

# Mercury Observations in Africa: What is Possible through Networking??

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## GAW TEAM

T. Mkololo, C. Labuschagne,  
P. Labuschagne & SAMNET and All Partners,



# Global Atmosphere Watch (GAW)

- WMO GAW coordinates activities and data from 31 Global Stations, >400 Regional Stations, and around 100 Contributing stations operated by Contributing Networks
- CPT first measurements started 1978 with CO 1<sup>st</sup> measured
- Strategic position of CPT w.r.t. southern hemisphere





# Why we are UNIQUE



## HOW DID IT ALL START

- CPT 1<sup>st</sup> Hg Measurements were made in **Sep 1995** via Manual Method
- Collaboration with Franz Slemr (GER) through a pilot study at Mt Wank
- Started with Continuous measurement in March 2007 with a Tekran 2537A donated by Prof Ralf Ebinghaus
- Wet deposition measurements in May 2007 in collaboration with Rob Mason and CSIR-Stellenbosch

# First Results of CPT Hg Program published in 2002

PERGAMON

Africa and The Middle East

ATMOSPHERIC ENVIRONMENT

Atmospheric Environment 36 (2002) 2459–2465

www.elsevier.com/locate/atmosenv

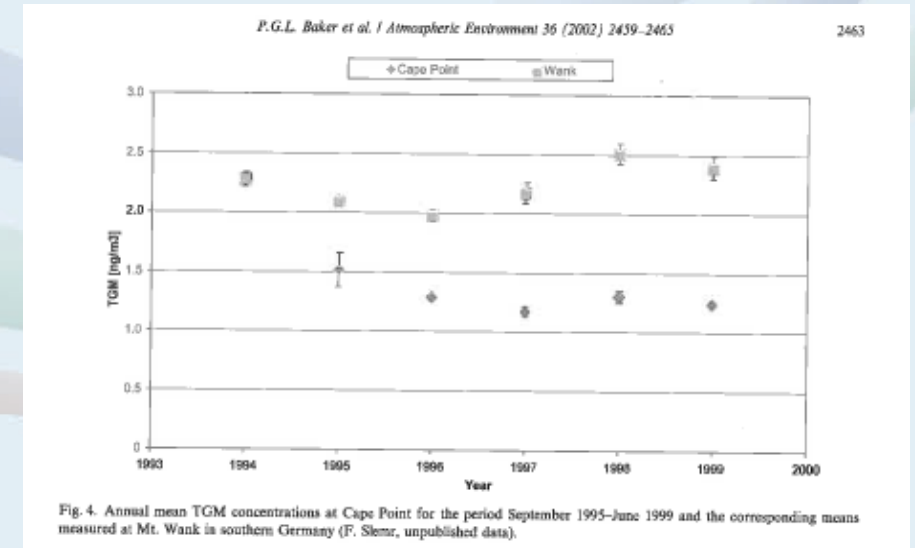
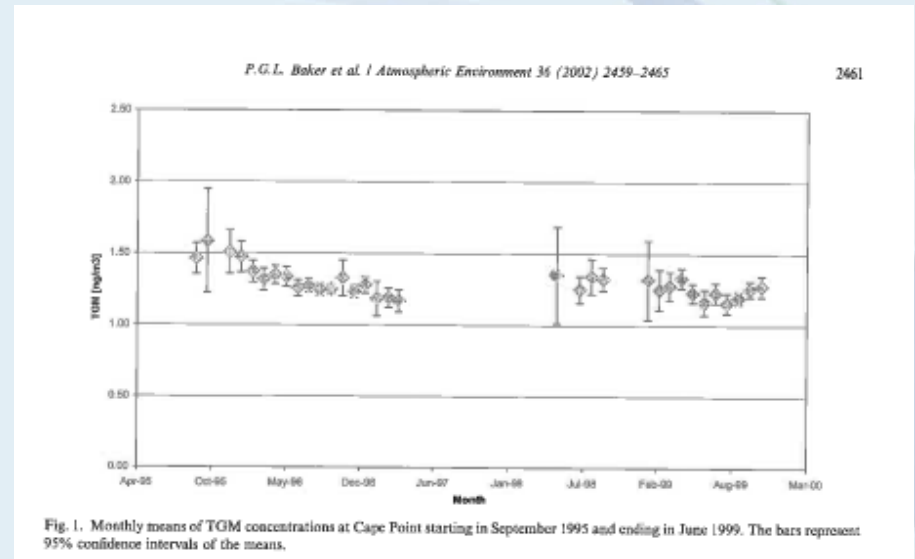
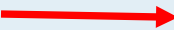
## Atmospheric mercury measurements at Cape Point, South Africa

