Validation for atmospheric products

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Long range observation(Continuous):

➔SKYNET observation network

Intensive short term observation:

➔comprehensive experiment such as APEX E1/E2 (Vicarious calibration)

Validation in the atmosphere group

Group members:

★universities:

U.Tokyo, Chiba U., Hokkaido U., Tohoku U., Kinki U., Nagasaki U.

★institutes:

National Institute for Environmental Studies(NIES),
Communication Research Laboratory(CRL),
Meteorological Research Institute(MRI/JMA)

National Institute of Agro-Environmental Sciences(NIAES),

★ foreign institutes/universities

Inst. Atmos. Phys./CAS, Anhui Inst. Opt. Fine Mech./CAS,
U. Maryland,

Supported:
Infor. Comp. Center/Ministry of Nature and Environment/Mongolia,
Irrigation and Artificial Precipitation(?) Div./Thailand,
and other organizations

Atmosphere Products to be validated

Product code	Algorithm code	Physical parameter code	Geophysical meanings	Product accuracy	Validation accuracy	Status Index
ARAE	ATSK5 Post_ATSK5	ARAE	Angstrom index of aerosols	0.5	0.3	1
AROP		AROP	Optical thickness of aerosols	10%	0.05 Or 10%	1
CLOP	Pre_ATSK3_p STSK3_p	CLOP	Optical thickness of clouds	10%	1 Or 10%	1
CLER	ATSK3_r ATSK3_e ATSK16	CLER	Effective radius of clouds	20%	2um	2
CLFR		CLFR	Cloudiness Cloud pattern	5%	5%	2
CLHT		CLHT	Cloud height	1 km	1 km	2
CLTT		CLTT	Temp. of cloud top	0.5 K	0.5 K	2
CLWP		CLWP	Liquid water path	20%	10%	3
CLBH	(Research)	CLBH	Cloud base height	1 km	1 km	4
WTVA	(Research)	WTVA	Precipitable water	0.2g/cm2	0.1g/cm2	4
FSTOP FSSRF	(Research)	FSTOP FSSRF	Solar flux at TOA/SRF	5W/m2	<2W/m2 (SFC)	4
FLTOA	(Research)	FLTOA	Longwave flux at TOA	5W/m2		4

