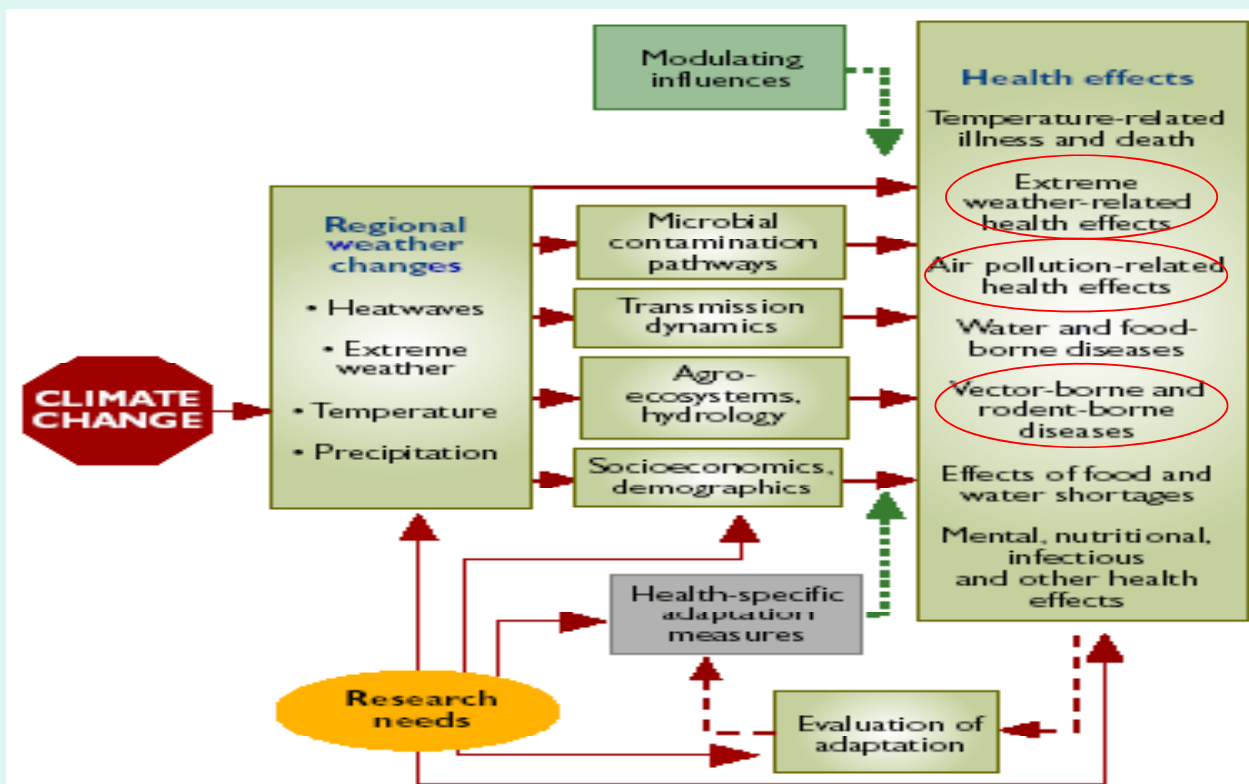
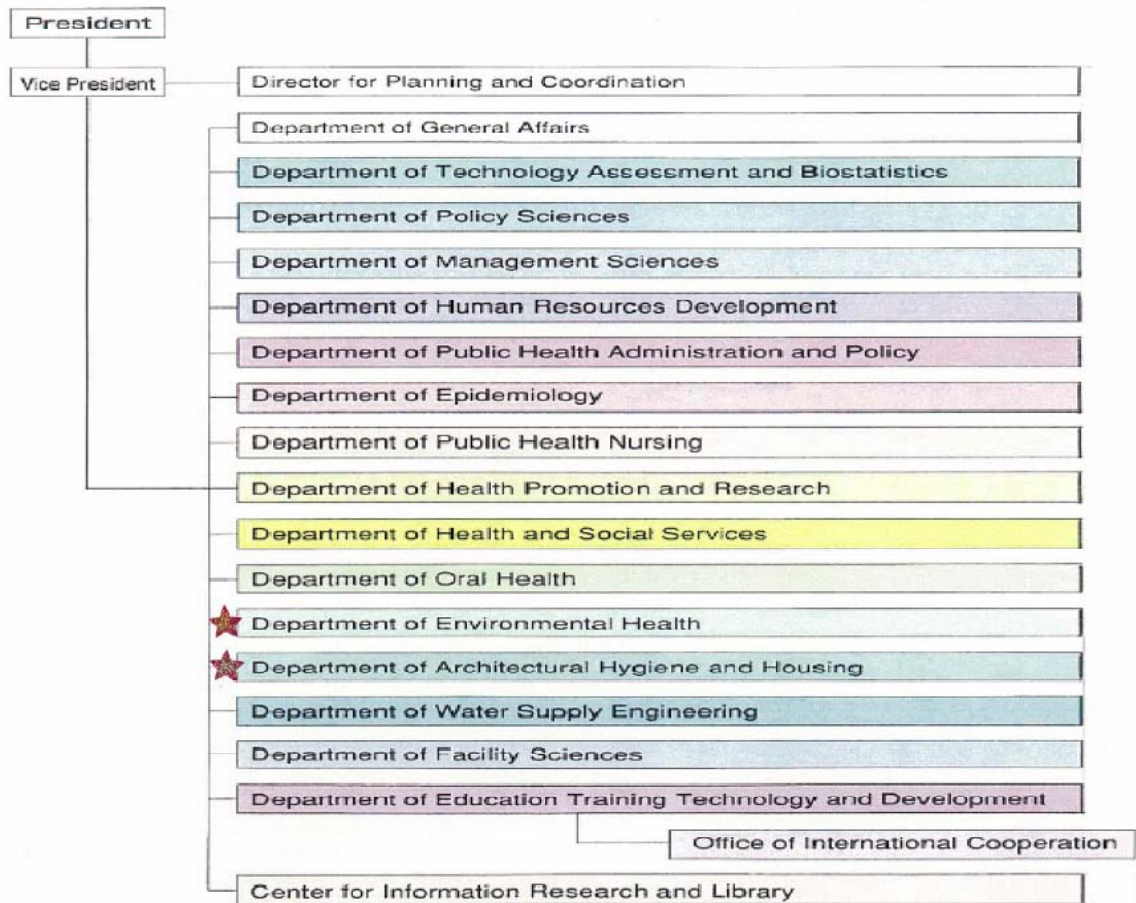
