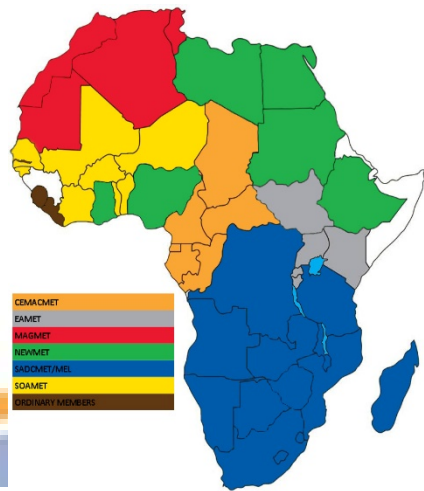




AFRIMETS
Intra-Africa Metrology System
Système Intra-Africain de Métrologie



- COMACMET
- EAMET
- MAGMET
- NEAMET
- SADMET/ML
- SOAMET
- ORDINARY MEMBERS

AFRIMETS TECHNICAL COMITEE FOR THERMOMETRY (TC-T) REPORT

Efrem K Ejigu
AFRIMETS TC-T Chair

32nd CCT meeting
Venue: BIPM
Date: 22 May 2026

CONTENTS

TC-T MEETINGS

Current AFRIMETS INTER-COMPARISONS

AFRIMETS PARTICIPATION IN CCT/APMP etc... COMPARISONS

CMC

Capacity Building

Challenges

Research and Development

AFRIMETS TC-T MEETINGS

- AFRIMETS TC-T 2024 was conducted on 09 July 2024 in on virtual media
- AFRIMETS TC-T 2025 was conducted on 21 July 2025 in person In Accra Ghana and on virtual media



CURRENT INTER-COMPARISON

AFRIMETS. T-S3

- Supplementary comparison of Industrial PRT calibration capability
- Range: -50 °C to 450 °C
- Started: May 2012, postponed & re-started in 2022
- Status: Measurement
- Participating NMIs:
South Africa, Zambia, Zimbabwe, Botswana, Namibia, Mozambique, Democratic Republic of the Congo

AFRIMETS. T-S7

- Supplementary comparison of noble metal thermocouple
- Range: 0 °C to 1200 °C
- Started: June 2019
- Pilot/coordinator: NMISA/NIS
- Status: Measurement
- Participating NMIs:
South Africa, Egypt, Kenya, Zimbabwe, Zambia, Botswana, Ethiopia, Morocco, Ghana, Tanzania.

AFRIMETS PARTICIPATION IN CCT/APMP etc... INTER-COMPARISONS

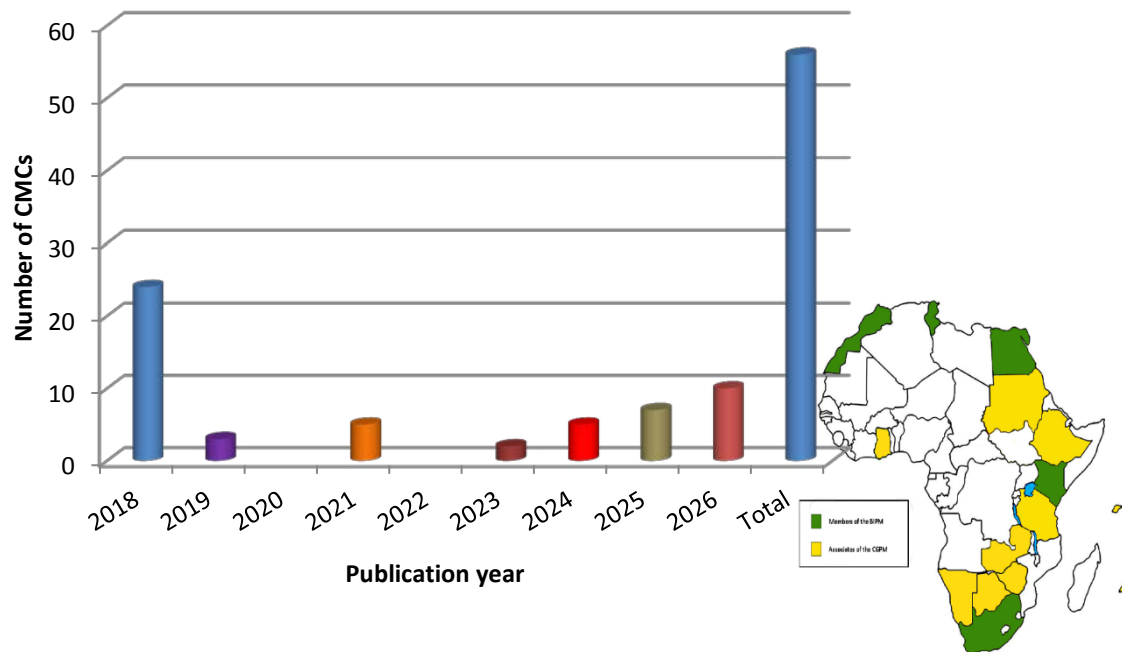
- CCT-K9.3
 - Range: Ar to Zn
 - Pilot: CEM
 - Linking Lab: CEM
 - Status: Measurement completed, **Report under review**
 - Participating AFRIMETS NMIs: South Africa
- CCT-K4.2
 - Range: Al to Ag
 - Pilot: CEM
 - Linking Lab: CEM
 - Status: Measurement completed, **Report preparation**
 - Participating AFRIMETS NMIs: South Africa
- APMP.T-K.6.2013
 - Range: Dew point temperature -50 °C - +20 °C
 - Pilot: NMC A*STAR
 - Start: March 2015
 - Status: Measurement completed, **Draft B**
 - Participating AFRIMETS NMIs: South Africa


