

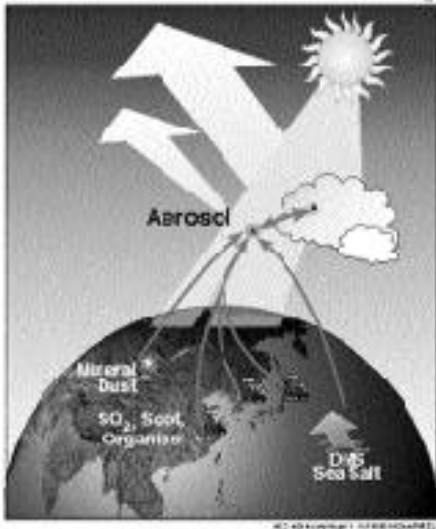
ACE-Asia

가 ACE-Asia (Aerosol Characterization Experiment in Asia Pacific Region) UN International Global Atmospheric Chemistry Project § (IGAC) 10

가 ACE-1(ACE-3), ACE-2((1). 가 ACE-3 ()

1. ACE-Asia

International Global Atmospheric Chemistry Project
ACE-ASIA
 Asian Pacific Regional Aerosol Characterization Experiment
 Radiative Forcing due to Anthropogenic Aerosols over the Asian Pacific Region



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- 2. ACE-Asia
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Fig. 1. <http://saga.pmel.noaa.gov:80/aceasia>

(ACE-1, ACE-2)

3.

. 2001

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-3.5 W/m²
+2.8 W/m²

negative
-0.3
+2.0

ACE-Asia가

- ACE-Asia 1
(ACE-Asia Planning Meeting)가 1997
11
2 가
1998 10

ACE-3

가

ACE-Asia Science Meeting
super-site
2004 ACE-Asia

ACE-Asia
2000-

가

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4.

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(WMO)
(IGBP; International Geosphere Biosphere
Program)
(IGAC; International Global Atmospheric
Chemistry) “
(ACE: Aerosol Characterization
Experiment)” , ‘95 ‘97

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: C-130 NOAA
(2001 3 20 - 4 20)
: 8500 2001. 3.
16 4. 24
- : NOAA
- (:
super-site)

- (: Tim Bates , NOAA, PMEL) 5 - Uematsu ,)
 - (: Barry Huebert , Hawaii) 6.
 - (: Terruyuk Nakajima ,) 13 가 4
 - Modelling (: Car Michael , Iowa) 17 2001 2 3 4
 - (: John Merrill , Univ. of Rhode Island) C-130 CSIRO (NOAA)
5. 3 15 5 15
- 1995 IGAC
- 1997 11 1 ACE-Asia Science Team : NOAA 8500 4000
- 13
- 1998 10 2 ACE-Asia Science Team - 7. 2000 6 super-site 5 2
- 가가 가 KAL Hotel 가 Super-site 가 2 가 2
- 1999 11 3 ACE-Asia Science Team Meeting - KIST 가 1 가 60 KW (2001 3 - 5) (NSF) 50%
- 가 Super-site
- 4 ACE-Asia Science Team Meeting - 20 m tower
- (Tower가 walk tower virginia 2001 1)
- 5 ACE-Asia Science Team Meeting - Hawaii Convension center 가
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Fig. 3. Containers in Kosan super-site in Cheju

