International Specialty Conference: Leapfrogging Opportunities for Air Quality Improvement

May 10-14, 2010
Xi'an, Shaanxi Province, China

Preliminary Program

Abstracts Due: November 30, 2009

Professional Development Courses
May 10, 2010 (8:30 a.m. to 12:30 p.m.; 1:30 p.m. to 5:30 p.m.)

Technical Program
May 11-13, 2010

Study Tours
May 10 and 14, 2010

Sponsored by: The Air & Waste Management Association, Pittsburgh, PA; the China Chapter and Hong Kong Section, Air & Waste Management Association; the Institute of Earth Environment, Chinese Academy of Sciences, Xi'an, China; and the Desert Research Institute, Reno, NV*

*Additional co-sponsors forthcoming.

About the Conference

China and other Asian countries need to balance rapid economic growth with environmental preservation. Asian air quality management strategies often follow the patterns set by Europe and North America, even though more effective methods have been proposed and demonstrated. Leapfrogging opportunities abound in the areas of multi-pollutant standard setting, emissions characterization, air quality monitoring, source and receptor modeling, quantifying and valuing adverse effects, emission reduction technologies, and implementation strategies.

Major changes are difficult to implement in a long-established regulatory climate due to a large investment in the current infrastructure and established regulatory culture. As environmental management investments are just being made in many Asian countries, it is possible that these nations can demonstrate more efficient and effective air quality management practices and set a future standard for countries with more established systems.

This conference brings together scientists, regulators, and industrialists with worldwide experience in different aspects of air quality assessment and management. These delegates will share their experiences and ideas in plenary addresses, platform sessions, and poster presentations, with an emphasis on how their information might be used for leapfrogging ahead of standard practices. Posters will be keyed to platform sessions, with a brief summary presented at a corresponding session. Dedicated poster and vendor exhibition times will be provided for interaction with each presenter.

Major topics will include:

- Methods for regional and urban emission inventories
- Ambient and source characterization techniques
- Air quality modeling applications
- Transboundary transport
- Clean transportation options
- Emission control technologies
- Air pollution and health effects
- Adverse effects on visibility, materials, and ecosystems
- Climate change and sustainable development
- Cost and benefit analyses for air quality management
- Science/policy linkages and community outreach
- Optimizing multipollutant regional and urban air quality management strategies and accountability for improvement

About Xi'an

Xi'an, the eternal city, records the great changes of the Chinese nation like a living history book. Called Chang'an in ancient times, Xi'an is the birthplace of an ancient civilization in the Yellow River Basin. During Xi'an's 3,100 year development, 13 dynasties—such as the Western Zhou (11th century BC - 771 BC), Qin (221 BC - 206 BC), Western Han (206 BC - 24 AD), and Tang (618 - 907)—located their capitals in central China. Xi'an enjoys equal fame with Athens, Cairo, and Rome as one of the four major ancient civilization capitals.

Xi'an is the capital of Shaanxi province, located in the southern part of the Guanzhong Plain. With the Qinling Mountains to the south and the Weihe River to the north, it is in a favorable geographical location surrounded by water and hills. It has a semi-moist monsoon climate, and there is a clear distinction between the four seasons. Except for the colder winter, any season is relatively suitable for indoor and outdoor activities.

Conference Committee

General Conference Chair:

Prof. Junji Cao, *Chinese Academy of Sciences (CAS), China*

Academician Zhisheng An, *Chinese Academy of Sciences (CAS), China*

Technical Program Chairs:

Prof. Judith C. Chow, *Desert Research Institute, USA*

Academician Jiming Hao, *Tsinghua University, China*

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Dr. C.V. Mathai, *2008 President of A&WMA; APS, USA*

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Prof. Kihong Park, *Gwangju Institute of Sci. and Tech. , Korea*