- **CCT-K11**
 - Key comparison of blackbodies for infrared ear and forehead thermometers
 - Range: 34 °C to 43 °C
 - Status: measurement
 - Participating AFRIMETS NMIs: **South Africa**
- **APMP.T-K4.2**
 - Key comparison of local realizations of aluminium (Al) freezing-point temperature
 - Range: Al fixed point
 - Started: 2018
 - Status: Completed, **Report published**
 - Participating AFRIMETS NMIs: **South Africa**
- **APMP.T-S11/S12**
 - Local realization of radiation thermometer scale from Indium point to 2800 °C
 - Range: 156 °C to 2800 °C
 - Started: 2013
 - Status: Measurement completed, **Report writing (pilot)**
 - Participating AFRIMETS NMIs : **South Africa**

- APMP.T-S16
 - Supplementary comparison of noble metal thermocouple
 - Range: 1000 °C to 1560 °C
 - Started: 2017
 - Status: completed, **published**
 - Participating AFRIMETS NMIs: **South Africa**
- APMP.T-S13
 - Supplementary comparison of humidity (dew point)
 - Range: Frost-point temperatures -60 °C, -70 °C, -80 °C, (-90 °C)
 - Started: 2014
 - Status: Measurement completed, **Draft A report**
 - Participating AFRIMETS NMIs : **South Africa**
- APMP.T-S17
 - Supplementary comparison of Air Thermometers
 - Range: -70 °C to 90 °C
 - Status: Measurement completed, **Draft B Report**
 - Participating AFRIMETS NMIs: **South Africa**

Approved
and
published
CMC in
the past
eight
years


Year	Number of CMCs	
2018	24	
2019	3	
2020	0	
2021	5	
2022	0	
2023	2	
2024	5	EMI + KEBS
2025	7	TBS
2026	10	
Total	56	8 Countries



A large red circular graphic on the left side of the slide, partially cut off by the edge.

Inter-RMO CMC review

AFRIMETS TC-T is actively participating in inter-RMO CMC reviewing process.

A decorative purple dashed line graphic in the bottom right corner, consisting of several curved segments.

Capacity Building

- NMISA provided training to Kenya Bureau of Standards (KEBS) temperature metrologist at KEBS
- NMISA provided training to Uganda National Bureau of Standards (UNBS) temperature metrologist at UNBS
- NMISA facilitated the SADC MET ILC workshop hosted by Malawi Bureau of Standards (MBS) on comparison and CMC review
- NIS & KEBS has training services that NMIs can utilize
- LPEE-LNM can provide training to French speaking countries per request
- NMISA Humidity lab provided training to TBS staff at NMISA
- NMISA temperature lab provided technical support to University of Cape town students in thermal imager project at NMISA
- South Africa, Ghana, Ethiopia and Kenya has engaged with Fujian metrology institute for future metrology collaborations

Challenges

- Difficulty in the procurement of ITS90 equipment
- ILC delays
- limited number ILCs available
- Limited number of NMIs willing or capable to be pilots
- Limited number of NMIs capable enough to provide training
- Limited technical capabilities
- Increase of thermometry calibration services
- Big continent with limited resource
- Lack of exposure

Research and Development

- **At NMISA South Africa**
 - Ongoing R&D on the evaluation of emissivity and temperature using signals obtained from a multi-wavelength infrared thermometer
 - Ongoing R&D on the design of cut-off interference filters for infrared thermometer applications
 - Completed research on *Investigating Design Considerations and Offsets in Body Infrared Thermometer Accuracy*, published in the Journal of Thermophysics
 - Engagement in the APMP Thermal Imager project, including experimental investigations of thermal imager testing principles
 - Modernization and automation upgrade of the thermocouple measurement system
- **At NIS Egypt**
 - Improvement of moisture measurements for Egyptian wood samples at NIS –EGYPT
 - Temperature Effect in the Calibration of NIS Reference Humidity Sensors Using a Two-pressure Humidity Generator
 - New adiabatic calorimeter for calibrating capsule standard platinum resistance thermometer in low-temperature fixed point at NIS-Egypt
 - Automated Controlled Stirred Liquid Baths System for Calibrating Contact Thermometers in the Temperature Range from -80°C to 420°C



Thank you