

Introduction to the Asia Pacific Mercury Monitoring Network (APMMN)



The Asia Pacific Mercury Monitoring Network (APMMN) is.....

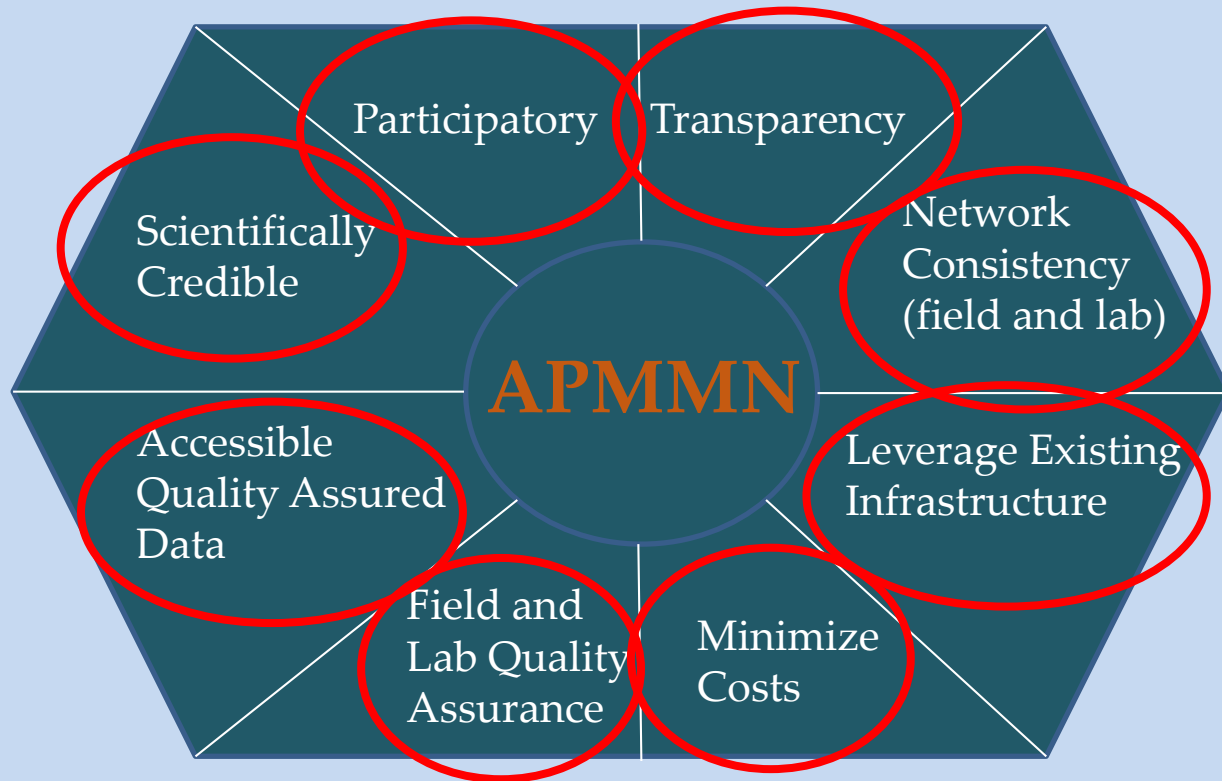
- a cooperative effort to systematically monitor mercury in air and rainwater throughout the Asia-Pacific Region, and
- involves many different and voluntary groups, including environmental ministries and federal government agencies, academic institutions, and scientific research and monitoring organizations.



APMMN Goal and Objectives

- Goal
 - Systematically monitor **wet deposition** and **atmospheric concentrations** of mercury in a network of stations throughout the Asia-Pacific region
- Objectives
 - Determine the **status and trends** in concentrations of ambient mercury species, and wet, dry, and total atmospheric deposition of mercury
 - **Develop a robust dataset** for regional and global modeling
 - Assist partner countries in **developing monitoring and assessment capacity**
 - **Share data** and monitoring information

