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Luftgütedaten 1999
Nationaler und europäischer Städtevergleich

Einführung

Die Bekämpfung der Luftverschmutzung war in den letzten Jahren und ist auch noch heute eines der zentralen Themen, mit denen Umweltämter, Umweltbehörden bzw. sonstige für den Umweltschutz tätige Organisationen beschäftigt sind. In Form von regionalen oder nationalen Luftreinhalteplänen versucht man, die Luftverschmutzung in den Griff zu bekommen und Luftqualität sukzessive zu verbessern.

Um überhaupt den Erfolg von Sanierungsmaßnahmen nachweisen zu können, ist die Beobachtung der Schadstoffkonzentrationen mit Hilfe von Luftmessnetzen sinnvoll. Mittlerweile sind in den meisten Messgebieten Luftmessnetze seit 1 bis 2 Jahrzehnten installiert, sodaß bei einer Verfolgung der Luftschadstoffdaten über mehrere Jahre ein Trend zur Verbesserung (oder auch Verschlechterung?) der Luftbelastung herauslesbar sein sollte. Sanierungsmaßnahmen in Betrieben und bei anderen Emittentengruppen müssten sich jedenfalls langfristig in einer verminderten Immissionsbelastung an Luftschadstoffen manifestieren.

Die Verfolgung *längerer Zeiträume* zur Bestimmung des Belastungstrends ist unbedingt notwendig, da aufgrund unterschiedlichen meteorologischen Einflüssen die Immissionsbelastungen außerordentlich stark schwanken können. Beispielsweise wird ein Monat mit vornehmlich regnerischer Witterung und viel Wind wesentlich geringere Immissionskonzentrationen aufweisen als ein Monat, in dem häufig Inversionswetterlagen vorherrschen.

Air Quality Data in 1999
The Comparison of Cities and Regions in Europe

Introduction

The fight against air-pollution was one of the major topics to deal with of all organisations concerned with environmental affairs, such as national and local authorities. In the form of regional or national air-cleaning programmes it is tried to get air pollution under control as well as to increase the air quality step by step.

To prove the success of measurements of redevelopment at all, the observation of the concentrations of noxious compounds by means of monitoring station networks is useful. In most of the referred air-monitoring areas monitoring station networks have been installed already for 1 to 2 decades. Thus following the air quality data through a longer period of years a trend for improvement (or even a change to the worse?) of the air-pollutant stress should be able to be recognized. Measurements of redevelopment in companies, factories and other groups of emittents should manifest in a reduced immission stress of air pollutants.

It is absolutely necessary to determine the trends of pollution through a *longer period of time*, because due to various meteorological influences the immission stress can alter extremely. For instance, a month with mostly rainy weather conditions and high wind speeds will have much less immission concentrations than a month, where the formation of inversion layers can be observed often.

Luftgütevergleiche werden durch das Amt für Natur- und Umweltschutz bereits seit mehreren Jahren durchgeführt, genaugenommen seit 1989. Anfänglich wurden nur österreichische Städte miteinander verglichen. In den folgenden Jahren wurde der Städtevergleich auf immer mehr europäische Städte und Regionen wegen des großen Interesses ausgedehnt. 1999 wurde Städte bzw. Regionen aus Österreich und Deutschland (alte und neue Bundesländer), weiters Städte aus Schweden, Norwegen, Polen, Tschechien, Schweiz, Ungarn, Italien, Belgien, Spanien und Kroatien mit einbezogen. Leider wurden uns bis zum heutigen Tag keine Daten aus Großbritannien und Frankreich zur Verfügung gestellt. Für den Städtevergleich 1999 wurden uns diesmal auch keine Daten aus Helsinki und Oslo zur Verfügung gestellt.	Comparisons of the air quality have been carried out by our organization already for a couple of years, exactly since 1989. At first only Austrian Cities were compared. During the last years the comparison was extended to other European cities and regions, for there is much interest in such studies. The comparison of the air quality of the year 1999 comprised cities and regions of Austria, Germany (old and new federal provinces), cities from Sweden, Poland, Czech Republic, Switzerland, Hungary, Italy, Belgium, Spain and Croatia. Unfortunately up to the present day no data of Great Britain an France were placed to our disposal. Unfortunately for the comparison of air quality data in 1999 we were not supported by data from Oslo and Helsinki.
Kritische Anmerkungen Als Kritikpunkt wird immer wieder angemerkt, daß ein Vergleich der Immissionsbelastung aus fachlichen Gründen nicht möglich ist, da 1. die Zahl der Messstellen sehr verschieden ist (die Anzahl der Messstellen pro Messgebiet ist in der Tabelle auf Seite 10 und den nachfolgenden Grafiken angeführt), 2. die Messstellendichte unterschiedlich ist, 3. die Situierung der Messstellen nicht immer vergleichbar ist (In manchen Städten hat man deswegen bei den Schadstoffkomponenten zwischen verkehrsbelasteten Messstationen und anderen Messstationen unterschieden). Den Autoren sind diese Tatsachen durchaus bewusst. Trotz der erhobenen Einwände gibt es einige Argumente für die Fortführung der Städtevergleiche:	**Critical remarks** Over and over again there is critically remarked that a comparison of the pollutant stress between monitoring areas is not possible. The following technical reasons are mentioned by some monitoring network services: 1. The number of monitoring stations differs very much (the number of monitoring stations of each monitoring network is mentioned on page 10 and the following tables), 2. the density of distribution of the monitoring stations is different, 3. the location of the monitoring station not always is comparable (for that reason in some cities the network services distinguished between traffic-stressed and non-traffic-influenced monitoring stations). 1. The authors of the comparative study is thoroughly conscious of these facts. But despite to the raised objections there are also some arguments of continuing the activities:

1. Die Luftschadstoffmessungen werden im allgemeinen in der gleichen Weise durchgeführt. Das bedeutet, daß die Luftüberwachung an bestimmten *Punkten* einer Stadt oder einer Region mit Hilfe automatisch registrierender Immissionsmessstationen durchgeführt werden. Die gemessenen Konzentrationen repräsentieren die Belastung eines mehr oder weniger weiten Bereiches um die Messstation. Die *Art der Probenahme* müsste also *vergleichbar* sein.

2. Die Luftgütestationen sollten an Punkten errichtet werden, die einen größeren Bereich um die Messstation abdecken und nicht nur die Schadstoffbelastung an einem bestimmten Punkt widerspiegeln. Ausgenommen sind besondere verkehrsbelastete Probenahmepunkte. Die Messnetzbetreiber wurden eingeladen, diese Messpunkte getrennt anzugeben, um die wirkliche Situation des überwachten Gebietes wiederzugeben. Wie bereits oben bemerkt, unterscheiden einige Städte zwischen verkehrsbelasteten und nicht vom Verkehr beeinflussten Messstationen.

3. Schließlich wird eine stärker objektivierende Basis der Auswertungen besonders dann erreicht, wenn man längere Zeiträume betrachtet und daraus die Trends der Entwicklung der Schadstoffimmissionen abliest.
   Nachdem die Stadt Linz internationale und nationale Städtevergleiche schon seit einigen Jahren durchführt, wurden in diesen Bericht für die Jahresmittelwerte auch die mehrährige *Trendentwicklung* der Schadstoffbelastung seit 1993 für die einzelnen Immissionsgebiete mit aufgenommen. Die Daten von Städten bzw. Regionen, die erst seit kurzem im Städtevergleich integriert sind, wurden dabei auch so weit wie möglich nachgeführt.

1. The kind of measurement of air pollutants is carried out by the same way. This means that the results of air monitoring activities are obtained by sampling at special sampling *points* in a city or region by means of automatically registrating monitoring stations. The measured concentrations represent the stress of a more or less wide area around the monitoring station. Due to this reason the *method of sampling* itself should be *comparable*.

2. The monitoring stations should be located at points that represent a wider portion of the monitored area, not only the pollution stress representative for a focal point. Exceptions are specially traffic stressed sampling points. The monitoring station network services were invited to seperate such monitoring points in order to reproduce the real situation of the monitored area. As already mentioned above, some cities distinguish between traffic-stressed and non-traffic-influenced monitoring stations.

1. And finally the evaluations are put to a more objectified basis, if one observes longer term developments and derives from these the trends of the pollutant immissions.
   Since the city of Linz has been carrying out comparisons of the air quality for years, in this report the *trend developments* for the annual mean value since 1993 for all immission regions have been included. The data of cities or regions that only have been participating the comparison since a couple of years, have been updatetd far as back as possible.

Immissionskenngrößen

In der vorliegenden Studie wurden verschiedene Immissionskenngrößen miteinander verglichen:

- Jahresmittelwert (Mittel aus allen Stationen einer Stadt/Region)
- Max. Monatsmittelwerte (höchstbelastete Station einer Stadt/Region)
- Max. Tagesmittelwert (höchstbelastete Station einer Stadt/Region)
- Max. 3-Stunden-Mittelwert (höchstbelastete Station einer Stadt/Region)
- Max. Einstunden-Mittelwert (höchstbelastete Station einer Stadt/Region)
- Max. Halbstunden-Mittelwert (höchstbelastete Station einer Stadt/Region)
- Max. 98-Percentil/Jahr (höchstbelastete Station einer Stadt/Region)

Von den einzelnen Messnetzbetreibern wurden die gewünschten Immissionsdaten in sehr unterschiedlicher Vollständigkeit zur Verfügung gestellt. Insbesondere betrifft dies die Percentil-Auswertungen und manchmal auch dieAuswertungen für max. HMW oder max. 3h-MW. Oftmals ist auch nicht das 98-Percentil verfügbar, sondern es werden andere Percentilgrößen (z. B. 95-Percentil) gebildet. Die meisten Messnetzbetreiber berechnen die Percentile aus den Halbstunden-Mittelwerten eines Jahres, manchmal werden jedoch auch die Tagesmittelwerte dafür herangezogen.

Aus diesem Grund wurde nur die Auswertung „max. 98-Percentil“ in grafischer Form durchgeführt. Im Kapitel „Luftgütekennzahlen“ der einzelnen Vergleichsregionen sind sämtliche dem Amt für Natur- und Umweltschutz übermittelten Percentilwerte aufgelistet. Die Art der Percentilbildung ist - soweit bekannt - in den Tabellen jeweils vermerkt.

Immission reference values

The present study compares various Immission reference values, such as:

- annual mean value (mean of all monitoring stations of a city/region)
- max. monthly mean value (max. stressed monitoring station of a city/region)
- max. daily mean value (max. stressed monitoring station of a city/region)
- max. 3-hours mean value (max. stressed monitoring station of a city/region)
- max. 1-hours mean value (max. stressed monitoring station of a city/region)
- max. 1/2-hours mean value (max. stressed monitoring station of a city/region)
- max. 98-Percentile/year (max. stressed monitoring station of a city/region)

The individual monitoring network services supported us with immission data of very different completeness, especially referring to the evaluation of the percentiles or somtimes the evaluations of the max. 1/2-hours mean-value or the max. 3-hours mean-value. Often the 98-Percentile was not available but the value for the 95-Percentile was given. Most of the monitoring network services calculate the percentiles from the 1/2-hours mean values of a calender year, sometimes they were based on the daily mean values.

This was the reason that only „max. 98-percentile“ was graphically evaluated. Within the chapter „Air quality reference numbers“ of each compared region all percentile-values the monitoring network sevices supported us with are mentioned. If known the kind of formation of percentiles is remarked in the tables.

Mehrjahresvergleich

Ein gutes Bild über die Entwicklung der Luftbelastung geben die Grafiken wieder. Dabei wurden von den am Luftgütevergleich teilnehmenden Städte die Entwickung der Immissionsbelastung von 1993 bis 1999 aufgetragen.

Wenn man die Daten analysiert, können folgende Aussagen getroffen werden:

1. Einige Städte und Regionen haben ein sehr dichtes Messstellennetz bezogen auf die Größe des Immissionsgebietes. Beispiele: Berlin, Linz, Wien. Andererseits werden manchmal sehr große Gebiete durch eine geringe Zahl von Messstationen überwacht.
2. Aufgrund dieser Tatsache ist die Vergleichbarkeit einzelner Regionen begrenzt.
3. Die Belastung (Jahresmittelwerte) einzelner Regionen und Städte ist noch immer sehr unterschiedlich.
   Bei einigen Städten kann man erkennen, daß in jenen Situationen, bei denen 1993 relativ hohe Immissionsbelastungen registriert wurden, seitdem oftmals eine sichtbare Besserung der Immissionssituation eingetreten ist, während in Städten mit niedriger Immissionsbelastung im Vergleich dazu nahezu keine Änderung der Luftbelastung eingetreten ist.
4. Entwicklung der Langzeitbelastung (Jahresmittelwerte) gegenüber 1993:

   SO_2: Nahezu alle Regionen *geringer* belastet

   Staub: Nahezu alle Regionen *geringer* belastet

   NO: Nahezu alle Regionen *höher* belastet

   NO_2: tendenziell *gleichbleibend*

   CO: uneinheitlich, tendenziell *gleichbleibend*

   O_3: uneinheitlich

Comparison over a period of years

One can get a good impression of the development of the air pollutant stress by studying the graphics. For this the immission stress for the area of each participating city and region from 1993 through 1999 are plotted.

