

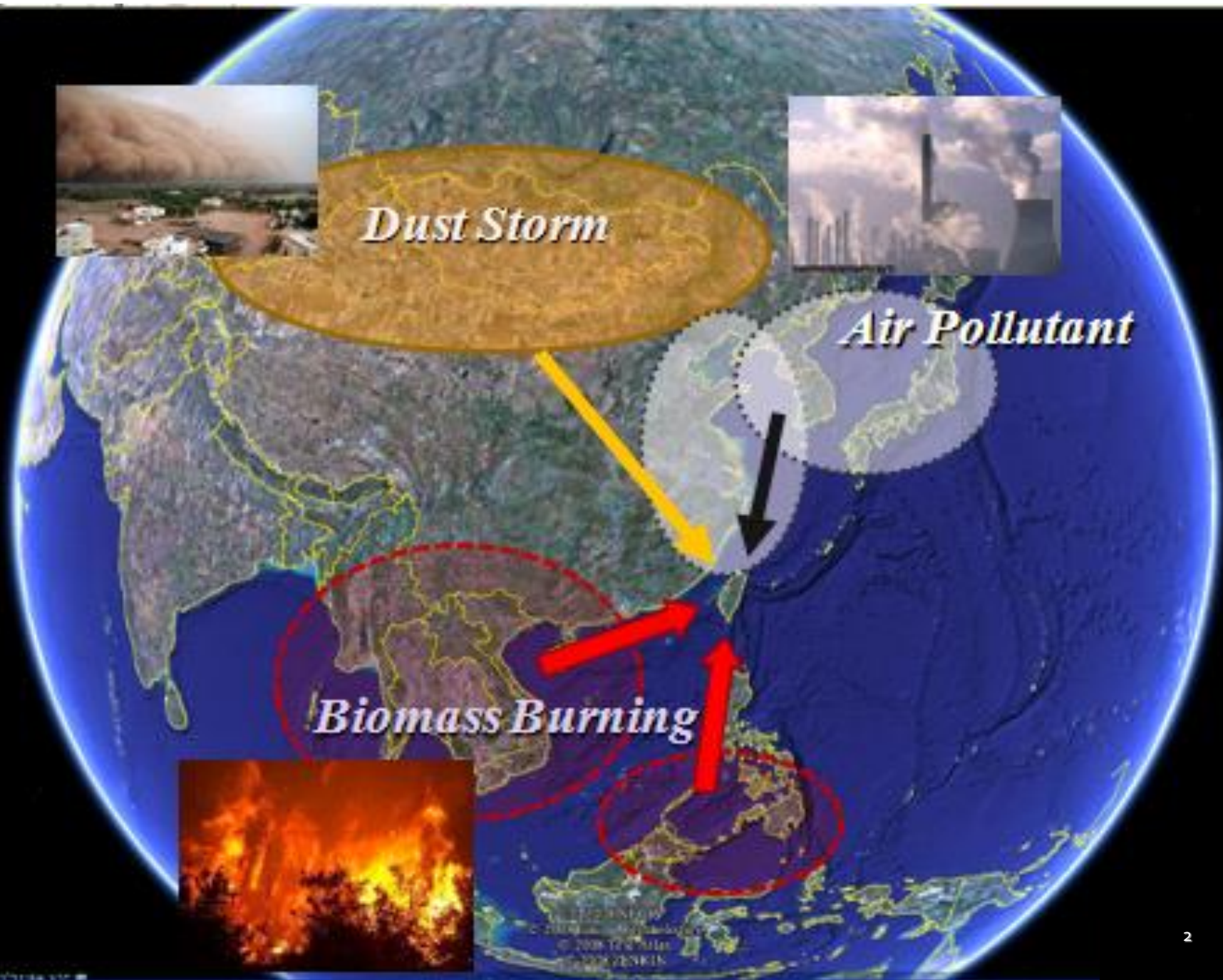


Introduction to Lulin Atmospheric Background Station in Taiwan

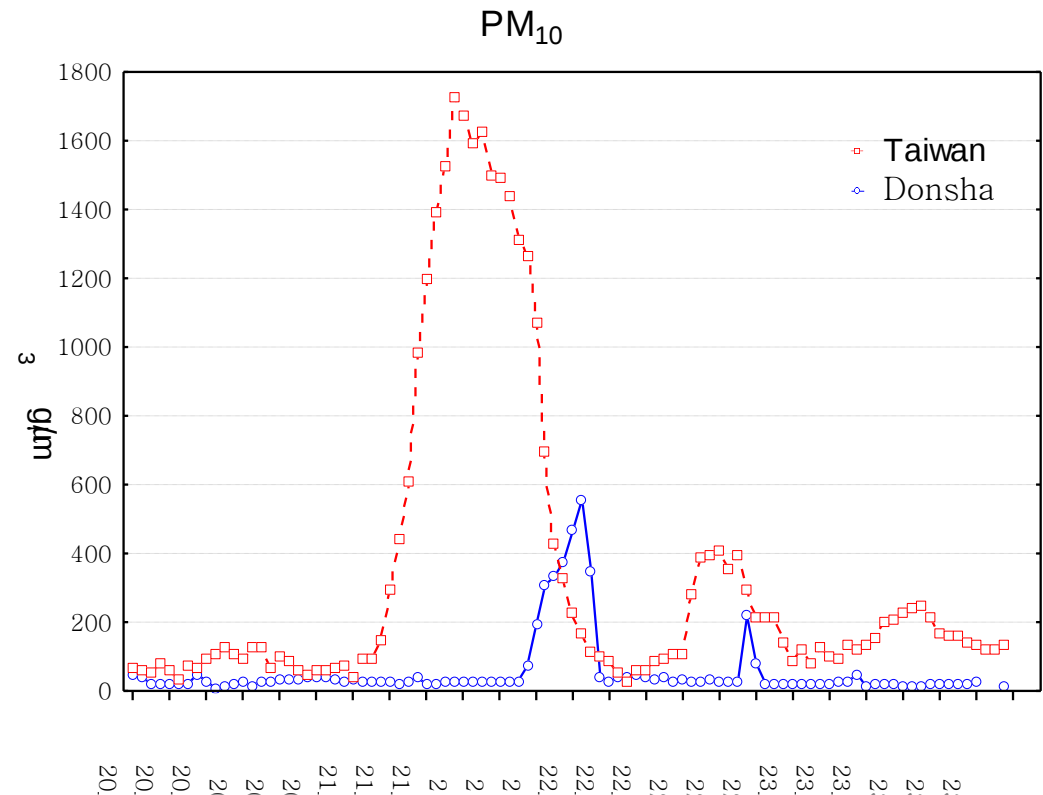
Wei-Li Chiang¹, Yu-Chi Chu¹,
George Lin², Guey-Rong Sheu²

¹ Taiwan EPA, Taipei,

² National Central University



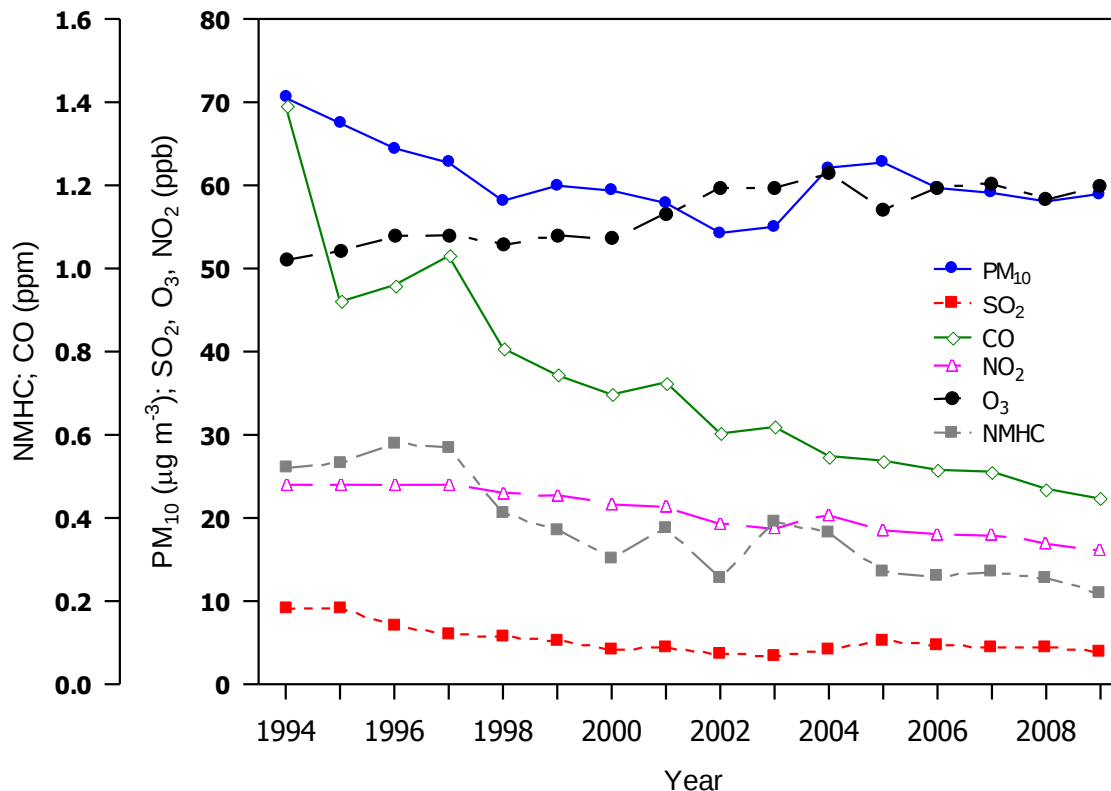
The dust storm affected Taiwan



2010/03/21-23

Introduction

- In these years, the air quality in Taiwan is better now.
- The ratio of long-range transportation air pollutant is higher than before.