Table 1. Participants of ACE-Asia observations

Participant PI	Obs. elements	Devices	Date of Setup/remove	Location	Descriptions
1 James Schauer Ph. D., PE Assistant Professor Civil and Env. Engineering, Wisconsin State Lab. of Hygiene Univ. of Wisconsin-Madison Water Science & Engineering Lab. 660 N. Park St. Madison, WI 53706 Tel: 1-608-262-4495 fax: 1-608-262-0454 jjschauer@facstaff.wisc.edu jschauer@engr.wisc.edu	TSP aerosols chemical components	1) Low-Volume chemical spacial monitor (Chemical special sampler) (PM1, PM2.5, PM10) 2) Hi-Volume TSP sampler(Trace metal)	1 week before IOP (2001)/End of IOP	Outdoor	*Data acquisition: No *Electric power: Chemical speciation sampler-110V, 15A Hi-Volume TSP sampler-110V, 10A *Equipment size: Chemical speciation sampler -1.0x0.75x2.5m(h) (outdoor) Hi-Volume TSP sampler -0.75x0.75x2.0m(h) (outdoor) *observing periods:6 weeks *observing frequency: 12hour; 2/day
2 Hilton Swan AGAL Australia Jonghee Kim (Seoul contact) jongheekim@dfat.gov.au	DMS (Atmospheric Dimethylsulphide)	GC (VARIAN 3400)	Mid March 2001/ May 2001	Indoor(?)	*Electric power: 240volt/ 50hz *Equipment size: 1m of bench space
3 Dr. Wlodek Zahorowski Leader, Atmospheric Radioactivity, Australian Nuclear Sci. & Tech. Organization, PBML, Menai, NSW 2234,Australia Tel: +61-2-9717-3804 Fax: +61-2-9717-9260 wza@ansto.gov.au www.ansto.gov.au ChangHee Kang Univ. of Cheju	Rn-222(radon-222) Hourly radon concentrations in the atmospheric boundary layer	ANSTO radon detector (automatic)	2000.10.6~12/ continuous	Outdoor	*Data acquisition: logger connected to PC *Size: 1.2(L) × 0.6(W) × 1.2(H) m *electrical capacity: 50W+PC power (220V, 0.22A, 50/60Hz)

4	David Cohen ANSTO(Australian Nuclear Sci. & Tech. Organization) PBML, Menai, NSW 2234, Australia	aerosols chemical components (Na/P6, H)	PM2.5, PM10 sampler	2000.10/ End of IOP	Outdoor	*Size: 0.4(L) × 0.2(W) × 0.8(H) m *electrical capacity: 500W+500W (220V, ~4A, 50/60Hz) *observing frequency: twice a week, (24h on wednesday/sunday)
5	Mitsuo Uematsu ORI Univ. of Tokyo	Organic Carbon Element Carbon	R&P Carbon Monitor 5400(Automatic)	Late of March/ Early June	Indoor	*Accessories: PM2.5 cyclone need a inlet ~20mm tube *Electric power: 100V/18A or 220V/9A, 60Hz +100V/4A (for pump) *observing periods: April 1~May 31 *observing frequency: every 4hours
6	Jim Anderson, Sang-Mi Lee Arizona state Univ. janderson@asu.edu	Aerosol (analysis by Scanning electron microscope (SEM) and transmission electron microscope)	Single Particle sampler (PIXE International Inc. Programmable streaker aerosol sampler)	1 week before IOP (2001)/ End of IOP	Outdoor (enclosed box on tower)	*Accessories: Electronic flow meter(2ea) Diaphragm pumps(2ea) *Electric power: 110/220V, 50/60hz, 400W *Equipment size: 30(L) × 20(W) × 40(H)cm *observing periods: continuous *observing frequency: 3days(2hours)
7	Fred Brechtel	1)Particle size distribution (0.004~50µm) 2)Particle Hygroscopic growth(at RH 30~90%, 20~100nm)	1)BNL Twin Scanning Electrical Mobility Analyzer 2)BNL Hygroscopic Tandemo Differential Mobility Analyzer	1 week before IOP (2001)/2days after IOP	Indoor (analyzer) Outdoor (Fssp-100, mounted on tower)	*Accessories: 1) FSSP-100 *Size: 1)1(L) × 1(W) × 2(H) m 2)1(L) × 1(W) × 2(H) m *electrical capacity: 1)110V, 60Hz, 6amp 2)220V, 60Hz, 5amp *observing periods: IOP *observing frequency: 1min
8	Dan Imre, Alla Zelenyuk	Elemental composition of individual particle >80µm, Hygroscopic growth & composition of hygro modes	BNL single particle Laser Ablation Time of Flight Mass Spectrometer	1 week before IOP (2001)/ 3days after IOP	Indoor(?)	*Size: 4(L) × 2(W) × 2(H) m *electrical capacity: 110V, 60Hz, 5A / 220V, 60Hz, 8A *observing periods: IOP ~10hr /day *observing frequency: ~10hr /day
9	Y. P. Kim Professor Ewha women Univ. (KIST)	1)Particle scattering 2)Particle scattering 3)TSP-organics	1)EAA(TSI) 2)2 Nephelometer (TSI 3wave, 1wave) 3)TSP Hi-Volume samp.	Oct. 2000/ Dec. 2002	Indoor (1, 2) Outdoor (3)	*Accessories: 2)Heater need inlet(1), inlet & outlet(2) *Electric power: 1)110V, 60Hz, 5A 2)110V/220V, 20A/10A 3)110V, 60Hz, 5A *space:1)~0.5m ³ , 2)2m ³ , 3)1m ³ *observing periods: 2000.10~2002.12
10	Jianzhen Yu Dept. of Chemistry Hong kong Univ. of Science & Tech, Clear Water Bay, Kowloon Hong Kong Tel: 852-2358-7389 Fax: 852-2358-1594 chjiangyu@ust.hk	1)PM2.5 mass, OC/EC, major ions 2)OC/EC, PAH, WSOC, WSOC organic speciation	1)IMPROVE-type aerosol sampler 2)High volume denuder/ filter/solvent filter system	March 18, 2001/ May 7,2001	Indoor(?)	*size: 1)18(L) × 30(W) × 44(H)cm 2)40(L) × 40(W) × 140(H)cm *Electric power: 1)23 /min, 250W, 210V 2)80 /min,1kW *observing periods: 2001.3.20~4.30 *connect with John H. Seinfeld, *Collaboration with KIST

