MONITORING CO_2 AND OTHER GREENHOUSE GASES IN GAW DANUM VALLEY STATION

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SCOPE

- INTRODUCTION
- MALAYSIA AS WMO GAW MEMBER
- MONITORING ACTIVITIES AT DANUM VALLEY GAW STATION
- INSTRUMENTATION AND PARAMETER MONITORED
- CONCLUSION

ATMOSHPERIC SCIENCE DIVISION

MetMalaysia has set up the Environmental Studies Division in 1976 to contribute towards conservation and enhancement of the environment and the advancement of knowledge and understanding of atmospheric processes. In 2013, the division has been renamed as Atmospheric Science Division

DIVISION'S SERVICES

Providing atmospheric composition & air quality data from monitoring stations network for public, private and commercial purposes.

Issuing early warning for environmental disaster through changes in atmospheric composition & environmental conditions monitoring.

Providing air quality forecast.

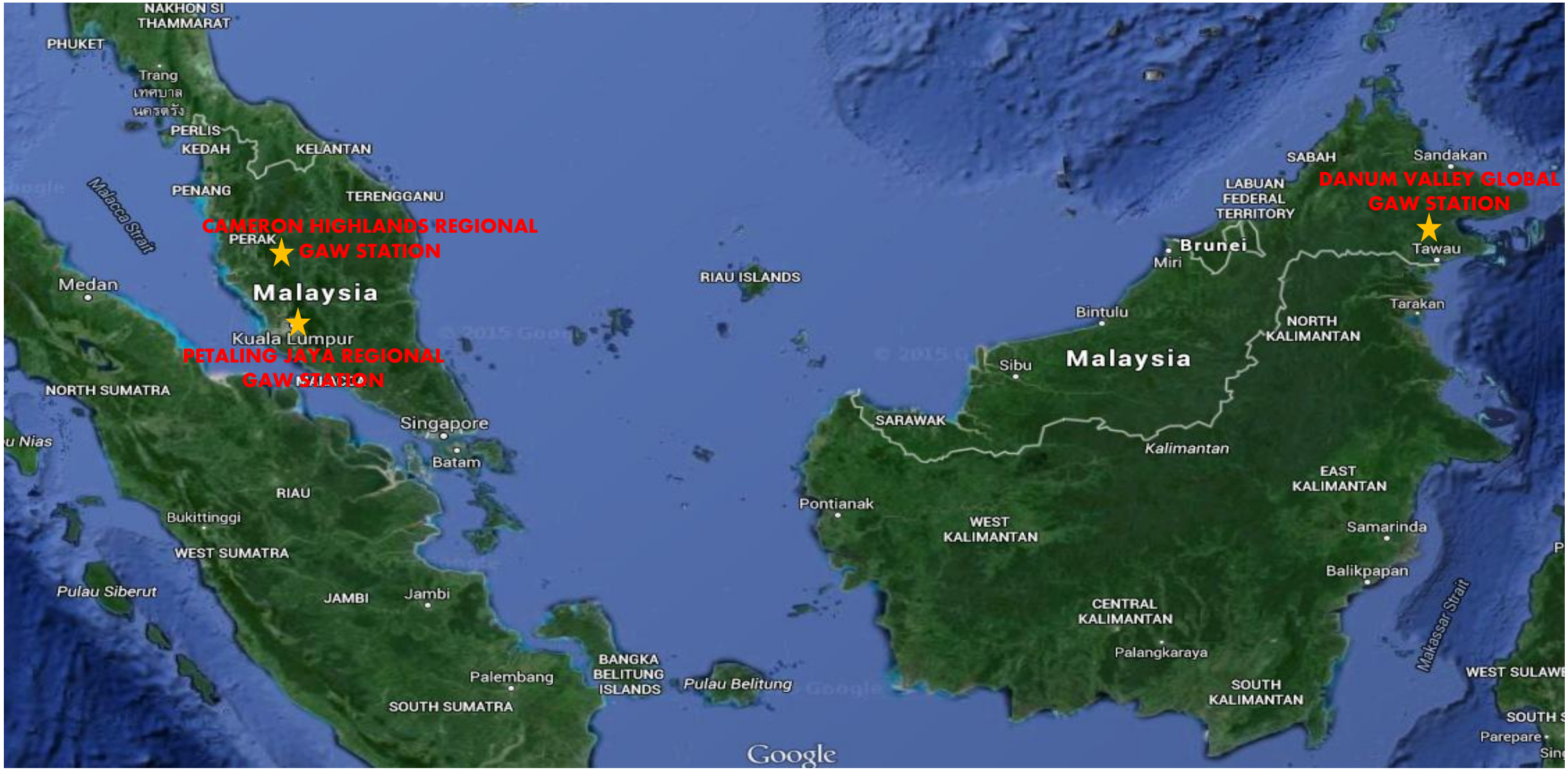
Coordinating department response towards haze events and other occuring environmental emergencies.