Dr. Kevin Percy, *Wood Buffalo Environmental Association, Canada*

Ms. Sophie Puente, *CAI-Asia, The Philippines (invited)*

Dr. Bret Schichtel, *Colorado State University, USA*

Dr. Jitendra Shah, *World Bank, USA*

Prof. Ranjeet Sokhi, *University of Hertfordshire, UK*

Prof. Wladyslaw W. Szymanski, *University of Vienna, Austria*

Prof. Sarawut Thepanondh, *Kasetsart University, Thailand*

Academician Xiaoyan Tang, *Peking University, China (invited)*

Dr. Xuexi Tie, *National Center for Atmospheric Research, USA*

Prof. Semra Tuncel, *Middle East Technical University, Turkey*

Prof. Laura Venegas, *National Technological University of Argentina, Argentina*

Dr. Qidong Wang, *National Natural Sci. Foundation, China*

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Prof. Ralf Zimmermann, *Universität Augsburg , Germany*

Local Organizing Committee:

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Prof. Zhu Tan, *Nankai University, China*
Mr. Jun Tao, *South China Institute of Environmental Sciences, China*
Prof. Zhenxing Shen, *Xi'an Jiaotong University, China*
Dr. Renjiang Zhang, *Chinese Academy of Sciences, China*
Prof. Shichun Zou, *Sun Yat-Sen University, China*

Abstract Submission

Submit abstracts of 300 words or less using the template available on the Web at http://www.awma.org/events/index.html to **Dr. Judith C. Chow** by **November 30, 2009** at:

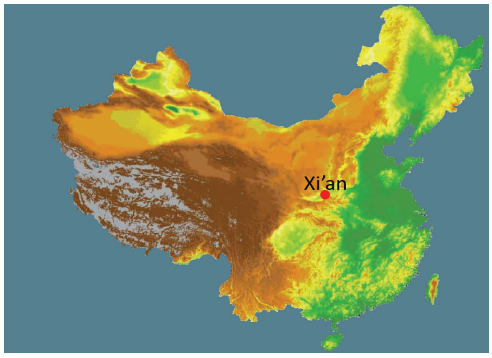
AWMA_10@dri.edu

Important Deadlines

-Short abstract submission: **November 30, 2009**
-Notification of abstract acceptance: **February 1, 2010**
-Early registration ends: **March 15, 2010**
-Extended abstract submission: **March 31, 2010**
-Paper submission for JAWMA dedicated issue: **June 30, 2010**

About the Air & Waste Management Association

A&WMA is a not-for-profit, nonpartisan professional organization that enhances knowledge and expertise by providing a neutral forum for technology exchange, professional development, networking opportunities, public education, and outreach to more than 8,500 environmental professionals in 65 countries. Established in 1907, A&WMA is the longest existing international air pollution association in the world. A&WMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society. For more information, please visit www.awma.org.



Professional Development Courses: May 10, 2010

Chair: Sophie Punte, CAI—Asia

Morning (08:30-12:30)

Track 1: Ultrafine Particle Measurement and Data Analysis—Prof. Peter McMurry, University of Minnesota, USA

This short course will discuss methods for measuring the physical and chemical properties of ultrafine particles smaller than 100 nm, focused on in situ measurement techniques. Physical measurement techniques include size classification according to electrical mobility, mass, or aerodynamic diameter, and particle detection by vapor condensation (condensation particle counters, CPCs). Recent advances of such techniques to particles in the 1 to 10 nm range will be summarized. Methods used to obtain size distributions from instrument systems such as the scanning mobility particle sizer (SMPS) will be explained. An overview will be given of measurement techniques whereby differential mobility analyzers (DMAs) are used in tandem with other instruments to measure aerosol properties. Examples of such tandem measurements include DMA+DMA (TDMA), DMA + APM (aerosol particle mass analyzer), DMA + mass spectrometer, etc. Such tandem measurements enable characterization of aerosol properties that include density, hygroscopicity, dynamic shape factor, volatility, vapor pressure, etc. Several mass spectrometers that are being used to measure the composition of ultrafine aerosol particles also will be described and compared.

