application of Miniature Sensors in the Development of Micro-climate Stations for Urban Climate Studies in Hong Kong Mr John Kai-Wing Chan (Hong Kong, China) et al.	[pdf]
O2(8)	Cloud Mapping by Using the Data from Different Observing Systems Mr Kemal Dokuyucu (Turkey) et al.	[pdf]
O2(9)	First experiences with the newly-developed Swisens Pollen Monitor Mr Erny Niederberger (Switzerland) et al.	[pdf]
O2(10)	A preliminary assessment of the biases between forecasted by ECMWF Numerical Weather Prediction model precipitation and the adjusted observed snowfall precipitation in different SPICE sites Dr Samuel Buisan (Spain) et al.	[pdf]
O2(11)	Remote Measurements of Volcanic Plume Electrification Using a Sparse Network Technique Dr Jeff L. Lapierre (United States of America) et al.	[pdf]
O2(12)	Comparison of electrostatic, radio and human observation techniques for thunderstorm warning at the WMO field intercomparison site in Vigna di Valle – Italy Dr Alec Bennett (United Kingdom of Great Britain and Northern Ireland) et al.	[pdf]

No.	Title and authors	Pres
O2(13)	Uncertainty sources that limit the precipitation identification / quantification and extinction coefficient determination capabilities of optical present weather and visibility sensors Mr Klaus Heyn (Germany) et al.	[pdf]

TOPIC 2:	EMERGING MEASUREMENT TECHNOLOGIES: FROM DEVELOPMENT TO OPERATION
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Poster presentations:

No.	Title and authors	Pres
P2(1)	Accurate Profiling of atmospheric temperature and Humidity with a new Lidar system from Raymetrics Dr George Georgousis (Greece) et al.	[pdf]
P2(2)	Mode-S: the full story Dr Edmund Keith Stone (United Kingdom of Great Britain and Northern Ireland) et al.	[pdf]
P2(3)	The solar radio flux observed by dual-polarization weather radars in Europe: examples of daily and sub-daily observations at 5 and 3 cm Dr Marco Gabella (Switzerland) et al.	[pdf]
P2(4)	Adaptive scanning of thunderstorm cells with a X-band mobile radar integrated in an operational thunderstorm tracking context Dr Jacopo Grazioli (Switzerland) et al.	[pdf]
P2(5)	visIvis – Evaluation of Vision based Visibility Measurement Dr Harald Ganster (Austria)	[pdf]
P2(6)	Drone development project in FMI Observation services Mr Jani Gustafsson (Finland) et al.	
P2(7)	Results of tests the Fog Stability Index modification by using remote sensing and numerical model's data blending technology for fog nowcasting project in Pulkovo airport Dr Nikolay Baranov (Russian Federation) et al.	[pdf]
P2(8)	Development of a Peltier-based chilled-mirror hygrometer "SKYDEW" for balloon sounding Dr Takuji Sugidachi (Japan) et al.	[pdf]
P2(10)	Cloud Observation System Mr Musa Mete (Turkey) et al.	[pdf]
P2(11)	Meteorological observation test of airship used in the stratosphere Mr RongKang Yang (China) et al.	
P2(12)	Automatic Observation Systems by AEMET in Antarctica Mr Jose Vicente Albero (Spain) et al.	[pdf]
P2(14)	Development of the SolarSIMs Dr Richard Beal (Canada) et al.	
P2(15)	Thermo-fluid dynamic simulations of the Hotplate precipitation gauge and wind tunnel experiments Ms Arianna Cauteruccio (Italy) et al.	[pdf]