P.G.L. Baker<sup>a,1</sup>, E.-G. Brunke<sup>b</sup>, F. Slemr<sup>c</sup>, A.M. Crouch<sup>a,\*</sup>

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<sup>b</sup> Department of Environmental Affairs and Tourism, P.O. Box 320, Stellenbosch 7600, South Africa  
<sup>c</sup> Max-Planck-Institut für Chemie, Airchemistry Department, P.O. Box 3060, D-55020 Mainz, Germany

Received 21 November 2000; received in revised form 13 August 2001; accepted 28 September 2001

Data from Sep 1995 – June 1999

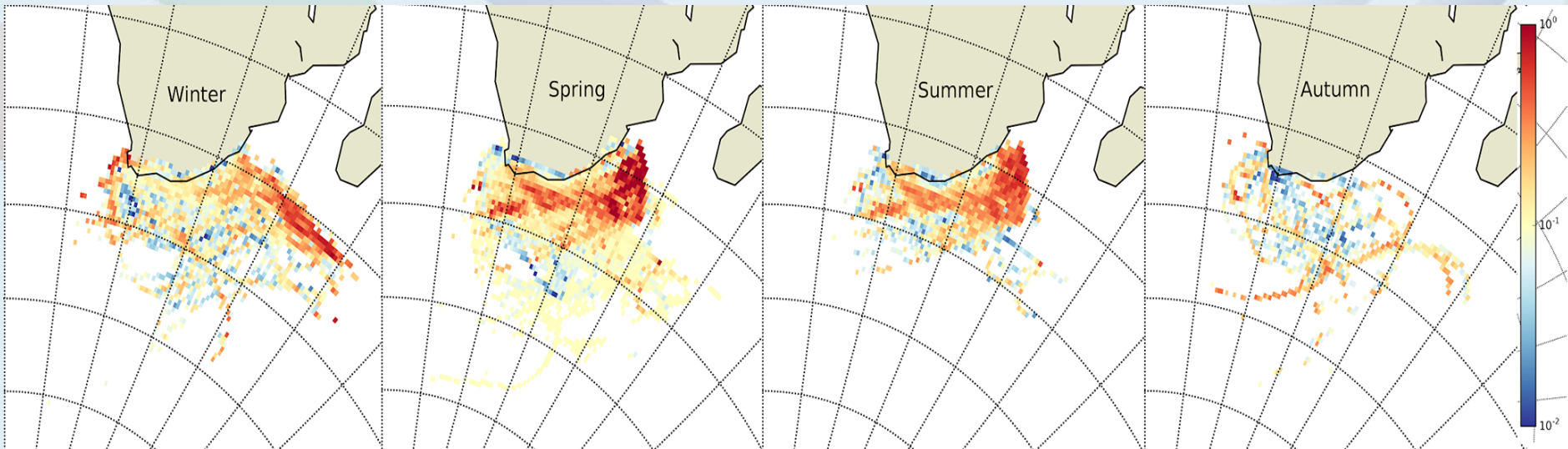
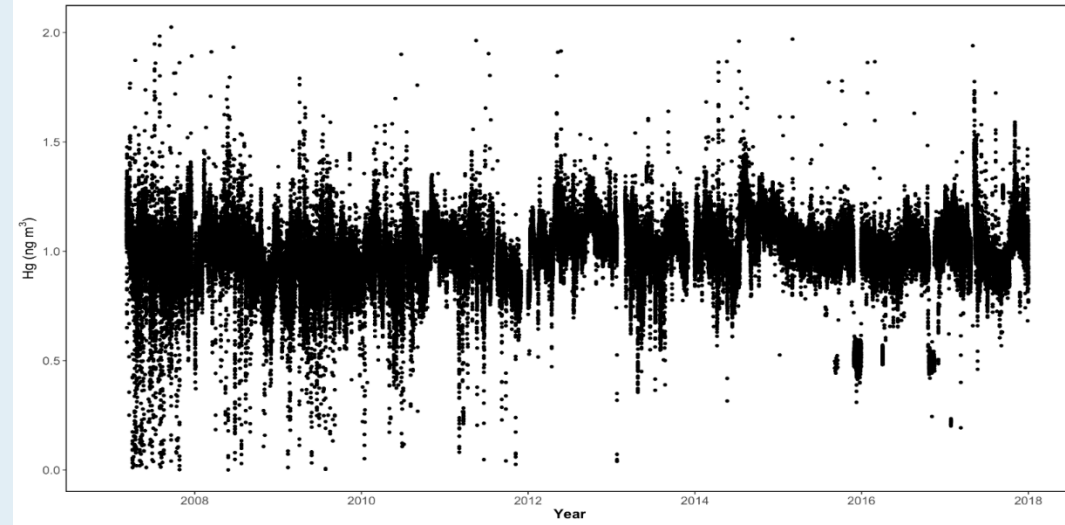