APMMN Network Principles

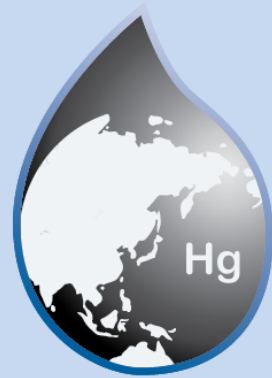


- **Our first step was mercury in precipitation**
 - Loadings to ecosystems
 - The atmosphere is the first place to identify changes in emissions
- Lots of monitoring experience; many experts regionally/globally
- We have an opportunity to help
 - Improve monitoring coordination
 - Assist countries with limited experience and build capabilities



- **Our second step was mercury in the atmosphere**
 - Loadings to ecosystems
- Lots of monitoring experience; many experts regionally/globally
- Multiple types of measurement systems available
 - Automated Tekran Instruments
 - Manual methods, provided by Japan MOE

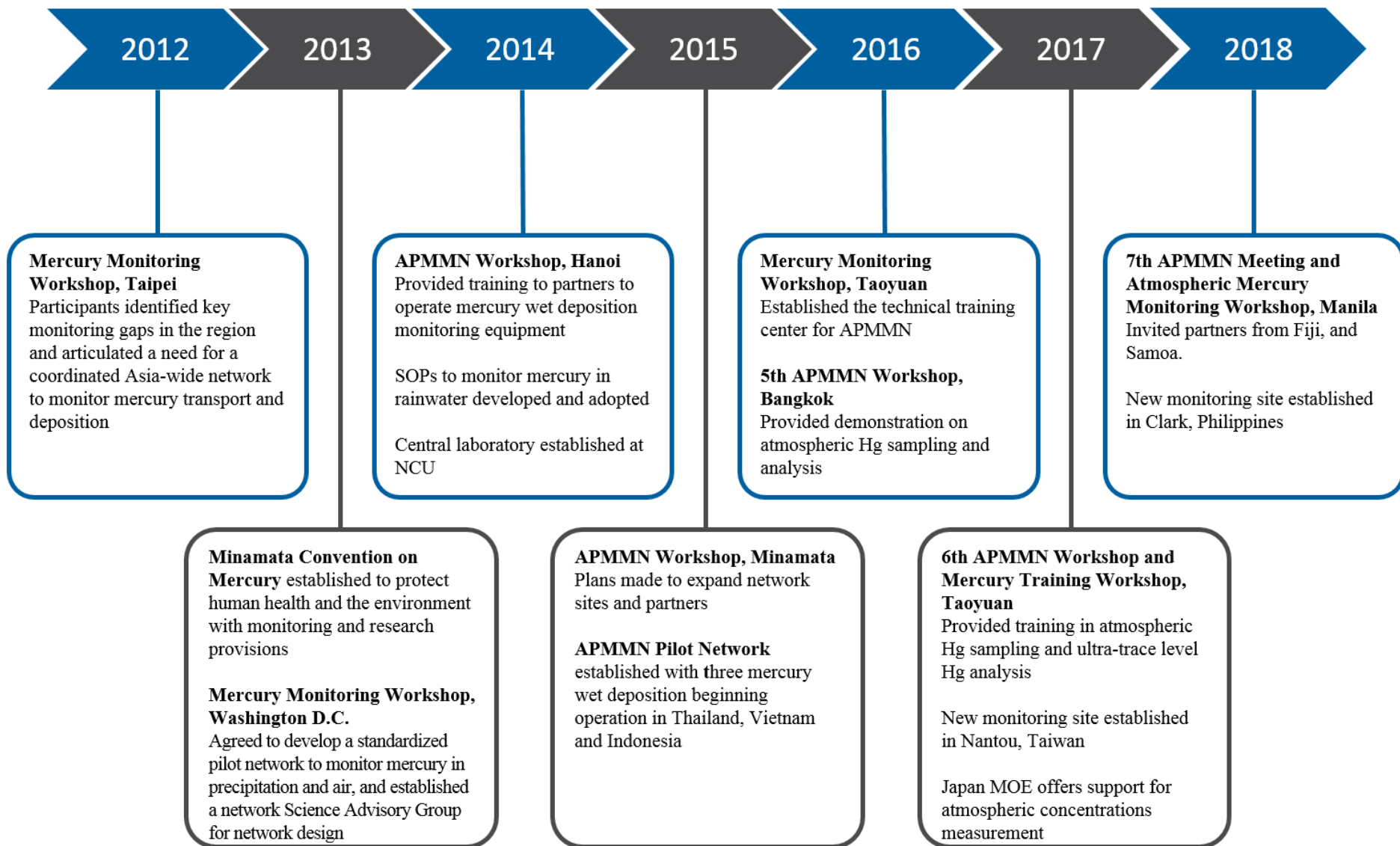




Asia Pacific Mercury
Monitoring Network

What Progress Have We Made?