particulate matter
composition stations



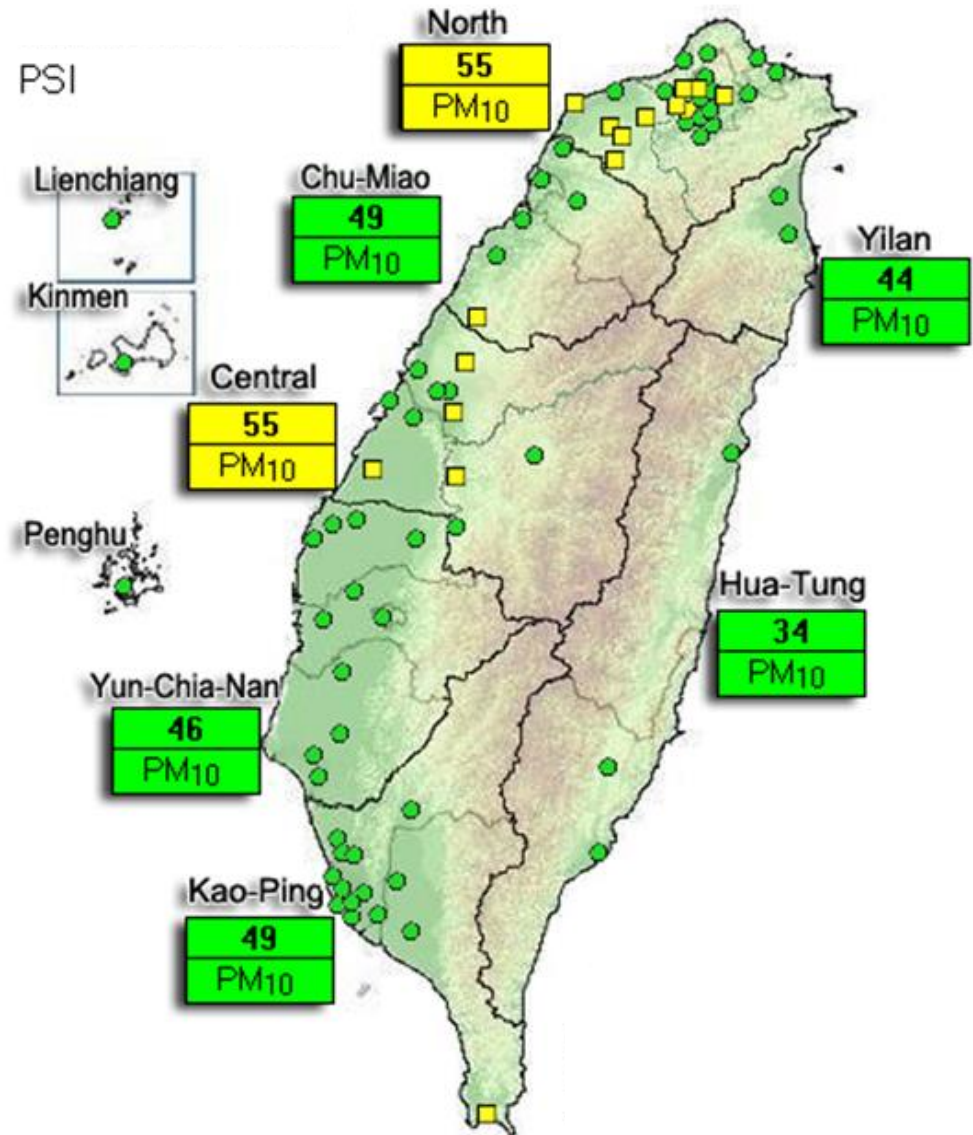
The photo chemical stations



The mobile stations



The Air Quality in Taiwan



Briefing the Lulin station

23.51°N, 120.92°E ; 2862 m



The New Platform



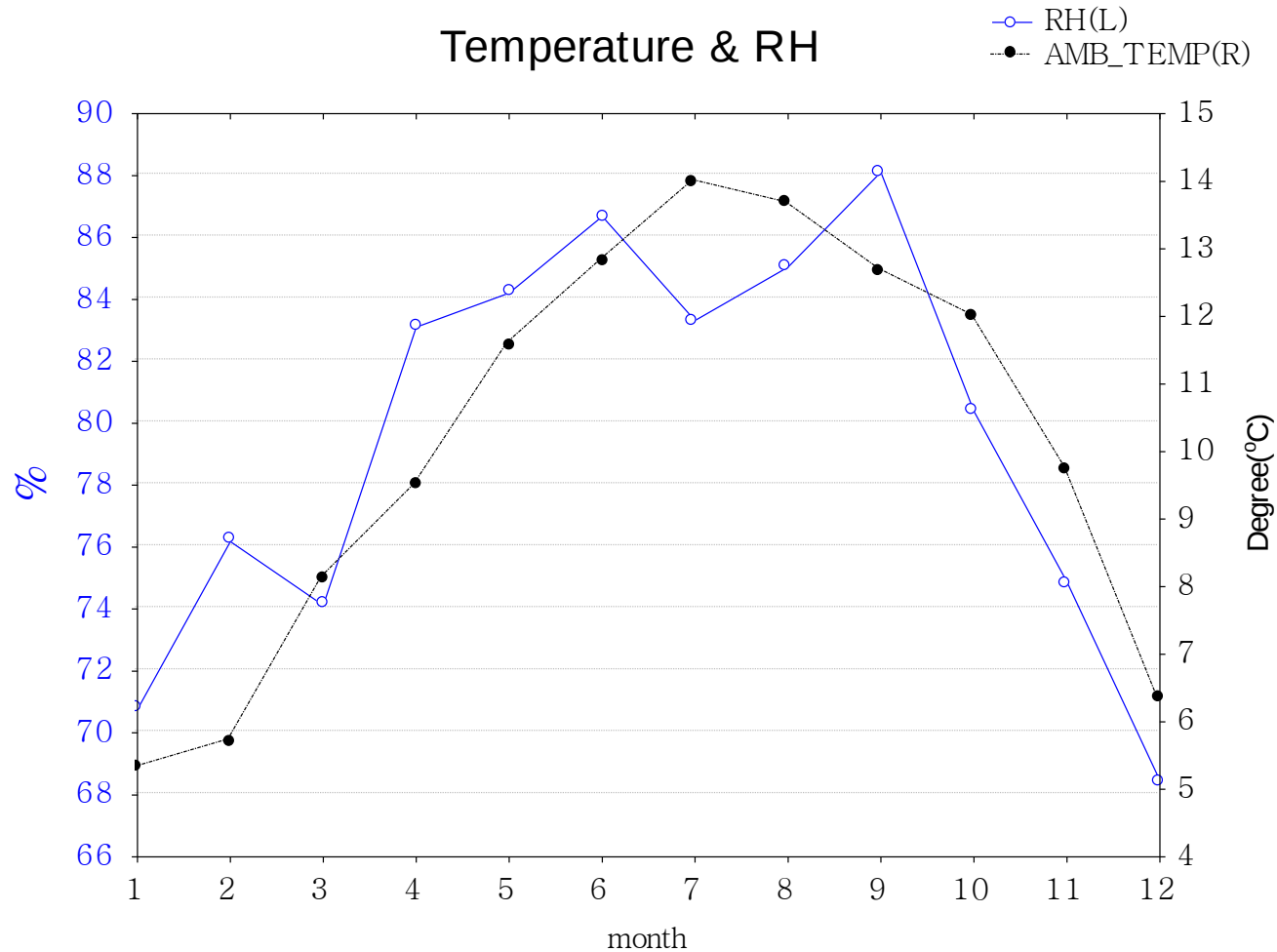


Instruments

- Meteorology
- Precipitation Chemistry
- Trace gases
- Aerosol
- Atmospheric Hg
- Radiation