Peter H. McMurry is the Kenneth T. Whitby Professor of Mechanical Engineering at the University of Minnesota. He completed his Ph.D. at Caltech in 1977 and has been at Minnesota since then. His research focuses on aerosol measurement and behavior with a primary focus on atmospheric aerosols, including research on new particle formation and in situ methods for accurately measuring physical and chemical properties of complex particles. He recently received the Fuchs Memorial Award (2006) and a Guggenheim fellowship (2007). He is Editor-in-Chief of Aerosol Science and Technology.

Track 2: Recent Advances for Real-World Source Measurements of Emission Factors and Emission Profiles – Prof. Eric Fujita, Desert Research Institute, USA

Emission rates and chemical composition of gaseous and PM pollutants from diesel and gasoline vehicles depend on many factors, including: vehicle age and mileage, fuel, brand and age of lubricating oil, emission control technology, vehicle operating mode, load, ambient temperature, and state of maintenance. This course will review vehicle volatile organic compounds, semi-volatile organic compounds, and particulate matter emission factors and composition profiles for on-road gasoline and diesel vehicles derived from recent vehicle emission testing programs. The course highlights the factors having the greatest impact on vehicle emissions and compares the rates and composition of exhaust emissions of new and older technology vehicles. Data from laboratory emission tests will be compared to corresponding data used in current emission factor models and reconciled with real-world emission measurements in roadway tunnels, on-road remote sensing, and historic trends in ambient pollutant concentrations.

Dr. Eric M. Fujita is a Research Professor in the Atmospheric Sciences Division of the Desert Research Institute. Dr. Fujita has more than 28 years of experience in managing and conducting air quality studies. His research interests include chemical characterization of emission sources, reconciliation of emission inventory estimates for VOC and PM with ambient measurements, and measurement and characterization of exposures to toxic air contaminants. He holds a doctorate in Environmental Science and Engineering from the University of California, Los Angeles.

Track 3: Integrated and Semi-Continuous Monitoring of $PM_{2.5}$ Mass and Constituents including Semi-Volatile Material—Prof. Delbert Eatough, Brigham Young University, USA

Fine particles (<2.5 μm in size) exacerbate adverse human health effects, degrade visibility, and modify the global radiative balance. Fine particle monitoring is complicated by the presence of semi-volatile material (ammonium nitrate and some organic material). This course reviews sampling techniques available for determination of fine particulate total mass and composition. Limitations of particle collection on a filter and the use of diffusion denuder techniques are explained. The science behind methods for the integrated determination of semi-volatile material has led to development of commercial semi-continuous samplers to determine both $PM_{2.5}$ mass and composition. Under-measurement of both mass and composition occurs if the semi-volatile material is not correctly sampled. Application of the resulting data to the understanding of sources and atmospheric chemistry in both regional and urban environments is outlined.

Delbert J. Eatough is a Professor Emeritus of Chemistry at Brigham Young University and a past Chair of theTechnical Council and Vice President for the Air and Waste Management Association. His current research interests are the semi-continuous determination of mass and chemical composition for fine particles in the atmosphere, and the application of these data to the attribution of primary emission sources and secondary formation mechanisms which contribute to airborne particulate pollution.

Professional Development Courses: May 10, 2010

Chair: Sophie Punte, CAI—Asia

Afternoon (13:30-17:30)

Track 4: Database Management for Long-Term Visibility Networks – Dr. Bret Schichtel, U.S. National Park Service, USA

The value of air quality data increases as it gets more and proper use in data and modeling analyses and assessments. Several Web-based decision support systems (DSS) have been developed to increase distribution and use of air quality data. This course presents an overview of how DSS can be used to support real-time and other air quality monitoring networks—improving program management, communication, and collaboration with users. The availability and integration of data from multiple networks and data analysis and visualization tools can be used to enhance and increase the efficiency of scientific investigations and implementation of air quality regulations. The course will use the IMPROVE (http://vista.cira.colostate.edu/improve/), VIEWS (http://vista.cira.colostate.edu/views/), WRAP Technical Support System (http://vista.cira.colostate.edu/tss/), and other DSS as examples with hands-on demonstrations. A brief overview of metadata standards for describing and sharing air quality data and database architectures for storing data and implementation technologies will be presented.