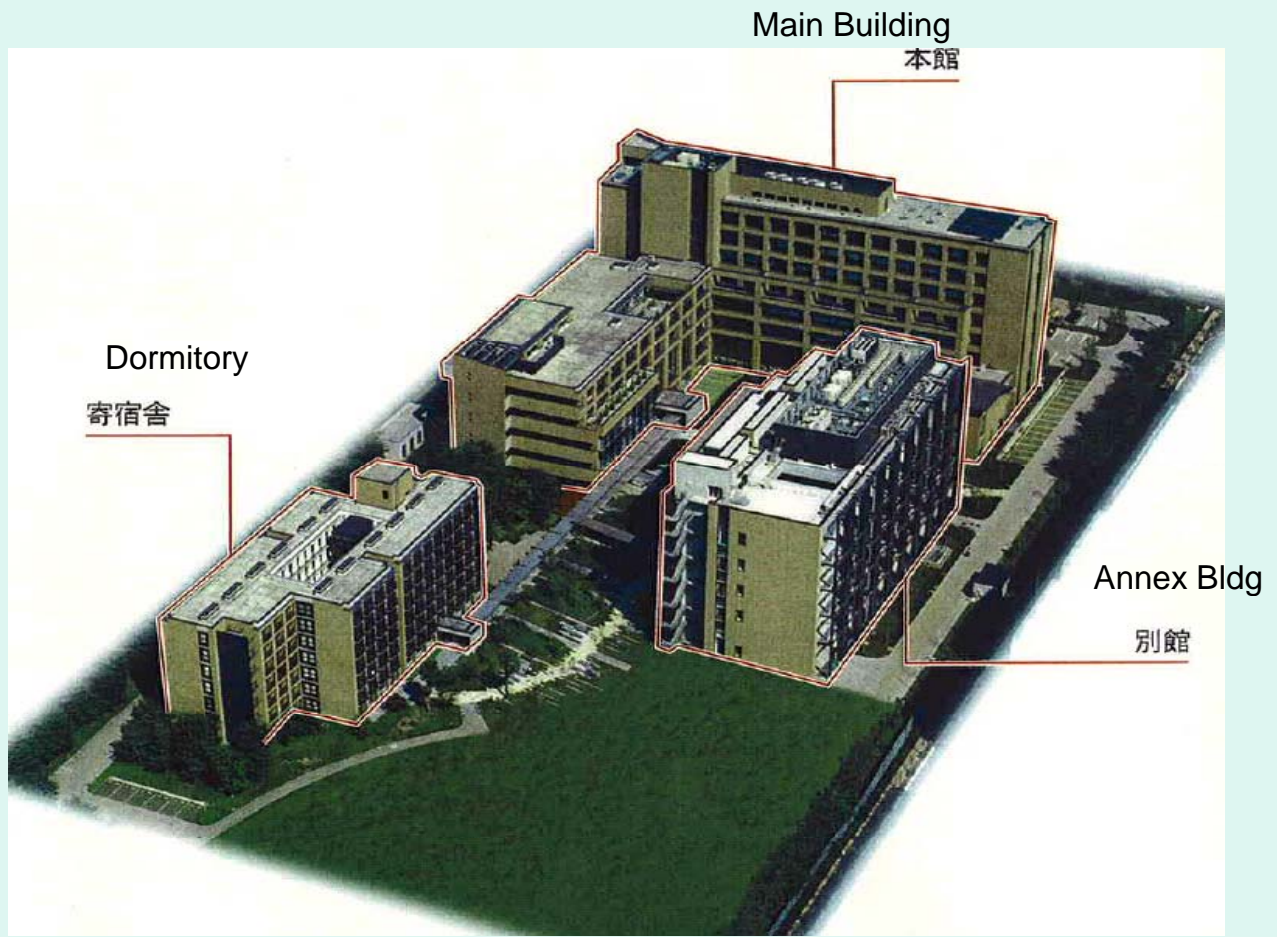