# Cape Point Mercury Paper 1: Summary

- CPT GAW Station is suited for long term monitoring of background trends in SH
- CPT is representative for the Southern Atlantic Ocean
- GEM trends in SH similar to that observed in NH but 6-12 month lag (Mt. Wank Comparison)
- Continued measurements at CPT will provide information on the North-South distribution of natural and anthropogenic Hg emissions

# Cape Point Time Series 2007 – 2018

## Tekran 2537 B (30 min averages)

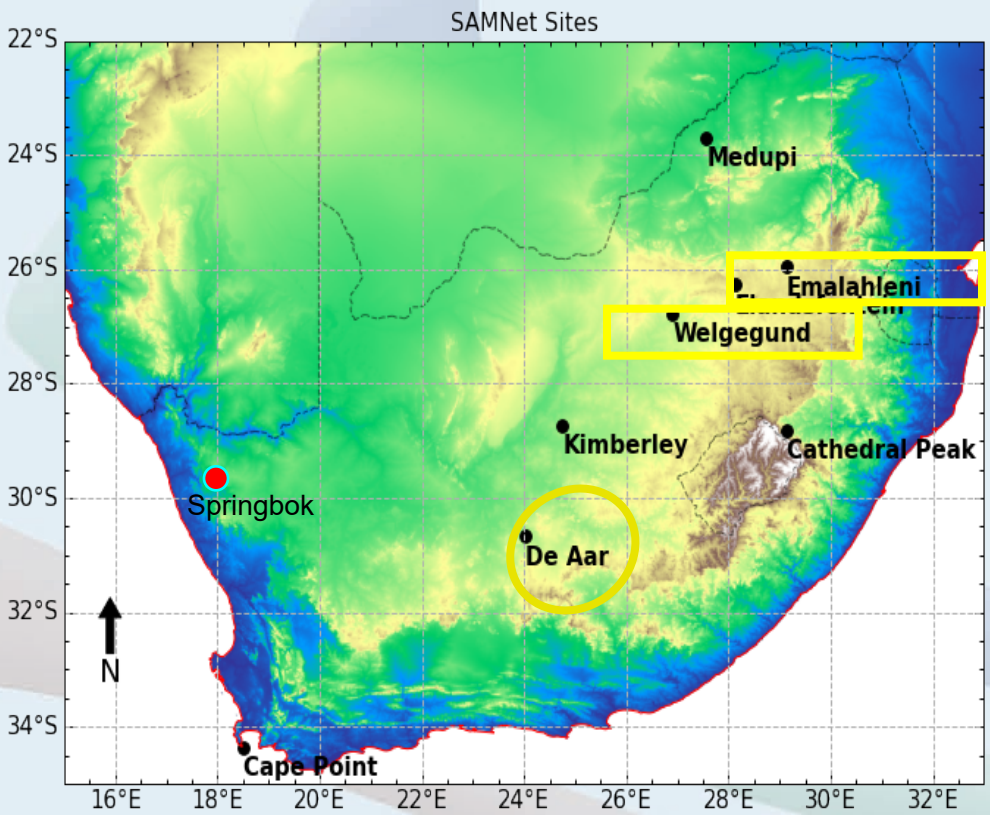


LG Martin et al., 2017 and Bieser et al., 2020



- SAMNet started 1 April 2020 and the goal is to develop a **coordinated SA observation network for mercury** to determine the status and trends in atmospheric mercury concentrations, Later in Africa also (GOS4M)
- Expand the monitoring stations in SA and start Speciation monitoring at CPT
- Give government and relevant stakeholders a firm basis for future policy developments in the implementation of the Minamata Convention

# SA Mercury Network (SAMNet) Observations



- 3 x Tekran X (Cape Point, Welgegund) Ship
  - 3 x Lumex , CPT, De Aar and Emalahleni
  - 8 Passive Sampling Sites (across the country)
  - 3 Passive sites collaborating with ECCC
  - 4 Wet deposition sites
- Speciation Monitoring started May 2022
- New Site:**  
Springbok started July 2022
- Passives part of the Global Network EC