Bret A. Schichtel received the D.Sc. degree in mechanical engineering from Washington University, St. Louis, Missouri, in 1996, and currently is a research physical scientist for the National Park Service, Air Resource Division. He has been involved in air quality research for more than 25 years where he has participated in the design and development of Web-based decision support systems facilitating the integration, visualization, and distribution of air quality, modeling, and meteorological data.

Track 5: Quality Assurance for Air Quality and Environmental Monitoring Programs – Prof. Richard J. Tropp, Desert Research Institute, USA

This course gives an overview of the necessary elements of a total quality assurance program for environmental monitoring, with an emphasis on air quality monitoring. The course will discuss the major elements of quality assurance and quality control, including infrastructure elements necessary to sustain a viable monitoring program that produces data of known and consistent quality. Elements of a quality assurance program to be discussed include: 1) policy and objectives; 2) organization; 3) planning; 4) training; 5) preparation and procurement; 6) preventive maintenance; 7) monitoring and sample collection and analysis; 8) calibration and standards; 9) audit procedures and intra- and inter-laboratory comparisons; 10) data processing and validation; 11) statistical analysis of data; and 12) management oversight and reporting.

Dr. Richard J. Tropp is an Associate Research Professor in the Atmospheric Science Division of the Desert Research Institute. He has more than 30 years of management and research experience. Dr. Tropp has taught quality assurance/quality control principles to the Republic of China EPA and the Canadian AES. He is currently the Chair of A&WMA's Technical Council.

Track 6: Exposure Assessment and Risk Management—TBD

TEXT PENDING

Sites and Activities

Xi'an has many historical and cultural attractions:

- The Museum of Terra Cotta Warriors and Horses is praised as "the eighth wonder of the world"
- The Mausoleum of Emperor Qin Shi Huang is listed as a World Heritage site.
- The City Wall of the Ming Dynasty (1368 - 1644) is the largest and most intact Ming Dynasty castle in the world.
- The Forest of Stone Steles contains 3,000 inscribed stone pillars for different periods from the Han Dynasty to the Qing Dynasty.
- The Famen Temple is the "forefather of pagodas and temples in Central Shaanxi," because it holds the finger bones of Sakyamuni—the founder of Chinese Buddhism.
- Mt. Huashan, one of the five best-known mountains in China, located ~120 km east of Xi'an, is famous for its breathtaking cliffs with unique characteristics.

Currency

Xi'an uses Renminbi (RMB), the currency of the People's Republic of China. The principle unit is the Yuan, which is broken down into 10 jiao.

U.S. $1 = 6.835 RMB as of June 9, 2009
Euro €1 = 9.572 RMB as of June 9, 2009

Weather

The climate in Xi'an is temperate, with an average annual temperature of 13.3 °C (55.9 °F). The average temperature in May is 19.4 °C (66.9 °F), ranging from 13.8 °C (56.8 °F) to 25.8 °C (78.4 °F). The average number of rainy days in May is nine, with 65 mm (2.6 inches) average rainfall.

Passport and Visa

A tourist visa is needed to enter China. Either employ a visa service (e.g., mychinesevisa.com, visaexpress.net, bcvisa.cbm) or go to the Consulate in person to apply for the visa. Check with the China Embassy and local travel agents for details. Visa application can take several weeks to process in the U.S.

Required passport and visa information can be obtained at http://www.china-embassy.org/eng/hzqz/

Access and Transportation

Xi'an is a bustling international city, and there are regular flights available in and out of Xianyang International Airport (XIY).

A&WMA-chartered transportation will be available between the airport and the conference venue (travel time ~40 minutes). Conference staff (carrying an A&WMA Specialty Conference sign) will be stationed at the airport on Sunday and Monday (May 9 and 10) to direct you.

Electrical Supply

220V, 50Hz. Representative plug types are Type A, Type I, and Type C or Type G.

Combination plug type common in China hotels showing Type A/I connection (top) and Type C (bottom)

Type G plug type (rare)

A good all-around adaptor plug set is recommended.

Conference Language

The official conference language is ENGLISH.

General Conference Information

Registration

To register, complete the attached registration form and return it with payment.

