

Ground/satellite/airborne obs. (as of Feb 11, 2017)

EMeRGe Japan

Type	Site, network etc.	See page	Contact	species	reference
Super sites	Fukue (remote) https://ebcrpa.jamstec.go.jp/atmoscomp/obsdata/fukue16.html http://www.nies.go.jp/chiiki/fukuejima/index.html	3,4	Yugo Kanaya (JAMSTEC) Akinori Takami (NIES) Hitoshi Irie (Chiba U.)	BC/CO/PM2.5/O3/MAX-DOAS,NO2 Profile Aerosol chemical composition/Mie Lidar/NOxy See SKYNET	Kanaya et al., ACP 2016 (BC) , AAQR2016 (O3) , ACP2014 (MAX-DOAS)
	Cape Hedo (remote) http://www.nies.go.jp/asia/hedomisaki/outline_e.html	4	Akinori Takami (NIES) Shungo Kato (Tokyo Metropolitan U.) Hitoshi Irie (Chiba U.)	Aerosol chemical composition/Mie Lidar Canister sampling/C2-C11 NMHCs, CO, O3 See SKYNET	Takiguchi et al., JGR 2008 , Takami et al., JGR 2007 , Suthawaree et al., AE 2008 , Primbs et al., EST 2007
	Noto (remote) http://thecloudmaker.info/center.html	5	Atsushi Matsuki, Kanazawa U.	ACTM, BC(MAAP), etc	Maki, T. et al., AE (2013), Iseki et al., AE (2010), Tobo et al., PNAS (2010)
	Fukuoka (urban) http://www.se.fukuoka-u.ac.jp/geophys/am/instrument.html	6	Hisahiro Takashima (Fukuoka U.)	NO2, HCHO etc. (MAX-DOAS) Aerosol chemicals, lidars, O3/CO/etc	Takashima et al. Atmos. Env., 2015
Long-term network obs.	JMA/GAW sites (Yonaguni, Minamitori, Ryori)	(16)	Kazuhiro Tsuboi, Hidekazu Matsueda (MRI)	CO2, CH4, CO, O3. AOD	http://ds.data.jma.go.jp/ghg/info_ghg_e.html
	TCCON (Rikubetsu, Tsukuba, Saga, new Philippines site) and GOSAT	7	Isamu Morino (NIES), Kei Shiomi (JAXA)	CO, CO2, CH4 etc	https://tccon-wiki.caltech.edu/Sites
	MADRAS (Yokosuka (urban)/Cape Hedo/Gwangju/Hefei)	8	Yugo Kanaya (JAMSTEC)	MAX-DOAS Profiles of NO2/aerosols/HCHO etc	Kanaya et al. ACP2014 (MAX-DOAS)
	SKYNET (Chiba/Tsukuba/Kasuga/Phimai etc)		Hitoshi Irie (Chiba U.)	MAX-DOAS, AOD, SSA etc.	http://atmos2.cr.chiba-u.jp/skynet/ http://www-lidar.nies.go.jp/skynet/obs_sites.php
	AD-Net (20 sites)	9	Nobuo Sugimoto (NIES)	Mie Lidar network	http://www-lidar.nies.go.jp/AD-Net/ Sugimoto et al., SPIE 2015
	Hedo Fukue, Noto, (remote) Fukuoka (urban)		Kazuma Aoki (Toyama U.)	Sky radiometer	Aoki and Fujiyoshi, JMSJ 2003 , Nakajima et al., JGR 2007
Aerosol	Chichijima (remote) and Kasugai (sub-urban)		Kimi Kawamura (Chubu U.)	LMW dicarboxylic acids and related compounds, SOA tracers, etc.	Kawamura and Bikkina, Atmos. Res., 2016 ; Fu et al., EST, 2016
	Taiwan (2017 spring)		Nobuyuki Takegawa (Tokyo Metropolitan U.)	Aerosol chemicals (LII/MS)	Takegawa et al. Aerosol Sci. Tech. 2012 Ozawa et al., Aerosol Sci. Tech. 2016
Satellite	GCOM-C (SGLI) swath		Hitoshi Irie (Chiba U.)	Cloud and aerosol data from GCOM-C will be available.	http://global.jaxa.jp/projects/sat/gcom_c/
airliner based obs.	CONTRAIL (passenger aircraft)	10	Toshinobu Machida (NIES)	CO2 (continuous: vertical and horizontal) CO, CH4 (sampling: horizontal)	Machida et al., JTEC-A, 2008 , Matsueda et al., GRL, 2015 , Sawa et al., GRL, 2015 , http://www.cger.nies.go.jp/contrail/ 1