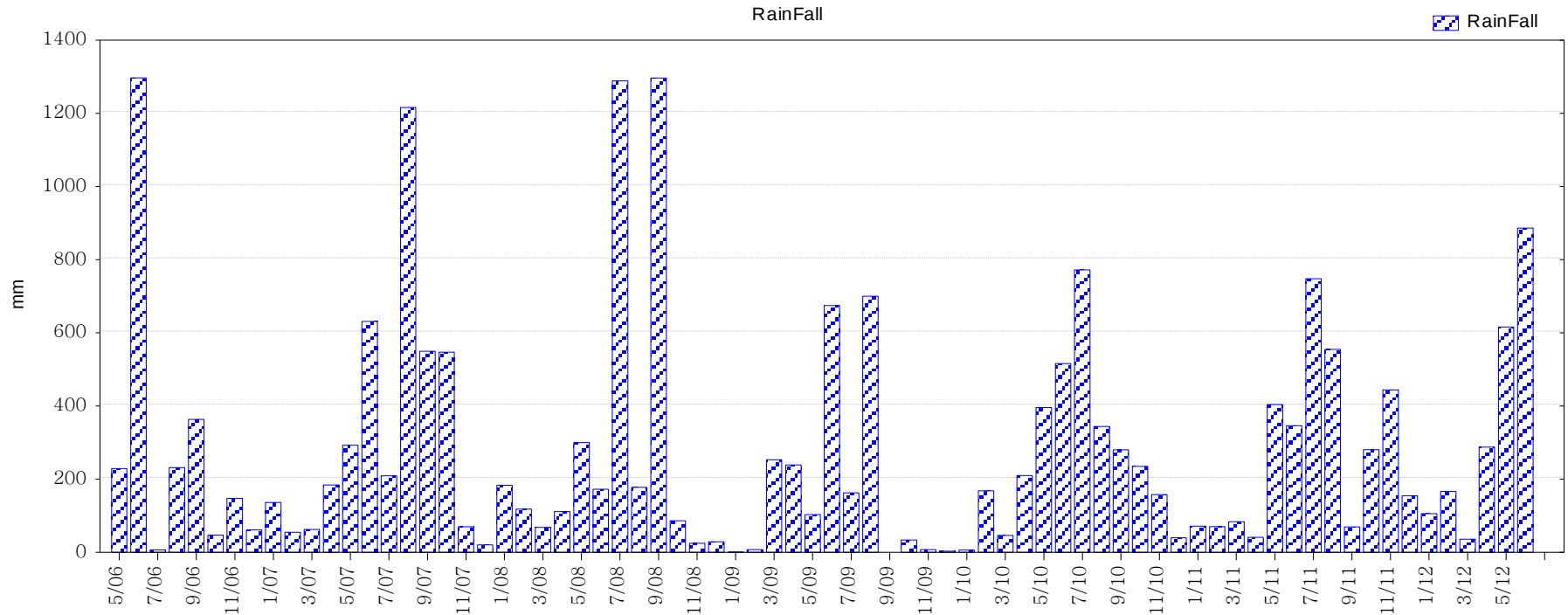
	Instrument, Manufacturer, Model
Aerosols	Aerosols
Particle mass concentration	TEOM Particulate mass monitor, R&P, 1400
aerosol chemical components	Aerosol sampling, R&P, 3500 Aerosol sampling, R&P, 2025D
Radiation	Radiation
7 spectral channels	Sunphotometer, Cimel, CE-318
6 spectral channels	Shadow band, Yankee, MFR-7
UVA	UVA, Solar Light, MODEL 501
UVB	UV-Biometer, Solar Light,
Total flux	Solar radiation sensor, MetOne, 96-1
Gas	Gas
O ₃	Ozone analyzer, Ecotech, ML9810B
CO	CO monitor, TraceAnalytical, TA-3000R
CO	CO monitor, Horiba, APMA-360
CO ₂	CO ₂ analyzer, LI-COR, LI-7000
CFCs	Gas Chromatography, Agilent, HP6890N
Mercury	Mercury
Gaseous Elemental Mercury	Cold Vapor Atomic Fluorescence Spectrometry, Tekran ,
Reactive Gaseous Mercury	Mercury Speciation Unit, Tekran , 1130
Particulate Mercury	Particulate Mercury Unit, Tekran , 1135
Precipitation chemistry	Precipitation chemistry
Rainwater sample	Rain sampler
Met.	Met.
Visibility	Present Weather Detector, VAISALA, PWD22
Meteorological Monitoring System	MetOne

– Meteorology : Temperature, RH



- The monthly mean of Temperature **10.1 °C**
- Relative Humidity **79 %**

Meteorology – Rainfall

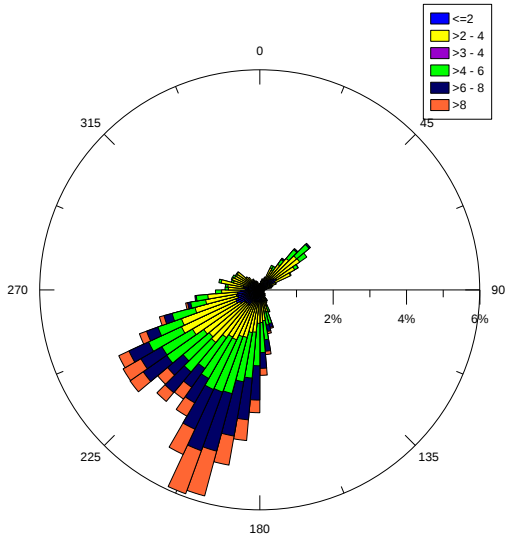


–The monthly mean of rainfall is 283mm

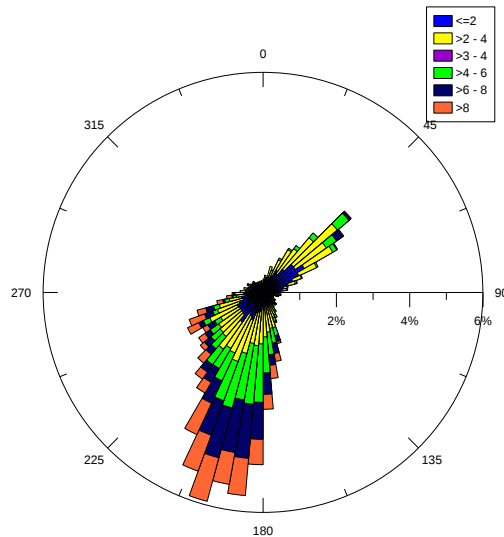
–The highest monthly mean of rainfall 1300mm

