OZONE LAYER DEPLETION

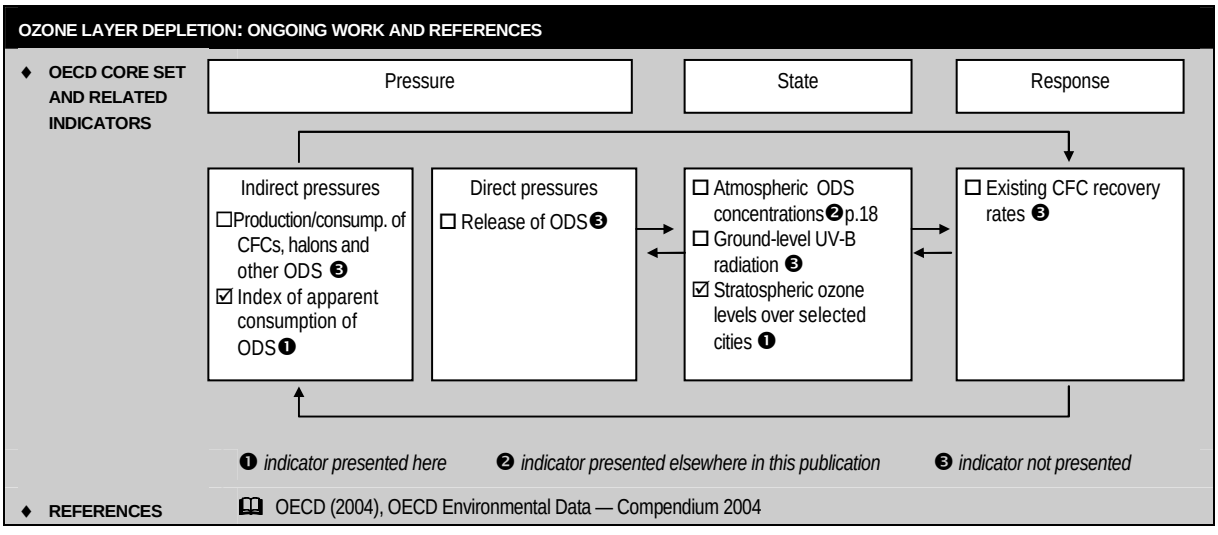
The release into the atmosphere of certain man-made substances containing chlorine and bromine endangers the stratospheric ozone layer, which shields the earth's surface from ultraviolet radiation. The main ozone depleting substances (ODS) are CFCs, halons, methyl chloroform, carbon tetrachloride, HCFCs and methyl bromide. These are man-made chemicals which have been used in air conditioning and refrigeration equipment, aerosol sprays, foamed plastics, and fire extinguishers. They are also used as solvents and pesticides.

The depletion of the ozone layer could have major or significant effects on sustainable development. It remains a source of concern due to the impacts of increased UV-B radiation on human health, crop yields and the natural environment. Performance can be assessed against domestic objectives and international commitments. The major international agreements are the Convention for the Protection of the Ozone Layer (Vienna, 1985), the Montreal Protocol (1987) on substances that deplete the ozone layer and subsequent London (1990), Copenhagen (1992), Montreal (1997) and Beijing (1999) Amendments. The protocol and amendments set out timetables for phasing out ODS. The Montreal Protocol has been ratified by 188 parties, including all OECD countries. Countries are developing alternatives to or substitutes for ODS, recovering and recycling ODS and regulating the emissions of ODS. The main challenges are to phase out the production and consumption of methyl bromide and HCFCs (by 2005 and 2030 respectively) in industrialised countries, and to reduce international movements of existing CFCs.