Status Indx: 1—Most important, 2—Important, 3—Possible, 4—Research level

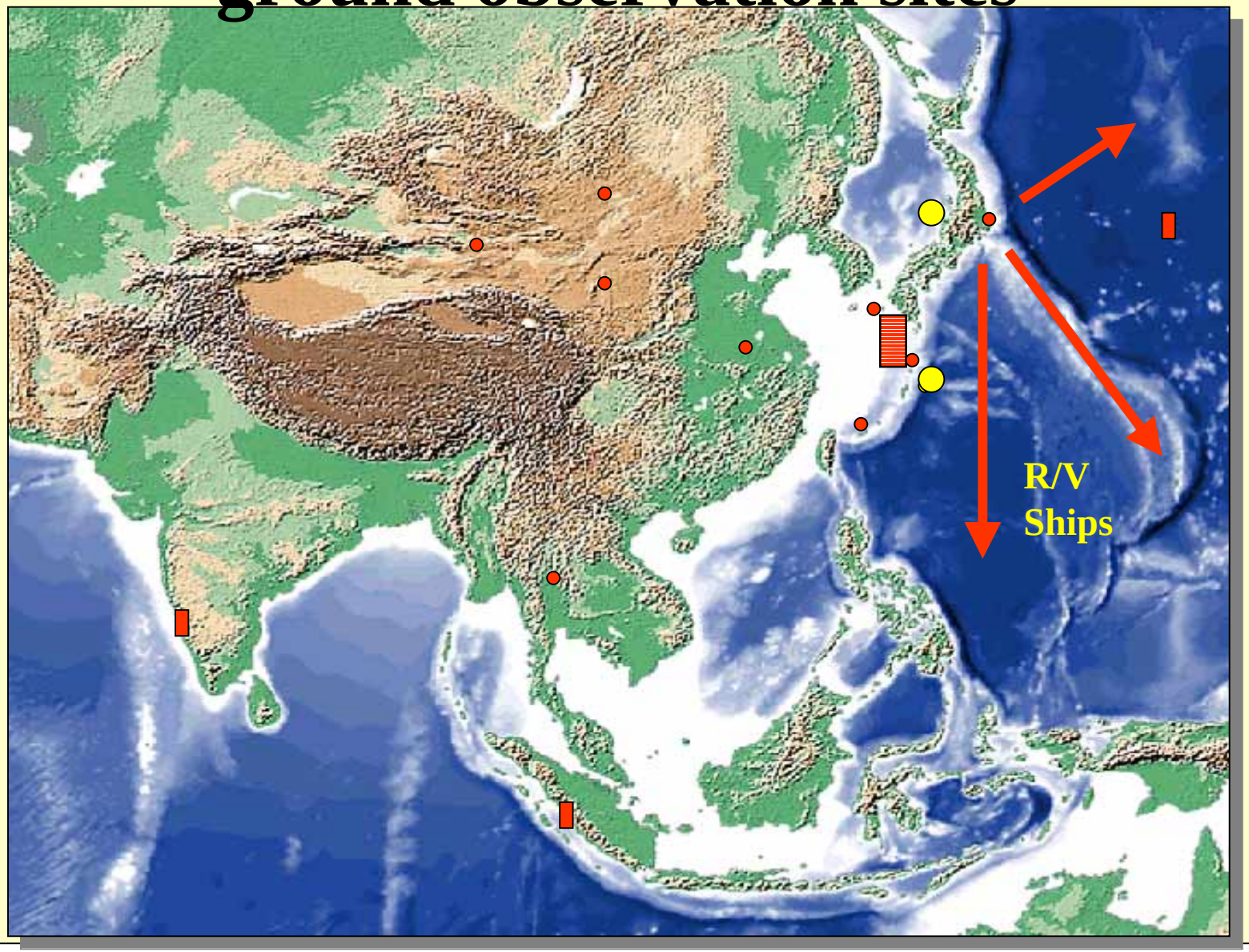
Validation instruments

Product code	Geophysical meanings	Validation instruments	Product accuracy	Validation accuracy	Status Index
ARAE	Angstrom index of aerosols	Sky radiometer, sun photometer	0.5	0.3	1
AROP	Optical thickness of aerosols	Sky radiometer, sun photometer	10%	0.05 Or 10%	1
CLOP	Optical thickness of clouds	i-sky radiometer	10%	1 or 10%	1
CLER	Effective radius of clouds	i-sky radiometer, radar, lidar, FSSP(Aircraft)	20%	2um	2
CLFR	Cloudiness Cloud pattern	Cloud camera, radar, Lidar	5%	5%	2
CLHT	Cloud top height	Radar, lidar, sonde	1 km	1 km	2
CLTT	Temp. of cloud top	Sonde	0.5 K	0.5 K	2
CLWP	Liquid water path	FSSP, Microwave radiometer Including AMSR group	20%	10%	3
CLBH	Cloud base height	Radar, lidar	1 km	1 km	4
WTVA	Precipitable water	Microwave radiometer, sonde Including AMSR group	0.2g/cm2	0.1g/cm2	4
FSTOP FSSRF	Solar flux at TOA/SRF	Pyranometer(SRF) CERES(TOP)	5W/m2	<2W/m2 (SFC)	4
FLTOA	Longwave flux at TOA	CERES(TOP)	5W/m2		4