Meteorology – WS, WD in four seasons

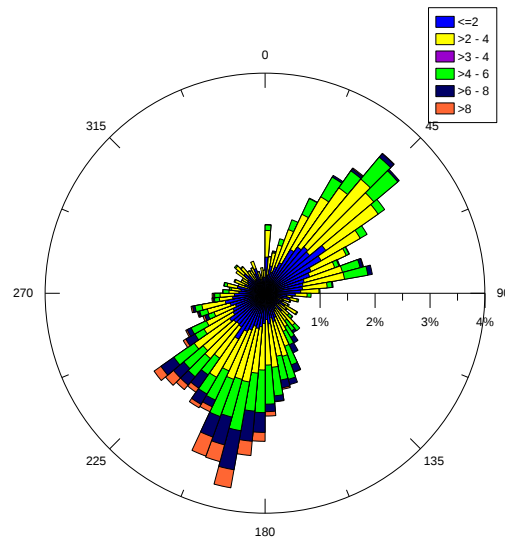
Spring



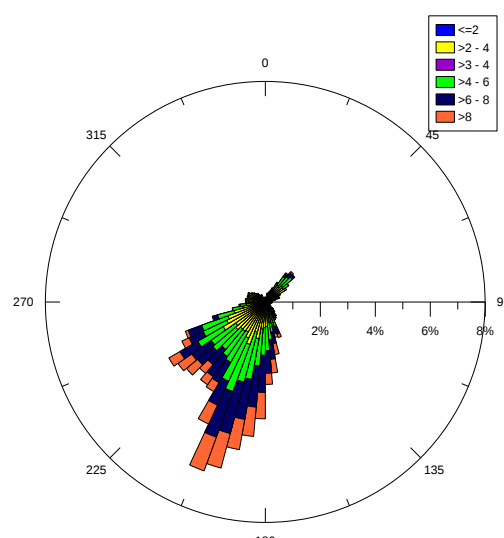
Summer



Fall

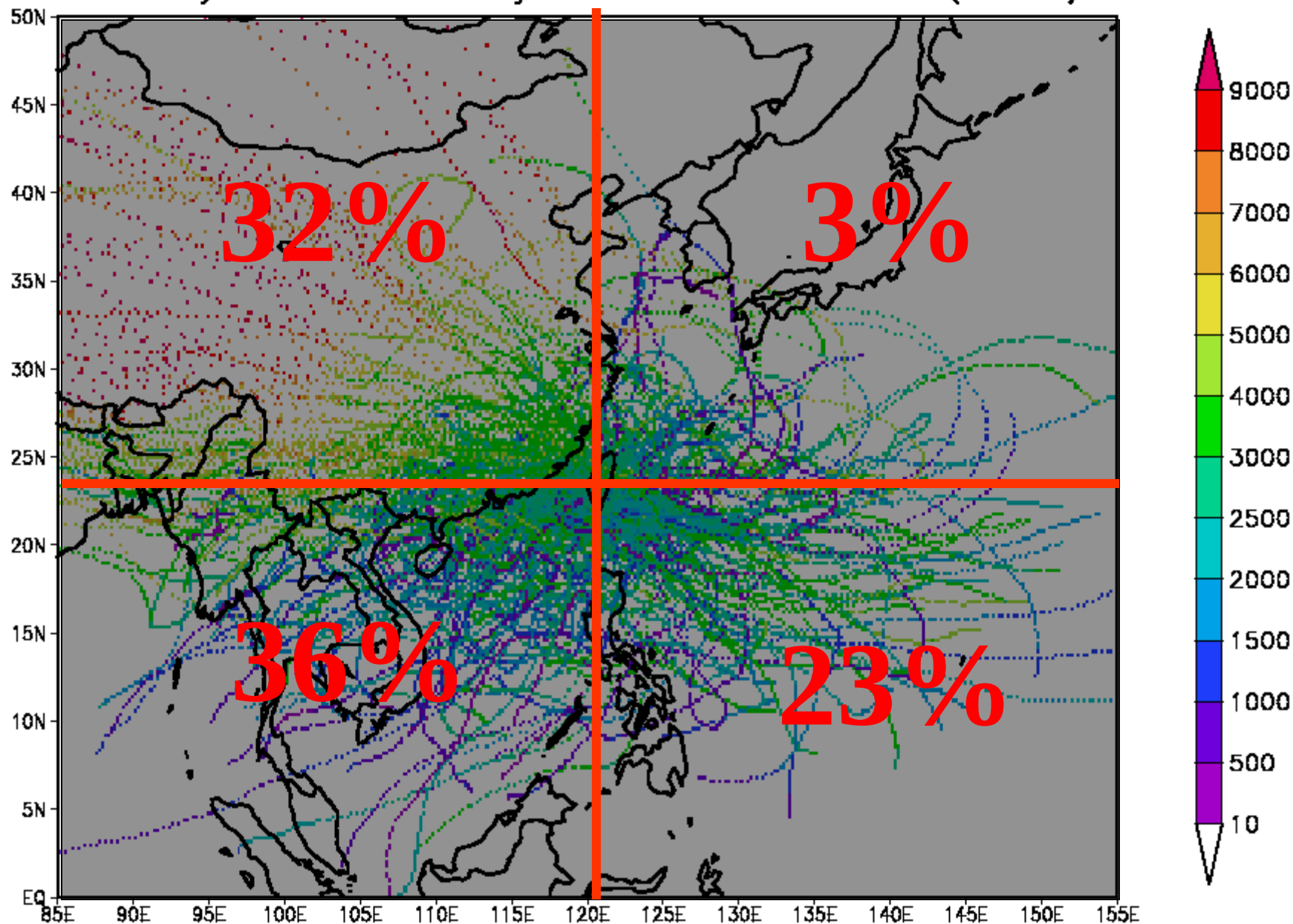


Winter

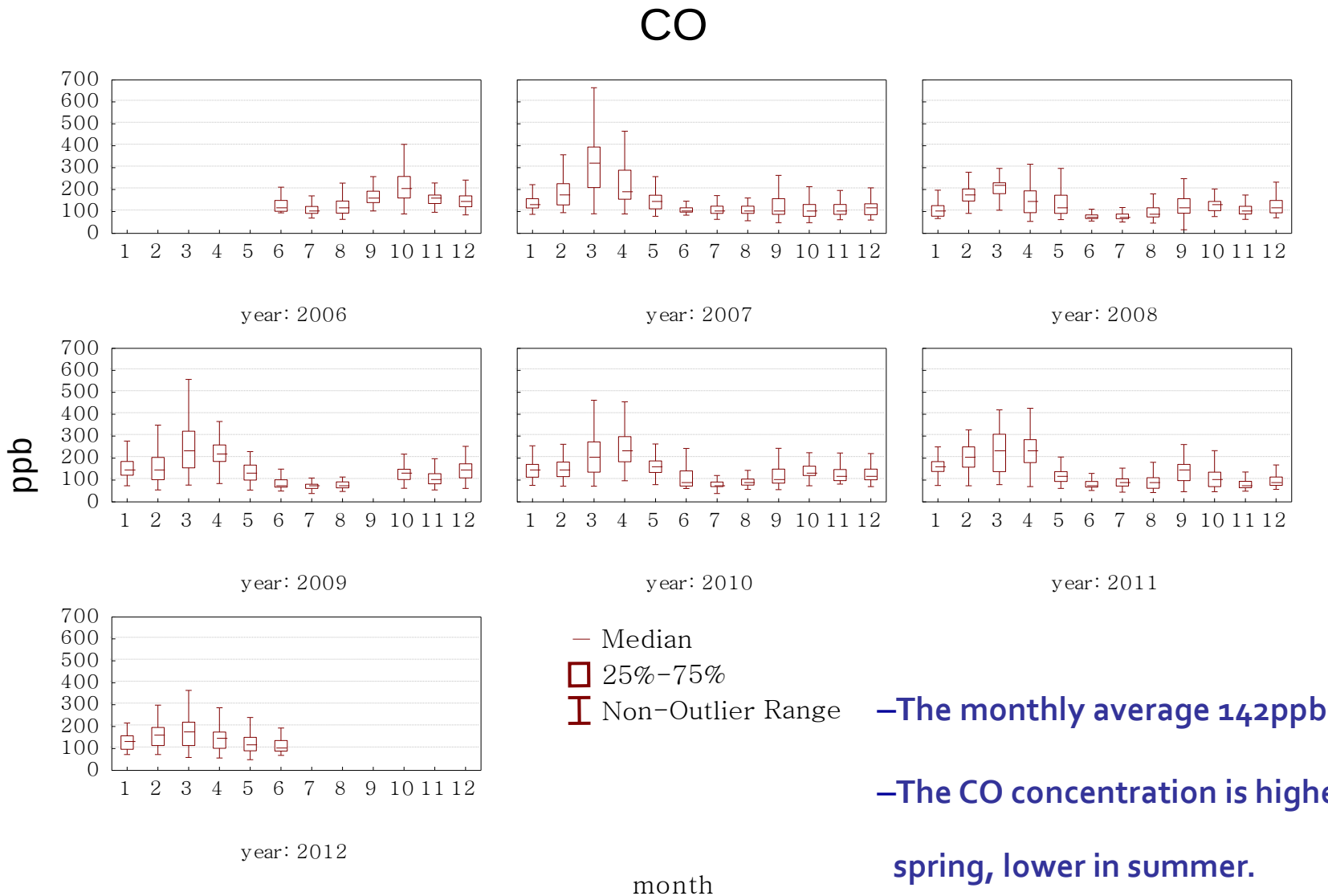


- Prevailing winds are from SW and NE.