Indicators presented here relate to:

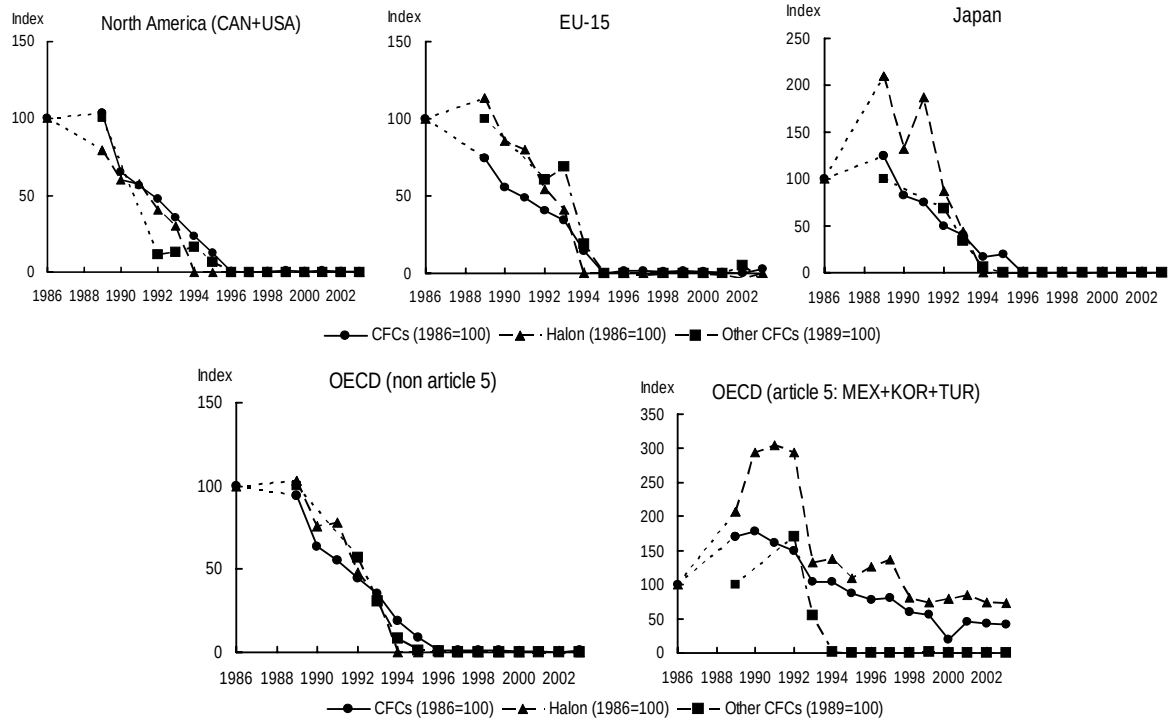
- *ozone depleting substances, i.e. the production and consumption of CFCs, halons and HCFCs, and the production of methyl bromide, as listed in the Montreal protocol. Basic data are weighted with the ozone depleting potentials (ODP) of the individual substances.*
- *stratospheric ozone levels expressed as the values of total ozone in a vertical atmospheric column over selected stations in OECD cities, presented with a zonal average (from 70N to 70S) taken from satellite data to put trends from individual stations in a global context.*

When interpreting these indicators it should be kept in mind that they do not reflect actual releases to the atmosphere and that individual substances vary considerably in their ozone-depleting capacity. These indicators should be read in connection with other indicators of the OECD Core Set and in particular with indicators on ground-level UV-B radiation.