The following statements can be given in analyzing the data:

1. Some cities and regions have - according to the area - a very high monitoring network density. Examples: Berlin, Linz, Vienna. On the other hand very large areas are monitored only by a little number of stations.
2. Due to this fact the comparability between regions is limited.
3. The range of the annual mean immission stress still is very different between the viewed cities and regions.
   In some cities it can be seen that where the pollution stress in 1992 was relatively high, there often has been a visible betterment of the immission situation, while in cities with low immission stress compared to other cities and regions there was nearly no change in air pollution.
4. Development of the air pollution stress in comparison with 1993:

   SO_2: Nearly all regions *less* stressed

   particulates: Nearly all regions *less* stressed

   NO: Nearly all regions *higher* stressed

   NO_2: trend *constant*

   CO: nonuniform, trend *constant*

   O_3: nonuniform

Übersicht über die Entwicklung der Schadstoffbelastungen 1993 - 1999

Overview over the development of the stress of air pollutants from 1993 through 1999

Beurteilungsbasis: Jahresmittelwerte über alle Stationen einer Region/ based on mean of all annual mean values of a region

Austrian cities

	SO_2			Particulates			NO			NO_2			CO			O_3		
	Stress in 1993	Ten-dency	Stress in 1999	Stress in 1993	Ten-dency	Stress in 1999	Stress in 1993	Ten-dency	Stress in 1999	Stress in 1993	Ten-dency	Stress in 1999	Stress in 1993	Ten-dency	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999
Linz		↘			↘			==			==			↘			==	
Bludenz		🡻			==			↘			↘		-	-	-		==	
Dornbirn		🡻			==		-	↘			==		-	==		-	-	-
Graz		🡻			↘		-	↘			==		-	↘			↗	
Hallein		↘					-	-	-		==			↘			🡹	
Innsbruck		🡻			↘			↘			==			==			==	
Klagenfurt		🡻			↘			==			==			↘			==	
Leoben/Göß/Dona-witz		↘			↘			↗		-	==			↘			==	
Salzburg		↘			↗		-	-	-		↘			🡻			==	
St. Pölten		↘		-	==			==			==		-	==		-	==	
Vienna		🡻			↘			↘			==			🡻			↘	
Villach		🡻			🡻			↘			==			↘			==	

European Cities

	SO_2			Particulates			NO			NO_2			CO			O_3		
	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999
Barcelona		↓		-	↘		-	==			↗		-	==		-	==	
Basel		↘			↘			↘			==			↘			↗	
Belfast		↓			↘			↘			↘			↘			↗	
Berlin		↓			↓			↗			==			↘			==	
Birmingham		↓			↘			==	-		↘			↘			↗	
Bristol		↓		-	↘		-	==	-		==			==			==	
Brussells		↓		-	↓		-	↘			==		-	↘		-	==	
Budapest		↘		-	↘		-	↘			==		-	==		-	↗	
Chemnitz		↓↓			↘			==			==			↘			==	
Copenhagen		↘			↘		-	↓		-	↘			==		-	==	
Debrecen		↓↓			↓		-	↘		-	==			-	-		==	
Dresden		↓↓			↓			==			==			↘			==	
Edinburgh		↓		-	↘			==			==			==			==	
Frankfurt		↓			↘			↘			↘			↘			==	
Goteborg	-	==		-	==			↘		-	==			↘		-	==	
Hamburg		↓			↘			↘			==			↘			==	
Karlsruhe		↘			↓			↘			==			↘			==	
Leeds		↓			==			==		-	==			==			==	
Leipzig		↓↓			↓			==			==			↘			↗	
Liverpool		↓			↘			==			↘			==			==	
London		↓			↘			↘	-		↘			↓			↗	
Luxemburg	-	↘		-	↘		-	==		-	==		-	==		-	==	

	SO_2			Particulates			NO			NO_2			CO			O_3		
	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999	Stress in 1993	Deve-lop-ment	Stress in 1999
Lyon-Agglomeration	-	↘		-	==		-	-		-	-		-	==		-	==	
Madrid		↘			==		-	-			==		-	↘		-	==	
Mannheim		↘			🡻			↘			==			↘			==	
Milan		🡻		-	↘			↘			↘			↘			↗	
Munich		↘			↘			↘			↘			🡻			==	
Rhine-Area south		🡻			↘			↘			↘			↘			==	
Rhine Area Centre		🡻			==			↘			↘			↘			==	
Rotterdam	-	==		-	↘		-	↘			==		-	==		-	==	
Ruhr-Area West		🡻			↘			↘			==			↘			↗	
Ruhr-Area Centre		🡻			↘			↘			==			↘			==	
Ruhr-Area East		🡻			↘			↘			↘			↘			==	
Stockholm		↘		-	-	-	-	↘		-	↗			==			↗	
Warszawa	-	🡻					-	-	-	-	↘		-	↘		-	==	
Wiesbaden		↘			==			↘			↘			==			==	
Zagreb	-	==		-	↘		-	-	-		==		-	-	-	-	-	
Zurich - town centre		↘			↘			==			==			↘			↗	

Legend:

- slightly stressed
- Medium stressed
- Highly stressed
- No data
- ↘ slight stress decrease
- 🡻 strong stress decrease
- 🡻🡻 very strong stress decrease
- == keeping constant
- ↗ slight stress increase
- 🡹 strong stress increase

Anzahl der Messstellen **Number of monitoring stations**

Country	Monitored Area	SO_2	particulates	NO	NO_2	CO	O_3
Austria	Bludenz-Town-Hall	1	1	1	1	-	1
	Dornbirn-Stadtstraße	1	1	1	1	1	-
	Graz	6	6	6	6	2	4
	Hallein	3	1	-	1	1	1
	Innsbruck	2	2	2	2	2	2
	Klagenfurt	2	2	2	2	2	2
	Leoben/Göß/Donawitz	3	3	3	3	2	1
	Linz	9	10	9	9	10	3
	Salzburg	3	3	-	3	2	2
	St. Pölten	1	1	1	1	1	1
	Vienna	17	17	17	17	5	5
	Villach	1	1	1	1	1	1
Belgium	Brussels	7	4	7	7	5	5
Bulgaria	Sofia	10	8	4	10	4	4
Croatia	Zagreb	9	4	-	6	-	5
Denmark	Copenhagen	1	1	2	2	2	1
France	Lyon-Agglomeration	17	4	11	11	4	5
Germany	Berlin	20	12	22	22	18	11
	Chemnitz	2	2	2	2	2	2
	Dresden	2	2	2	2	2	2
	Frankfurt	5	5	5	5	4	5
	Hamburg	11	6	11	11	4	6
	Karlsruhe	3	3	3	3	3	3
	Leipzig	3	3	3	3	3	3
	Mannheim	3	3	3	3	3	3
	Munich	8	7	8	8	8	3
	Rhine Area Centre (Region Düsseldorf)	4	5	4	4	4	2
	Rhine Area South (Region Cologne, Bonn)	8	8	8	8	7	7
	Ruhr Area East (Region Dortmund)	9	9	9	9	7	4
	Ruhr Area Centre (Region Essen, Bochum)	8	8	9	9	8	5
	Ruhr Area West (Region Duisburg, Oberhausen)	8	8	8	8	8	5
	Wiesbaden	1	1	1	1	1	1
Greece	Athens	9	-	8	8	9	9
	Thessaloniki	3	3	-	3	3	3

Anzahl der Messstellen — Number of monitoring stations

Country	Monitored Area	SO_2	partic-ulates	NO	NO_2	CO	O_3
Hungary	Budapest	8	8	8	8	8	2
	Debrecen	10	2	1	10	-	1
Italy	Milan	5	1	10	10	6	3
Latvia	Riga	2	-	-	2	-	2
Luxemburg	Luxemburg	2	1	2	2	1	2
Netherlands	Rotterdam	9	5	3	3	1	1
Poland	Warszawa	16	4	-	14	1	2
Portugal	Lisbon	5	3	-	8	8	2
Romania	Bukarest	5	5	-	5	-	-
Spain	Barcelona	2	5	5	5	5	5
	Madrid	25	24	25	25	25	25
Switzerland	Basel-Outskirts	1	1	1	1	1	1
	Zurich-Centre	1	1	1	1	1	1
Sweden	Göteborg	3	1	2	3	1	3
	Stockholm	1	-	4	4	4	2
U.K.	Belfast	2	2	-	1	1	1
	Birmingham	2	2	-	2	2	2
	Bristol	1	1	-	2	2	1
	Edinburgh	1	1	-	1	1	1
	Leeds	1	1	-	1	1	1
	Liverpool	1	1	-	1	1	1
	London	7	5	-	9	8	8

Quellen für die Immissionsdaten **Sources for the immission-data**

Austria, *Bludenz, Dornbirn*	Umweltinstitut des Landes Vorarlberg Montfortstraße 4 A-6901 Bregenz Austria *e-mail:* ui@vlr.gv.at *homepage: -*
Austria, *Graz, Leoben, Donawitz*	Amt der Steiermärkischen Landesregierung Fachabt. Ia (Ref. f. Luftgüteüberwachung) Landhausgasse 7 A-8010 Graz *e-mail:* post@fa1a.stmk.gv.at *homepage:* http://www.stmk.gv.at/luis
Austria, Innsbruck	Amt der Tiroler Landesregierung Landesforstdirektion Abt. Waldschutz-Luftgüte Bürgerstrasse 36 A-6020 Innsbruck Austria *e-mail:* an.weber@tirol.gv.at *homepage: -*
Austria, Linz	Amt der oö. Landesregierung UA Luftreinhaltung und Energietechnik Goethestraße 86 A-4020 Linz Austria *e-mail:* elisabeth.danninger@ooe.gv.at *homepage:* www.ooe.gv.at
Austria, *Salzburg, Hallein*	Amt der Salzburger Landesregierung, Abt. 16 Postfach 527 A-5010 Salzburg *e-mail:* peter.biebl@land-slg.gv.at *homepage: -*
Austria, St. Pölten	Magistrat der Landeshauptstadt St. Pölten Abteilung XIII Roßmarkt 6 A-3100 St. Pölten Austria *e-mail:* marktamt@st-poelten.gv.at *homepage: -*

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Austria, *Klagenfurt, Villach*	Amt der Kärntner Landesregierung Abt. 15 (Umweltschutz und Technik) Flatschacher Straße 70 A-9020 Klagenfurt *e-mail:* Luftimmission_abt15@ktn.gv.at *homepage: -*
Belgium	CELINE-IRCEL Avenue des Arts, 10-11 B-1210 – Bruxelles Belgium *e-mail:* rasse@irceline.be *homepage:-*
Bulgaria	Executive Environmental Agency 136 Tzar Boris III 6 Lvd. BG-1618 Sofia Bulgaria- *e-mail:* Serafimov@nfp-bg.eionet.eu.int *homepage: -*
Croatia	Inistitute of Medical Research and Occupational Health Ksaverska cesta 2 HR-10000 Zagreb Croatia *e-mail:* vadic@imi.hr *homepage: -*
Denmark	National Environmenal Research Institute Atmospheric Environment Frederiksborvej 399 DK-4000 Roskide Denmark *e-mail:* kke@dmu.dk *homepage:* http://www.dmu.dk/Atmospheric
France	COPARLY-Comité pour le contrôle de la Pollution Atmosphérique dans le Rhône et la région Lyonnaise 63, avenue Roger Salengro F-69100 Villeurbanne France *e-mail: -* *homepage: -*

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Landesumweltamt Nordrhein-Westfalen
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Hungary, Debrecen

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Városfejlesztési Osztály
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e-mail: apmbuc@automation.ipa.ro
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homepage: -

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U.K.
e-mail: ruth_chapman@detr.gsi.gov.uk
homepage: http://www.aeat.co.uk/netcen/airqual