11	Brent Holben NASA GSFC brent@aeronet.gsfc.nasa.gov	AOD , , wo , Size distribution, ro , Cv	Sun/Sky Scanning Radiometer (AERONET)	March 10, 2001/ April 30, 2001 Outdoor	Outdoor	*Electric power: none use solar panels *size: 100(L) × 100(W) × 50(H)cm *observing periods: 2001.3.10~4.30 *observing frequency: automatic
12	Tomas A. Cahill, Steve Cliff Delta group Atmospheric Sciences (LAWR) / Physics Univ. of California, Davis One Shields Ave. Davis, CA 95616 Tel: 1-530-752-4674 fax: 1-530-752-9804 tacahill@ucdavis.edu	aerosol elements heavy to lead 1)Mass, Hydrogen, Na->Sr, Hg->Pb, speciated organics 2)Na->Sr, Hg->Pb 3)Mass, Hydrogen, Na->Sr, Hg->Pb, Nitrate, sulfate, OC-EC. speciation organics	1)3stage drum/Teflon/Al 2)8stage drum/Mylar (2)one for kosan & the other for Halla Mt. 3)IAS sampler /Mylar (International Aerosol sampler)	March 20, 2001/ April 30, 2001, Aug 15, 2001	Outdoor (Tower)	*Accessories:1/4 h.p. pump(4ea) *Electric power: 400 W 110/220V, 60hz, 4A for All *Equipment size: 1)0.15x0.2x0.3m(h) 2)0.3x0.3x1.5m(h) 3)0.3x0.3x1.5m(h) ((2,3)wooden with a rain/sun shield) *observing periods: 2001.3.20~4.30, 8.15 *observing frequency: 1,2) 4hr continuous 3)daily(24hr)
13	Mikio Kasahara Kyoto Univ.	1)Particle size distribution, chemical analysis 2)fine & coarse particles, Elemental analysis	1)Low Pressure Cascade Impactor 2)Two filter packed sampler	end of Feb, 2001/ the early of May, 2001	outdoor (?)	*Accessories:1 1)pump, Flow meter 2)auto exchange system, flow meter, recoder, pump *Electric power: 1)100V, 60hz, 10A 2)100V, 60hz, 6A *Equipment size: 1)0.6(L)x0.6(W)x0.8(H) m 2)0.6(L)x1.0(W)x0.5(H) m *observing periods: 2 months (2001, 3. 1~4.30) *observing frequency: 1) 48hr 2) 6hr(6set at once), 36hr *need person who help sampling
14	VALERO UCSD/Scripps	solar radiation	Radiation Measurement System(RAMS) -solar radiometer: (direct & total) -spectral radiometer (7 channels)	end of Feb, 2001/ the early of May, 2001	outdoor (?)	*Accessories:1 1)pump, Flow meter 2)auto exchange system, flow meter, recoder, pump *Electric power: 1)100V, 60hz, 10A 2)100V, 60hz, 6A *Equipment size: 1)0.6(L)x0.6(W)x0.8(H) m 2)0.6(L)x1.0(W)x0.5(H) m *observing periods: 2 months (2001, 3. 1~4.30) *observing frequency: 1) 48hr 2) 6hr(6set at once), 36hr *need person who help sampling