Contributing towards the GAW-WMO network on air pollution and ozone layer depletion research.

Providing air quality status reports at selected locations in Malaysia.

Conducting researches towards developing knowledge and understanding of the atmosphere.

MALAYSIA AS WMO GAW MEMBER



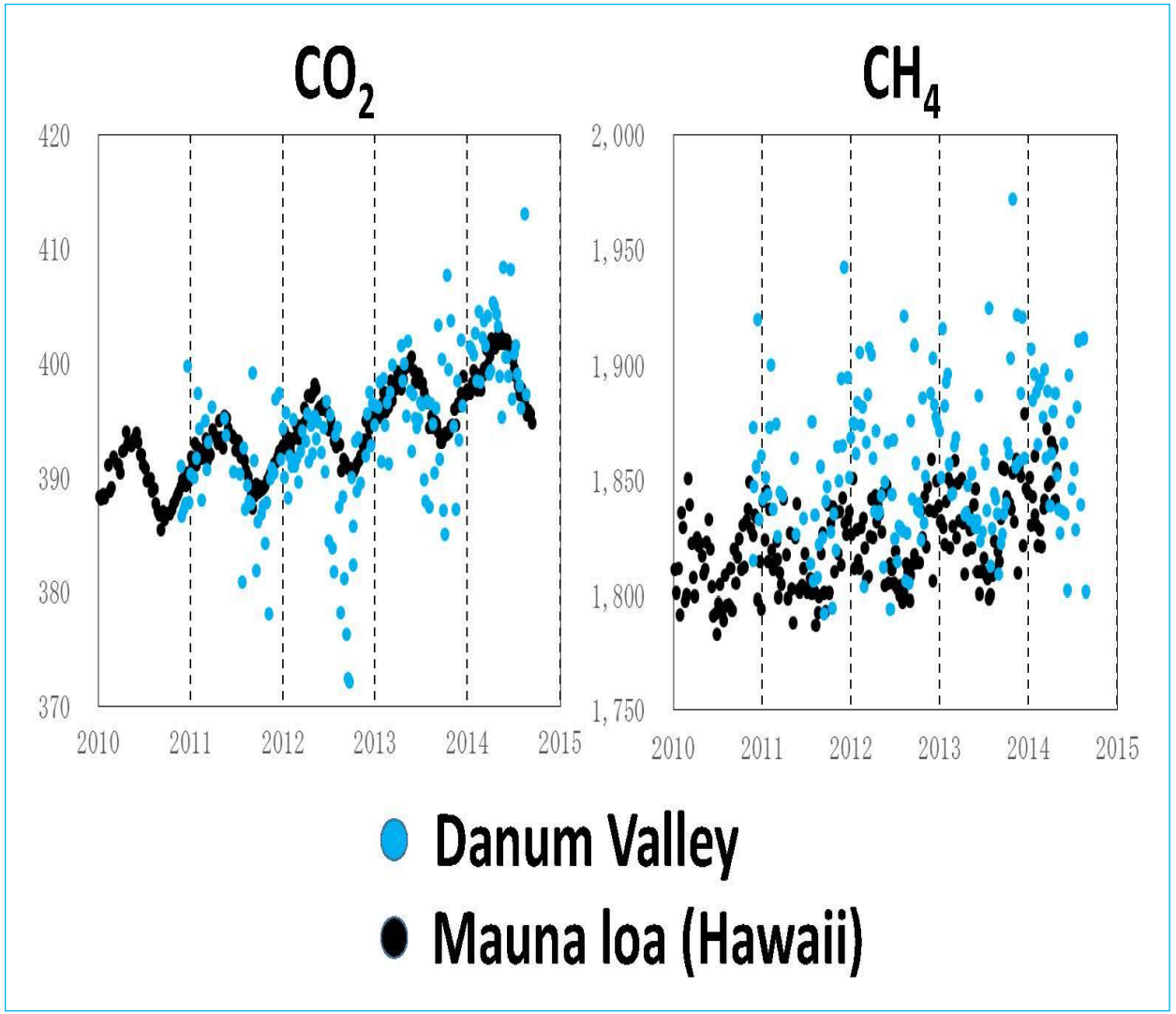
Danum Valley GAW Global Station

Cameron Highlands GAW Regional Station

Petaling Jaya GAW Regional Station

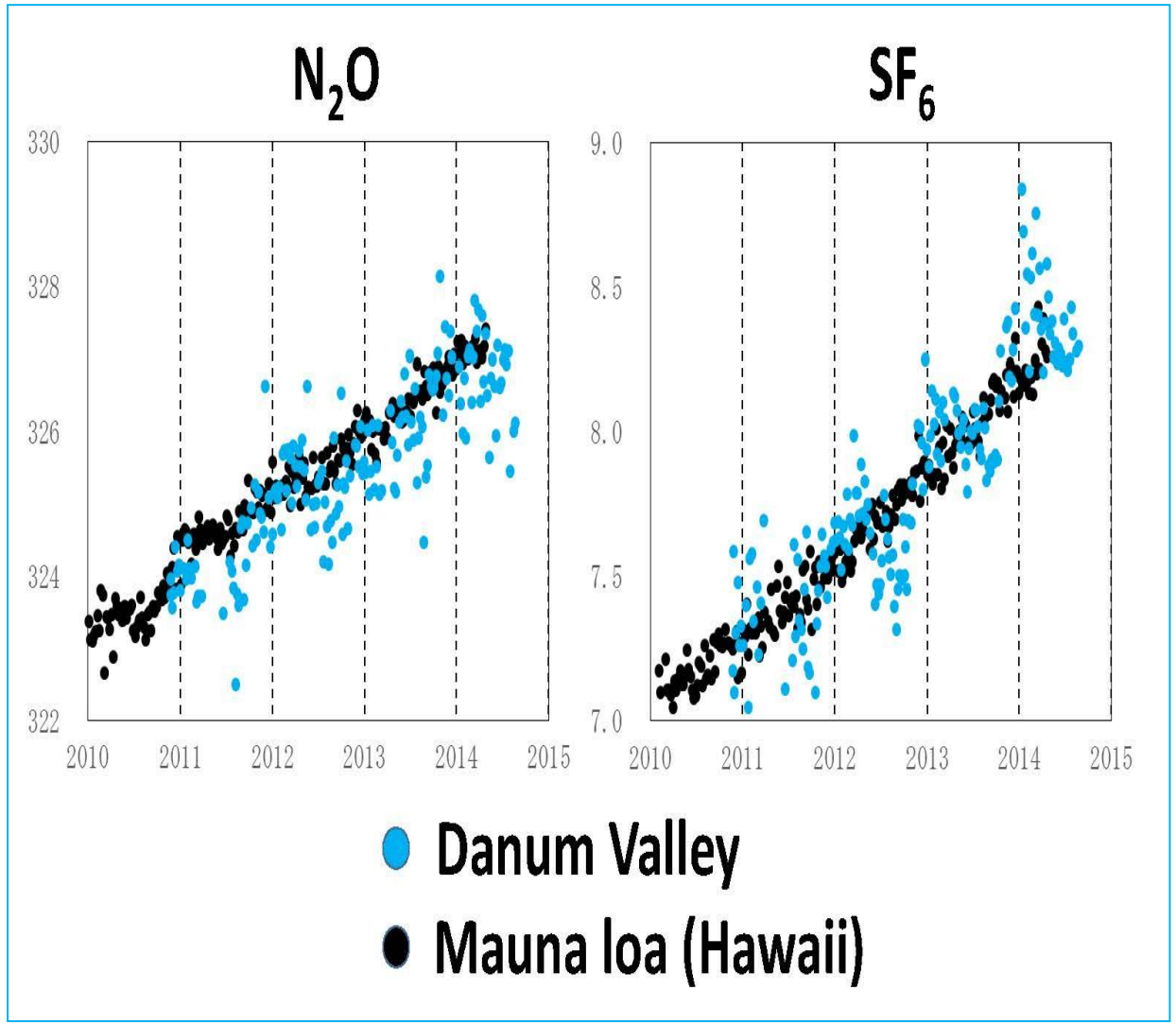
MONITORING ACTIVITIES AT DANUM VALLEY GAW STATION