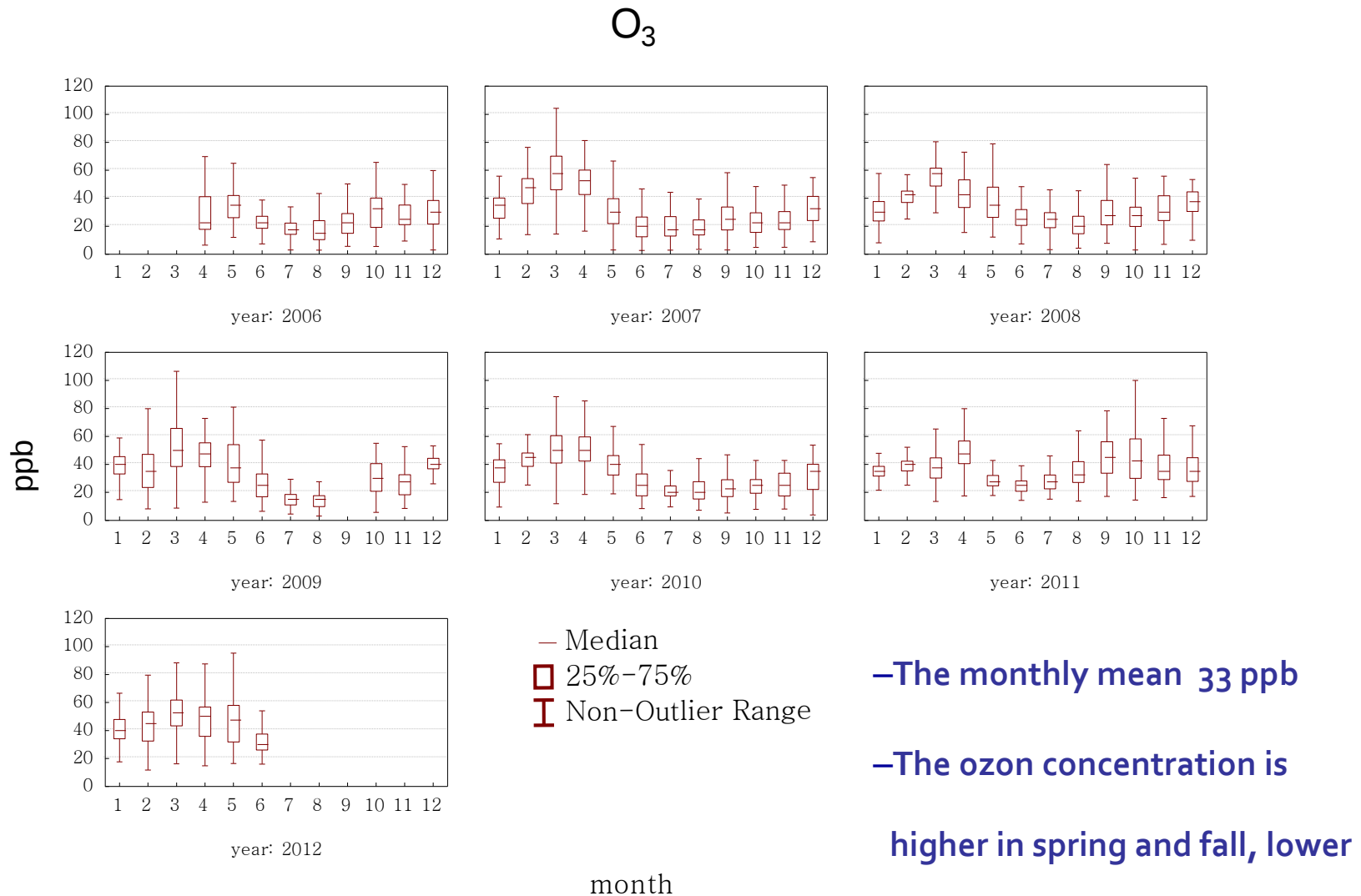
5-day backward trajectories in Mt. Lulin(2862)