Luftgütevergleich

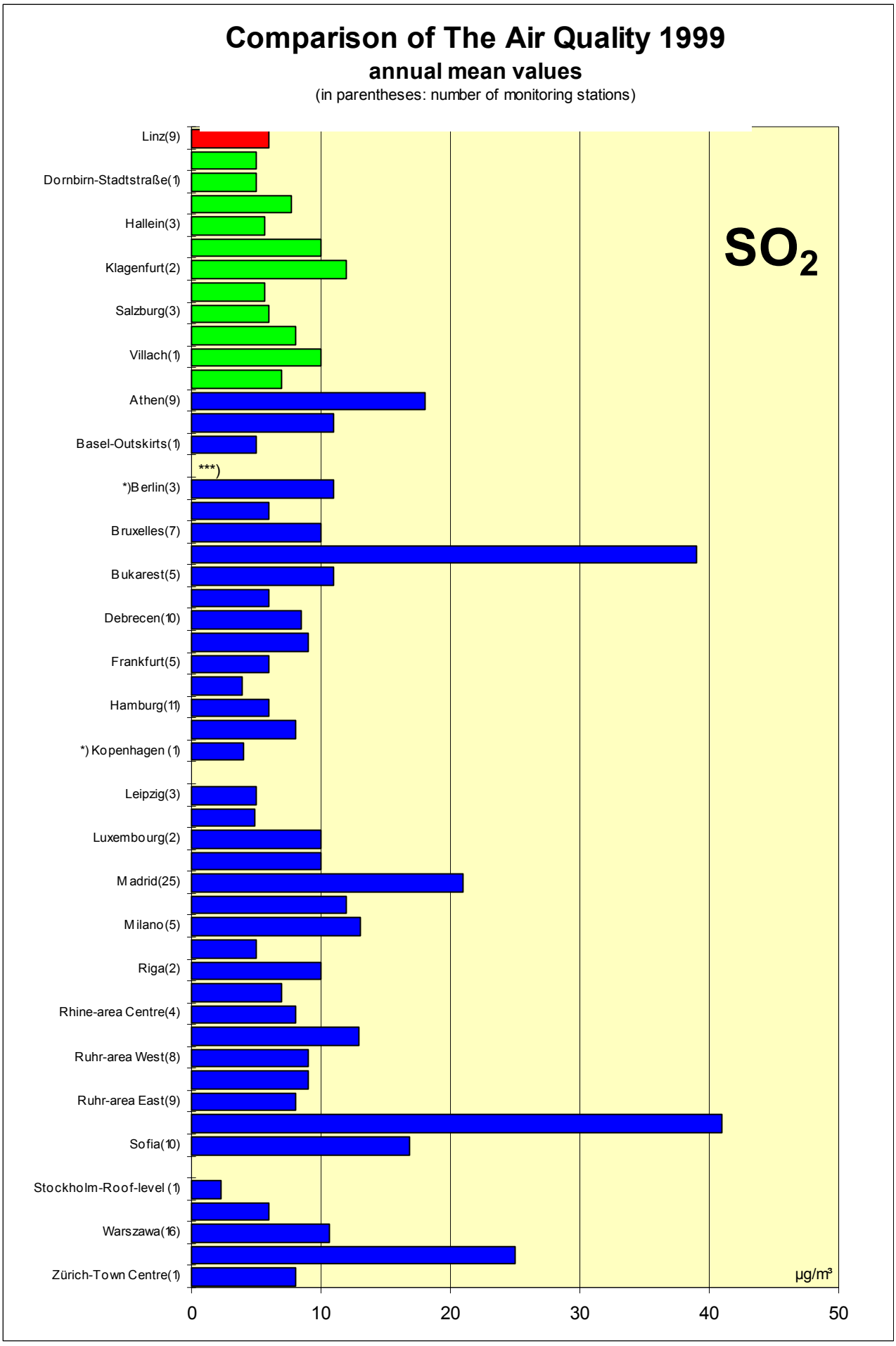
1999

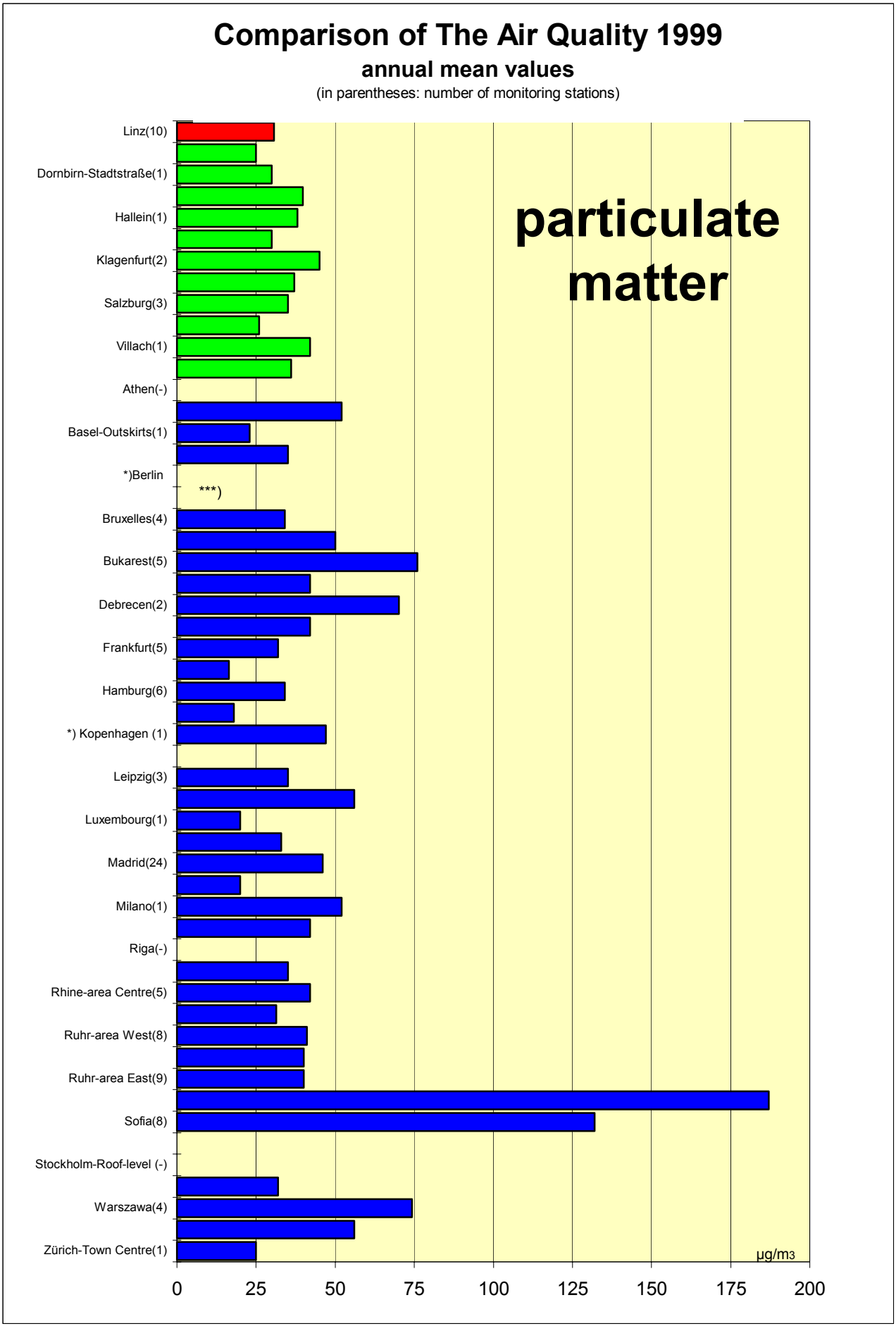
Jahresmittelwert (Gebietsmittel)