Participants should send payment by major credit card or money order to:
Registrar, Air & Waste Management Association, China Chapter
No. 10 Fenghui South Road, High-Tech Zone
Xi'an 710075, China
Telephone: +86-29-88326488,
Fax:+86-29-88320456
(No registration will be processed without payment.)

Refund Policy

If written notice of cancellation is received on or before March 1, 2010, payment will be refunded, less a U.S.$75 cancellation fee. (Cancellation fees apply regardless of payment method.)

Exhibition Information

An exhibition featuring related products and services complements this conference. Please contact:

Ms. Feng Chen, Exhibition Manager
Beijing Monitor Environment Technology, Ltd.
2/F, Building 65th, No 160 Beiqing Road
Haidan district, Beijing, 100095, China
+86-10-6246-6055 (phone)
+86-10-6246-6355 (fax)
monitorl@vip.sina.com

Table-top exhibits are available ranging from U.S.$900 to U.S.$3500 including one free full registration.

Conference Proceedings/Dedicated Issue

Extended abstracts and/or short papers will be assembled and distributed on memory stick to each registrant. Peer-reviewed papers will be published as a dedicated issue of the Journal of the Air & Waste Management Association in 2011.

Conference Hotel (Grand Park Hotel, Xi'an)

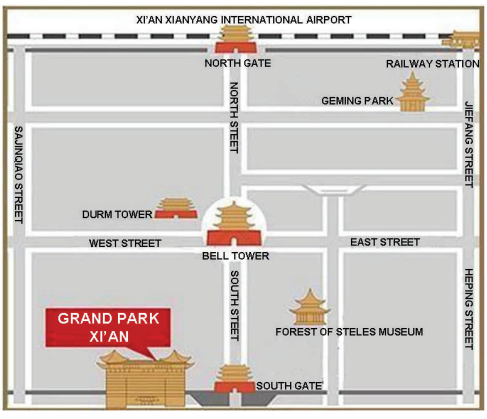
Located at:

12Xi Duan Huan Cheng South Road
Xi'an 710068, Shaanxi, P.R. China
+86-29-8760-8888 phone
+86-29-8723-1500 fax
info.gpxa@parkhotelgroup.com
website: http://www.parkhotelgroup.com/

This downtown Xi'an hotel evokes the grandeur of an ancient palace in harmony with the nearby ancient City Wall. The hotel is within 10 km of the Beilin Museum and close to major shopping malls, office buildings, and within walking distance of nearby historic scenic sites, including the Bell and Drum Towers. The five-star Grand Park Hotel appeals to both business and leisure travelers and boasts the latest in modern technology.

Each of the guest rooms offers air conditioning, LCD TV, free broadband Internet access, speaker-phones, mini-bars, coffee/tea makers, and slippers. Bathrooms include jetted tubs and/or shower/tub combinations, hair dryers, bathrobes, and in-bathroom phones . Business-friendly rooms are equipped with desks. Complimentary in-room bottled water is provided. Both smoking and non-smoking rooms are available.

Room rates for conference participants range from RMB 550 for a Superior room to RMB 2080 for a Deluxe Suite. The hotel accepts the following credit cards:



Downtown Xi'an

Pre-Conference City Tour
(09:00-18:00, May 10, 2010)

Includes: The Big Wild Goose Pagoda, North Square, and Shaanxi History Museum. Cost is U.S.$35 per person including transportation, entry fees, English-speaking guide, and insurance. (At least ten participants are needed.)

Big Wild Goose Pagoda and the North Square

Located in downtown Xi'an, the Big Wild Goose Pagoda, is an architectural marvel standing 60 meters high (seven stories). The square pyramid pagoda, was built with layered bricks and no mortar in 652 A.D. under the direction of Buddhist master Xuan Tang (Monk Tripitaka) of the Tang Dynasty. In 627 A.D., at the age of 28, Zhang traveled to India to study Buddhism. Seventeen years later, he returned to Chang'an with 657 volumes of Buddhist Scriptures.