No.	GAW FOCAL AREAS	TYPE OF INSTRUMENT	PARAMETER
1.	Aerosol	▪ Tapered Element Oscillating Microbalance (TEOM) ▪ Nephelometer ▪ Multi Angle Absorption Photometer (MAAP) ▪ Precision Filter Radiometer (PFR)	▪ Pm-10 concentration ▪ Back scattering coefficient ▪ Black carbon concentration, Absorption Coefficient ▪ Aerosol optical depth
2.	Greenhouse gases	▪ LoFlo Mark II CO_2 Analyzer, ▪ Flask sampling ▪ NIES CO_2 Analyzer	▪ Carbon Dioxide (CO_2) ▪ Methane (CH_4) ▪ Nitrous Oxide (N_2O) ▪ Sulphur Hexafluoride (SF_6)
3.	Reactive Gases	▪ Flask sampling ▪ Passive Sampler ▪ Filter Pack	▪ Surface Ozone (O_3) ▪ Carbon Monoxide (CO) ▪ Nitrogen Oxides (NOx) ▪ Sulphur Dioxide (SO_2) ▪ Hydrogen (H_2)
4.	Ozone	▪ O_3 Analyzer	Surface ozone
5.	Precipitation Chemistry	▪Wet Only Rainwater Sampler	Wet fallout: pH,EC,Cl^-,NO_3^-,SO_4^{2-},Na^+,K^+, Ca^{2+}, Mg^{2+},NH_4^+, oxalate, acetate, formate, mercury, copper, iron, manganese, nickel, lead, zinc, cadmium