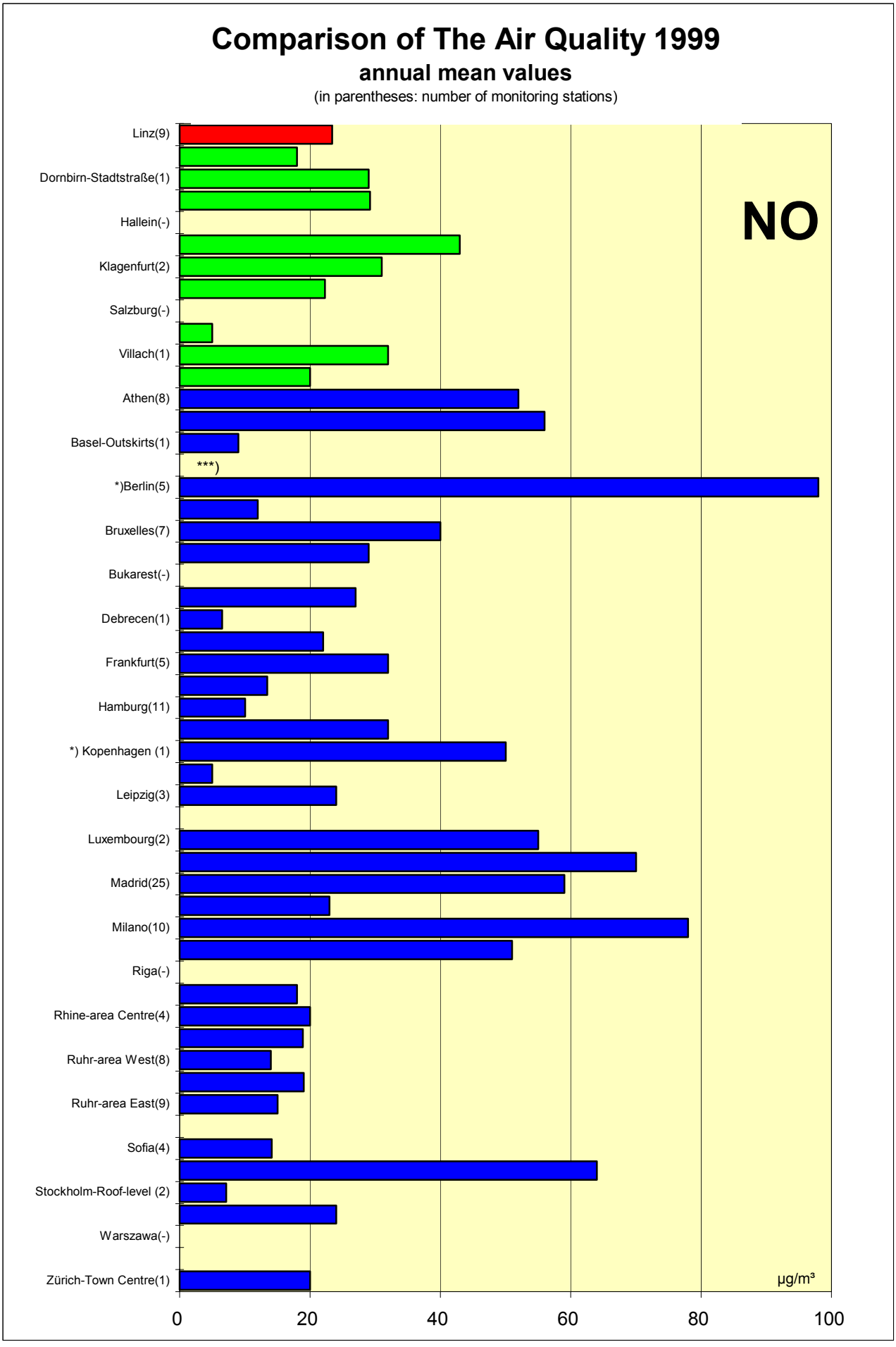
Comparison of The Air Quality

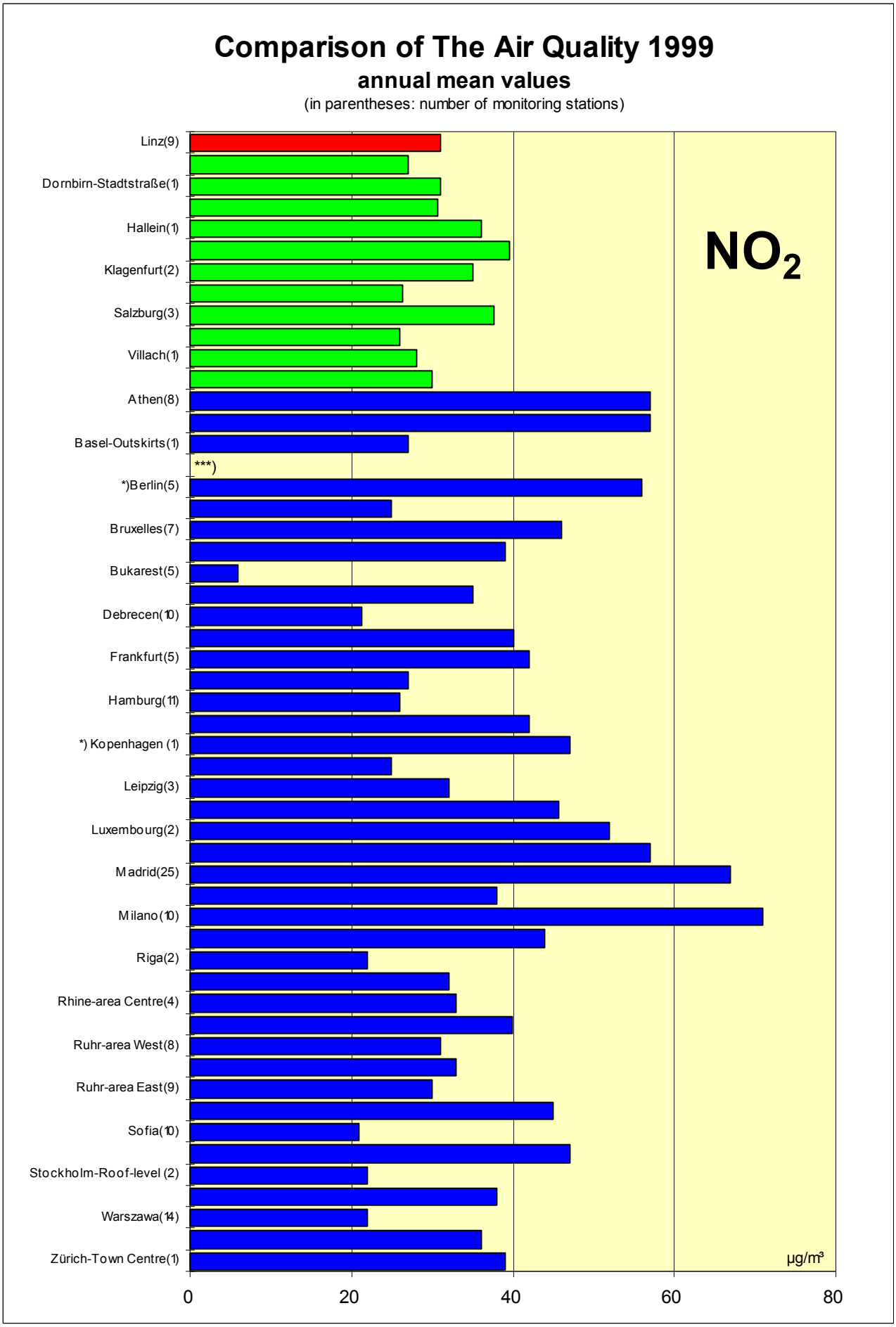
1999

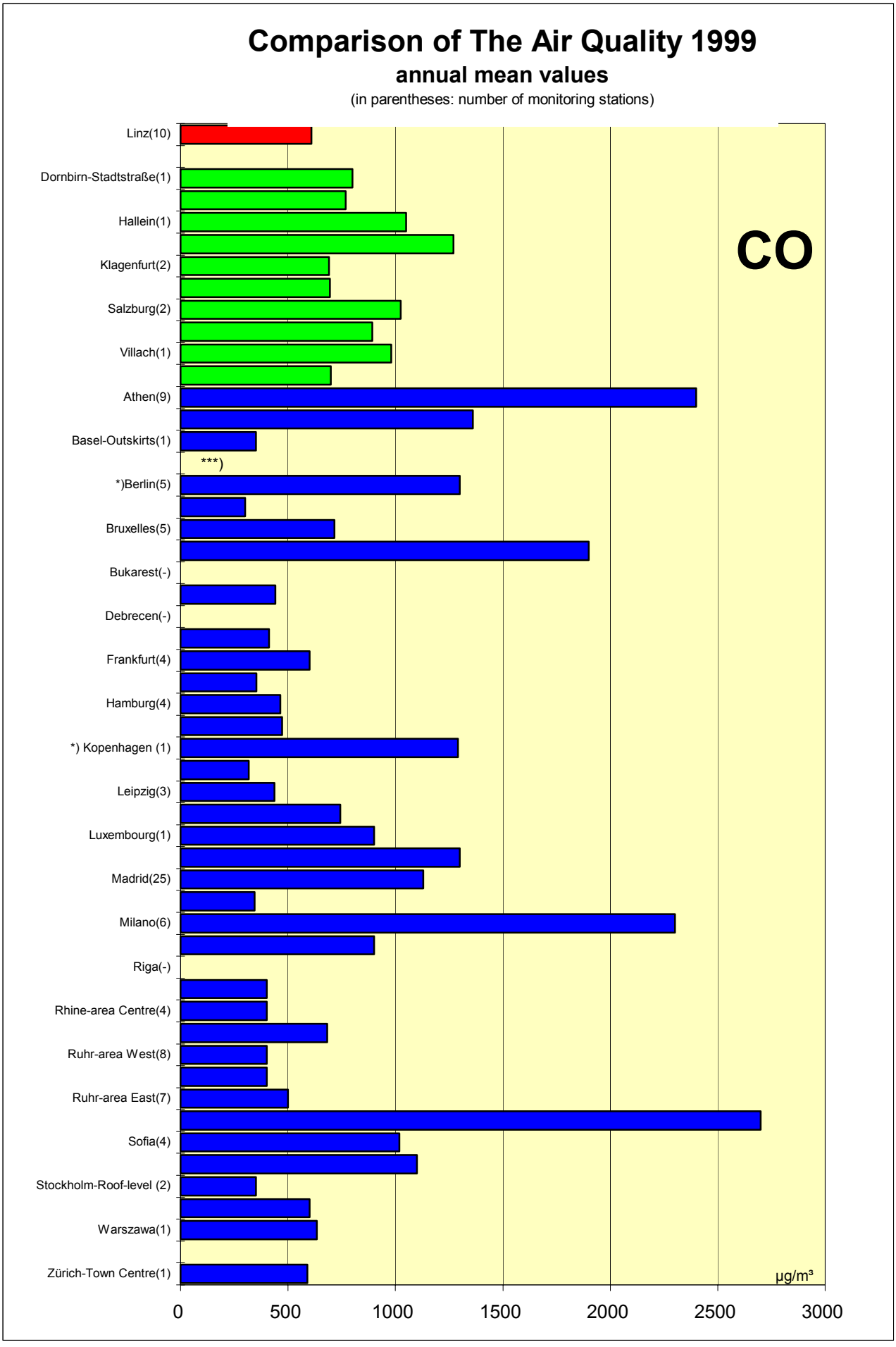
Annual Mean Values

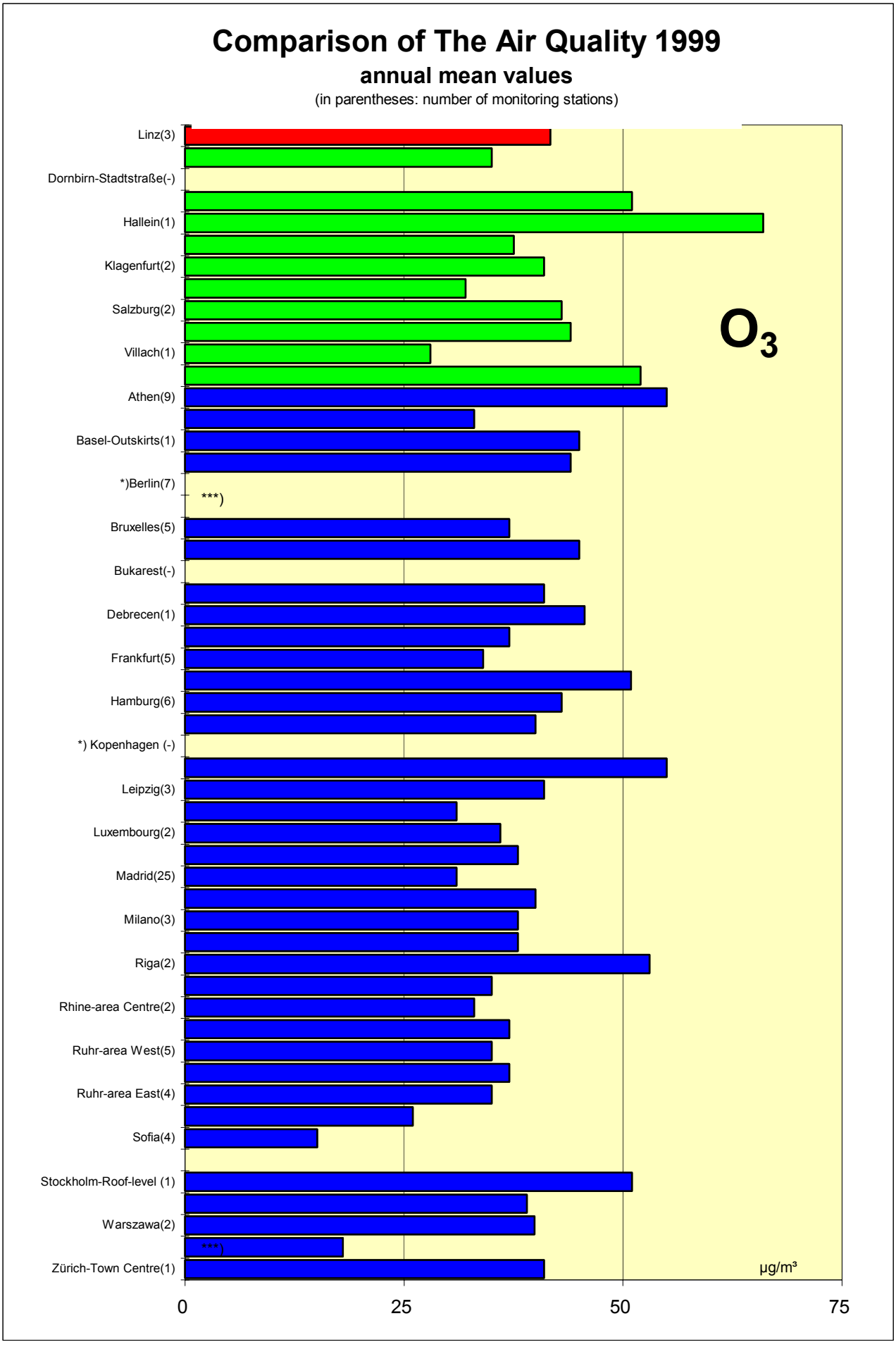

Comparison of The Air Quality 1999
annual mean values
(in parentheses: number of monitoring stations)
SO2
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(3)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(9)
Basel-Outskirts(1)
***)
*)Berlin(3)
Bruxelles(7)
Bukarest(5)
Debrecen(10)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(5)
Riga(2)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(10)
Stockholm-Roof-level (1)
Warszawa(16)
Zürich-Town Centre(1)
µg/m³
0
10
20
30
40
50


Comparison of The Air Quality 1999
annual mean values
(in parentheses: number of monitoring stations)
particulate matter
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(1)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(-)
Basel-Outskirts(1)
*)Berlin
***)
Bruxelles(4)
Bukarest(5)
Debrecen(2)
Frankfurt(5)
Hamburg(6)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(1)
Madrid(24)
Milano(1)
Riga(-)
Rhine-area Centre(5)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(8)
Stockholm-Roof-level (-)
Warszawa(4)
Zürich-Town Centre(1)
µg/m3
0
25
50
75
100
125
150
175
200


Comparison of The Air Quality 1999
annual mean values
(in parentheses: number of monitoring stations)
NO
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(-)
Klagenfurt(2)
Salzburg(-)
Villach(1)
Athen(8)
Basel-Outskirts(1)
***)
*)Berlin(5)
Bruxelles(7)
Bukarest(-)
Debrecen(1)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
Riga(-)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(-)
Zürich-Town Centre(1)
µg/m³
0
20
40
60
80
100


Comparison of The Air Quality 1999
annual mean values
(in parentheses: number of monitoring stations)
NO2
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(1)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(8)
Basel-Outskirts(1)
***)
*)Berlin(5)
Bruxelles(7)
Bukarest(5)
Debrecen(10)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
Riga(2)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(10)
Stockholm-Roof-level (2)
Warszawa(14)
Zürich-Town Centre(1)
µg/m³
0
20
40
60
80


Comparison of The Air Quality 1999
annual mean values
(in parentheses: number of monitoring stations)
CO
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(1)
Klagenfurt(2)
Salzburg(2)
Villach(1)
Athen(9)
Basel-Outskirts(1)
***)
*)Berlin(5)
Bruxelles(5)
Bukarest(-)
Debrecen(-)
Frankfurt(4)
Hamburg(4)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(1)
Madrid(25)
Milano(6)
Riga(-)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(7)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(1)
Zürich-Town Centre(1)
µg/m³
0
500
1000
1500
2000
2500
3000


Comparison of The Air Quality 1999
annual mean values
(in parentheses: number of monitoring stations)
O3
Linz(3)
Dornbirn-Stadtstraße(-)
Hallein(1)
Klagenfurt(2)
Salzburg(2)
Villach(1)
Athen(9)
Basel-Outskirts(1)
*)Berlin(7)
***)
Bruxelles(5)
Bukarest(-)
Debrecen(1)
Frankfurt(5)
Hamburg(6)
*) Kopenhagen (-)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(3)
Riga(2)
Rhine-area Centre(2)
Ruhr-area West(5)
Ruhr-area East(4)
Sofia(4)
Stockholm-Roof-level (1)
Warszawa(2)
***)
Zürich-Town Centre(1)
µg/m³
0
25
50
75