No.	Title and authors	Pres
P2(16)	Development of Automatic Cloud Observation System(ACOS) Estimating the Amount and Base Height of Cloud Dr Ki-Ho Chang (Republic of Korea) et al.	[pdf]
P2(17)	Improvement of Rainfall Measurements by Using Dual Tipping-Bucket Rain Gauge Mr Jeong Hwan Choi (Republic of Korea) et al.	[pdf]
P2(18)	Prototyping a versatile, interoperable and gregarious (VIG) logger: early stages Mr Nicolas De Coster (Belgium) et al.	[pdf]
P2(20)	AOD and water vapor column monitoring with "Triple Photometry" at observatory MOL-RAO, Lindenberg, Germany Dr Lionel Doppler (France)	[pdf]
P2(22)	Development of a prototype spectrophotometer based on an acousto-optic tunable filter for measurements of total column ozone Mr Eric Gonzalez Peralta (Mexico)	[pdf]
P2(23)	Preliminary results from the use of free ADS-B data acquisition system for meteorological purpose in the Basque Country Mr José Daniel Gómez de Segura (Spain) et al.	[pdf]
P2(24)	Development of the Technology for total cloud cover based on machine learning Mr HyeongGuk Kim (Republic of Korea)	
P2(25)	Wind LiDAR measurement campaign at CESAR Observatory in Cabauw: preliminary results Dr Steven Knoop (Netherlands) et al.	[pdf]
P2(26)	Independent field test of the solar monitoring system RaZON+ Dr Marc Korevaar (Netherlands) et al.	[pdf]
P2(27)	SUV, the new series of Smart UV radiometers Dr Marc Korevaar (Netherlands) et al.	[pdf]
P2(29)	Latest Development of the Lightning Location Network over the Pearl River Estuary and Data Analysis Related to Tropical Cyclone Monitoring Ms Olivia Shuk-Ming Lee (Hong Kong, China)	[pdf]
P2(30)	An Improvement of the Doppler Weather Radar Network in China Dr Haihe Liang (China) et al.	
P2(31)	A self-draining paired buckets for the weighing raingauges Prof Gyu-Ho Lim (Republic of Korea) et al.	
P2(35)	Design Construction and Calibration of Self Recording Precipitation, Temperature and Relative Humidity Measurement Equipment Mr Babatunde Abraham Okunlola (Nigeria)	[pdf]
P2(36)	Frequency Interference and Detection Methods in Meteorological Radars Mr İsmail Temir (Turkey) et al.	[pdf]

No.	Title and authors	Pres
P2(40)	The observations of sub-tropical weather by a prototype water vapour Differential Absorption LIDAR (DIAL) in Hong Kong Mr Wai-Lung Yeung (Hong Kong, China) et al.	[pdf]
P2(41)	Development of new thermometer shields with the ventilation speed controller Mr Daiki Yoshida (Japan) et al.	[pdf]
P2(42)	Development and industrialization of a handy and portable irradiation sensor measuring global, diffuse, and direct solar irradiation with no need for sun tracking systems or moving parts Mr Alessandro Rossi (Italy) et al.	[pdf]

TOPIC 3:	ENSURING SUSTAINABILITY OF THE MEASUREMENTS
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Oral presentations:

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03(1)	Sustainability of measurements post donor funded programmes Mr Andrew Harper (New Zealand) et al.	[pdf]
03(2)	Experiences with Quality Evaluation of AMDAR Observations Dr Jitze van der Meulen (Netherlands)	[pdf]
03(3)	GCOS Upper Air Network (GUAN) Radiosonde Observations – Past, Present and Future Mr Tim Oakley (United Kingdom of Great Britain and Northern Ireland)	[pdf]
03(4)	Quality Assurance & Quality Control of IAGOS In Service Aircraft Measurements: Concept & Experiences Made Dr Herman G.J. Smit (Germany) et al.	[pdf]
03(5)	Radiosonde descent reports: encouraging preliminary results Mr Bruce Ingleby (United Kingdom of Great Britain and Northern Ireland)	[pdf]
03(6)	Field intercomparison of some candidates for measuring the reference surface air temperature Mr Akira Yamamoto (Japan) et al.	[pdf]
03(7)	Challenges in transition from mercury measuring instruments to alternative measurement technologies in Zimbabwe Mr Webster Magwaro (Zimbabwe)	[pdf]
03(8)	Lessons from the Modernisation of National Meteorological and Hydrological Services (NMHSs) - A Case Study of the Zambia Meteorological Department Mr Oliver Mudenda (Zambia)	[pdf]
03(9)	Effects of different shelter types on temperature measurements Ms Lisa Hannak (Germany) et al.	[pdf]
03(10)	Thermal Study of Costa Rica by means Automatic Meteorological Stations Mrs Marta Eugenia Pereira Molina (Costa Rica)	[pdf]
03(11)	Freezing Prevention and Open Area Control System for Automatic Weather Stations Mr Ahmet Şahan (Turkey) et al.	[pdf]
03(12)	Review of the history and future of automatic upper air soundings Mr Aki Lilja (Finland) et al.	[pdf]
03(13)	Historical siting classification Mr Gabriel Kielland (Norway) et al.	[pdf]