Seasonal Variation of CO at LABS



Seasonal Variation of O₃ at LABS



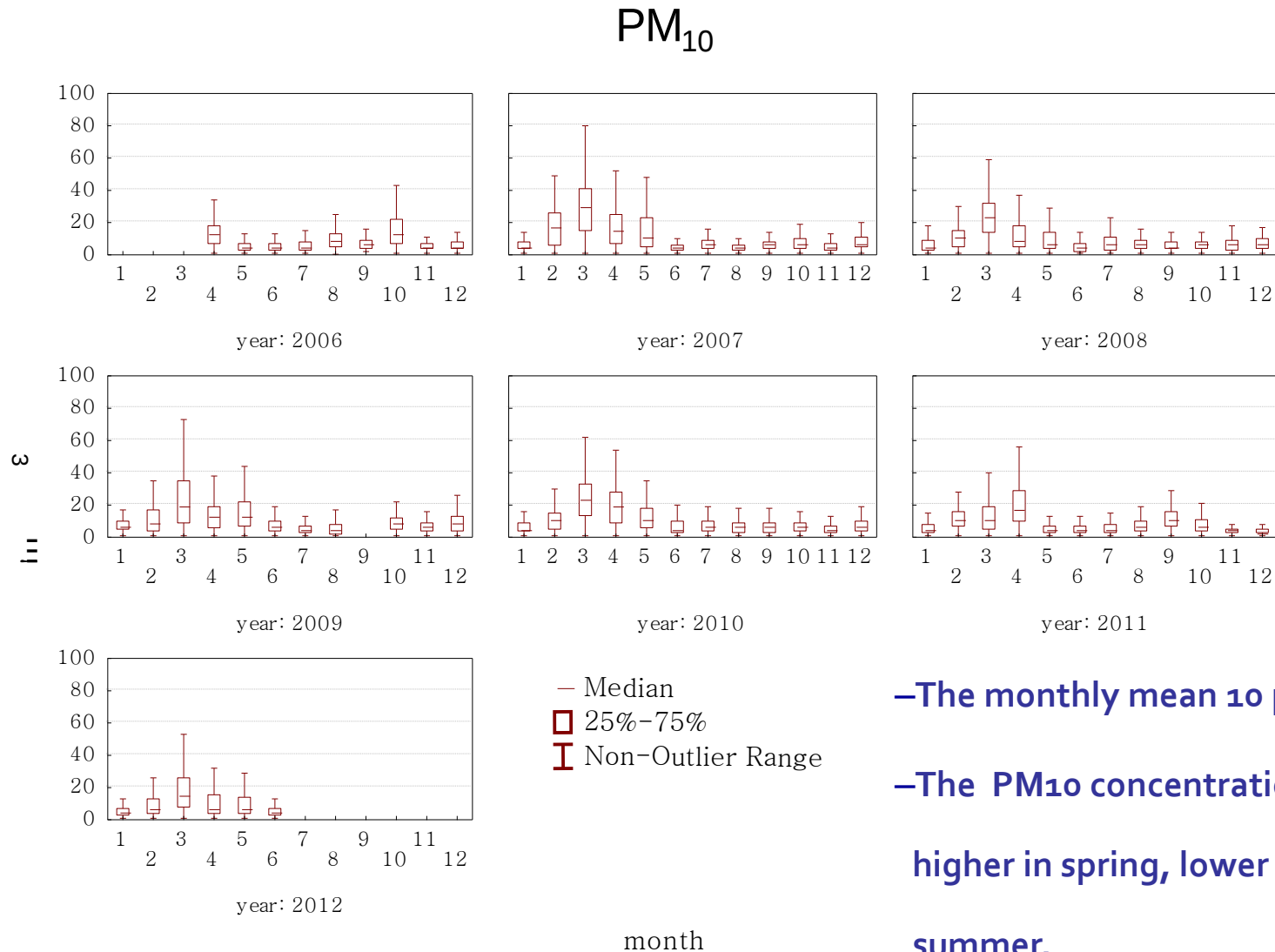
—The monthly mean 33 ppb

—The ozone concentration is

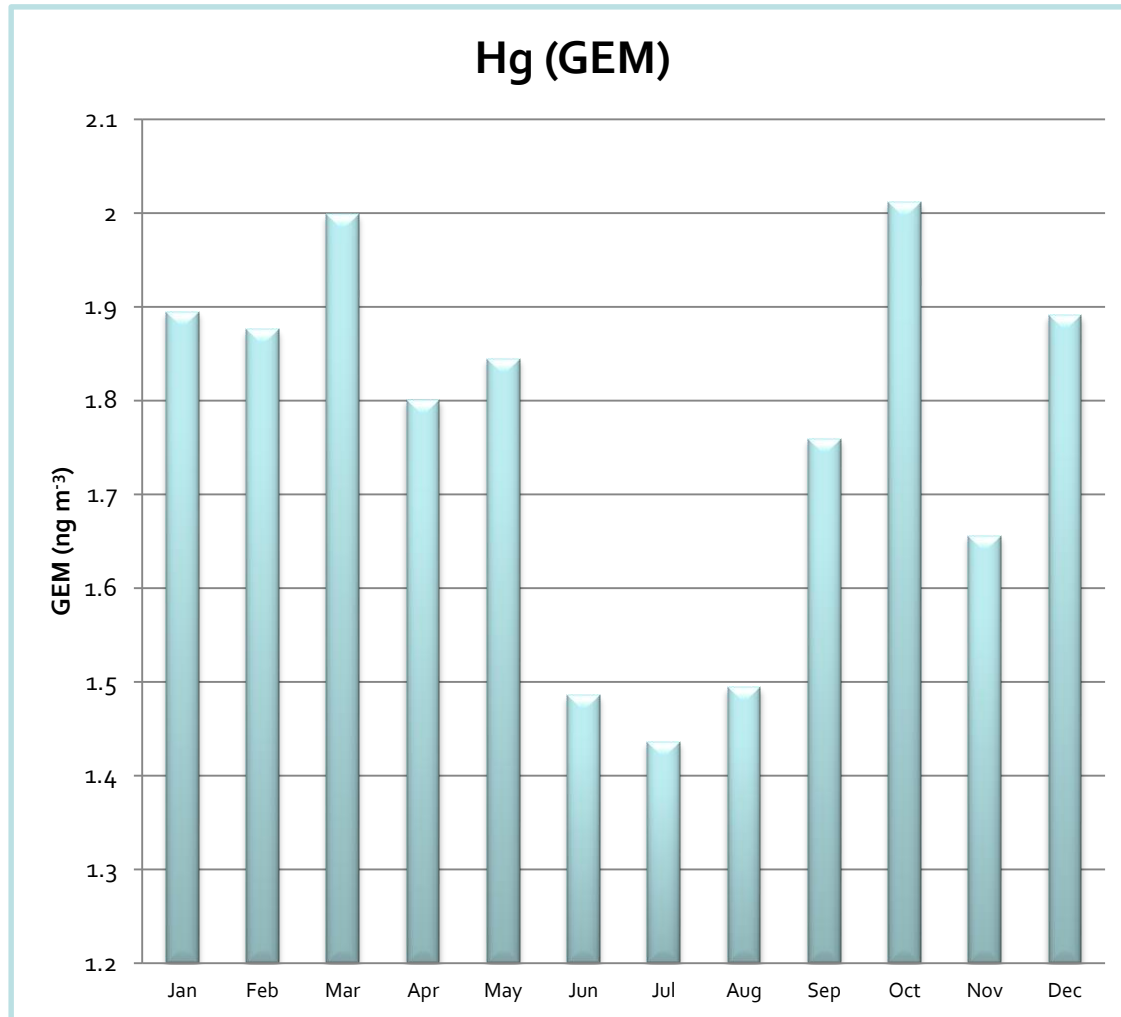
higher in spring and fall, lower

in summer.

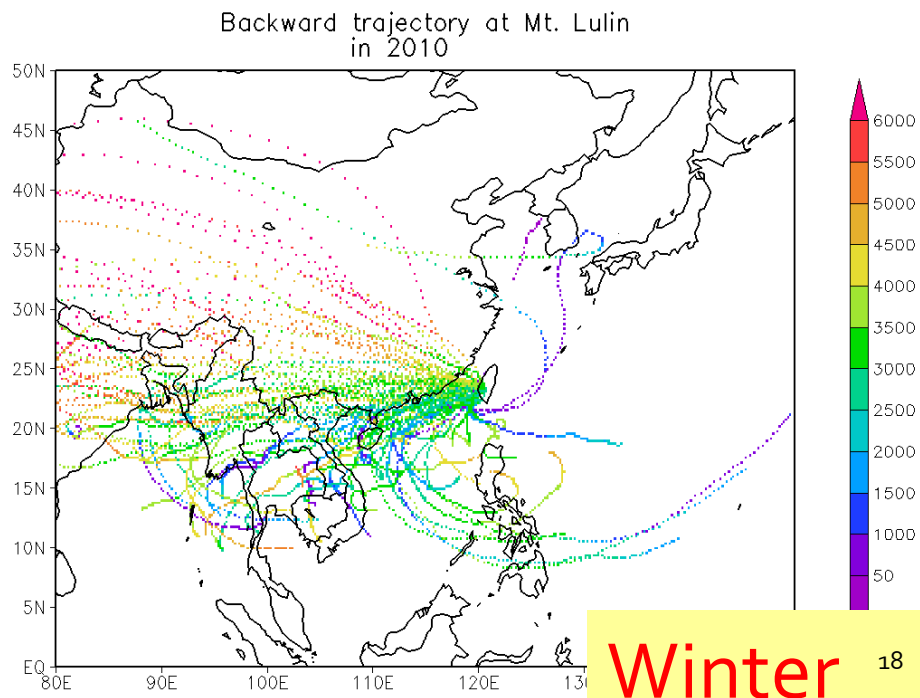
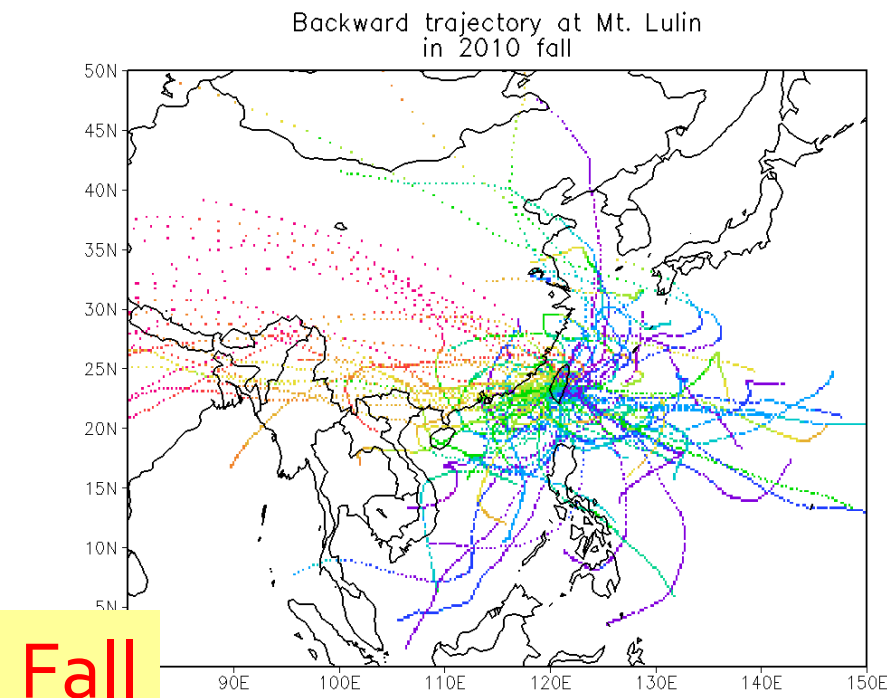
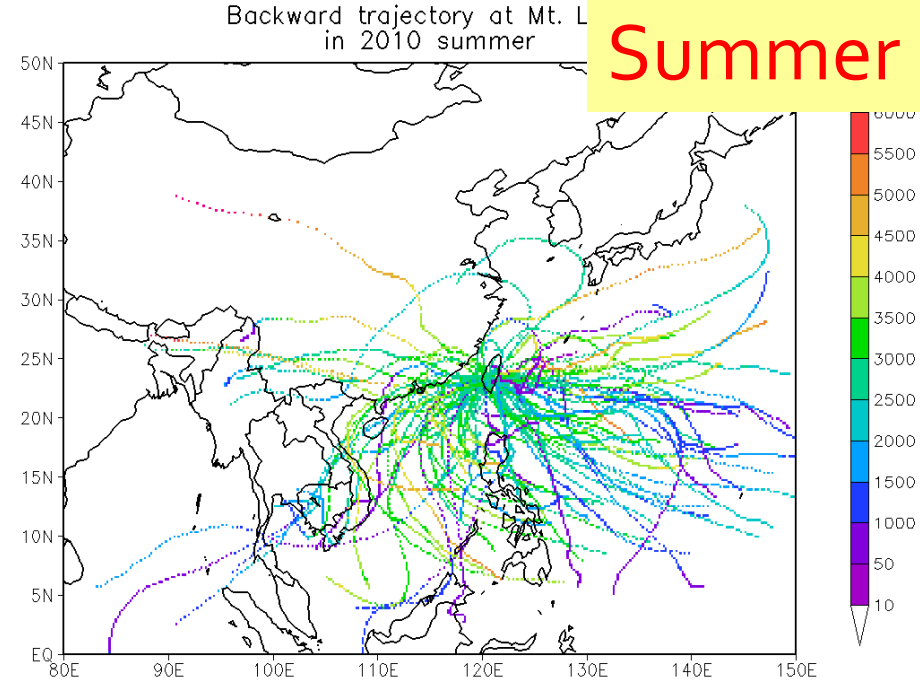
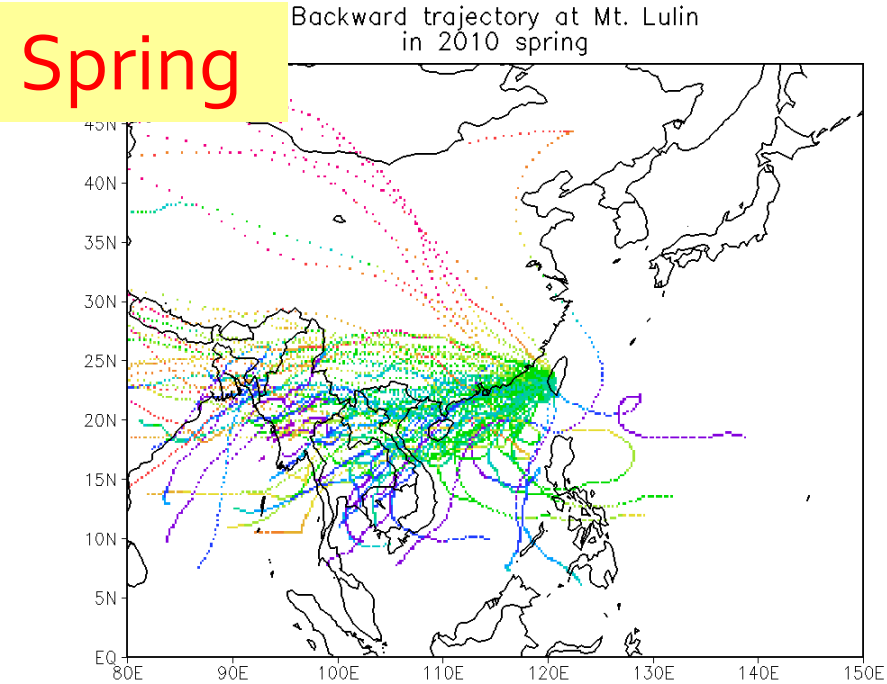
Seasonal Variation of PM₁₀ at LABS