Luftgütevergleich

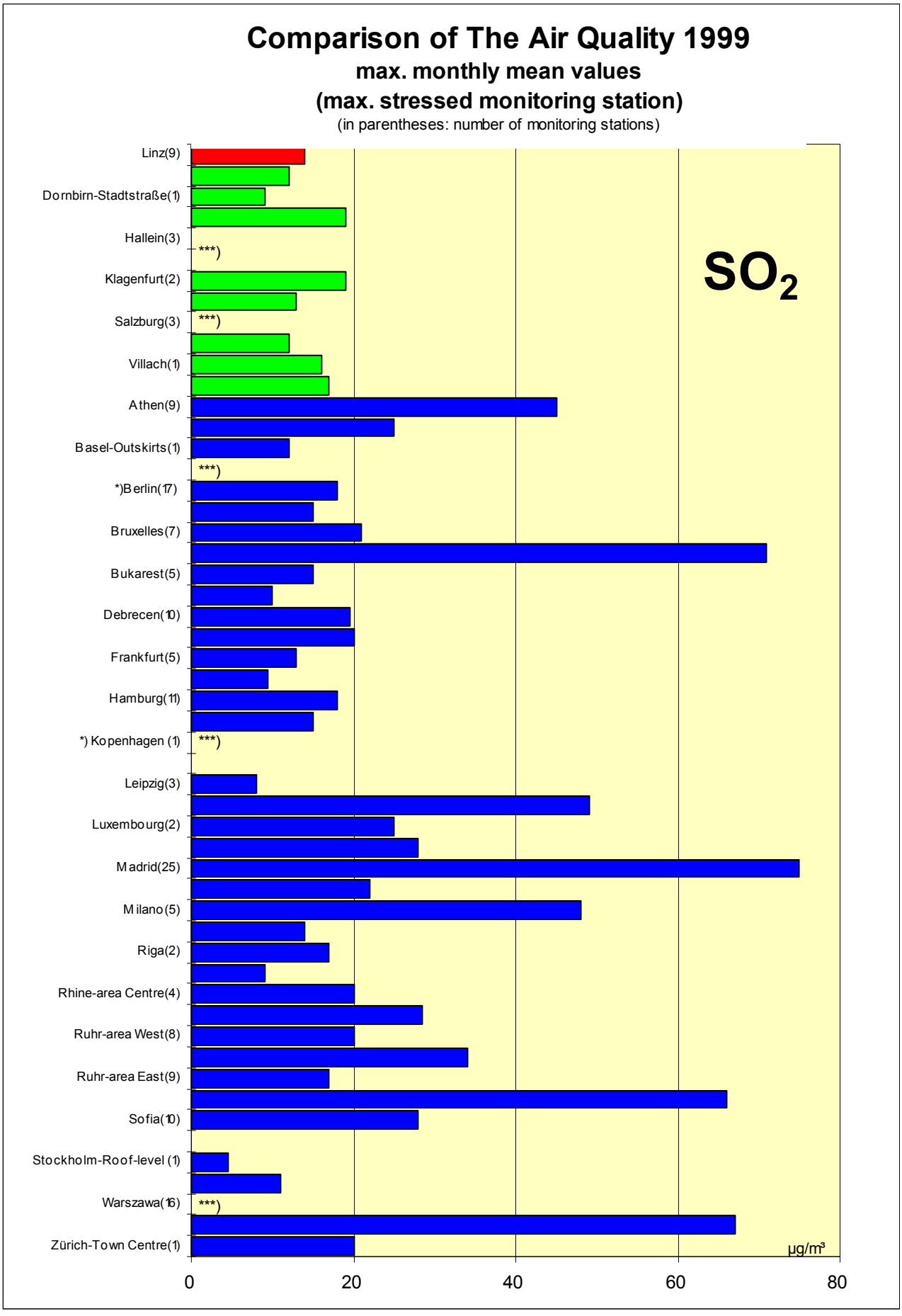
1999

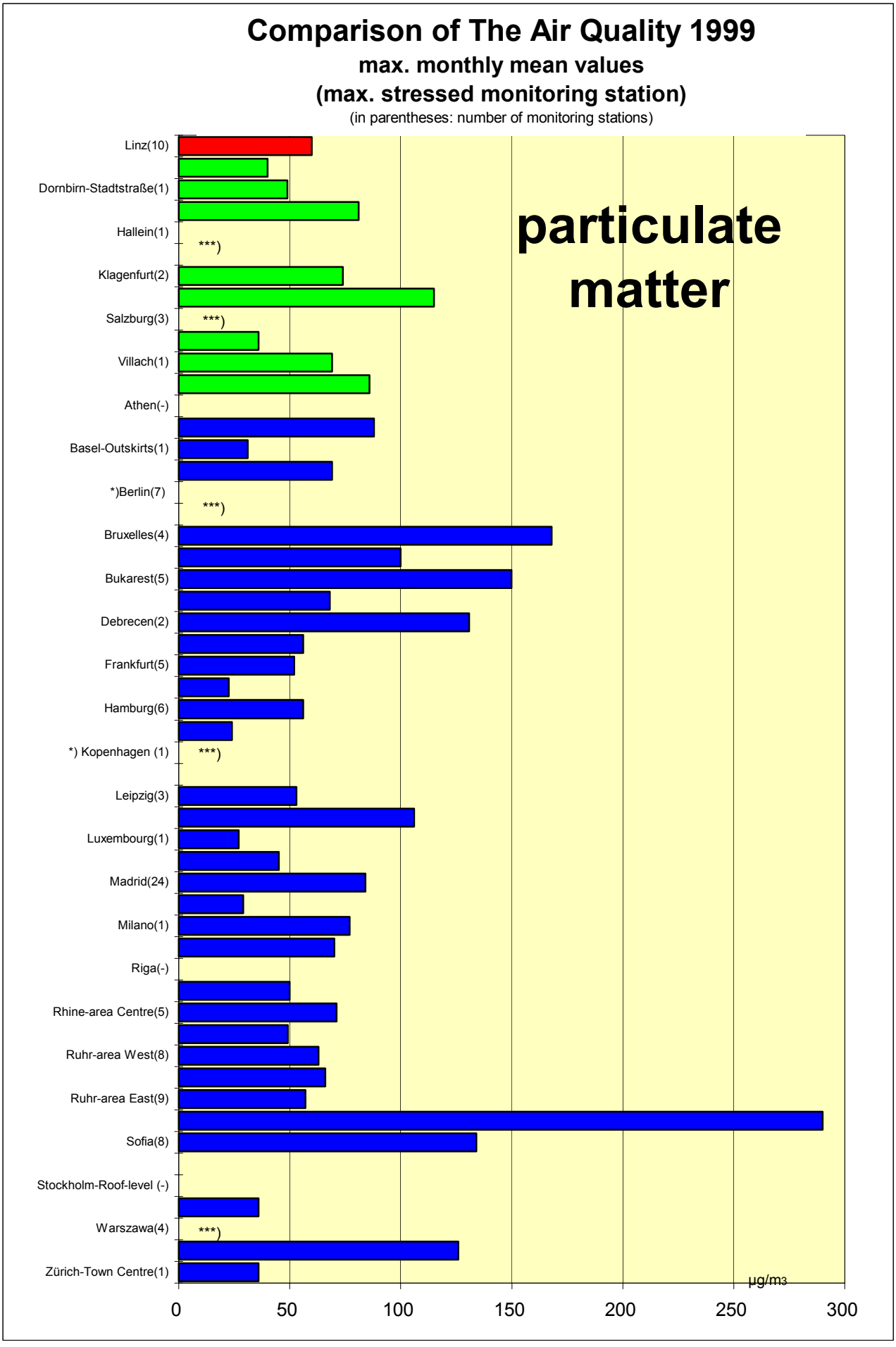
max. Monatsmittelwert

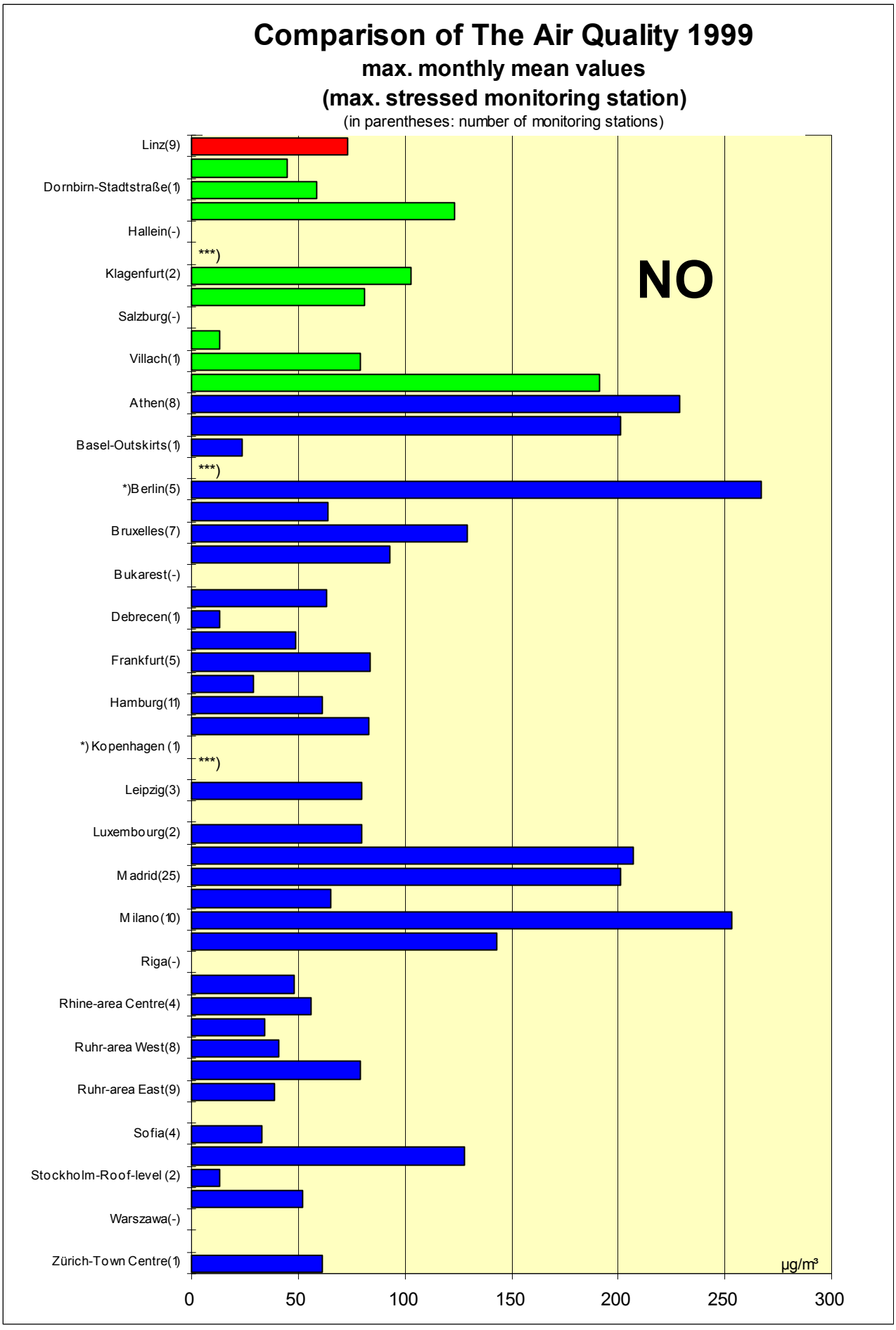
Comparison of The Air Quality

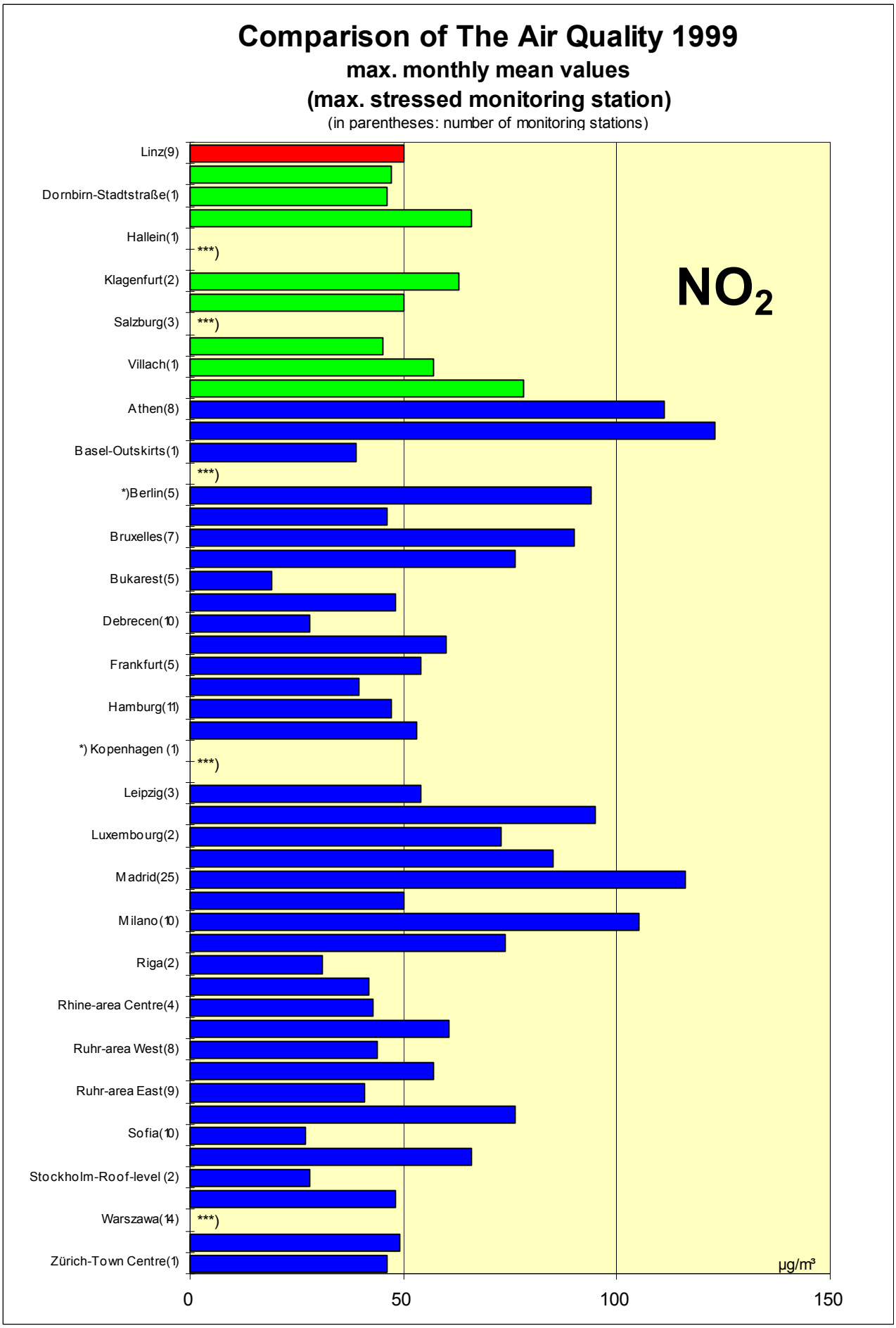
1999

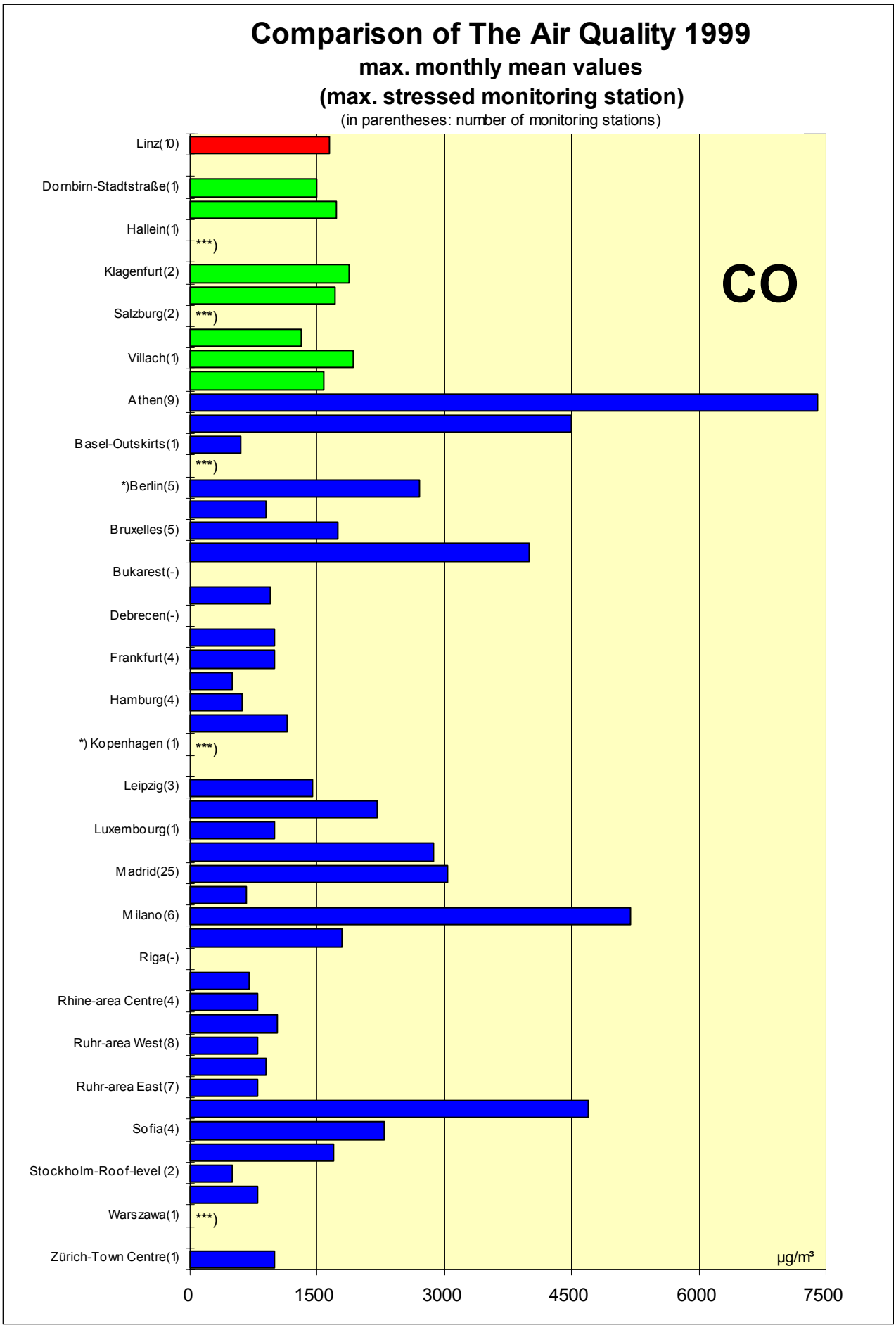
Max. Monthly Mean Values

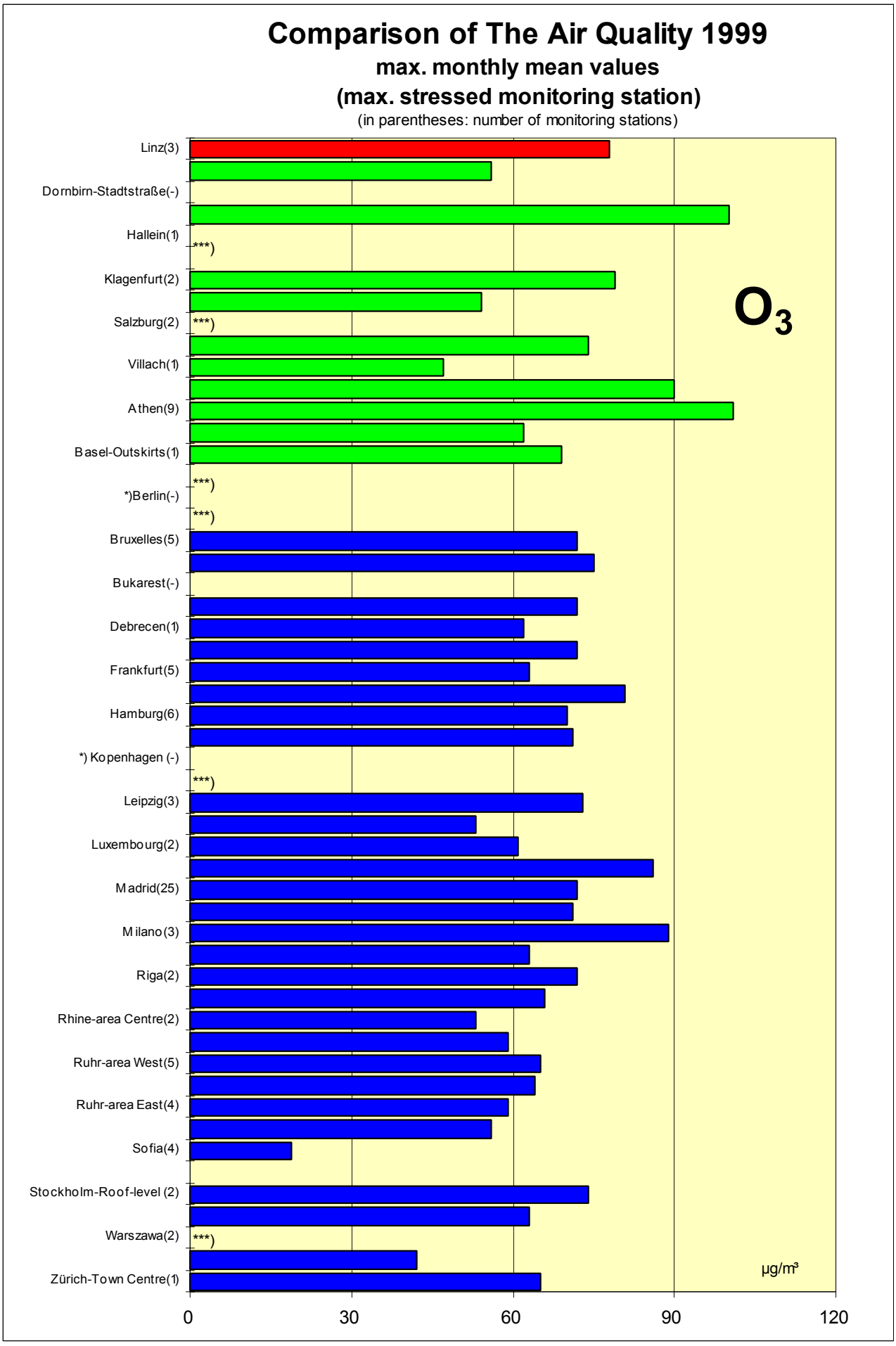

Comparison of The Air Quality 1999
max. monthly mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
SO2
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(3)
***)
Klagenfurt(2)
Salzburg(3)
***)
Villach(1)
Athen(9)
Basel-Outskirts(1)
***)
*)Berlin(17)
Bruxelles(7)
Bukarest(5)
Debrecen(10)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
***)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(5)
Riga(2)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(10)
Stockholm-Roof-level (1)
Warszawa(16)
***)
Zürich-Town Centre(1)
µg/m³
0
20
40
60
80


Comparison of The Air Quality 1999
max. monthly mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
particulate matter
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(1)
***)
Klagenfurt(2)
Salzburg(3)
***)
Villach(1)
Athen(-)
Basel-Outskirts(1)
*)Berlin(7)
***)
Bruxelles(4)
Bukarest(5)
Debrecen(2)
Frankfurt(5)
Hamburg(6)
*) Kopenhagen (1)
***)
Leipzig(3)
Luxembourg(1)
Madrid(24)
Milano(1)
Riga(-)
Rhine-area Centre(5)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(8)
Stockholm-Roof-level (-)
Warszawa(4)
***)
Zürich-Town Centre(1)
µg/m3
0
50
100
150
200
250
300


Comparison of The Air Quality 1999
max. monthly mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(-)
***)
Klagenfurt(2)
Salzburg(-)
Villach(1)
Athen(8)
Basel-Outskirts(1)
***)
*)Berlin(5)
Bruxelles(7)
Bukarest(-)
Debrecen(1)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