* ACE-Asia Hawaii meeting 가 (14)
* e-mail (7)
* 가 21

	Participant PI	Obs. elements	Devices	Date of Setup/remove	Location	Descriptions
15	Bill Keene wck@virginia.edu		20m aluminum scaffolding tower	2000.autumn	Outdoor	*require support to METRI(installation and removal) *shipboard experiments(2001, spring)
16	Anne Jefferson NOAA/CMDL 325 Broadway Boulder, CO 80303 USA Tel: (1) 303-497-6493 Fax: (1)303-497-5590 ajefferon@cmdl.noaa.gov www.cmdl.noaa.gov/aero	*aerosol total and hemispheric backscattering coeff.(RH), *aerosol light absorption coeff., *aerosol ionic composition, *gravimetric mass	*2 nephelometers (TSI model 3560), *radiance research particle soot absorption photometer, *aerosol humidification system *aerosol filter sampling carousel	*2000. 10 *a few weeks before the intensive field project(2001. 3.) *Operate for a full year		*Data acquisition: PC *electrical capacity: 2.5 3KW *Space: 2m ² , *glove box, pump, electronics *Collaboration with KIST
17	Judith Lloyd Chair Chemistry/Physics Department state Univ. of New York PO Box 210 Old Westbury, NY 11568 Tel: (516)876-2728 Fax: (516)876-2749 jlloyd@bnl.gov	gaseous peroxide	BNL 3-channel peroxide analyzer	3 days prior to beginning of spring intensive (2001. spring)		*Size; 0.7(wide)x0.7(deep)x1.2m (ht) *Weight: 250kg (+250kg supplies) *Data acquisition: own computer *Electric power: instrument - 5.7 amp(110V), computer -3 amp *Needing space for balance, pH meter
18	Barry Huebert huebert@soest.hawaii.edu	boundary layer structure, entrainment of free-tropospheric air	NCAR Integrated Sounding System(ISS) 1. sonde-launch facilities 2. an acoustic temp. profiler 3. a radar wind profiler 4. a complete weather station	not yet determined		*Determination after October meeting
19	Rich Arimoto CEMR/New Mexico State University 1400 University Drive Carlsbad, NM 88220 Tel: 505-234-5503 Fax: 505-887-3051 arimoto@cenrc.org					*Determination after visiting of site all obs. elements and device etc.
20	Jim Hudson hudson@dri.edu	CCN aerosols	*CCN spectrometer *MOUDI impactors	2001, 3-4		*Data acquisition: Two small PC *Electric power: 9A & 120V AC *Equipment size: CCN Spectrometer-0.58x0.62x1m(h) CCN accessory rack-0.56x0.66x1m(h) CCN Pump-0.3x0.3x0.4m(h) CCN power supply-0.4x0.4x0.5m(h) MOUDI pumps-1x2x3m(h) MOUDI pumps-2x2x3m(h) miscellaneous are-2x2x3m(h)

21	<p>Dr. Peter R. Buseck, Jia Li (student) Arizona State University, US 153-8904 pbuseck@asu.edu jia.li@asu.edu</p>	aerosols	<p>*electron microscopy *aerosol impactors</p>	2001, 3-4	<p>*Electric power:several hundred W *Equipment size:1x1x1m(h)</p>
22	<p>Dr.K.N.Bower NERC Science Coordinator for CWVC (the NERC Clouds Water Vapour and Climate thematic programme) Senior Project Officer/Research Fellow, Atmospheric Physics Research Group, The Physics Department, U.M.I.S.T. P.O. Box 88, Manchester, M60 1QD. United Kingdom. Tel. +44 161 200 3952 Fax. +44 161 200 3951 (or 3941) K.Bower@UMIST.AC.UK</p>	<p>aerosol distributions aerosol size and composition aerosol chemistry composition aerosol mass distribution aerosol hygroscopicity</p> <p>gases (NO, NO₂, NO_x, SO₂, O₃, NH₃, HNO₃, HCl, H₂O₂)</p>	<p>*DMPS (3-650nm), ASASP (0.1~3.0μm) *Aerodyne AMS (aerosol mass spectrometer) *2 x 6 stage Berner Impactors *8 stage Berner Impactors *TDMA (hygroscopicity)</p>	2001, spring	