The North Square, adjacent to the Big Wild Goose Pagoda, is divided into nine levels. The terraced Square stretches from north to south and includes the largest fountain and waterscape square in Asia, Tang cultural sculptures, decorated archways, and gardens.

Shaanxi History Museum

This modern museum, built in the style of the Tang Dynasty, covers an area of 70,000 m^2. The architecture combines the construction styles of the ancient Chinese palaces and courtyard buildings. The collection includes highlights of Shaanxi province culture and documents development of Chinese civilization over 7,000 years. The museum collection includes 113,000 historic and cultural artifacts unearthed in Shaanxi.

Post-Conference Study Tour
(09:00-18:00, May 14, 2010)

Arranged by the Conference Organizers, this study tour includes Emperor Qin's Terra-cotta Warriors and Horses and Han YangLing Museums. The cost for non-conference participants is $50 per person including transportation, museum entry fees, English-speaking guide, lunch, and insurance. A special emphasis of the tour is protection methods for cultural artifacts from environmental threats.

Terra–cotta Warriors and Horses Museum

Located 30 km east of Xi'an, Emperor Qin's Terra-cotta Warriors and Horses Museum, "the Eighth Wonder of the World" is a world cultural heritage site. It is among the top archaeological excavations of the 20th century.

Constructed more than 2,200 years ago to protect the afterlife of the Emperor Qin Shi Huang, the terra-cotta army includes > 7,000 life-sized warriors, horses, chariots, and weapons. It was discovered by peasants digging a well in 1974. The original paint has worn off, and the bronze-age weapons (including swords, arrows, and lances) have eroded. The most impressive aspect of the site is the scale of the collection even though only 20% of the statues have been unearthed. The unique faces of the warriors—no two are alike—are said to be modeled after the artists who sculpted them and the Imperial Guards of the time.

Han YangLing Museum

Located ~30 km east of Xi'an near the Xianyang airport, Han YangLing is the mausoleum and garden of Liuqi, the fourth emperor of the Western Han Dynasty. It has been dated to 2,000 years ago, a time regarded as the golden age of Imperial China. The archaeological investigation at YangLing started in 1970, but the explorations were enhanced during the 1990s when highways were built to the Xianyang airport. The museum, built in 1999, houses a large number of precious relics inside hermetically sealed enclosures.

This large-scale underground museum uses advanced technology to protect the cultural relics. The pits are encased with special glass that maintains the environment similar to what it was before excavation. Suspended glass corridors allow visitors to take a closer look at the painted pottery warriors, animals, chariots, and horses.

Spouse/Companion Tour (09:00-17:30, May 11, 2010)

Includes: Mount CuiHua National Park and Southern Wutai. Cost is U.S.$45 per person including transportation, entry fees, English-speaking guide, lunch, and insurance. (At least ten participants are needed.)

Mount CuiHua National Park

Located ~20 km from Xi'an, CuiHua Mountain is part of the Qin mountain chain, which is composed of metamorphic rock from the middle geological epoch (one billion years ago). The Mountain was formed as a result of an earthquake in three valleys in the middle of Shaanxi during the You King of the Western Zhou Dynasty. The highest peak, Zhongnan Mountain, rises 2,604 m above sea level. Well-maintained, easily traversed trails with interpretative signs in English and Chinese lead to many scenic wonders and overlooks.

Southern Wutai

Located 30 km south of Xi'an, southern Wutai is one of the most sacred Buddhist shrines. This lush and beautiful mountain consists of five peaks: Qingliang, Wenshu, Shenshen, Lingying, and Guanyin. Climbing the mountain on foot offers outstanding views. There are many streams and bridges traversing through bamboo with views of the temple resting on the mountain's slope. Ancient edifices that can be visited include the Shengshou Temple, Shengbao Spring, ZhiZhu Temple, Guanying Dais, and Wufu Palace. It takes 20 to 30 minutes to reach the summit by car. Southern Wutai served as a resort for the emperors of several dynasties and is now part of the Zhongnanshan National Forest Park.