***)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
Riga(-)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(-)
Zürich-Town Centre(1)
µg/m³
0
50
100
150
200
250
300


Comparison of The Air Quality 1999
max. monthly mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO2
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(1)
***)
Klagenfurt(2)
Salzburg(3)
***)
Villach(1)
Athen(8)
Basel-Outskirts(1)
***)
*)Berlin(5)
Bruxelles(7)
Bukarest(5)
Debrecen(10)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
***)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
Riga(2)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(10)
Stockholm-Roof-level (2)
Warszawa(14)
***)
Zürich-Town Centre(1)
µg/m³
0
50
100
150


Comparison of The Air Quality 1999
max. monthly mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
CO
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(1)
***)
Klagenfurt(2)
Salzburg(2)
***)
Villach(1)
Athen(9)
Basel-Outskirts(1)
***)
*)Berlin(5)
Bruxelles(5)
Bukarest(-)
Debrecen(-)
Frankfurt(4)
Hamburg(4)
*) Kopenhagen (1)
***)
Leipzig(3)
Luxembourg(1)
Madrid(25)
Milano(6)
Riga(-)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(7)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(1)
***)
Zürich-Town Centre(1)
µg/m³
0
1500
3000
4500
6000
7500


Comparison of The Air Quality 1999
max. monthly mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
O3
Linz(3)
Dornbirn-Stadtstraße(-)
Hallein(1)
***)
Klagenfurt(2)
Salzburg(2)
***)
Villach(1)
Athen(9)
Basel-Outskirts(1)
*)Berlin(-)
***)
***)
Bruxelles(5)
Bukarest(-)
Debrecen(1)
Frankfurt(5)
Hamburg(6)
*) Kopenhagen (-)
***)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(3)
Riga(2)
Rhine-area Centre(2)
Ruhr-area West(5)
Ruhr-area East(4)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(2)
***)
Zürich-Town Centre(1)
µg/m³
0
30
60
90
120