TOPIC 3:	ENSURING SUSTAINABILITY OF THE MEASUREMENTS
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Poster presentations:

No.	Title and authors	Pres
P3(1)	The Interactive Weather Radar Visibility Analysis Tool Dr Kurtuluş Öztürk (Turkey) et al.	[pdf]
P3(2)	Summary of JMA/WMO Workshop on Quality Management of Surface Observations – RA II WIGOS Project Mr Yoshiaki Hirano (Japan) et al.	[pdf]
P3(3)	Automatic Weather Station Design for Primary AWS networks Mr Jorma Islander (Finland)	[pdf]
P3(5)	Increasing the quality of homogenized long-term time series by combining novel homogenization routines and siting classification Ms Elin Lundstad (Norway) et al.	[pdf]
P3(6)	Ozone Sonde Data Quality Assessment: Resolving Inhomogeneities With New Insights from the JOSIE 2017-SHADOZ Campaign Dr Herman G.J. Smit (Germany) et al.	[pdf]
P3(16)	Rehabilitation of Environmental Conditions of Observing Stations for Improving Data Quality Mr Mustafa Atılan (Turkey) et al.	[pdf]
P3(17)	New architecture of the meteorological observation network in view of the migration from obsolete to electronic instruments Mr Mounir Aziz (Morocco) et al.	
P3(18)	Impact of wind and temperature on snowfall measurements by three Thies LPM and three OTT Parsivel2 compared with DFAR (Double Fence Automated Reference) measurements at WMO.SPICE Formigal-Sarrius site Dr Santiago Begueria (Spain) et al.	[pdf]
P3(19)	Ecuador: Preliminary Results of the UV Radiation Network Mr Manuel Carvajal (Ecuador) et al.	
P3(20)	Modernization of the Surface Network observation in Tunisia Mrs Saoussen Cheriaa (Tunisia)	[pdf]
P3(21)	Malawi Experience with Automatic Weather Station (AWSs) Challenges and Possible Solutions Mr Francis John Chithila (Malawi)	
P3(22)	Comparison of the Lightning Detecting and Tracking System's Rain Output and Automated Weather Observing System's Output Mr Yusuf Salih Eroğlu (Turkey) et al.	
P3(24)	Improvements in the observation of the canopy layer Urban Heat Island in Milano Dr Giuseppe Frustaci (Italy) et al.	[pdf]

No.	Title and authors	Pres
P3(25)	Meteorological observation network automation in the underdeveloped countries for a better adaptation of the vulnerable zones to the climatic change (case of Guinea) Mr Laddah Gberegbe (Guinea) et al.	
P3(27)	Achievements of Reflectivity - Rainfall Rate Conversion Coefficients for 8 Radars of TSMS Mr Aytaç Hazer (Turkey) et al.	
P3(28)	Storage Stability of Ultrasonic Wind Sensors Dr Jarmo Hietanen (Finland)	[pdf]
P3(31)	Aids for Automatic quality control of AWS data at Basque Meteorology Agency Mr Kepa Otxoa de Alda (Spain) et al.	[pdf]
P3(34)	Technical Regulation as a Key Component of Quality Assurance of Hydrometeorological Products and Services Dr Viacheslav Manukalo (Ukraine) et al.	
P3(35)	Integration of Rainfall Data from Various Agencies in Gridded Map Mr Zabani Md Zuki (Malaysia) et al.	[pdf]
P3(36)	A coordinated effort to improve precipitation data quality over Canada: Precipitation Round Table Dr Eva Mekis (Canada) et al.	[pdf]
P3(37)	Evolution of the extreme values in a dense Automatic Weather Station network - Case study temperature time series of the Basque Country Dr Mercedes Maruri (Spain)	[pdf]
P3(39)	Preliminary results of UV measurements in the high-altitude station Formigal-Sarriós (Pyrenees) Mr Juan R. Moreta (Spain)	[pdf]
P3(42)	On the Automation and Modernisation of the Irish Climate Station Network Mr Tony O'Leary (Ireland) et al.	[pdf]
P3(50)	The Basque Automatic Weather Station Mesonetwork in perspective Mr Santiago Gaztelumendi (Spain) et al.	[pdf]
P3(53)	Comparison of Automatic weather Observing Station and Conventional Instruments Temperature Data at Serere Agrometeorological station in Uganda Mr Andrew Ssali (Uganda)	[pdf]
P3(54)	Modernisation of the Meteorological Monitoring Network in Croatia Dr Nataša Strelec Mahovic (Croatia) et al.	[pdf]
P3(56)	Vaisala Radiosonde RS41 Cover Update – Analysis of Comparative Soundings to Study Possible Effects on Atmospheric Profiling Mr Petteri Survo (Finland) et al.	[pdf]