Evening Reception at the Institute of Earth Environment, Chinese Academy of Sciences (IEECAS) (18:30 - 20:30, May 11, 2010)

Conference participants and their companions are invited for a reception hosted by IEECAS with refreshments, music, and laboratory tours. Bus transportation will be provided from the conference center.

Established in Xi'an through the efforts of Professors Liu Tunghseng, An Zhisheng, and others in 1999, IEECAS is an extension to the State Key Laboratory of Loess and Quaternary Geology (SKLLQG), CAS. IEECAS researchers study regional and global climatic and environmental changes at different time scales to better define and implement sustainable environmental practices. IEECAS is composed of four research units: 1) the Xi'an Accelerator Mass Spectrometer (AMS) center (jointly built with Xi'an Jiaotong University and supported by CAS, Ministry of Education, and Ministry of Science and Technology); 2) the Paleo-Environment Division; 3) the Recent Environmental Processes Division; and 4) the Aerosol Environment Division. IEECAS employs 59 scientists and technicians of a staff of 65. There are over 50 visiting scientists, 88 graduate students, and three post-doctoral fellows. IEECAS is equipped with a 3 MV AMS, 2G-755R U-channel Superconducting Rock Magnetometers, MAT-252 and Delta plus, Laser Particle Analyzer, X-ray Diffraction, Carbon Analyzers, and TL/OSL and Lenovo 1800 Cluster computers. IEECAS cooperates with academic institutions from the U.S., U.K., France, Germany, Austria, Canada, Japan, Australia, the Netherlands, Korea, Russia, and Sweden, among other countries. The institute is gaining its reputation as a world-renowned center for environment research and training.

Spouse/Companion Tour
(09:00-18:00, May 13, 2010)

Includes: Qianling Mausoleum, Famen Temple, and Princess Yongtai's tomb. Cost is U.S.$65 per person including transportation, entry fees, English-speaking guide, lunch, and insurance .(At least ten participants are needed.)

Qianling Mausoleum

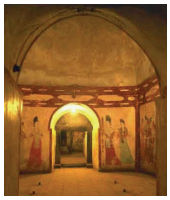
Located ~80 km west of Xi'an on Liangshan Hill, Qianling Mausoleum is a well-preserved and high-quality cultural site. The joint tomb of the Tang dynasty Emperor Gaozong and Empress Wu Zeitan includes a number of historic relics including stone engravings and exquisitely carved stone statues from the Tang dynasty.

Famen Temple

Located ~120 km northwest of Xi'an, Famen Temple is a fascinating place with an intriguing history. Legend has it that in 147 A.D., King Asoka of India traveled throughout Asia, distributing Buddhist relics as atonement for his sins and warlike attitude. In China, he built Famen Temple and left the fingers of Buddha to be enshrined therein.

Tang dynasty emperors revered the sacred relics and regularly walked through the streets followed by a worshipful procession. The Tang emperors offered wonderful gifts in an attempt to surpass their predecessors' offerings. This site is still an important place of pilgrimage for today's Buddhists.

Princess Yongtai's Tomb



Located 2 km northeast of Qianling Mausoleum, Princess Yongtai's tomb, now the site of the Qianling Museum, is a chief satellite tomb to Qianling. Princess Yongtai was the granddaughter of the Tang Emperor Gaozong and his wife, Empress Wu Zeitan. In 701 A.D., Princess Yongtai and her husband were slain by Empress Wu Zeitan because Yongtai spoke about the Empress' scandalous affairs. After mounting to the throne, Zhongzong ordered his daughter and her husband be buried in Qianling.

Spouse/Companion Tour
(09:00-18:00, May 12, 2010)

Includes: Mount Huashan. Cost is U.S.$75 per person including transportation, cable car ride, entry fees, English-speaking guide, lunch, and insurance. (At least ten participants are needed.)

Mount Huashan

Located ~120 km east of Xi'an, Mt. Huashan is one of five famous mountains in China. Known for its high peaks and steep cliffs, Mt. Huashan consists of five distinct summits: Eastern, Western, Southern, Northern, and Central.