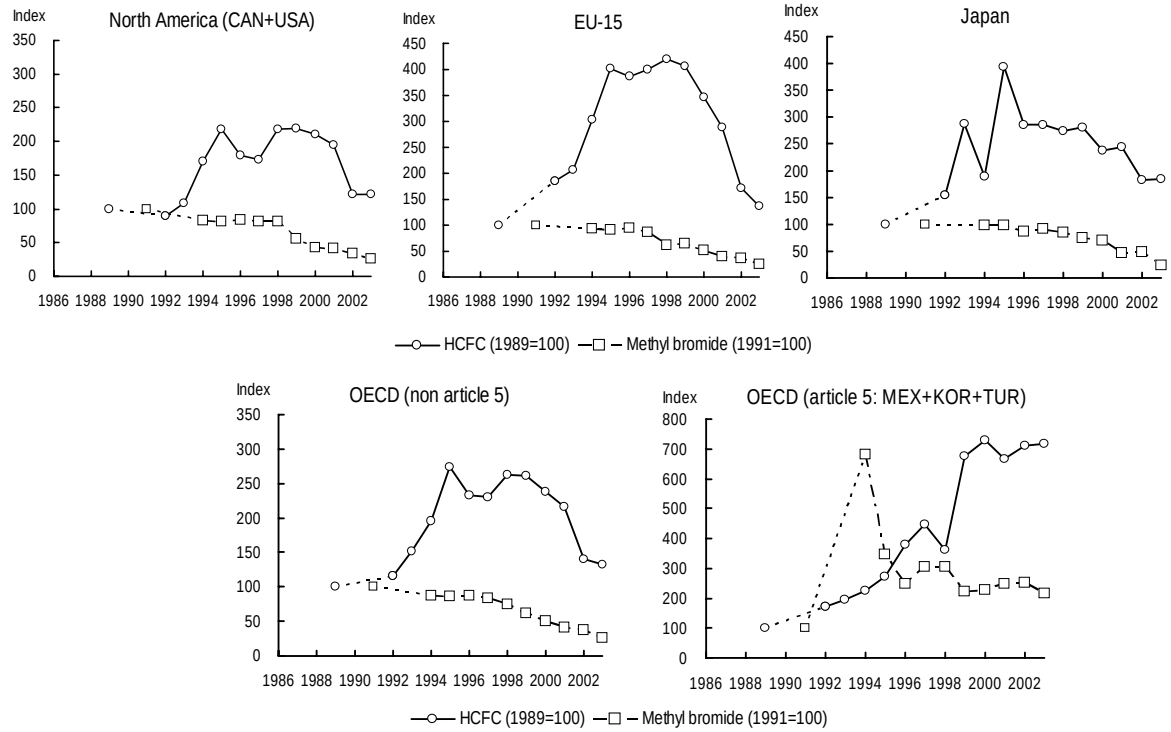

OZONE LAYER DEPLETION: ONGOING WORK AND REFERENCES
♦ OECD CORE SET AND RELATED INDICATORS
Pressure
State
Response
Indirect pressures
☐Production/consump. of CFCs, halons and other ODS ❸
☑ Index of apparent consumption of ODS❶
Direct pressures
☐ Release of ODS❸
☐ Atmospheric ODS concentrations❷p.18
☐ Ground-level UV-B radiation ❸
☑ Stratospheric ozone levels over selected cities ❶
☐ Existing CFC recovery rates ❸
❶ indicator presented here
❷ indicator presented elsewhere in this publication
❸ indicator not presented
♦ REFERENCES
OECD (2004), OECD Environmental Data — Compendium 2004

OZONE DEPLETING SUBSTANCES 3

Consumption of CFCs and halons



Consumption of HCFCs and methyl bromide



Article 5: Parties operating under article 5 of the Montreal Protocol entitling them to delay compliance with certain measures.