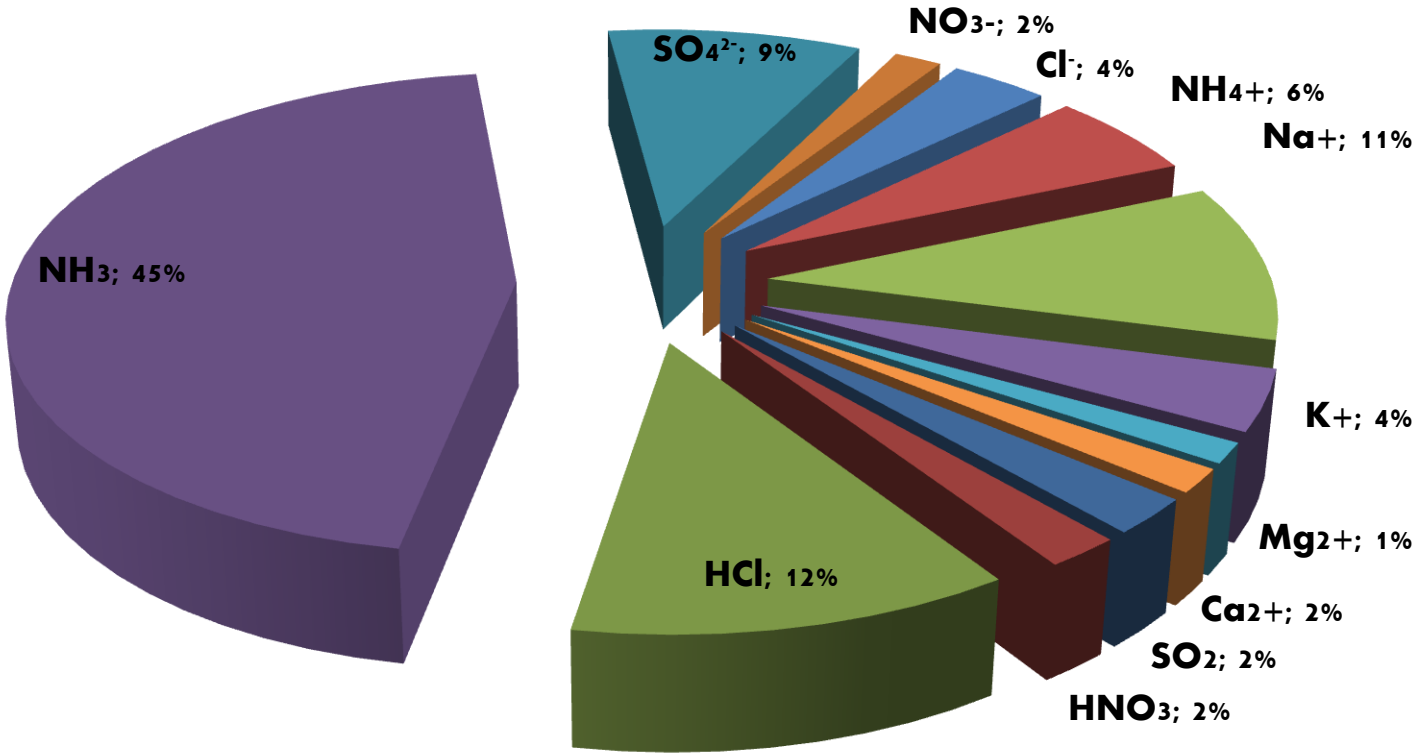


The time series analysis of CO_2 & CH_4 concentration at Danum Valley & Mauna Loa.

The time series analysis of N_2O & SF_6 concentration at Danum Valley & Mauna Loa.