Status Indx: 1—Most important, 2—Important, 3—Possible, 4—Research level

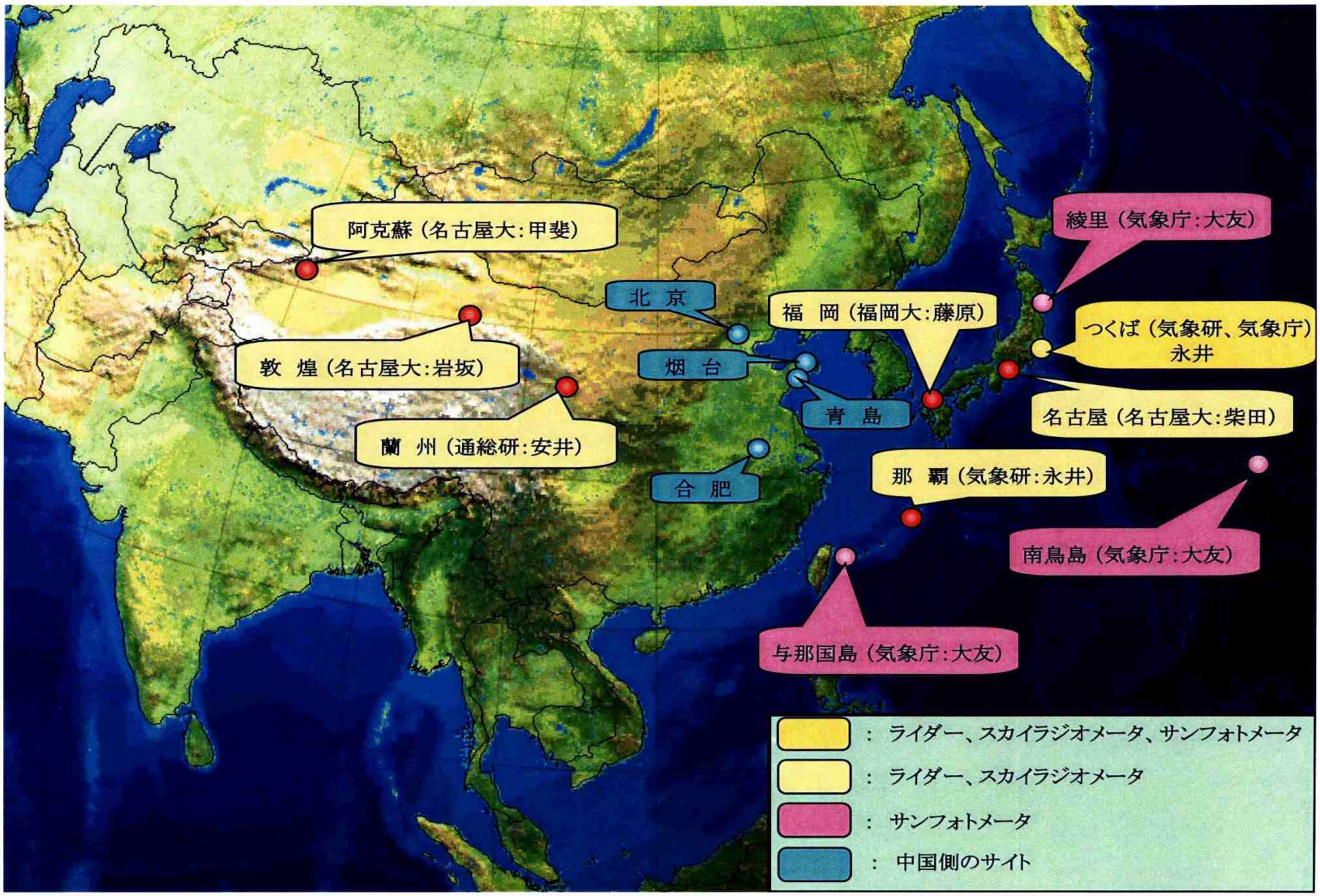
SKYNET

ground observation sites

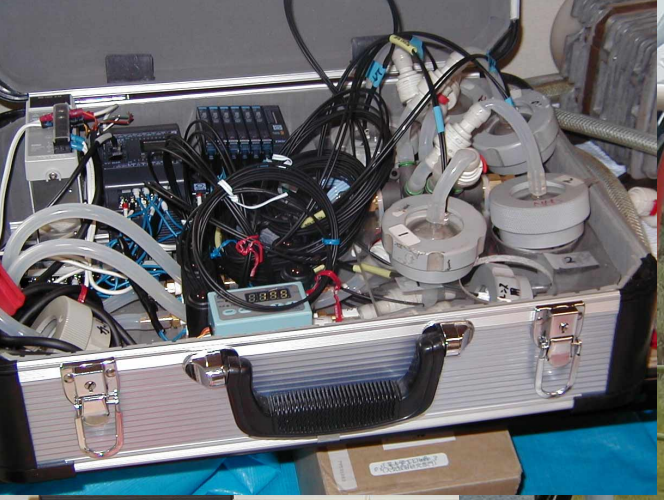


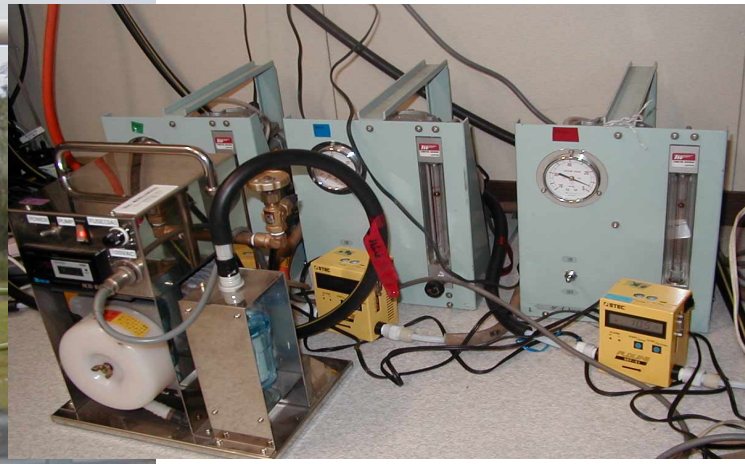
Cooperative data network sources

ADEC LIDAR network(conducted by Dr.Mikami(MRI))



Instruments at Amami-Ohshima (APEX-E1/E2)