No.	Title and authors	Pres
P3(57)	Ensuring sustainability of measurements in Solomon Islands Mr Barnabas Tahunipue (Solomon Islands)	[pdf]
P3(59)	Toward the Fit Weather Observation for Development of Meteorological Services in Myanmar Mr Hla Tun (Myanmar) et al.	[pdf]
P3(60)	Optimization of Observation Network Based on the Requirements Mr Özden Tüten (Turkey) et al.	[pdf]
P3(61)	IoT based modern surface meteorological observatory Mr Uday Shende (India) et al.	[pdf]
P3(63)	Sphere calibration of two co-located polarimetric X-band radars Ms Floortje van den Heuvel (Switzerland) et al.	[pdf]
P3(64)	Alternative of gradual modernization of manned measurement instruments Mr Augusto Vargas (Peru)	[pdf]
P3(65)	Development of the weather observations network at the Icelandic Meteorological Office (IMO) Dr Sibylle von Löwis (Iceland) et al.	[pdf]

TOPIC 4:	MEASUREMENT AND INTEGRATION CHALLENGES IN THE NEXT 20 YEARS
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Oral presentations:

No.	Title and authors	Pres
O4(1)	Neural network approach for automatic fog detection using traffic camera images Mr Giuliano Andrea Pagani (Netherlands) et al.	[pdf]
O4(2)	Megacities Experiment on integrated Meteorological Observation in China (MEMO) Dr Bai Li (China) et al.	[pdf]
O4(3)	Data Collection Network Modernisation - What You Need to Know Mr Bruce Hartley (New Zealand)	[pdf]
O4(4)	Development of an integrated on-demand observing system Mr Seiichiro Kigawa (Japan)	[pdf]
O4(5)	Towards a global land surface climate fiducial reference measurements network Mrs Caterina Tassone (Switzerland) et al.	[pdf]
O4(6)	Including Upper Air Measurements in Operational Weather Observing Networks Dr Ludovic Thobois (France) et al.	[pdf]
O4(7)	Operational Early Warning System in Southern Brazil - Blending Remote Sensing and Surface Observations for Precipitation Nowcasting Dr Cesar Beneti (Brazil) et al.	[pdf]
O4(8)	An Internet-of-Things (IoT) system development and implementation for Automatic Weather Station (AWS) of BMKG based on MQTT Protocol Mr Ariffudin Ariffudin (Indonesia) et al.	[pdf]
O4(9)	Towards a unified central information processing system to operate the various automatic weather stations composing the Moroccan AWS network Mr Youssef Darari (Morocco) et al.	[pdf]

TOPIC 4:	MEASUREMENT AND INTEGRATION CHALLENGES IN THE NEXT 20 YEARS
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Poster presentations:

No.	Title and authors	Pres
P4(1)	Crowdsourcing observations with FMI Weather App Mr Ismo Karjalainen (Finland) et al.	[pdf]
P4(2)	The Internet of Things and Environmental Monitoring Mr Rod McKay (New Zealand) et al.	
P4(3)	Development of Innovative Technology to Provide Low-Cost Surface Atmospheric Observations in Data Sparse Regions Dr Paul Anthony Kucera (United States of America) et al.	
P4(4)	Towards simplified expression of uncertainty in meteorological observations Dr Stephanie Bell (United Kingdom of Great Britain and Northern Ireland) et al.	[pdf]
P4(5)	Analysis of West African Challenges Towards Fit-For-Purpose Environmental Measurements and Integration Dr Stella Uche Obikwelu (Nigeria) et al.	
P4(6)	Challenges of Utilizing AWOS Information for Nowcasting and Weather Observation - A Pictorial/Graphical Perspective Mr Humphrey Geoffrey Angulu (Kenya)	
P4(7)	Use of satellite brightness temperature and ground lightning data for nowcasting of pre-monsoon season thunderstorms in Nepal Mr Chiranjibi Bhetuwal (Nepal) et al.	[pdf]
P4(9)	Developing high-resolution surface analyses from bias-corrected home AWS data Mr Matthew Clark (United Kingdom of Great Britain and Northern Ireland)	[pdf]
P4(11)	New design of AWS network in Egypt Mr Hamza Mohamed Hamza (Egypt)	[pdf]
P4(12)	Southeast Asian Radar Network (Regional WIGOS Project) Mr Koichiro Kakahara (Japan) et al.	[pdf]
P4(13)	Improving Efficiency and Quality in Weather Observation and Climate Monitoring by Using Artificial Intelligence and Information Communication Technology (ICT) Infrastructure Mr Wilberforce Kahwa Kikwasi (United Republic of Tanzania)	[pdf]
P4(14)	Volumetric measurements of meteorological parameters to improve the weather forecast Dr Alexander Kochin (Russian Federation)	[pdf]

No.	Title and authors	Pres
P4(15)	A Challenge associated with observing, recording and reporting of maximum temperature in East Africa - A case study of Dar Es Salaam, Tanzania Mr Zephrean Lufurano (United Republic of Tanzania) et al.	
P4(20)	Croudsourcing and IoT at Meteo France Émilie Mallet (France) et al.	[pdf]

TOPIC 5:	SOME ACHIEVEMENTS OF CIMO EXPERT TEAMS AND TASK TEAMS IN THE LAST INTERSESSIONAL PERIOD (2014-2018)
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Poster presentations:

No.	Title and authors	Pres
P5(1)	Best Practices Guide to Operational Weather Radar CIMO/CBS IPET on Operational Weather Radars	[pdf]
P5(2)	Achievements of the CIMO Expert Team on Developments in In Situ Technologies CIMO ET on Developments in In Situ Technologies	[pdf]
P5(3)	Progress and Achievements from the CIMO Expert Team on New Remote Sensing Technologies CIMO ET on New Remote Sensing Technologies	[pdf]
P5(4)	Achievements of the CIMO Expert Team on Operational Metrology CIMO ET on Operational Metrology	[pdf]
P5(5)	The WMO International Cloud Atlas (ICA) – Manual on the Observation of Clouds and Other Meteors (WMO-No. 407), a New Edition CIMO TT for Revision of the ICA	
P5(6)	CIMO Task Team on Competencies CIMO TT on Competencies	[pdf]

JOINT SESSION:	JOINT CIMO TECO-2018 & GWEC SESSION Observations – sustainability, innovation and quality
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Oral presentations:

No.	Title and authors	Pres
CG_1	Satellite data – innovations from private sector Peter Platzer, CEO Spire (GWEC)	[pdf]
CG_2	Crowdsourced data improves temperature forecasts on Yr Dr Thomas Nipen (Norway) et al. (CIMO TECO)	[pdf]
CG_3	Leveraging Public-Private Partnerships for Sustainability of Enhanced National Weather Information Services – Conceptual Basis and Global Case Studies Mr James Anderson (United States of America) (CIMO TECO)	[pdf]
CG_4	Quality, standards, fitness-for-purpose - what standards are needed in the GWE? Alessandra Liberto, Campbell Scientific Inc. (GWEF)	[pdf]
CG_5	Sustaining observations in extreme conditions Andrew Harper (New Zealand) (CIMO TECO)	[pdf]

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