3 OZONE DEPLETING SUBSTANCES

		Consumption										Production	
		CFCs		Halons		HCFCs		Methyl Bromide		Total	Total	Total	Total
		2003	Change (%)	2003	Change (%)	2003	Change (%)	2003	Change (%)	2003	2003	2003	2003
		tonnes	86-03	tonnes	86-03	tonnes	89-03	tonnes	91-03	tonnes	g/cap.	tonnes	g/cap.
Canada		-	-100	-	-100	798	119	35	-76	833	26	74	2
Mexico		1983	-78	104	-11	728	432	968	307	3783	37	8975	87
USA		1605	-99	-	-100	7327	15	4053	-74	12419	43	13234	45
Japan		4	-100	-	-100	2699	85	858	-77	3560	28	4636	36
Korea	♦	6647	-22	2187	-26	1638	634	-	..	11746	245	12708	265
Australia		1	-100	-	-100	144	-3	109	-74	254	13	-	-
New Zealand		-	-100	-	-100	23	-1	21	-74	44	11	-	-
Austria		..	..	..	..	..	..	..	..	..	..	-	-
Belgium		..	..	..	..	..	..	..	..	..	..	-	-
Czech Rep.		-4	-100	-	-100	3	78	-	-100	93	9	84	8
Denmark		..	..	..	..	..	..	..	..	..	..	-22	-4
Finland		..	..	..	..	..	..	..	..	..	..	-43	-8
France		..	..	..	..	..	..	..	..	..	..	6307	106
Germany		..	..	..	..	..	..	..	..	..	..	451	5
Greece		..	..	..	..	..	..	..	..	..	..	1481	134
Hungary		-1	-100	-	-100	26	..	10	-70	34	3	-1	-
Iceland		-	-100	-	-100	3	-46	-	-	3	9	-	-
Ireland		..	..	..	..	..	..	..	..	..	..	-	-
Italy		..	..	..	..	..	..	..	..	..	..	7511	129
Luxembourg		..	..	..	..	..	..	..	..	..	..	-	-
Netherlands		..	..	..	..	..	..	..	..	..	..	688	42
Norway		-66	-105	-13	-101	21	-58	1	-78	-56	-12	-79	-17
Poland		114	-98	-	-100	98	78	36	-70	249	7	-	-
Portugal		..	..	..	..	..	..	..	..	..	..	-	-
Slovak Rep.		1	-100	-	-100	3	-3	-	-100	4	1	-	-
Spain		..	..	..	..	..	..	..	..	..	..	5089	122
Sweden		..	..	..	..	..	..	..	..	..	..	-	-
Switzerland	♦	-3	-100	-	-100	14	-21	12	-54	26	4	-48	-7
Turkey		439	-89	41	-67	358	1688	185	-37	1056	15	-	-
UK		..	..	..	..	..	..	..	..	..	..	1315	22
EU-15		8864	-97	-	-100	2584	36	2953	-74	14452	44	22776	69
*OECD	♦	10514	-99	-13	-100	13743	32	8087	-74	17462	19	40675	44