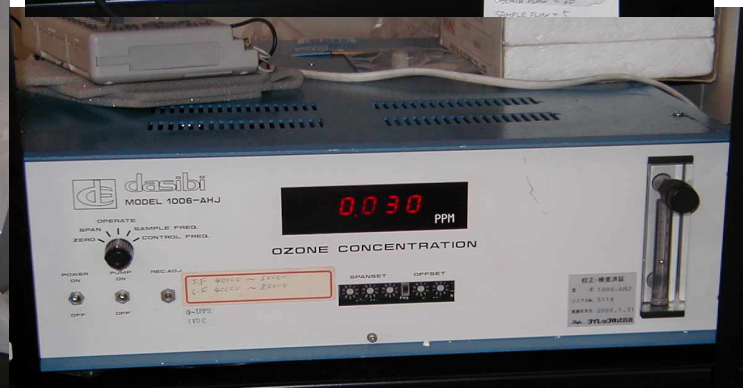





IBM
LASER
PARTICLE COUNTER
Met One


PSAP
DURAL
Radiance Research
MODEL 236 LASER AEROSOL COUNTER
PACIFIC SCIENTIFIC

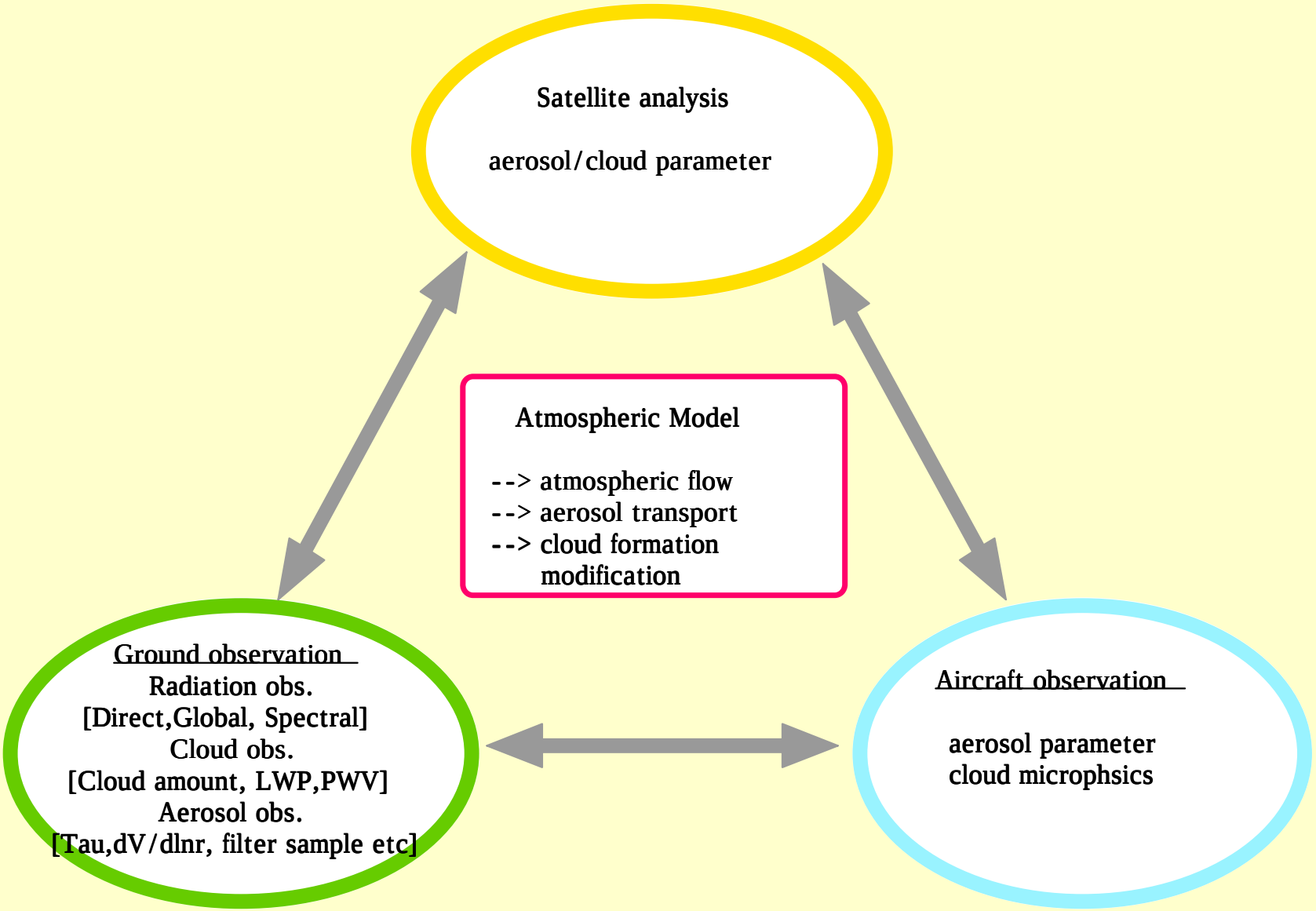

PULSED FLUORESCENCE SO2 ANALYZER
Model 43S
SAMPLE FLOW


dasibi
MODEL 1006-AHJ
0.030 PPM
OZONE CONCENTRATION

Present status of data transfer for MUD production

Site	Country	Lat/Lon	Raw data transfer	(raw) data archive
Sri Samrong	Thailand	17.08N/99.59E	Once a day	U. Tokyo/Chiba U/NIES
Hefei	China	31.90N/117.17E	1-2 months later Once a day(2002.4)	Chiba U.
Dunhuang	China	40.15N/94.80E	1-2 months later	Chiba U.
Yinchuan	China	38.47N/106.22E	1-2 months later	Chiba U.
Mandalgovi	Mongolia	45.73N/106.25E	1-2months later	Chiba U.
Miyako-jima	Japan	24.73N/125.32E	Once a day(2001.12)	MRI/Chiba U.
Amami-ohshima	Japan	28.43N/129.68E	Once a day(2001.11)	Chiba U./NIES
Fukue-jima	Japan		Once a day(2002.4)	Chiba U./ Hokkaido U./NIES
Minam-Torishima	Japan	24.30N/153.97E	???	MRI/ Chiba U.
Chiba	Japan	35.62N/140.10E	Once a day	Chiba U.
Mirai(R/V)	Japan	North pacific	Depend on each cruise plan	Hokkaido U./U. Tokyo
Shinzan-maru	Japan	Jpn⇔Australia	About 2 weeks per cruise	Hokkaido U./U. Tokyo
Yahagi-maru	Japan	Jpn⇔Australia	About 2 weeks per cruise	Hokkaido U./U. Tokyo
Hakuho-mau	Japan	North pacific	Depend on each cruise plan	Hokkaido U./U. Tokyo

Frame of APEX-E1/E2



APEX-E1/E2 observation site

Air survey area

Location:

Amami-Ohshima

Kasari-machi

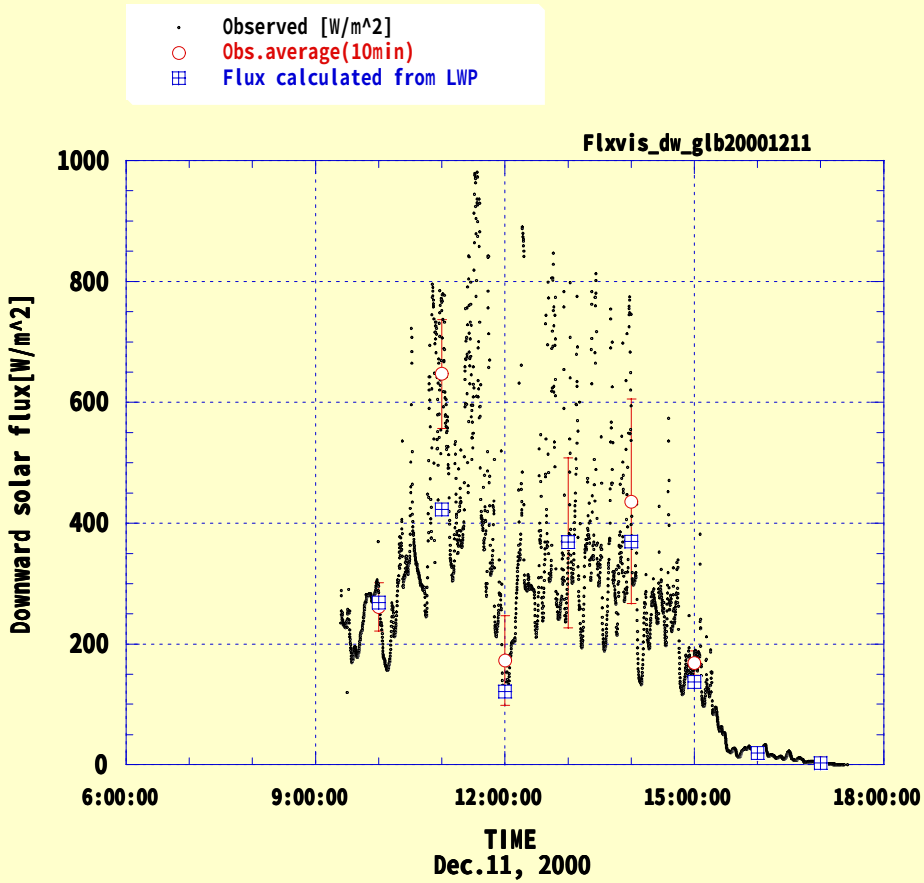
28.44430N

129.69776E

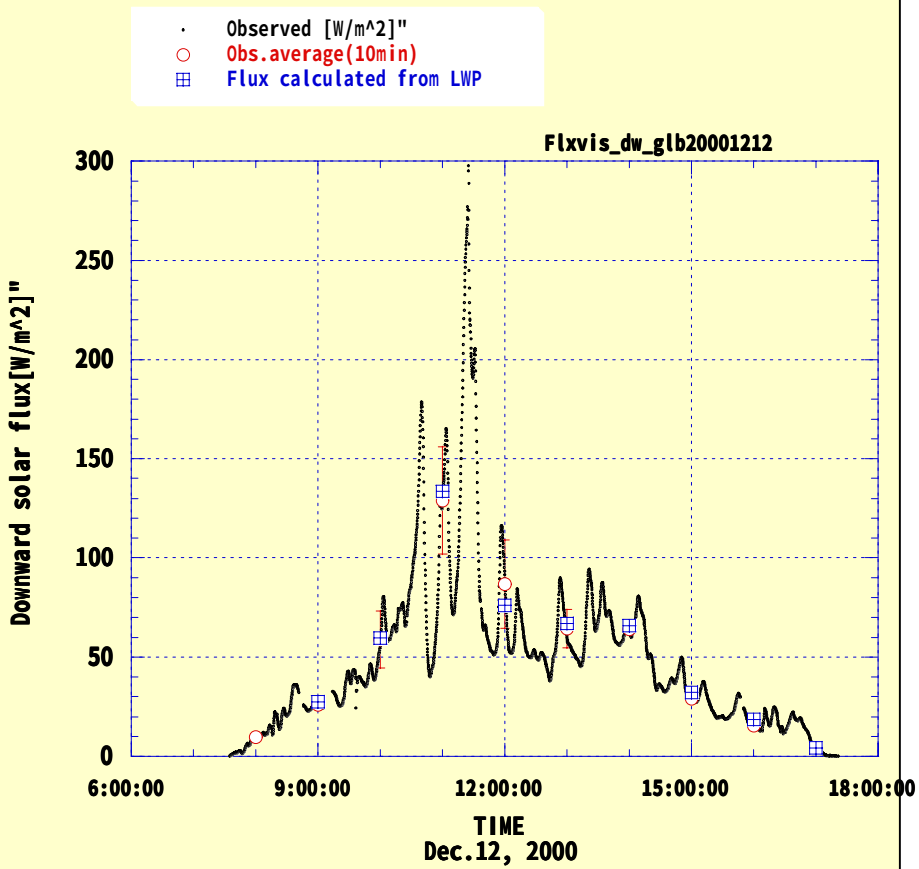
Time series of downward solar radiation