Seasonal Variation of GEM at LABS



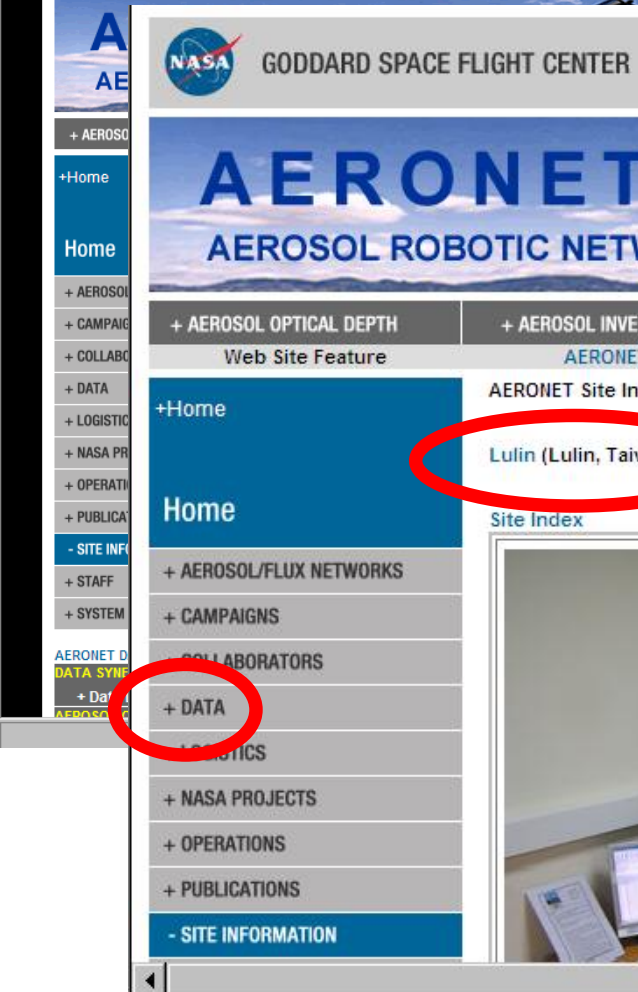
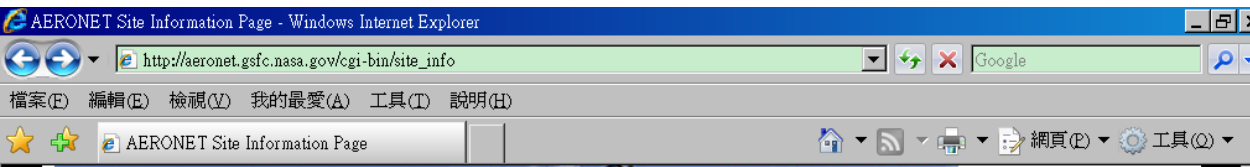
- The mean concentration of GEM is 1.69 ng m⁻³
- The GEM concentration is higher in spring and fall, lower in summer.



International Collaborations

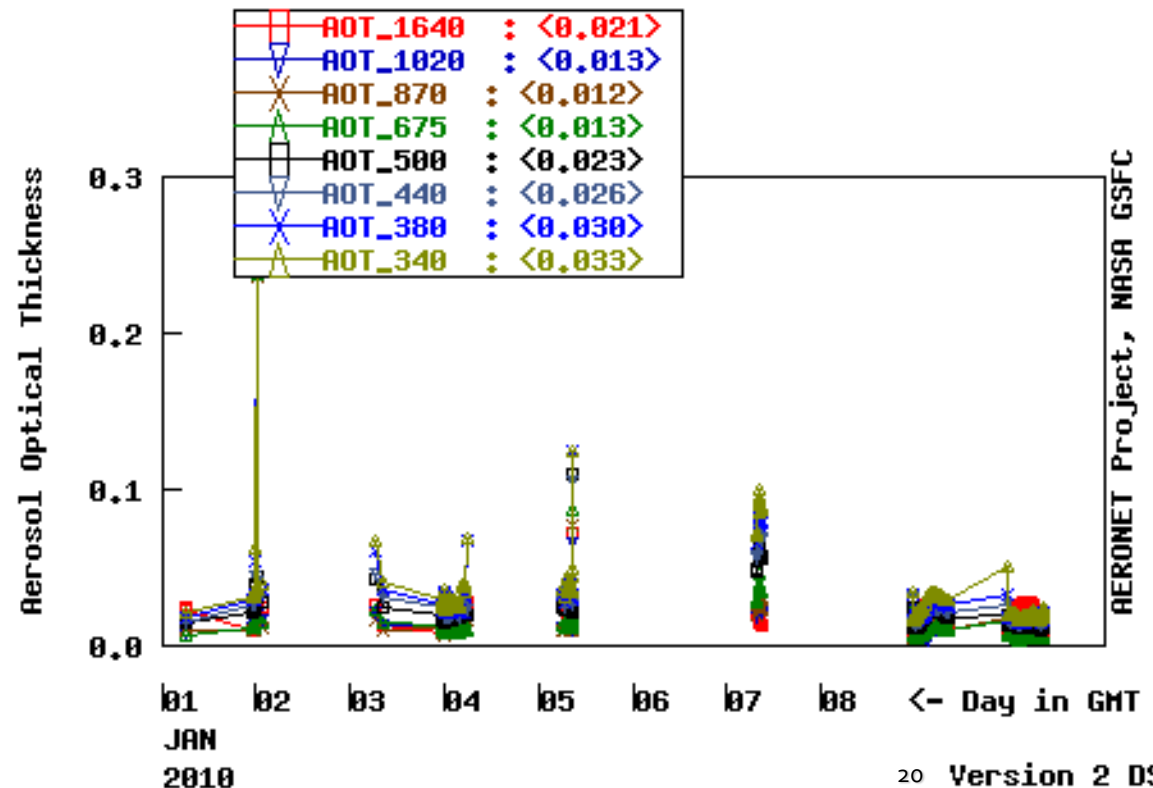
- NASA(National Aeronautics and Space Administration)
 - AERONET
 - MPLNET
- NOAA(National Oceanic and. Atmospheric Administration of the United States)
 - Trace gas-Carbon Cycle Greenhouse Gases Group (CCGG)
- USEPA
 - Mercury Monitoring (NADP-AMNET)

NASA-AERONET



AOD Level 1.0 data from JAN of 2010

Lulin , N 23°28'08", E 120°52'26", Alt 2868 m,
PI : Meng-Huei_(George)_Lin, nhlin@cc.ncu.edu.tw
Level 1.0 AOT; Data from JAN 2010



Carbon Cycle Greenhouse Gases Group (CCGG)

Lulin, Taiwan [LUL]