# MOYAI Initiative

- A Moyai-line linking Minamata and the World - Rev.1



## Supporting Developing Countries

### MINAS:

Moyai Initiative for Networking, Assessment and Strengthening

**Networking:** Building networks of mercury-related activities (e.g. monitoring) and information between Japan and partner countries

**Assessment:** Accelerating developing countries' efforts by supporting their situation assessments, taking advantage of Japan's experiences

**Strengthening:** Strengthening developing countries' mercury management by providing Japan's advanced technologies and know-how

Supporting developing countries for the ratification / implementation of the Convention

## Leading Voices from Minamata

### Awareness about the Convention:

Holding Convention-related events and disseminating messages to the world

### Technology and Knowledge Sharing:

Introducing simple mercury analysis method, and hosting international academic forum on mercury

### Environmental Rehabilitation:

Supporting Minamata disease patients, promoting 'Moyai-naoshi' activities, and revitalizing society and its economy through environmental means

Disseminating Model Case of Pollution Control and Environmental Rehabilitation

## Knotting Economy-Environment Moyai-line

\*:Japanese term 'Moyai' literally means a bowline rope mooring boats together. It also refers to the cooperative works in local communities

# THE 8<sup>TH</sup> ASIA-PACIFIC MERCURY MONITORING NETWORK WORKSHOP

The Ritz-Carlton Jakarta Mega Kuningan  
Jakarta, Indonesia  
August 14-16, 2019



National Atmospheric  
Deposition Program



# SAWS & MOEJ WORKSHOP 4-6 JULY 2023

## STELLENBOSCH SOUTH AFRICA



This is how we can close the data GAPS, Working Together/ Continued Collaboration