Cloud model: St I, St II, Sc I, Sc II, Ns, As, Cu, Cb

Thin cloud case

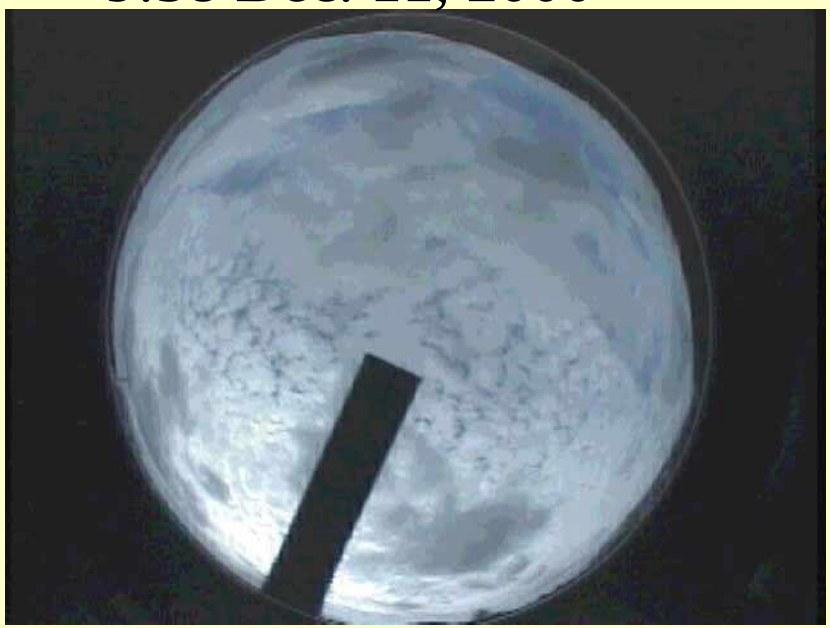


Thick cloud case



Cloud images from SKYVIEW camera