♦ *See Technical Annex for data sources, notes and comments.*

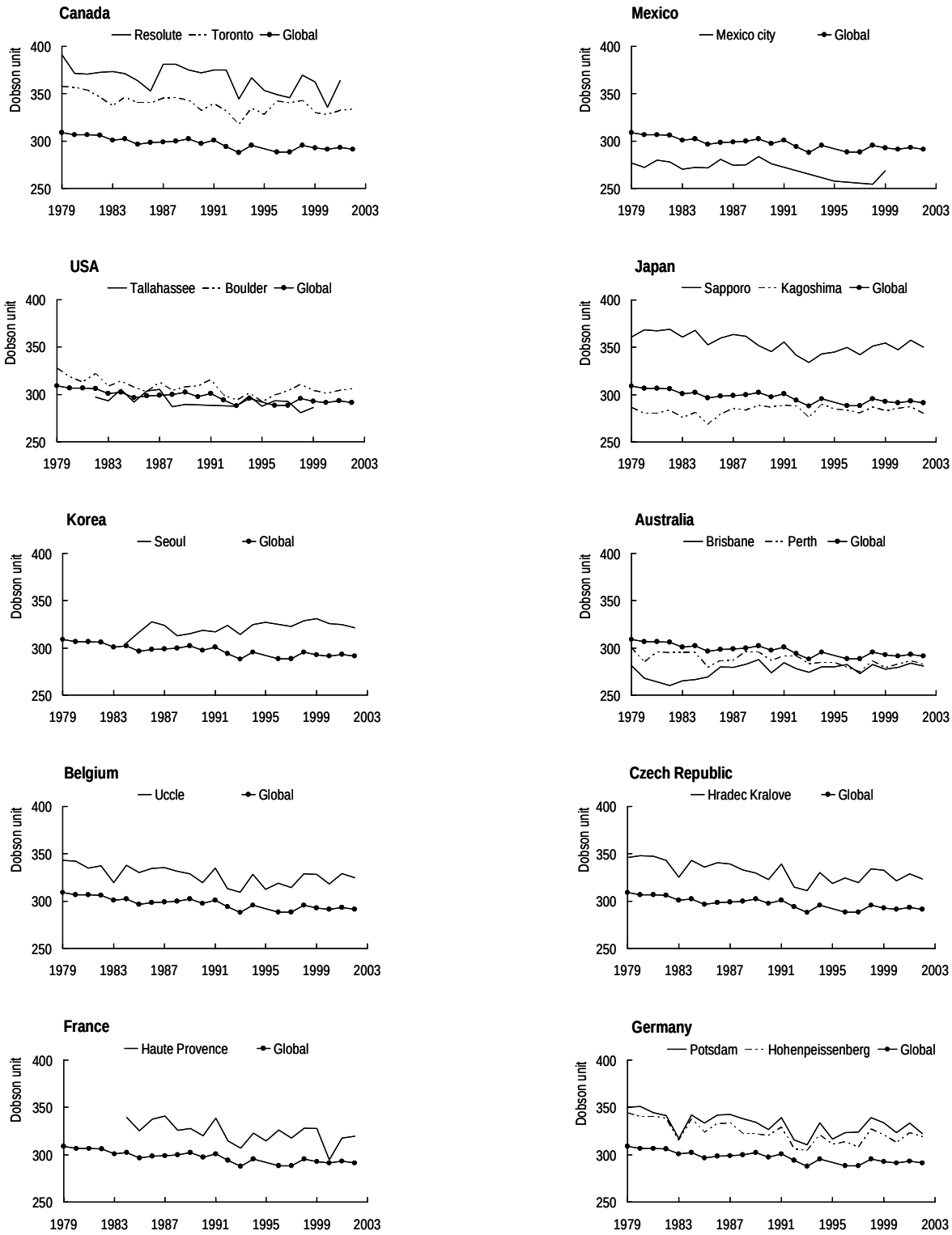
STATE AND TRENDS SUMMARY

As a result of the Montreal Protocol, industrialised countries have rapidly decreased their production and consumption of CFCs (CFC 11, 12, 113, 114, 115) and halons (halon 1211, 1301 and 2402). The targets set have been reached earlier than originally called for, and new and more stringent targets have been adopted. Many countries achieved zero level by 1994 for halons and by end of 1995 for CFCs, HBFCs, carbon tetrachloride and methyl chloroform. Since 1996, there has been no production or consumption (i.e. production + imports - exports) of these substances in industrialised countries except for certain essential uses, but there are still releases to the atmosphere. Efforts are being made to reduce international traffic (legal and illegal) in existing CFCs as well as intentional or accidental releases of existing CFCs. Imports and exports from non-Parties to the protocol are banned. Storage banks for existing halons and CFCs have been created in some countries. New measures have been adopted to phase out the production and consumption of HCFCs and methyl bromide by 2030 and 2005 respectively in industrialised countries.

Global atmospheric concentrations of ODS show important changes. Growth rates of CFC concentrations have decreased since 1989, reflecting the impact of the Montreal Protocol and its amendments (page 18). Growth rates of HCFC concentrations are increasing. HCFCs have only 2 to 12% of the ozone depleting potential of CFCs, but under current international agreements they will not be phased out for at least 25 years and will remain in the stratosphere for a long time. Stratospheric ozone depletion remains a source of concern due to the long time lag between the release of ODS and their arrival in the stratosphere.