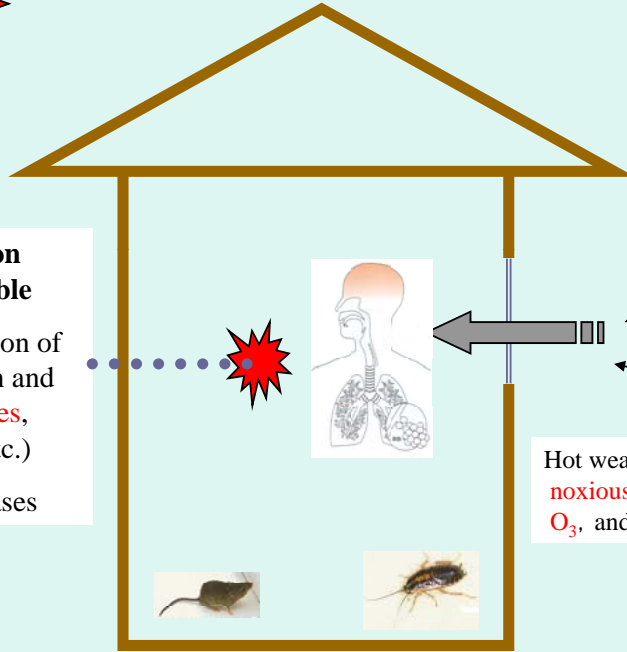
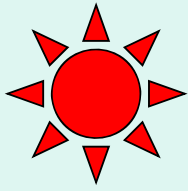
Climate Change