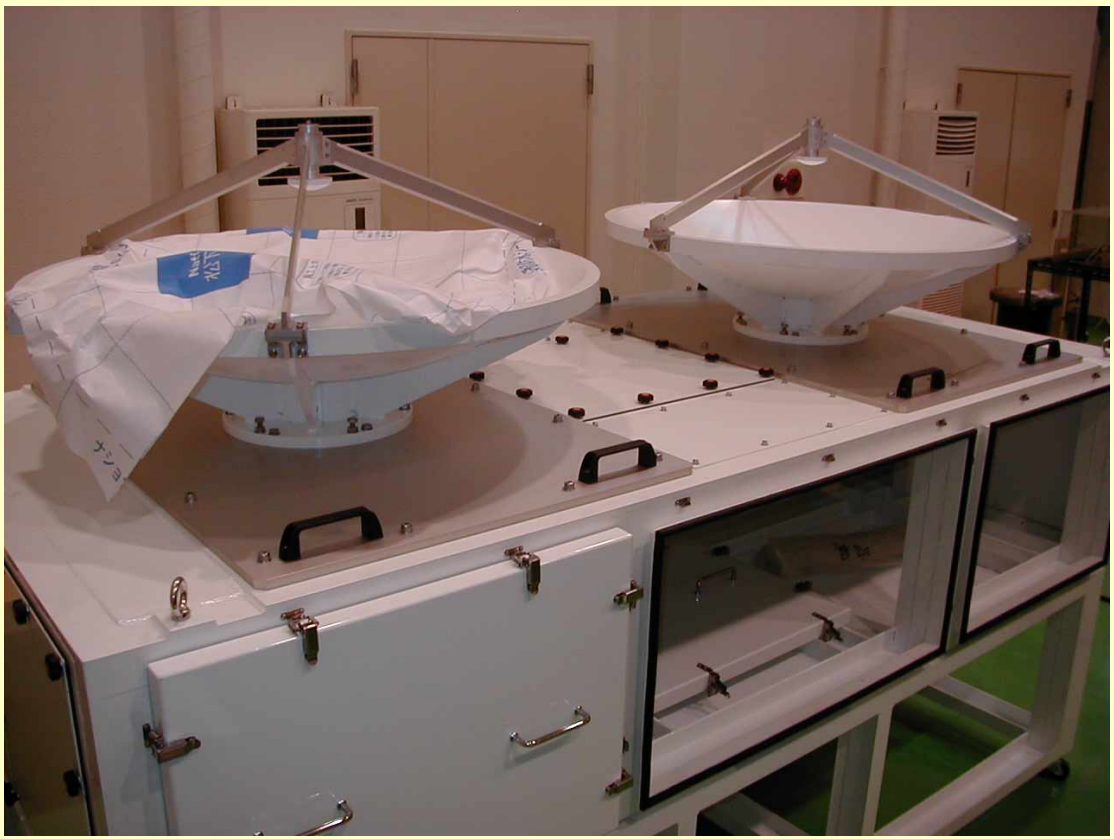
9:58 Dec. 11, 2000



10:00 Dec.12, 2000

Newly developing instruments

94GHz FM-CW cloud radar



i-sky radiometer
(1.6 and 2.2 um added)