Luftgütevergleich

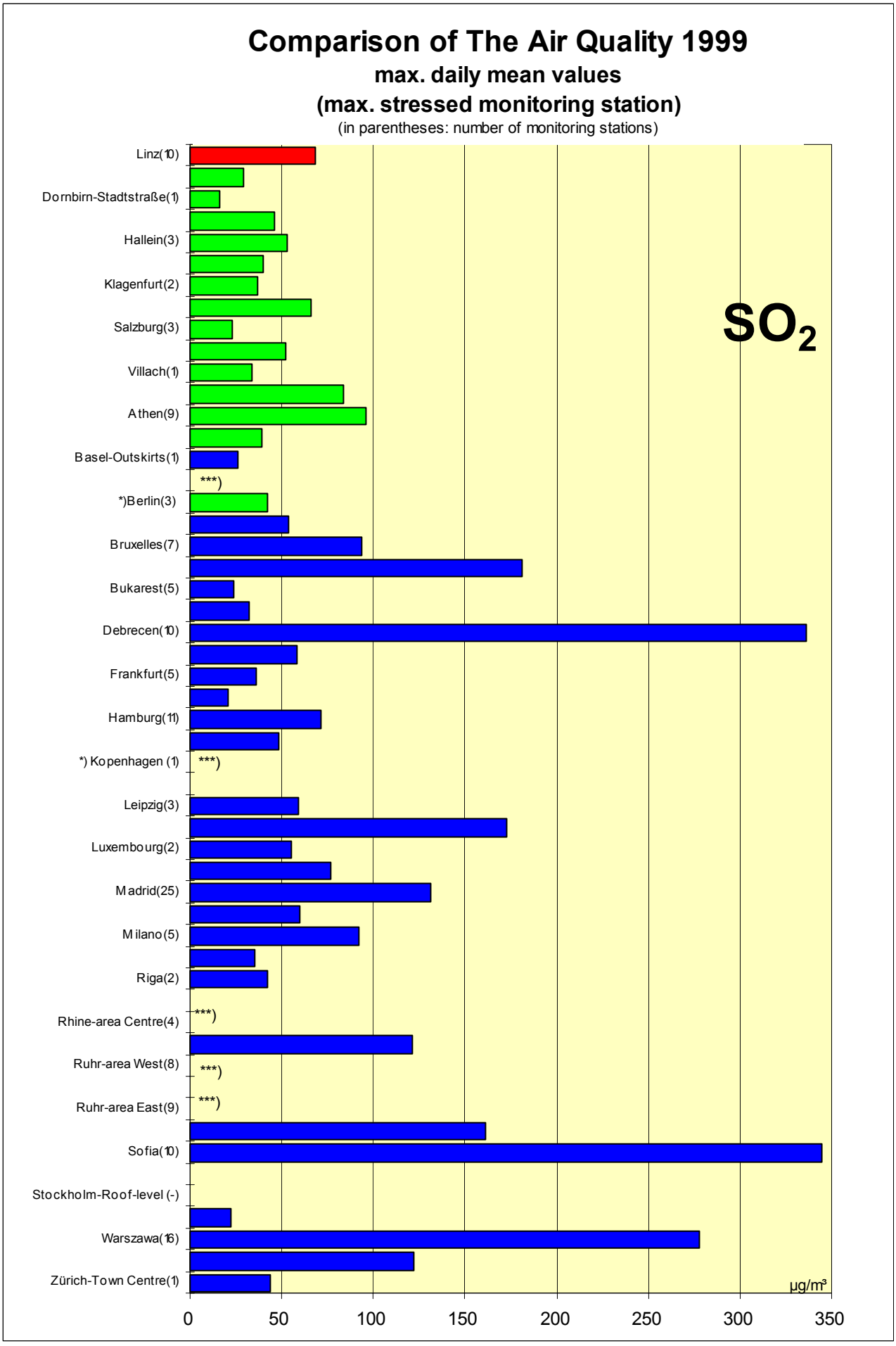
1999

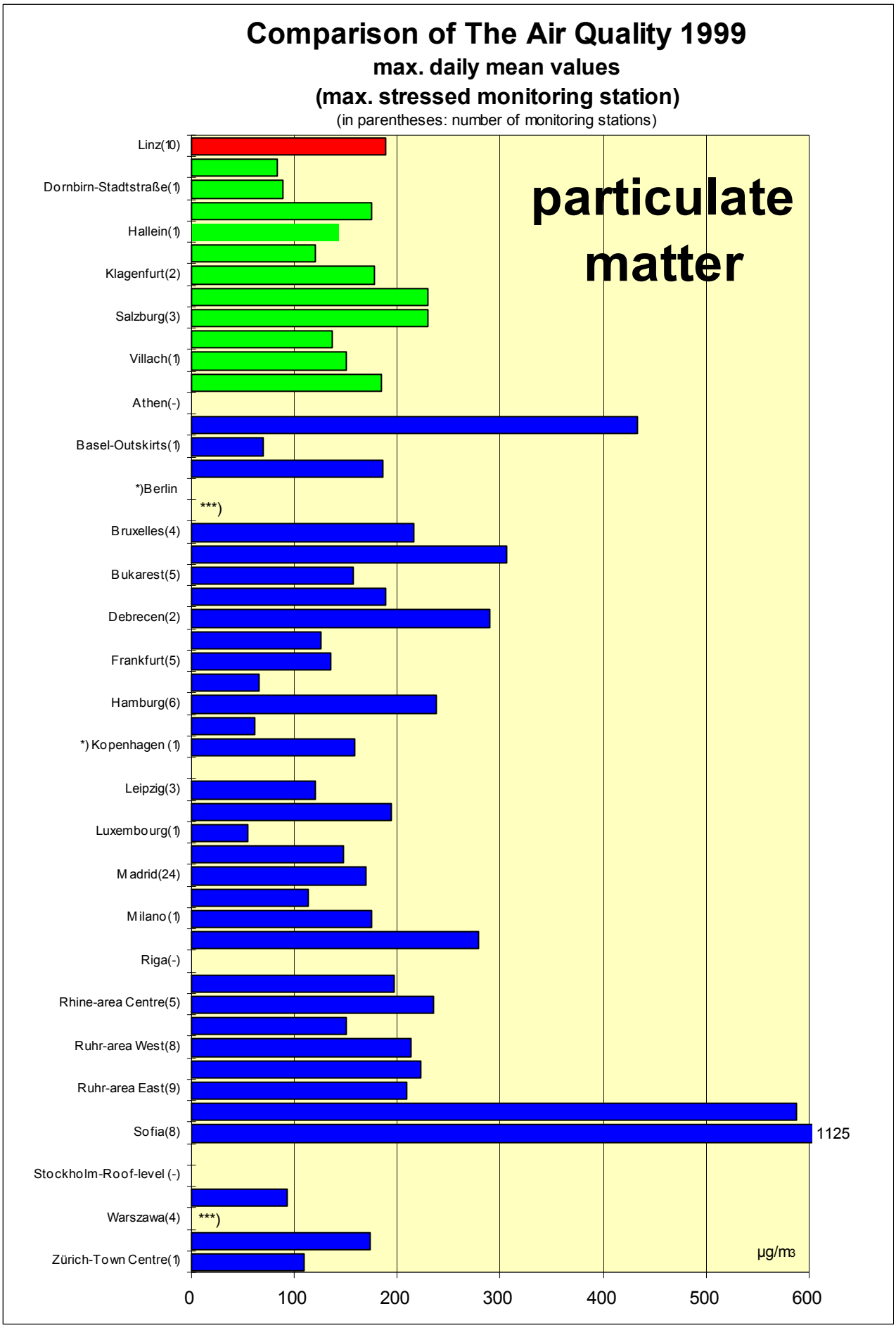
max. Tagesmittelwert

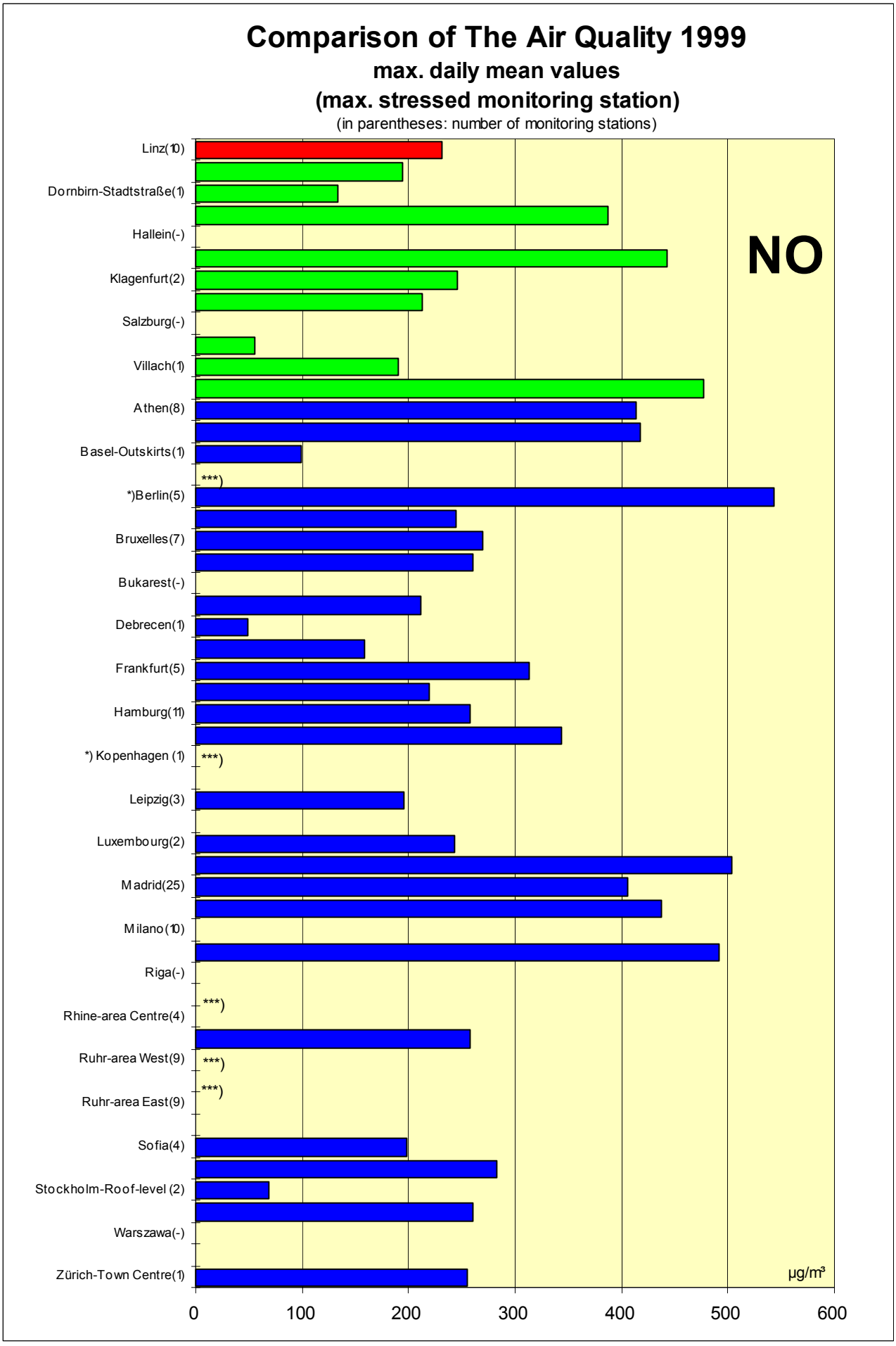
Comparison of The Air Quality

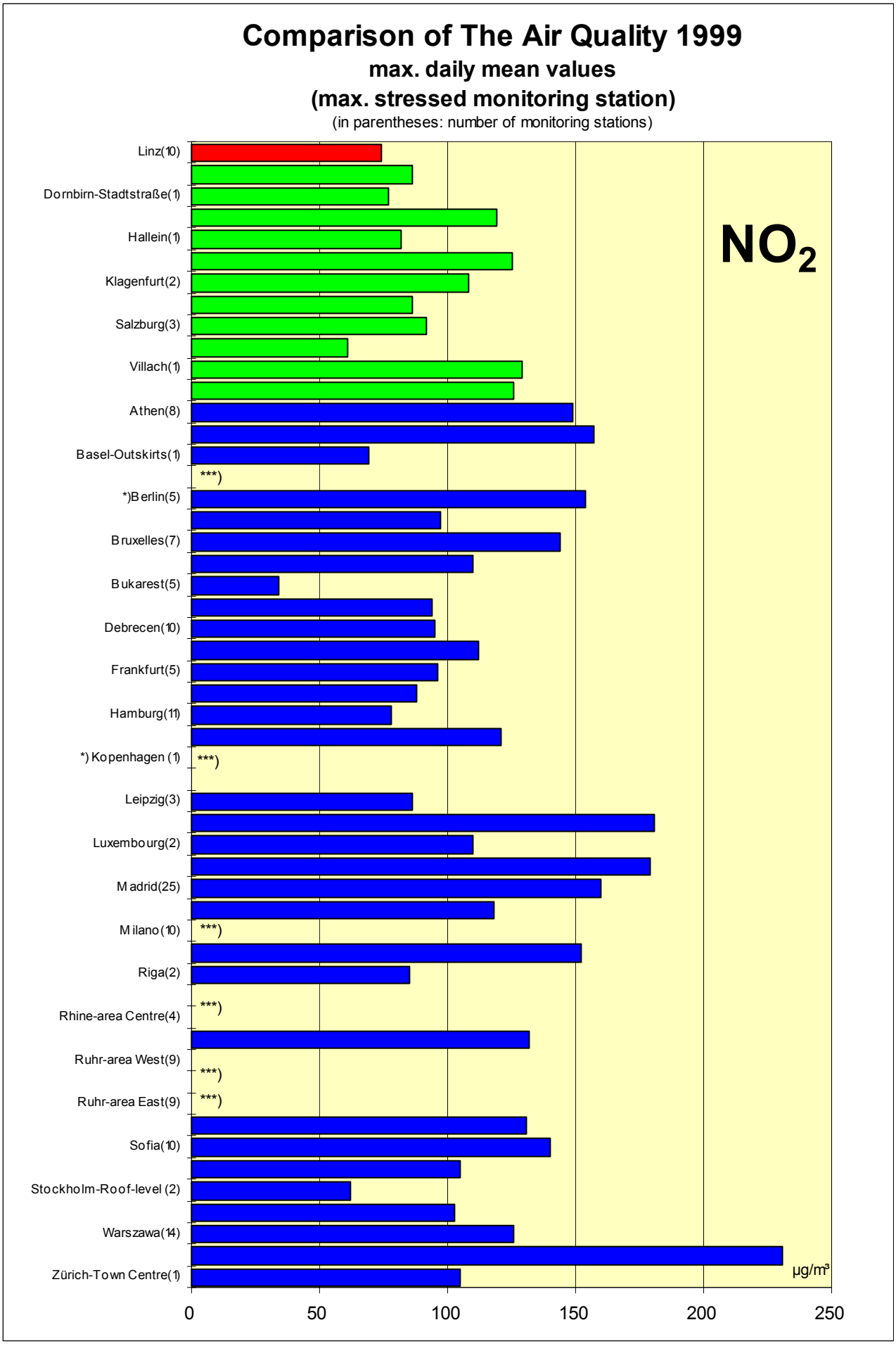
1999

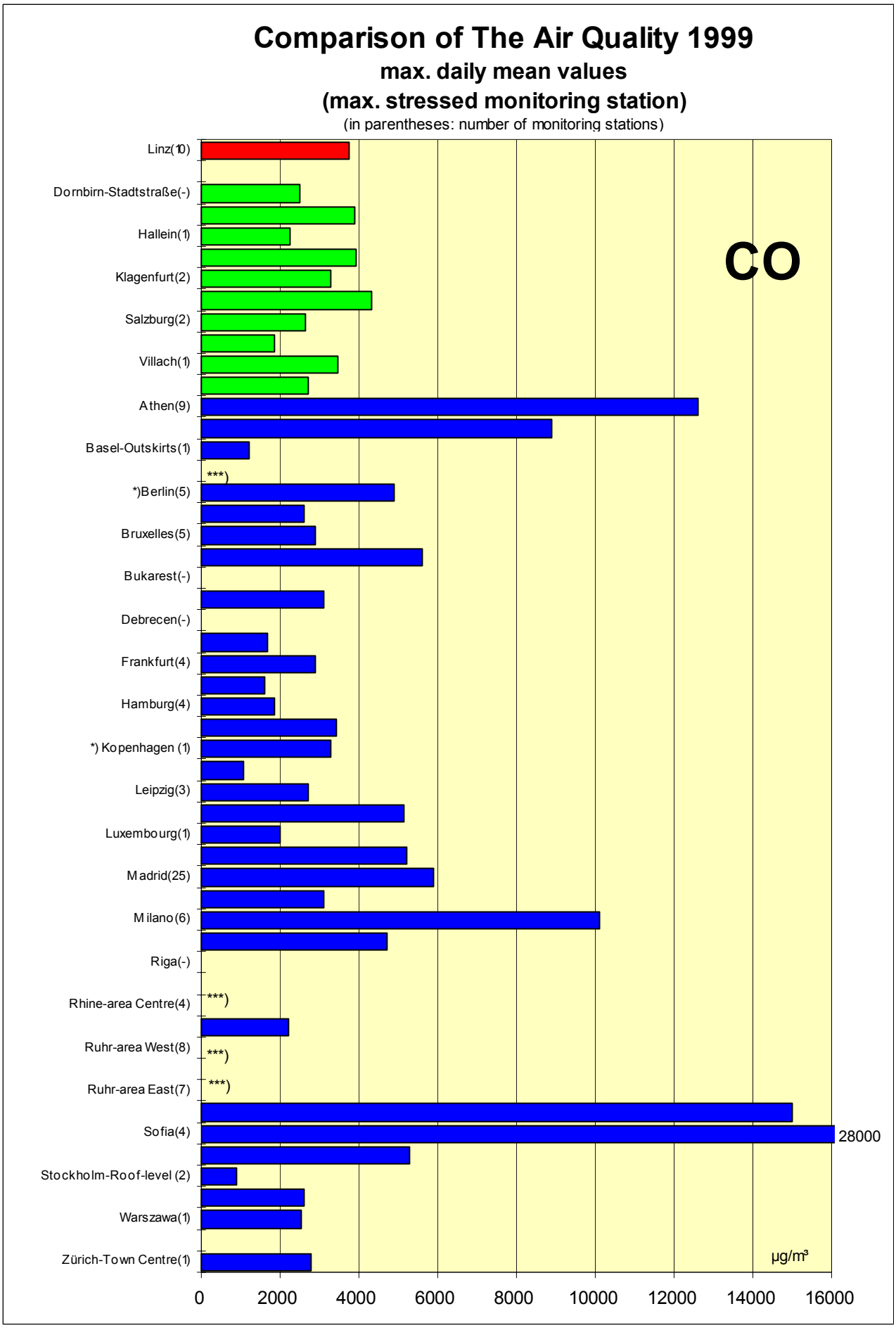
Max. Daily Mean Values

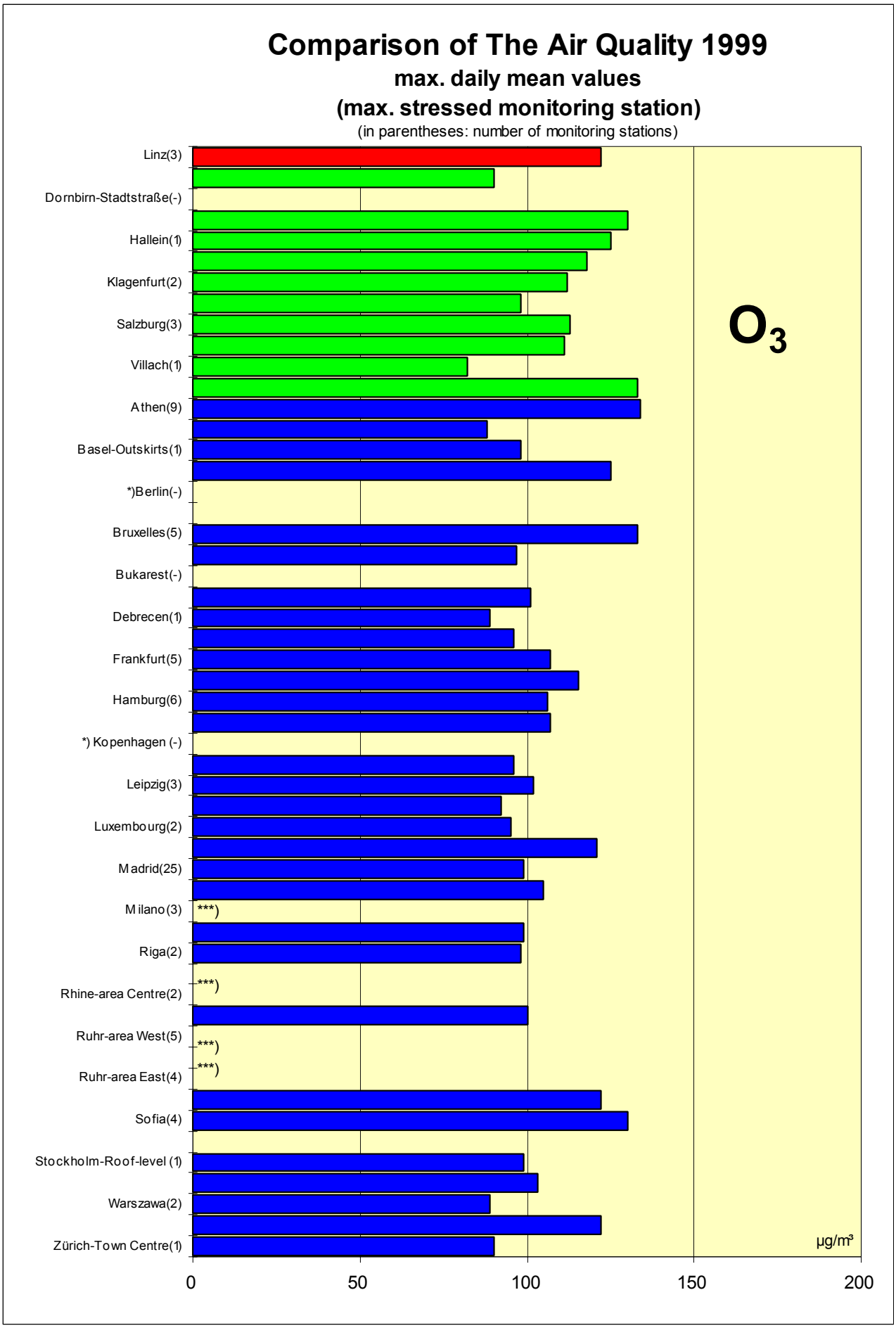

Comparison of The Air Quality 1999
max. daily mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
SO2
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(3)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(9)
Basel-Outskirts(1)
***)
*)Berlin(3)
Bruxelles(7)
Bukarest(5)
Debrecen(10)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
***)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(5)
Riga(2)
Rhine-area Centre(4)
***)
Ruhr-area West(8)
***)
Ruhr-area East(9)
***)
Sofia(10)
Stockholm-Roof-level (-)
Warszawa(16)
Zürich-Town Centre(1)
µg/m³
0
50
100
150
200
250
300
350