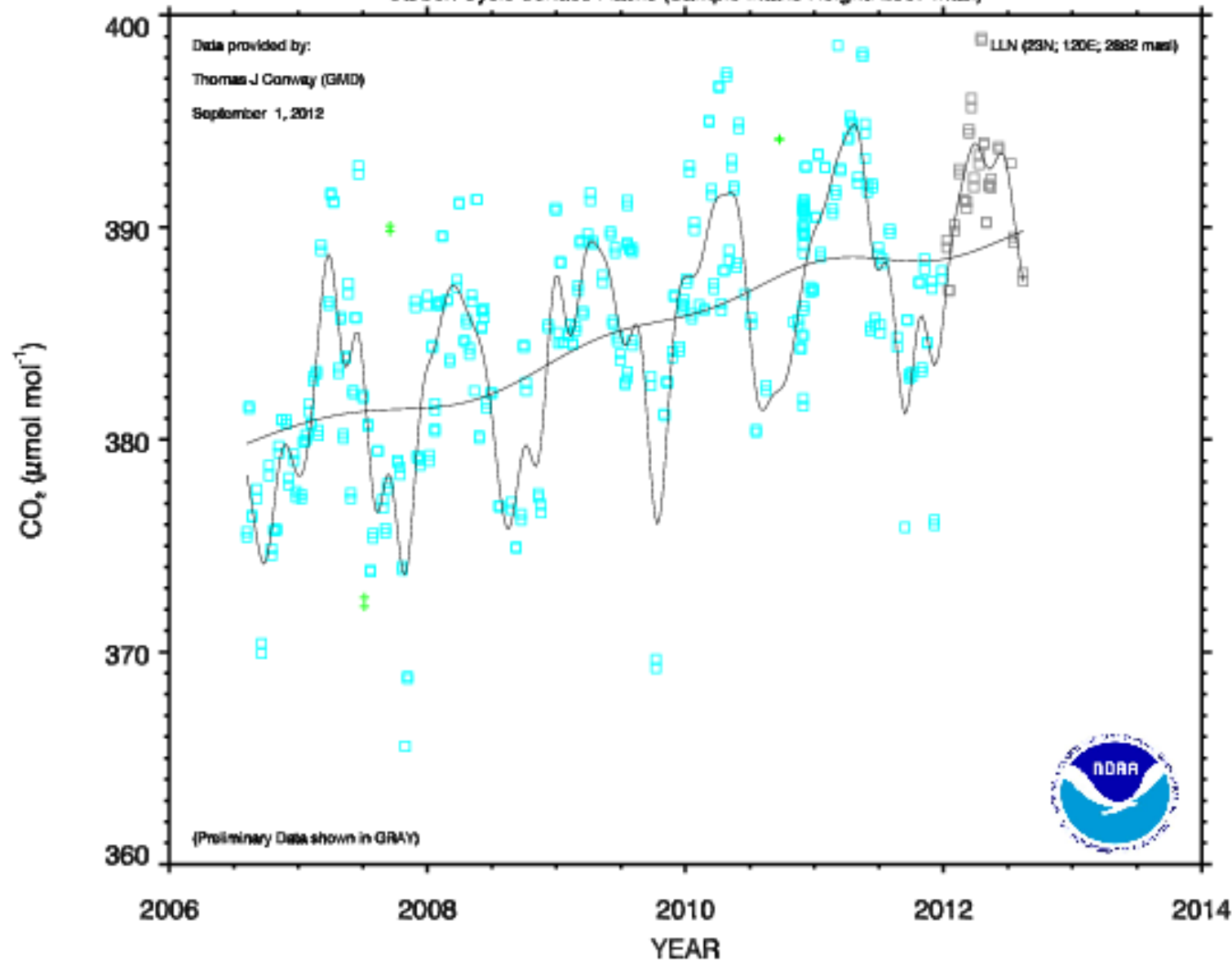


Country	 Taiwan
Latitude:	23.47° North
Longitude:	120.87° East
Elevation:	2862.00 masl
Time Zone:	Local Time + -8 hour(s) = UTC

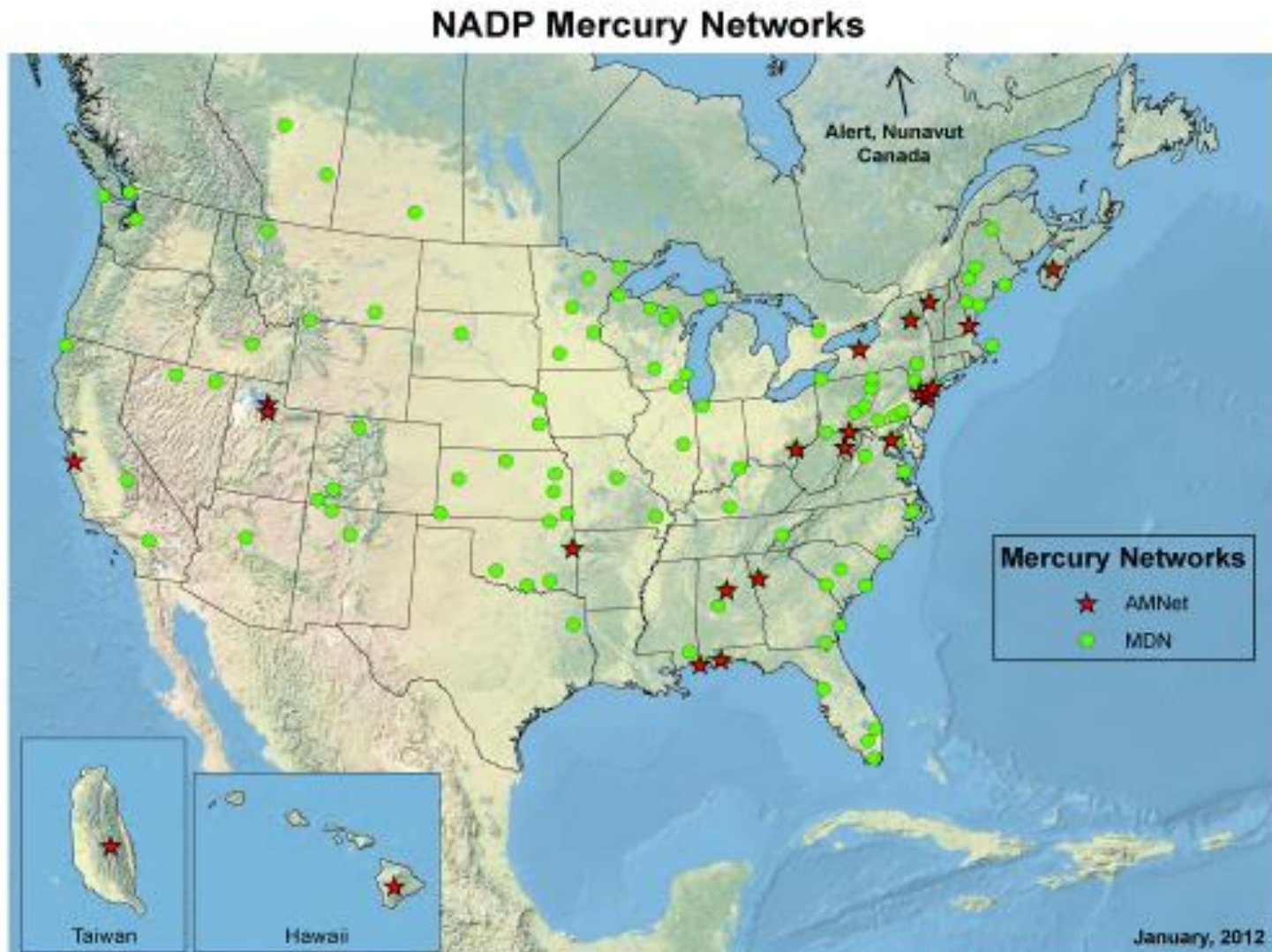


Lulin, Taiwan

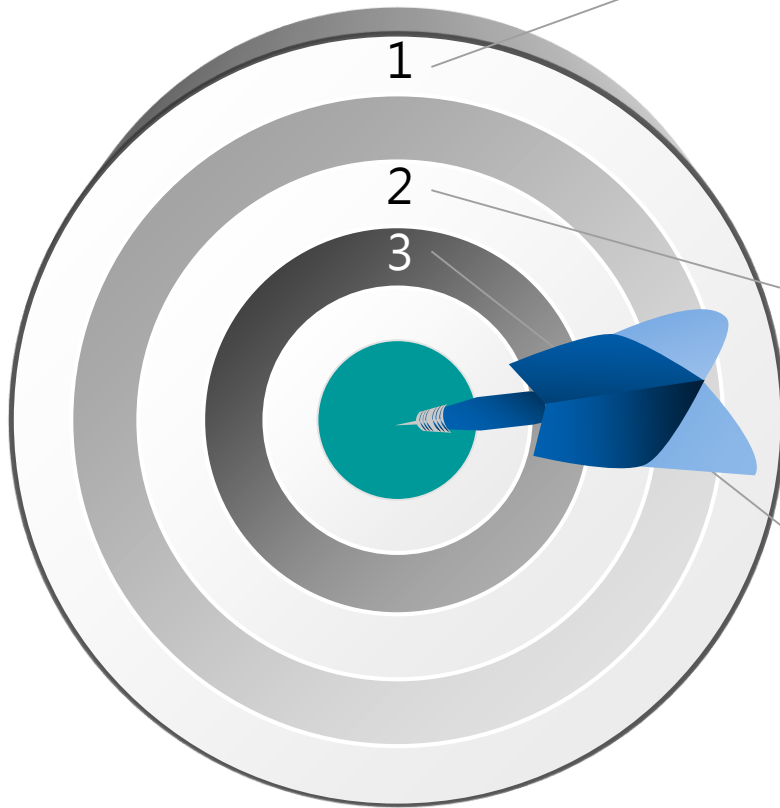
Carbon Cycle Surface Flasks (Sample Intake Height: 2867 masl)



Mercury Monitoring (AMNET)



Summery



Building up the air quality baseline in Taiwan

Understanding the long – range transport of air pollutants effect Taiwan

Cooperating with neighboring countries to exchange air pollutants data



Welcome you to visit the LABS!

Thank you!