APMMN Milestones 2012-2018



Specifics of the APMMN for Wet Deposition



**NCON Model
MDN 00-125-2**



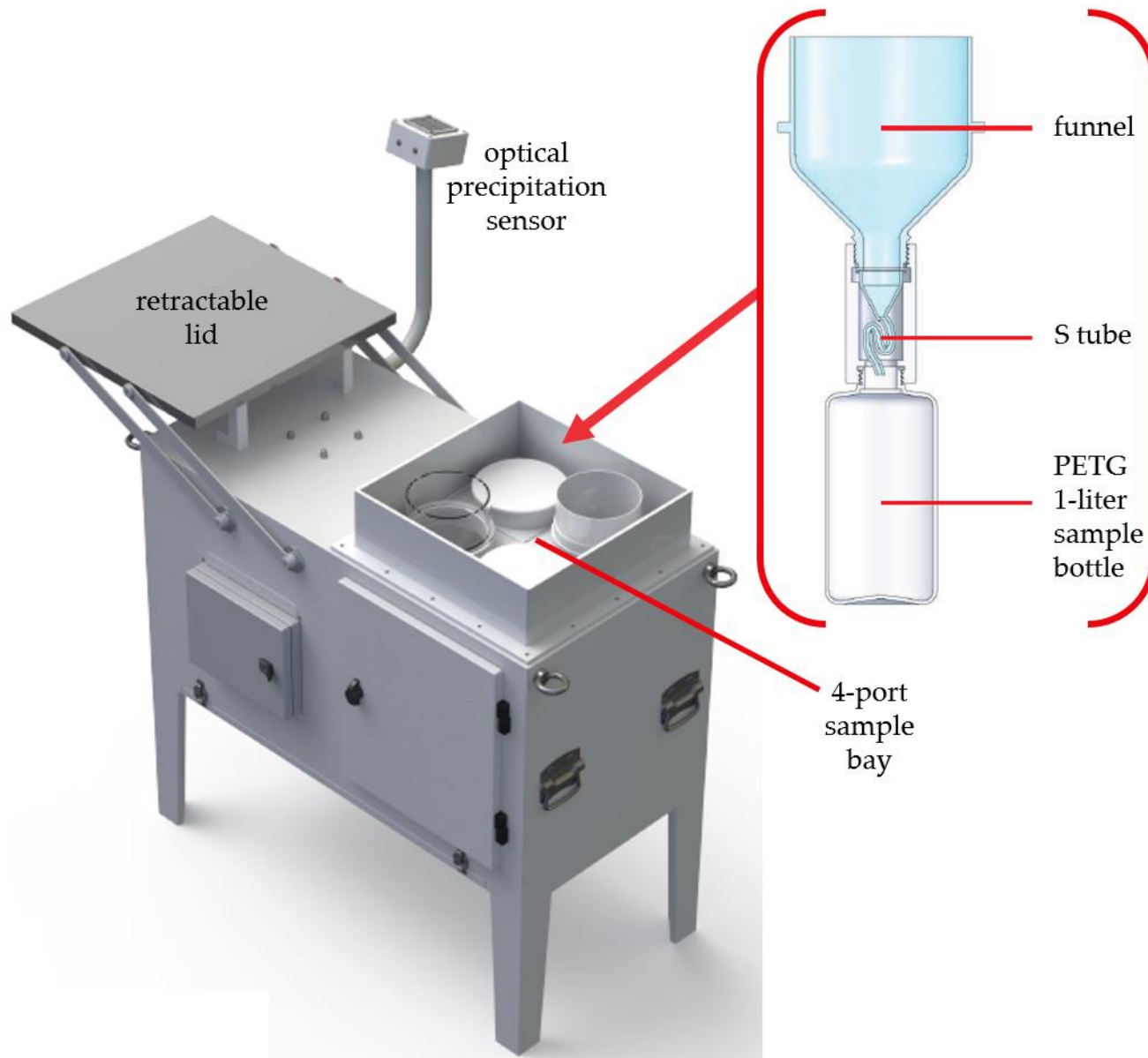
**NADP-style
Aerochem 301**



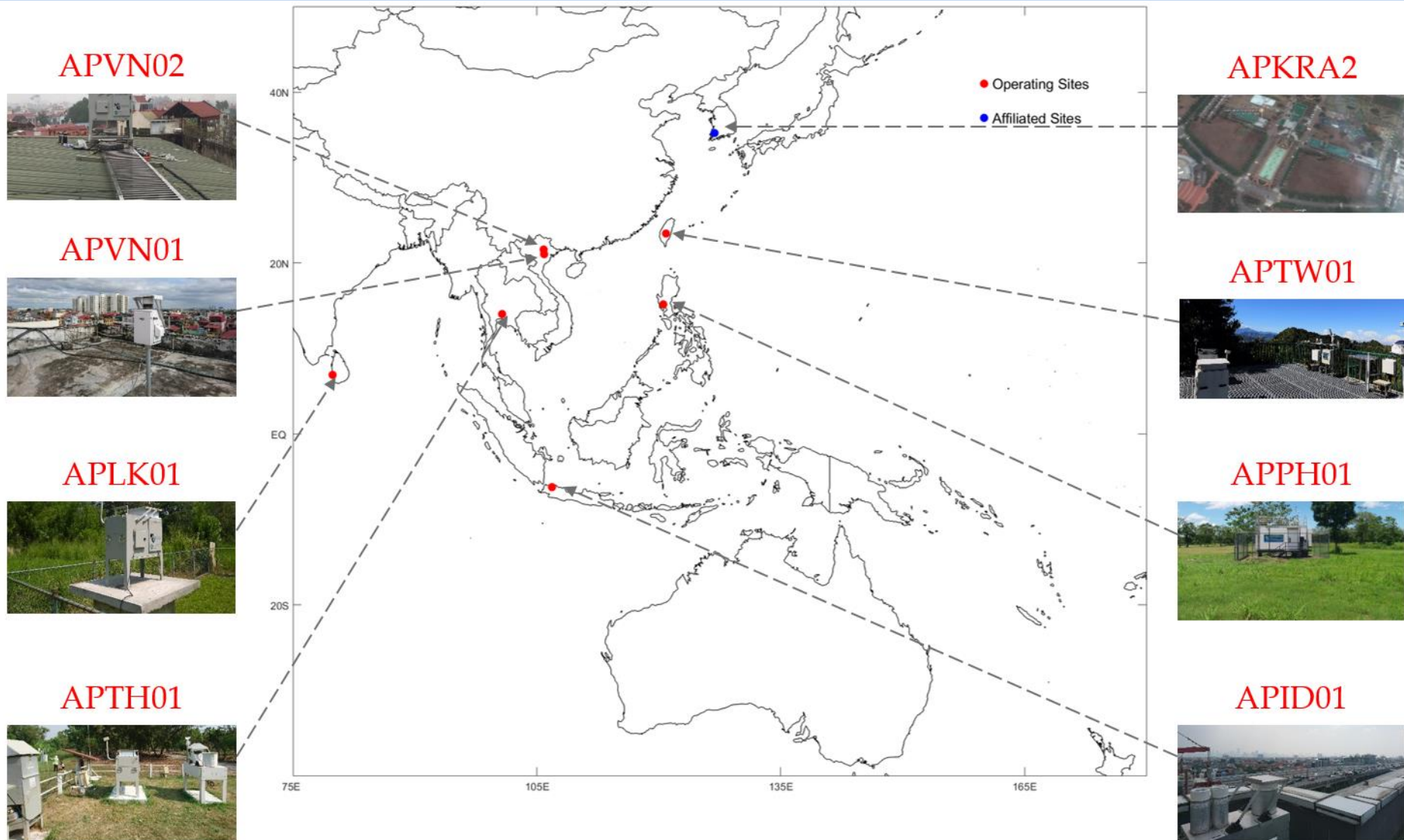
**Taiwan-style
MIC**

Sampler:	Automated wet only precipitation collection systems
Sampling Schedule:	Sample bottles and glassware are changed every Tuesday
Chemical Analysis:	Cold vapor atomic fluorescence spectroscopy (CVAFS)
Lab Location:	National Central University, Taiwan (Dr. G. R. Sheu)
Mercury Forms:	Total mercury wet deposition and precipitation concentrations
Site Locations:	Regionally representative; rural, urban, and suburban areas with estimated high levels of mercury emissions and deposition; and sensitive ecosystems