Model analysis (as of Feb 11, 2017)

Model	See page	Contact	output	reference
Observationally-constrained 0-D photochemical box model	11	Yugo Kanaya (JAMSTEC)	OH/HO ₂ /RO ₂ estimation, O ₃ prod. Rates, importance of hetero. chemistry	Kanaya et al. ACP 2009 Taketani et al., ACP 2012 Kanaya et al., AAQR 2016
3-D chemical transport model (50 km mesh), Multi-component data assimilation	12	Kazuyuki Miyazaki, Takashi Sekiya, (JAMSTEC), Kengo Sudo (Nagoya U.)	Post process analysis, emission, process, concentration field	Miyazaki et al., ACP 2012 , 2015 etc
WRF-CMAQ	13	Kazuyo Yamaji (Kobe U.), Kohei Ikeda (NIES)	Post process analysis, O ₃ /PM _{2.5} /related species, from ground sites & vertical extent	Ikeda et al., Geochem. J. 2015 Yamaji et al., ACP 2010
WRF-Chem/ATRAS	14	Hitoshi Matsui (Nagoya U.)	Conc/Size/coating of BC VBS-based organic aerosols Oxidants, NPF	Matsui et al. ACP 2014
NICAM-Chem	15	Yasko Kasai(NICT), Takeshi Kuroda(NICT), and Daisuke Goto(NIES)	aerosol (carbon, seasalt, dust, sulfate), SO ₂	Goto et al., Geosci. Model Dev., 2015

Chemical forecast (as of Feb 11, 2017)

System/Principal Scientists		Web sites
SPRINTARS (Toshihiko Takemura, Kyushu U.)	Global, aerosol chemicals/optical	http://sprintars.riam.kyushu-u.ac.jp/forecast.html
VENUS (Seiji Sugata, NIES)	Japan/Asia, PM _{2.5} , ozone, sulfate	http://envgis6.nies.go.jp/osenyosoku/
MRI (Takashi Maki, Mizuo Kajino, MRI)	East Asia, ozone	http://ds.data.jma.go.jp/pco/mri_ccm2/index.html
GCWM (Masayuki Takigawa, JAMSTEC)	Global & Urban Ozone, reactive species	http://www.jamstec.go.jp/frcg/gcwm/eng/index.html

Calibration of TCCON FTSs in Japanese and Philippines sites and GOSAT validation

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Calibration of TCCON FTSs at Rikubetsu, Tsukuba, Saga in Japan and Burgos in Philippines (<https://tcon-wiki.caltech.edu>) will be made using the HALO aircraft data. Then we also compare the GOSAT data (<http://www.gosat.nies.go.jp/en/>) with them.

<i>Measured species</i>	<i>instruments/model</i>
XCO ₂ , XCH ₄ , XCO, XN ₂ O, XH ₂ O, etc.	TCCON FTS at Rikubetsu, Tsukuba, Saga in Japan and Burgos in Philippines
Profiles of aerosol and cloud	Lidars at Rikubetsu, Tsukuba, Saga in Japan and Burgos in Philippines
Profile of H ₂ O	Lidar at Burgos in Philippines
Profile of O ₃	Lidar at Tsukuba and Saga in Japan
XCO ₂ , XCH ₄ , XH ₂ O	GOSAT TANSO-FTS SWIR and TIR

Publication: Wunch et al., AMT, 3, 1351-1362, 2010; Yoshida et al., AMT, 6, 1533-1547, 2013; Inoue et al., AMT, 9,3491-3512,2016; Eric et al., Remote Sens.,8, 414, 2016, correction, 8, 982,2016.

Objective during EMeRGe:

Calibration of TCCON FTSs and validation of the GOSAT data.

Deliverable to EMeRGe:

TCCON data, profile data of liadrs, GOSAT data upon request and agreement by data owners.

Synergy with EMeRGe:

Data set from EMeRGe, ground-based and satellite measurements would be useful for evaluating model simulation

TCCON sites in East Asia and