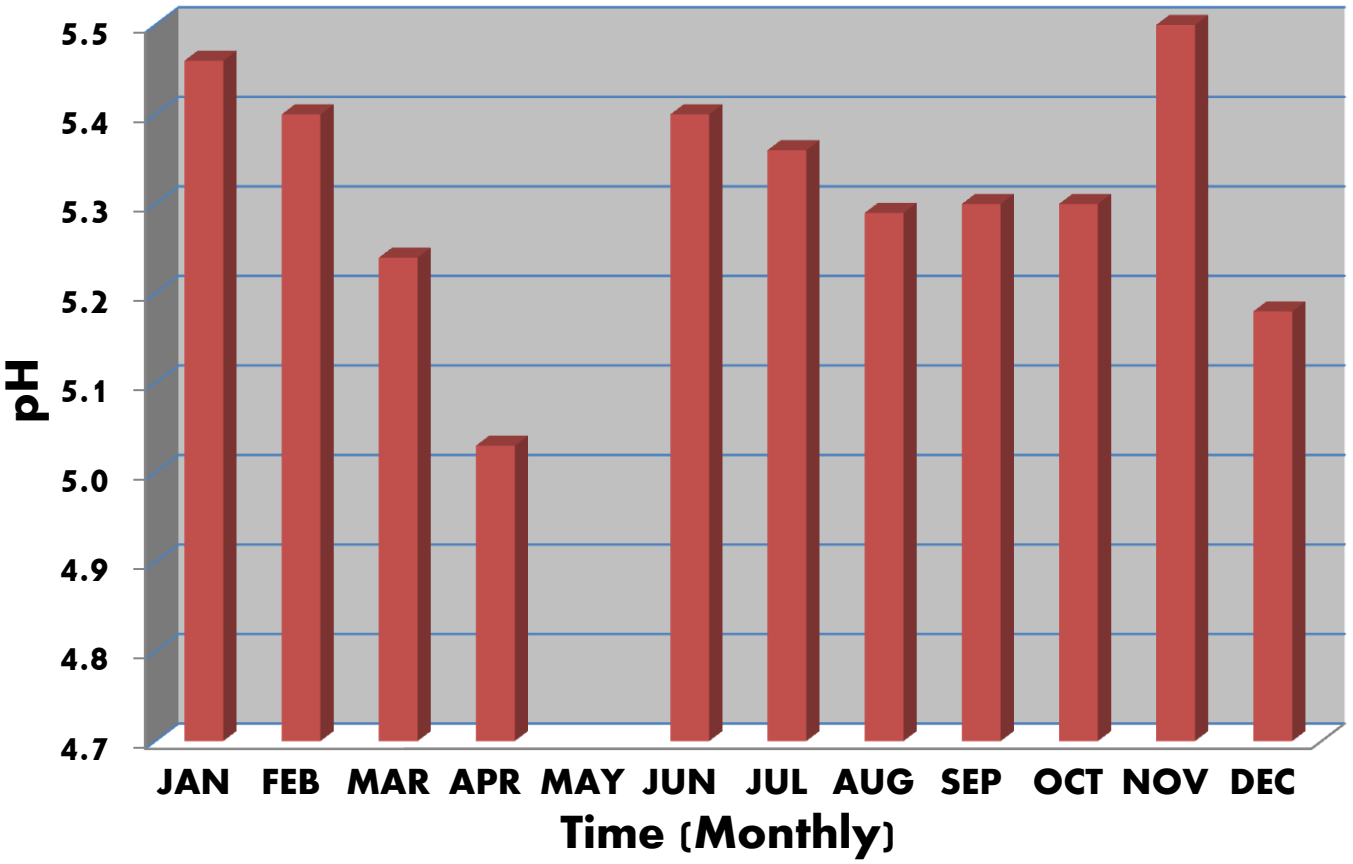
Filter Pack Danum Valley 2014



Filter Pack

Average percentage of gases and ions of atmospheric dry deposition in Danum Valley

Monthly Variation of Rainwater pH 2014



Ecotech Wet Only Sampler

COLLABORATION AND COOPERATION WITH SCIENTIFIC COMMUNITY

- Department of Chemistry Malaysia
- Universiti Kebangsaan Malaysia (UKM)
- Universiti Malaya (UM)
- WMO's GAW
  - WCCPAP
  - PMOD
  - WRC
- East Asia Acid Deposition Network (EANET)
- Southern Hemisphere Additional Ozonesondes (SHADOZ) Programme
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- National Institute for Environmental Studies (NIES)

CONCLUSION

MetMalaysia are aware of the importance in keeping the status of GHG concentration updated, such that an environmental sustainability development could be properly planned and structured. Therefore the support from WMO GAW are very much appreciated in the continuity of the GHG monitoring in Malaysia.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