Hideo Shinozaki, M.D., Ph.D., M.Sc
National Institute of Public Health

WHO Climate Change and Health Programme Activities







Indoor air pollution becomes remarkable

Increasing production of certain air pollution and aeroallergens (spores, molds, mites, and etc.)

Rodent-borne diseases

Window

Air Conditioner

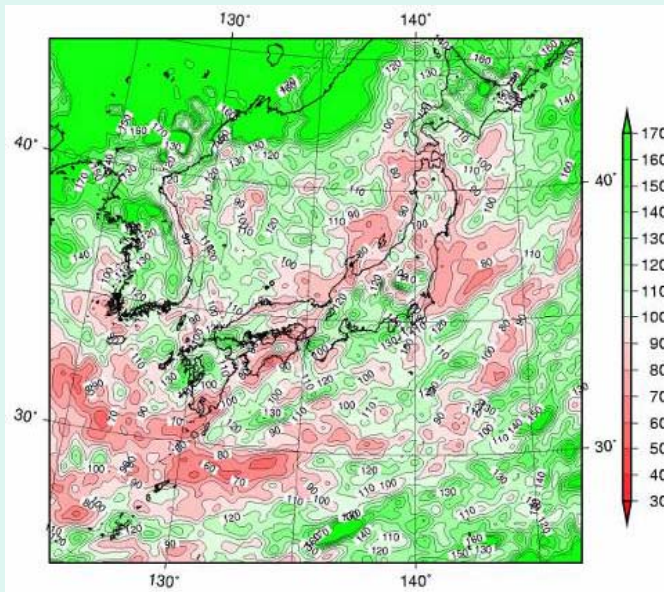
Hot weather would amplify the production of noxious photochemical smog O_3 , and particulate matter in urban areas

Warm temperatures can increase indoor air pollution, which in turn harm human health.



天王洲アイルビル群(東京都品川区)

Rage of heavy rain (increase of maximum rainfall)



Rate of change of maximum daily rainfall (%)
 = (average in 2081-2100) / (average in 1981-2000)

Reference :

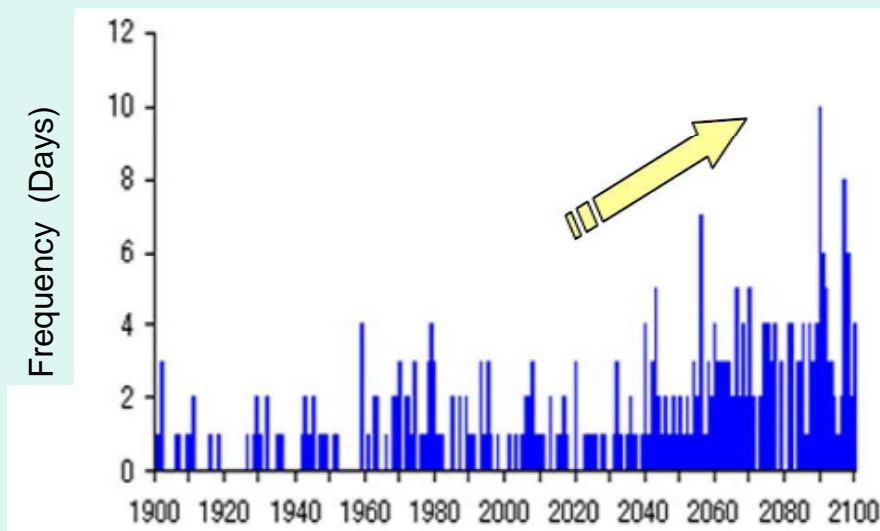
http://www.data.kishou.go.jp/climate/cpdinfo/GWP/Vol6/pdf/gwp6_1.pdf

地球温暖化予測情報：気象庁：H17.3

Increase of regional maximum daily rainfall is predicted by global simulations, up to 50% in 100 years.