# SA and MOEJ Collaboration

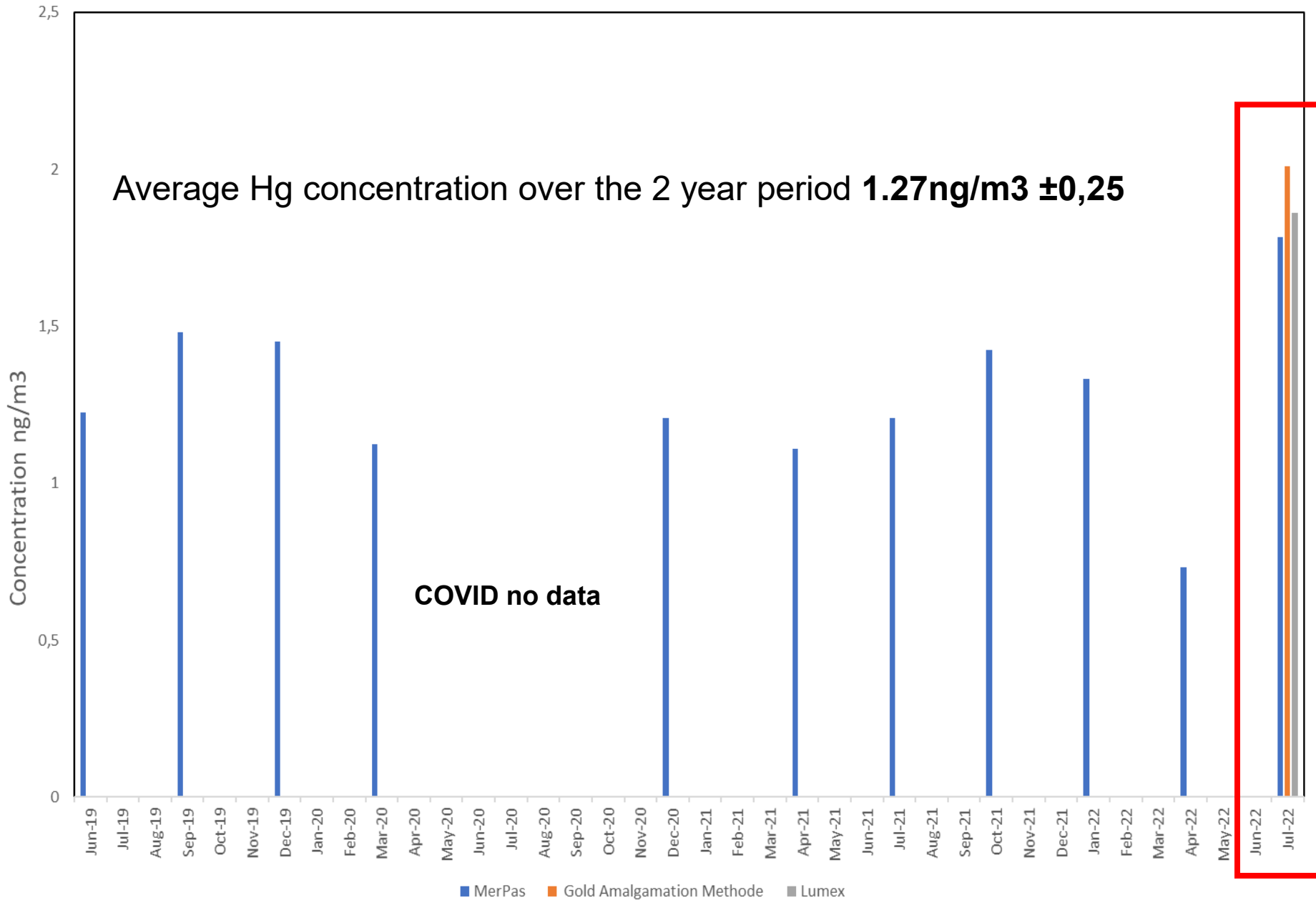


# MOEJ Manual Method vs Lumex Comparison in De Aar

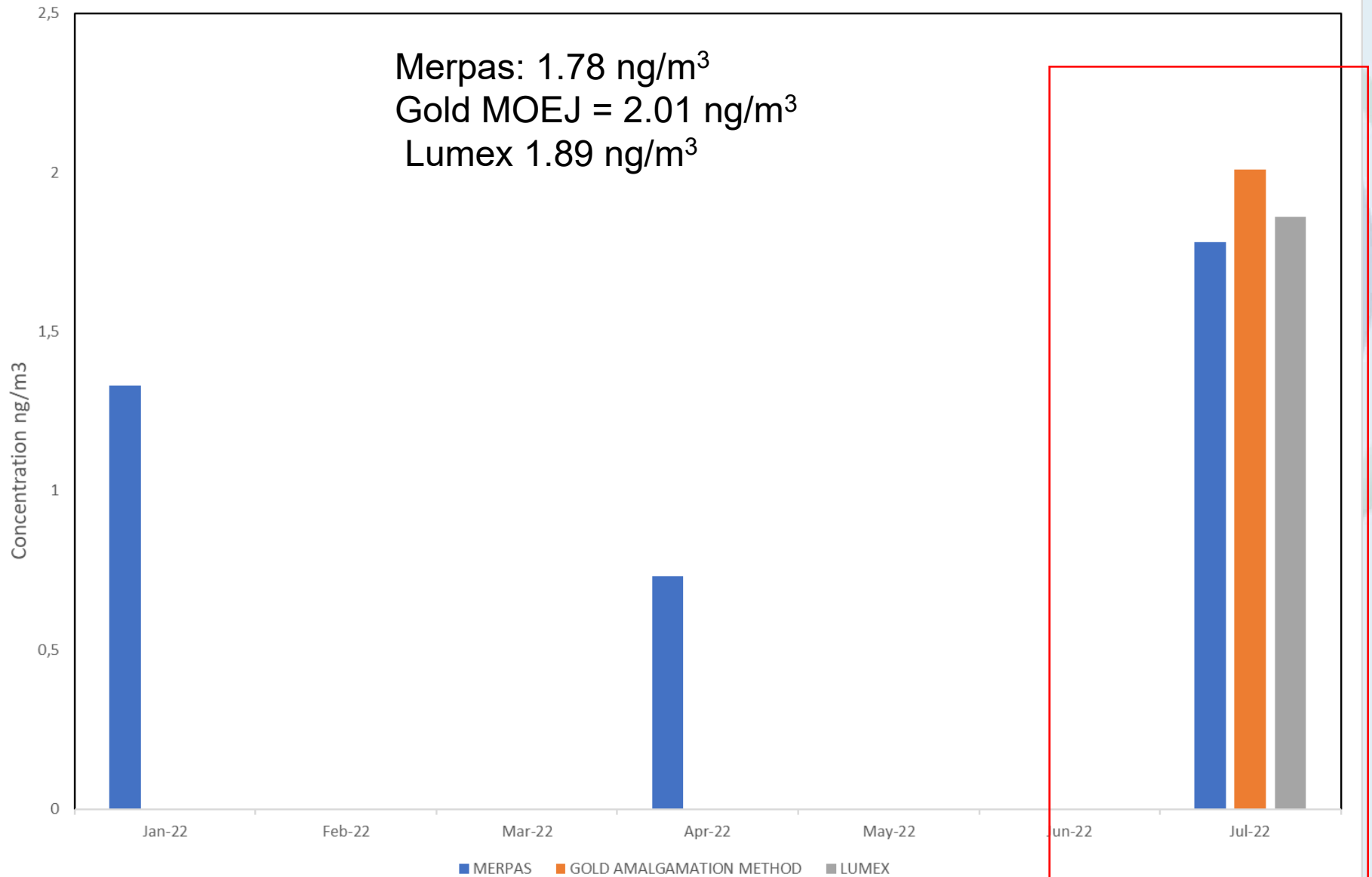
- The De Aar weather office is (30.67° S, 24.01° E)
- Site is located in the middle of the country in the N-Cape.
- De Aar has a climate of extremes - very hot in the summer (days and nights) and icy in the winter months.
- With little to no industrial activity, De Aar is ideally suited to be considered as background site for Hg monitoring.
- Hg detected at this location will be due to long range transport from surrounding provinces and hotspots within the province.