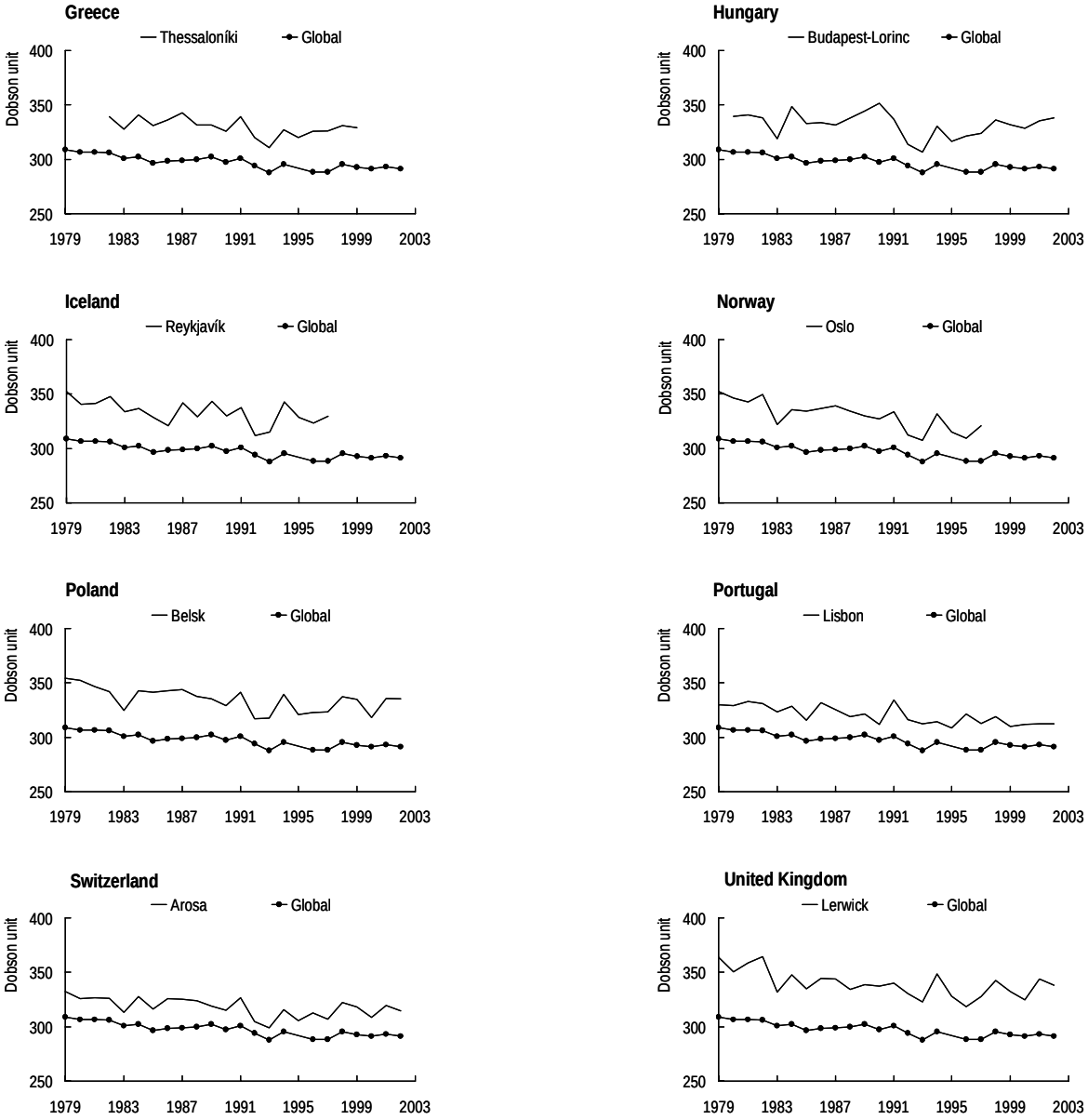
STRATOSPHERIC OZONE 4

Total column ozone* over selected cities



4 STRATOSPHERIC OZONE

Total column ozone* over selected cities



** See Technical Annex for further details.*

STATE AND TRENDS SUMMARY

Since 1979, the amount of stratospheric ozone over the entire globe has decreased. The eruption of Mount Pinatubo in June 1991 caused levels to sink to record lows in 1992 and 1993. Trends also show a decrease in ozone levels over a number of cities. These trends, however, need continued monitoring and careful interpretation, due to possible interference with ground-level ozone.