9

Critical Rainfalls are expected in Summer



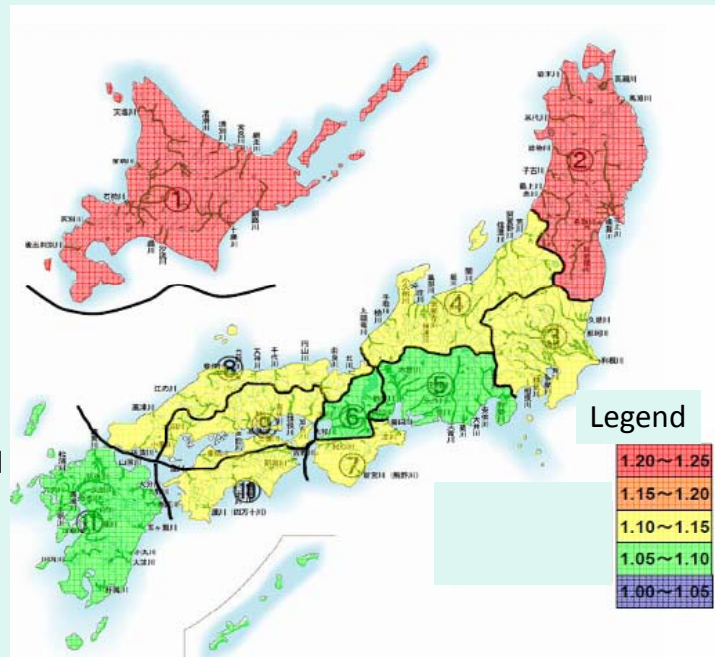
Number of days, which have more than 100mm rainfall, increase from 3 to 10.

Reference: 東京大学等合同研究チームによる報道発表(2004.9)、
 国土交通省国土交通審議会・河川部会資料

10

Regional deterioration of flood safety caused by GW (Rate of annual maximum-daily rainfall increase)

Region	Rate
1 Hokkai-do	1.24
2 Touhoku	1.22
3 Kantou	1.11
4 Hokuriku	1.14
5 Chubu	1.06
6 Kinki	1.07
7 South-Kii	1.13
8 San-in	1.11
9 Seto-uchi	1.10
10 South-Shikoku	1.11
11 Kyusyu	1.07



Rate of annual maximum daily rainfall Increase

$$= \frac{\text{(average in 2080-2099)}}{\text{(average in 1979-1998)}}$$

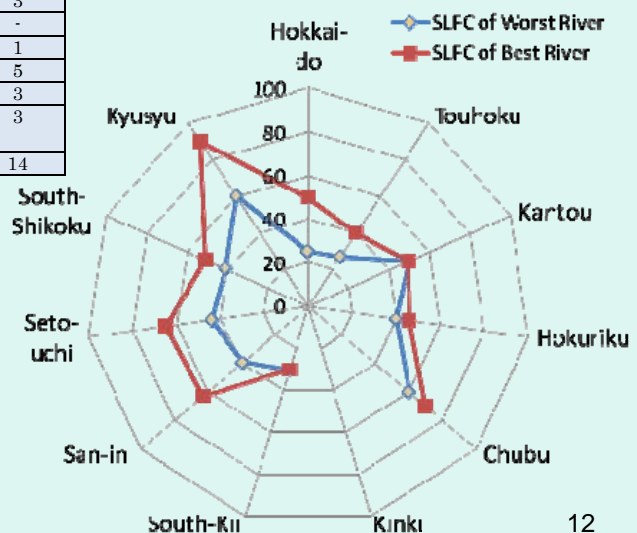
Simulated by GCM20 using A1B scenario

Reference:

http://www.mlit.go.jp/river/basic_info/jigyo_keikaku/gaiyou/kikouhendou/pdf/080601_shiryo_08_11.pdf

Regional deterioration of flood safety caused by GW (Deterioration of Safety level of Flood Control*)