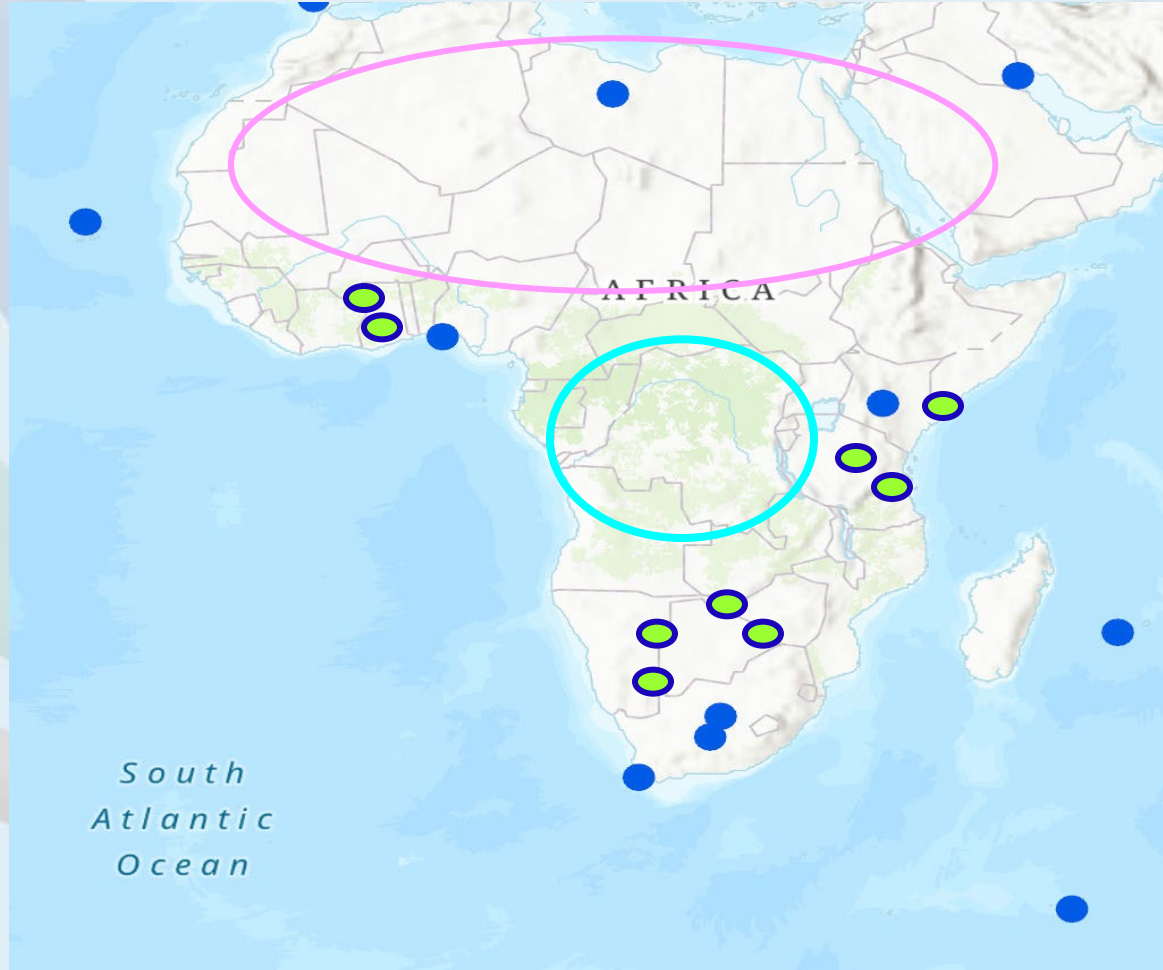
# Merpas data for De Aar



# MerPas vs Manual vs Lumex at De Aar



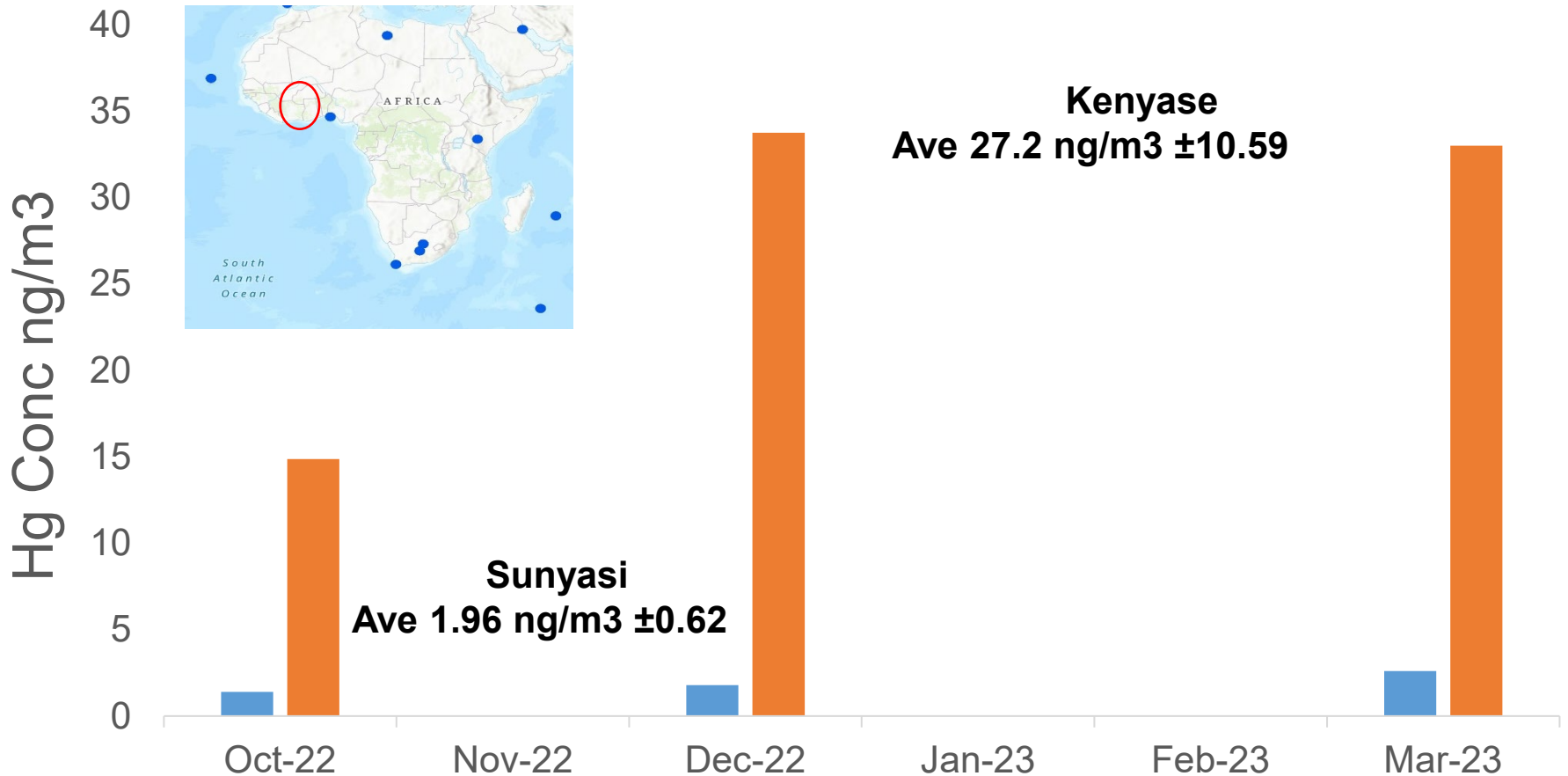
# Passive Network in Africa as part of the Global Passive Sampling Network Env Canada



**South African  
Weather Service**

# The Challenge in Africa is BIG

Ghana MerPas Sites **Sunyasi** & **Kenyase** (ASGM Site)