Taiwan-Style MIC Collector



Current Locations of Sites



Country	Site ID	Site Name	City	Latitude	Longitude	Elev. (m)	Status	Type	Sampler
Indonesia	APID01	MOEF	Jakarta	6.233 S	106.877 E	24	Active	Wet	AEROChem
Korea	APKRA2	GIST	Gwangju	35.228 N	126.841 E	33	Active	Wet	NCON
Philippines	APPH01	Clark	Pampanga	15.177 N	120.536 E	184	Active	Wet	MIC-B style
Sri Lanka	APLK01	U of Peradeniya	Central Province, near Kandy	7.2518 N	80.595 E	481	Active	Wet	MIC-B style
Taiwan	APTW01	Lulin	Nantou	23.4689 N	120.873 E	2862	Active	Wet/ Gaseous	MIC-B style
Thailand	APTH01	ERTC	Pathum Thani	14.046 N	100.714 E	6	Active	Wet	MIC-B style
Vietnam	APVN01	CEM	Hanoi	21.0487 N	105.883 E	16	Active	Wet	NCON
Vietnam	APVN02	Thai Nguyen	Thai Nguyen	21.584 N	105.840 E	31	Active	Wet	MIC-B style



Asia Pacific Mercury Monitoring Network

Phase 1 Wet Deposition Sites

- Operating
- Operating (sampling splits)
- K Affiliated Network
- Pending Sites (waiting equipment)
- Initial Interest/Acceptance

★ Central Laboratory (NCU)

Progress Made

- A 3-year pilot wet deposition network established
 - sites in Indonesia, Thailand, and Vietnam
 - Established Standard Operating Procedures
 - One Laboratory; National Central University of Taiwan
 - New Site in Philippines (last week)
 - 7 new monitors available for distribution
- Data reported back to operating country
- U.S. led capacity building and site operator training workshops
- Transition to fully-operational wet network anticipated by 2017



APMMN Laboratory at NCU Taiwan



APMMN Samplers are Available

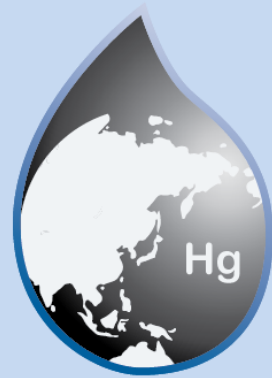


Participation in the APMMN workshops



More Information Here

<http://apmmn.org/>



Asia Pacific Mercury
Monitoring Network

What is Next?

What's Next?

- Full coverage of Asia; 20 operating sites or so, all countries;
- All APMMN data measured would be publicly available.
- total atmospheric deposition (wet deposition and dry deposition);
- work to develop a modeling methodology to estimate dry deposition fluxes using APMMN gaseous measurements;
- formally work more closely with other mercury networks;
- continue to have the highest of quality assurance in all of our network operation and measurement;
- We plan to continue our network training in all network activities, and to develop additional training programs

Journal Article in Productions

Title: A New Monitoring Effort for Asia: The Asia Pacific Mercury Monitoring Network (APMMN)

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Submitted to “Atmosphere” journal, we should know this week if they will publish it

Summary

The Asia-Pacific Mercury Monitoring Network (APMMN) is...

- A group of countries, agencies, academics and monitoring groups
- Making measurements of mercury
 - Wet deposition
 - Atmospheric mercury in the future (for dry deposition)
- Using the same instruments and standard operating procedures across Asian countries and consistent with NADP
- Sharing data to solve the mercury problem





Asia Pacific Mercury Monitoring Network

Thanks!



*Minamata Bay
Today*

Monitoring of Mercury Deposition Across Asia

Asia Pacific Mercury Monitoring Network (APMMN)



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