The mountain peaks resemble the petals of a huge plant, with the middle peak serving as a corolla, hence the mountain's name. The southern peak is the largest (2,100 m), followed by the eastern and western peaks. The ascent by overland cable car provides natural scenery, including the Hundred-foot Gorge, Laojun Furrow, Heavenward Ladder, and Old Dragon Ridge, and also a number of ancient buildings and stairways that are part of the mountain's culture. The well-maintained trail to the peaks passes by temples, shrines, pavilions, terraces, carvings, statues, food stalls, and hawkers who appear interspersed with the stone-carved trail and forested hillsides. Along the Green Dragon Ridge (Bilong Ji), which connects the northern peak with the rest of the mountain, the way is cut along a narrow rock ridge with steep cliffs on either side.

Advance Registration Form

Leapfrogging Opportunities for Air Quality Improvement

May 10 - 14, 2010

PLEASE PRINT

Last Name: _____ First Name: _____

Title: _____ Affiliation/Company _____

Street Address: _____

City: _____ State/Province: _____ Country: _____ Zip/Postal Code: _____

Telephone: _____ Email: _____

Conference Registration Fee

Full registration includes technical sessions, refreshment breaks, luncheons, receptions, banquet, dinner show, and a memory stick containing conference abstracts. Published conference abstract books will be available for U.S.$50 or ¥350RMB.

	Advance	**On or After March 1, 2010**
Full non-Chinese A&WMA Member	☐ U.S.$475	☐ U.S.$575
Full non-Chinese A&WMA non-Member	☐ U.S.$600	☐ U.S.$700
Student Member*	☐ U.S.$250	☐ U.S.$350
Student Non-Member*	☐ U.S.$350	☐ U.S.$450
Full Chinese A&WMA Member or non-Member	☐ ¥2000RMB	☐ ¥3000RMB

*Valid ID and proof of full-time enrollment required. Student registration includes refreshments and memory sticks only.

Course Registration Fee

Course registration include lunch and a copy of the course manual.

May 10, 2010 (8:30 a.m.—12:30 p.m.)

☐ **Ultrafine Measurement and Data Analysis**
☐ **Recent Advances for Real-World Source Measurements of Emission Factors and Emission Profiles**
☐ **Integrated and Semi-Continuous Monitoring of $PM_{2.5}$ Mass and Constituents including Semi-Volatile Material**

May 10, 2010 (13:30—17:30 p.m.)

☐ **Database Management for Long-term Visibility Networks**
☐ **Quality Assurance for Air Quality and Environmental Monitoring Programs (Translation from English to Chinese will be provided)**
☐ **Exposure Assessment and Risk Management**

	One Course Advance	**Two Course Advance**	**One Course on or after March 1, 2010**	**Two Course on or after March 1, 2010**
Non-Chinese A&WMA Member	☐ U.S.$150	☐ U.S.$275	☐ U.S.$250	☐ U.S.$375
Non-Chinese A&WMA non-Member	☐ U.S.$200	☐ U.S.$375	☐ U.S.$300	☐ U.S.$475
Student Member**	☐ U.S.$ 75	☐ U.S.$150	☐ U.S.$150	☐ U.S.$250
Student Non-Member**	☐ U.S.$100	☐ U.S.$200	☐ U.S.$200	☐ U.S.$300
Chinese A&WMA Member or non-Member	☐ ¥500RMB	☐ ¥850RMB	☐ ¥800RMB	☐ ¥1500RMB
Chinese Student Member or non-Member	☐ ¥300RMB	☐ ¥500RMB	☐ ¥550RMB	☐ ¥1000RMB

Registration Total

	U.S. Dollars	RMB
Conference Registration	$_____	¥_____
Course Registration	$_____	¥_____
Printed Conference Proceedings	$ 50 X ____= $____	¥350 X ____= ¥____
Total Payment	**$_____**	**¥_____**

Form of payment: ☐ MasterCard ☐ Visa ☐ American Express
Credit Card Number:_____ Expiration Date: _____

Signature:_____ Date:_____
Name (printed, as it appears on card): _____
I authorize A&WMA to charge my credit card in the amount of $_____

Deadline for advance registration is March 1, 2010