	Region	Predicted Change of Safety Level of Flood Control (SLFC)		# of river system investigated
		Predicted Rate of max daily rainfall Increase	Change of Safety Level in 100years (Return Period)	
1	Hokkai-do	1.24	1/25 - 1/50	8
2	Touhoku	1.22	1/27 - 1/40	5
3	Kantou	1.11	1/50	1
4	Hokuriku	1.14	1/40 - 1/46	4
5	Chubu	1.06	1/60 - 1/70	3
6	Kinki	1.07	-	-
7	South-Kii	1.13	1/30	1
8	San-in	1.11	1/39 - 1/63	5
9	Seto-uchi	1.10	1/44 - 1/65	3
10	South-Shikoku	1.11	1/41 - 1/51	3
11	Kyusyu	1.07	1/60 - 1/90	14

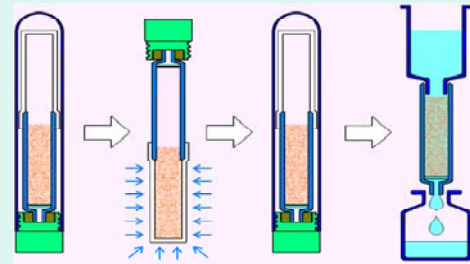
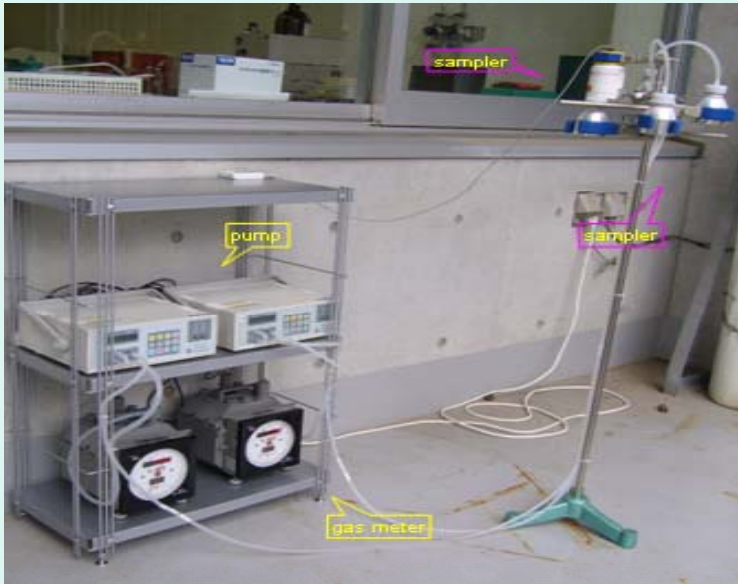


*SLFC: Safety level of Flood Control
= Inverse number of Return period [-/year]

Development of a Diffusive Sampling Device for Measurement of Ozone in Ambient Air

Uchiyama, S.; Inaba, Y.; Matsumoto, M.; Suzuki, G. (National Institute of Public Health)

Measuring ozone using the DSD-OZONE device



Parallel sampling with diffusive and active sampling

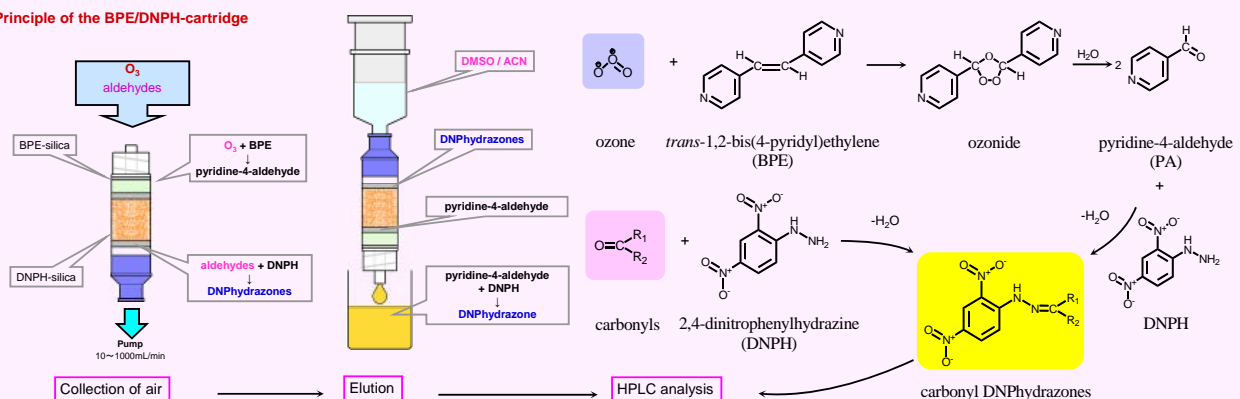
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Simultaneous Determination of Ozone and Carbonyls Using *trans*-1,2-Bis(4-pyridyl)ethylene as an Ozone Scrubber for 2,4-Dinitrophenylhydrazine-Impregnated Silica Cartridge