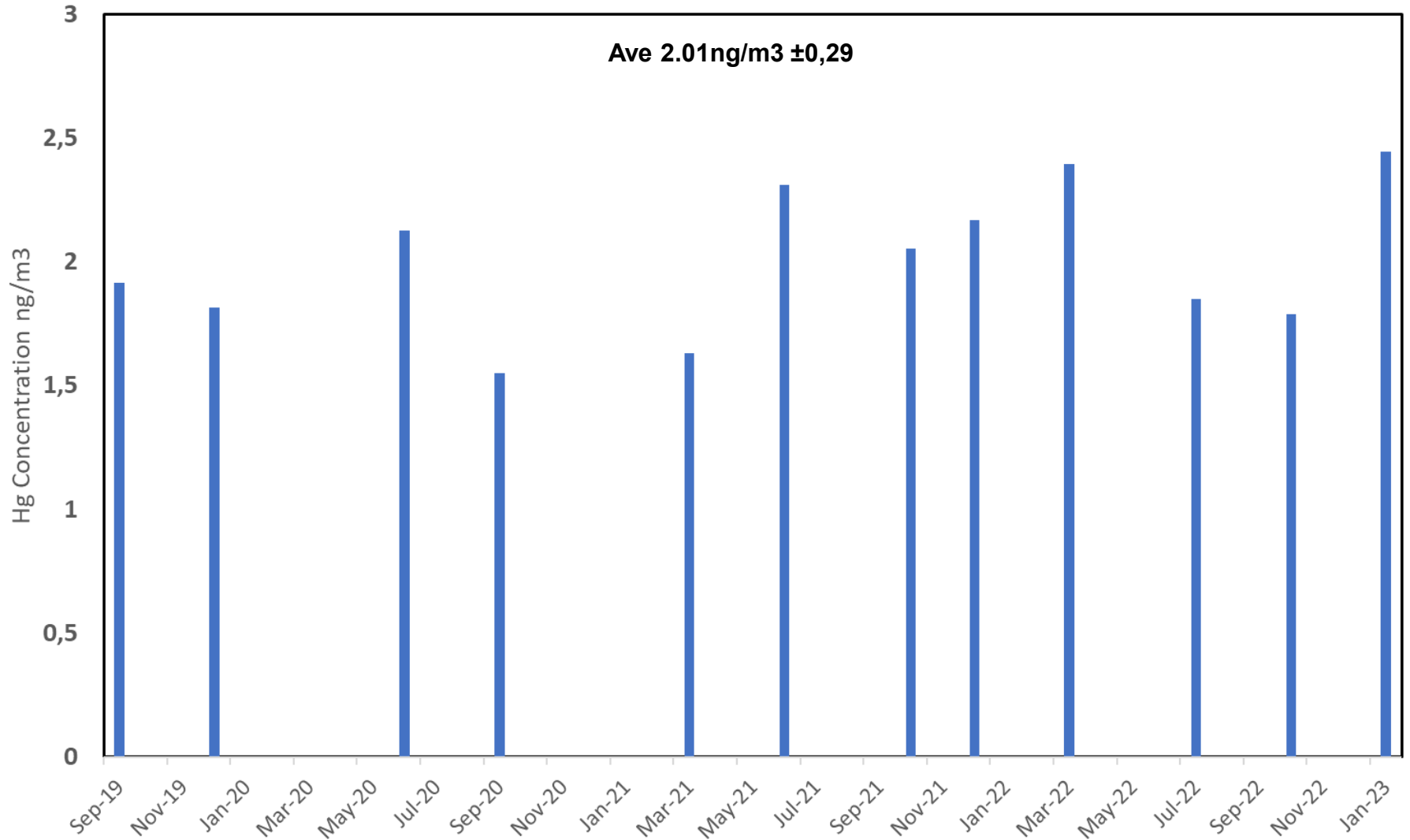


**South African  
Weather Service**

Data provide by Katrina McSween as part of the Global Passive Network coordinated by Environment Canada  
Passive Samplers are exposed for 3 months at all sites

# The Challenge in Africa is BIG

## NIGERIA MerPas



# **Take HOME Message**

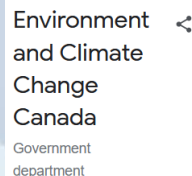
**Mercury Observations in Africa: What is Possible through  
Networking??**

**ANYTHING IS POSSIBLE**

# TAKE HOME Message

- MOYAI Program is an Excellent Initiative to help developing countries with atmospheric mercury monitoring and collect data to fill in the data gaps in Africa and have data available for EE process
- Mercury Passive Sampling Network coordinated by Environment & Climate Change Canada is Proof that it can be DONE

# SAMNet Stakeholders & Partners



Thank You!