Uchiyama, S.; Inaba, Y.; Matsumoto, M.; Suzuki, G. (National Institute of Public Health)

A new method for the simultaneous determination of ozone and carbonyls in air using a two-bed cartridge system has been developed. Each bed consists of reagent-impregnated silica particles. The first contains *trans*-1,2-bis(4-pyridyl)ethylene (BPE) while the second contains 2,4-dinitrophenylhydrazine (DNPH). Air samples are drawn through the cartridge first through the BPE and then through the DNPH. Ozone in the air sample is trapped in the first bed by the BPE-coated silica particles and produces pyridine-4-aldehyde. Carbonyls in the air sample are trapped in the second bed by the DNPH-coated silica particles and produce carbonyl DNPhyrazones.

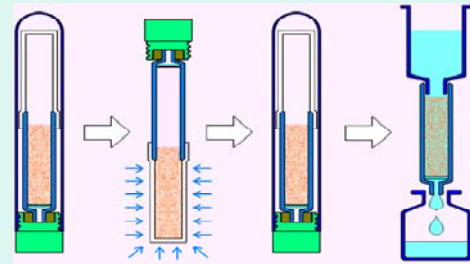
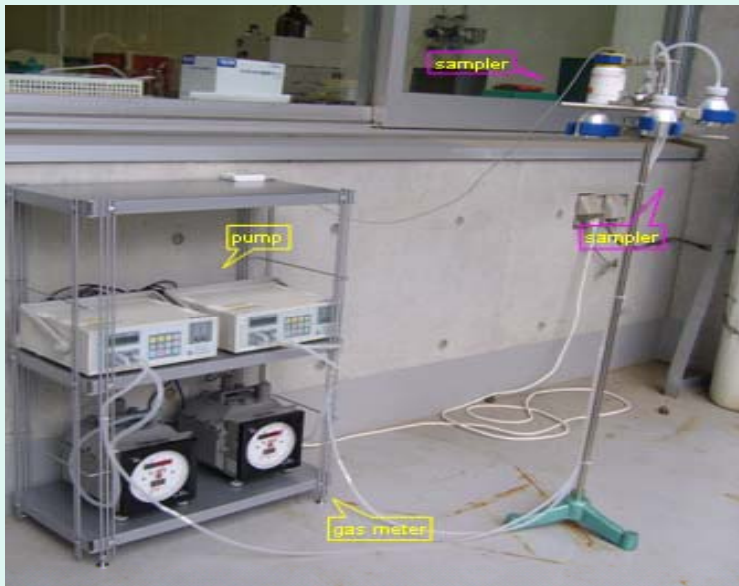
Principle of the BPE/DNPH-cartridge



Development of a Diffusive Sampling Device for Measurement of Ozone in Ambient Air

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Measuring ozone using the DSD-OZONE device



Parallel sampling with diffusive and active sampling

15

Global air pollution

Particulate and gaseous contaminants which adhere to Aeolian Dust are transported even to a distant place



Reference
NASA Goddard Institute for Space Studies
Asahi Shimbun, Apr. 19, 2001

16