Comparison of The Air Quality 1999
max. daily mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
particulate matter
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(1)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(-)
Basel-Outskirts(1)
*)Berlin
***)
Bruxelles(4)
Bukarest(5)
Debrecen(2)
Frankfurt(5)
Hamburg(6)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(1)
Madrid(24)
Milano(1)
Riga(-)
Rhine-area Centre(5)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(8)
1125
Stockholm-Roof-level (-)
Warszawa(4)
***)
Zürich-Town Centre(1)
µg/m3
0
100
200
300
400
500
600


Comparison of The Air Quality 1999
max. daily mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(-)
Klagenfurt(2)
Salzburg(-)
Villach(1)
Athen(8)
Basel-Outskirts(1)
*)Berlin(5)
Bruxelles(7)
Bukarest(-)
Debrecen(1)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
Riga(-)
Rhine-area Centre(4)
Ruhr-area West(9)
Ruhr-area East(9)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(-)
Zürich-Town Centre(1)
***)
µg/m³
0
100
200
300
400
500
600


Comparison of The Air Quality 1999
max. daily mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO2
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(1)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(8)
Basel-Outskirts(1)
***)
*)Berlin(5)
Bruxelles(7)
Bukarest(5)
Debrecen(10)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
***)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
***)
Riga(2)
Rhine-area Centre(4)
***)
Ruhr-area West(9)
***)
Ruhr-area East(9)
***)
Sofia(10)
Stockholm-Roof-level (2)
Warszawa(14)
Zürich-Town Centre(1)
µg/m³
0
50
100
150
200
250


Comparison of The Air Quality 1999
max. daily mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
CO
Linz(10)
Dornbirn-Stadtstraße(-)
Hallein(1)
Klagenfurt(2)
Salzburg(2)
Villach(1)
Athen(9)
Basel-Outskirts(1)
***)
*)Berlin(5)
Bruxelles(5)
Bukarest(-)
Debrecen(-)
Frankfurt(4)
Hamburg(4)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(1)
Madrid(25)
Milano(6)
Riga(-)
***)
Rhine-area Centre(4)
Ruhr-area West(8)
***)
Ruhr-area East(7)
***)
Sofia(4)
28000
Stockholm-Roof-level (2)
Warszawa(1)
Zürich-Town Centre(1)
µg/m³
0
2000
4000
6000
8000
10000
12000
14000
16000


Comparison of The Air Quality 1999
max. daily mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
O3
µg/m³
Linz(3)
Dornbirn-Stadtstraße(-)
Hallein(1)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(9)
Basel-Outskirts(1)
*)Berlin(-)
Bruxelles(5)
Bukarest(-)
Debrecen(1)
Frankfurt(5)
Hamburg(6)
*) Kopenhagen (-)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(3)
***)
Riga(2)
Rhine-area Centre(2)
***)
Ruhr-area West(5)
***)
Ruhr-area East(4)
***)
Sofia(4)
Stockholm-Roof-level (1)
Warszawa(2)
Zürich-Town Centre(1)
0
50
100
150
200

Luftgütevergleich

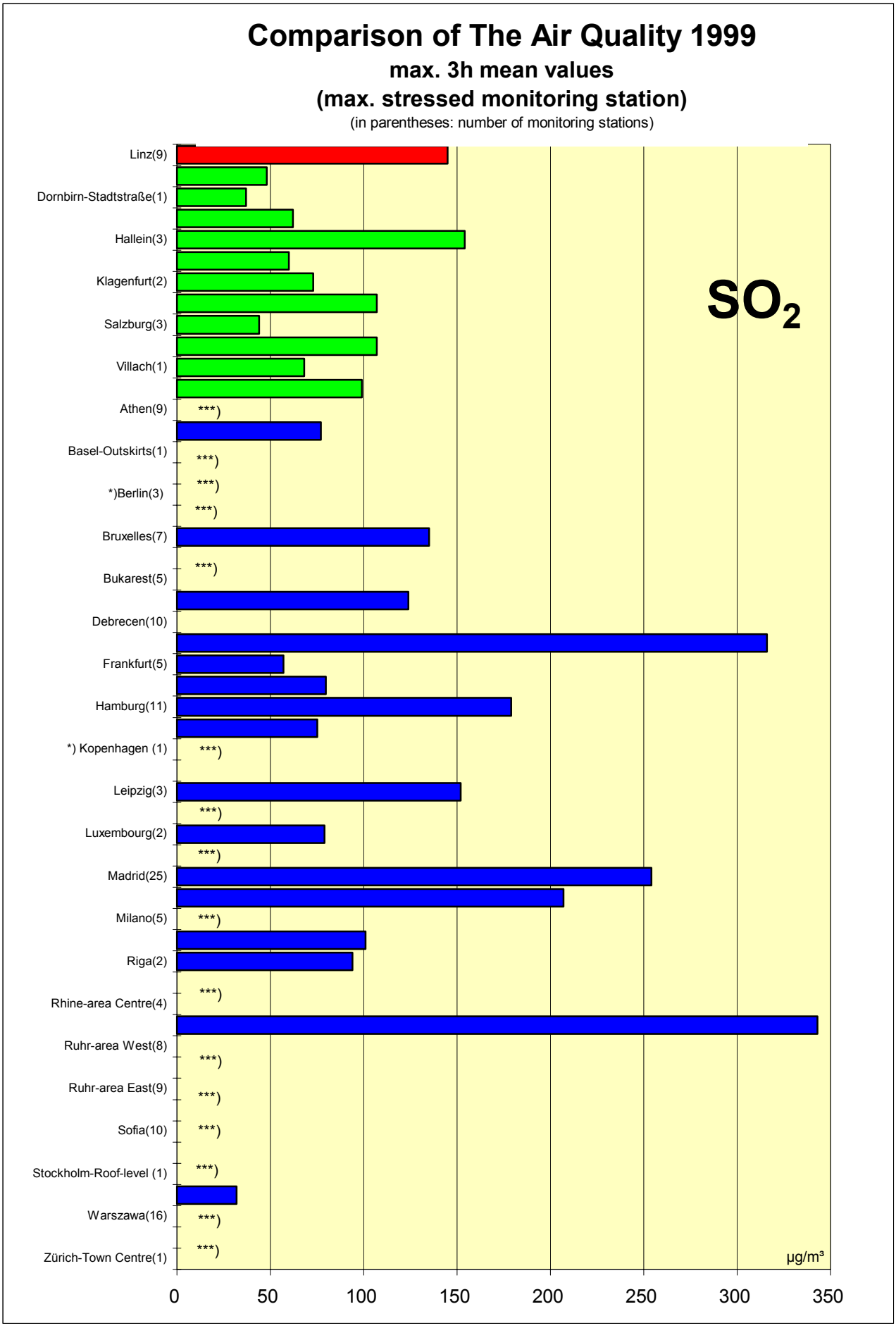
1999

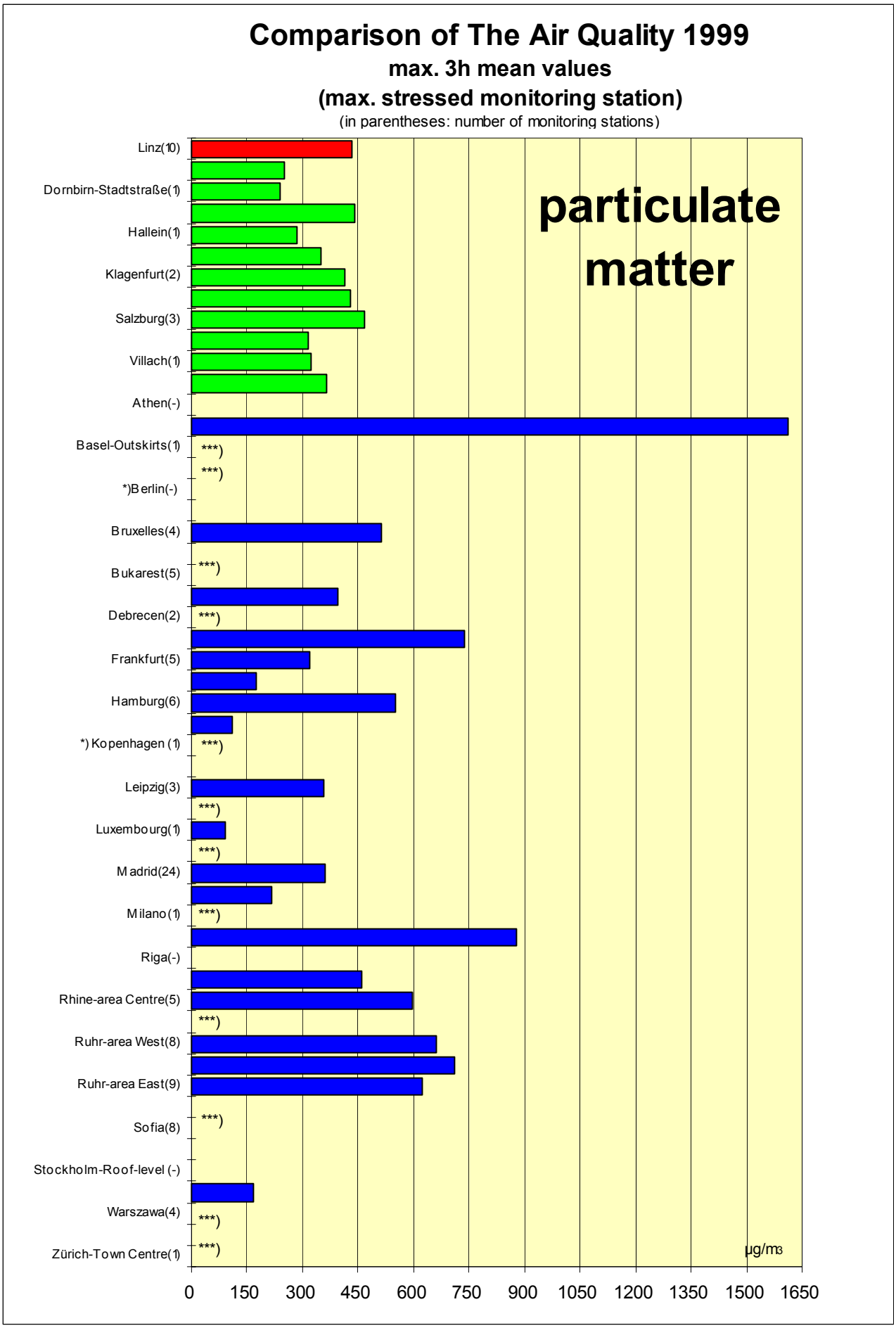
max. 3h-Mittelwerte

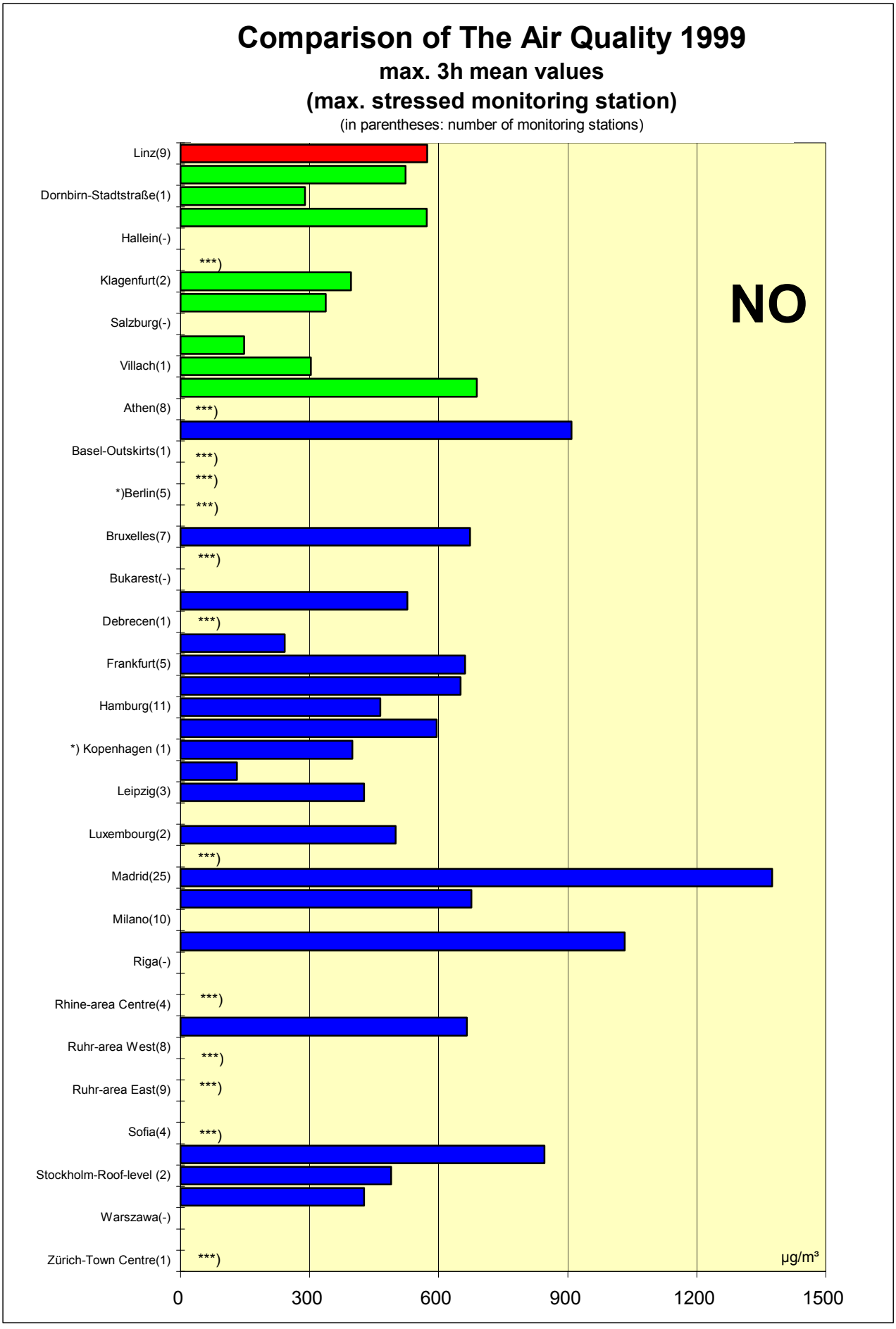
Comparison of The Air Quality

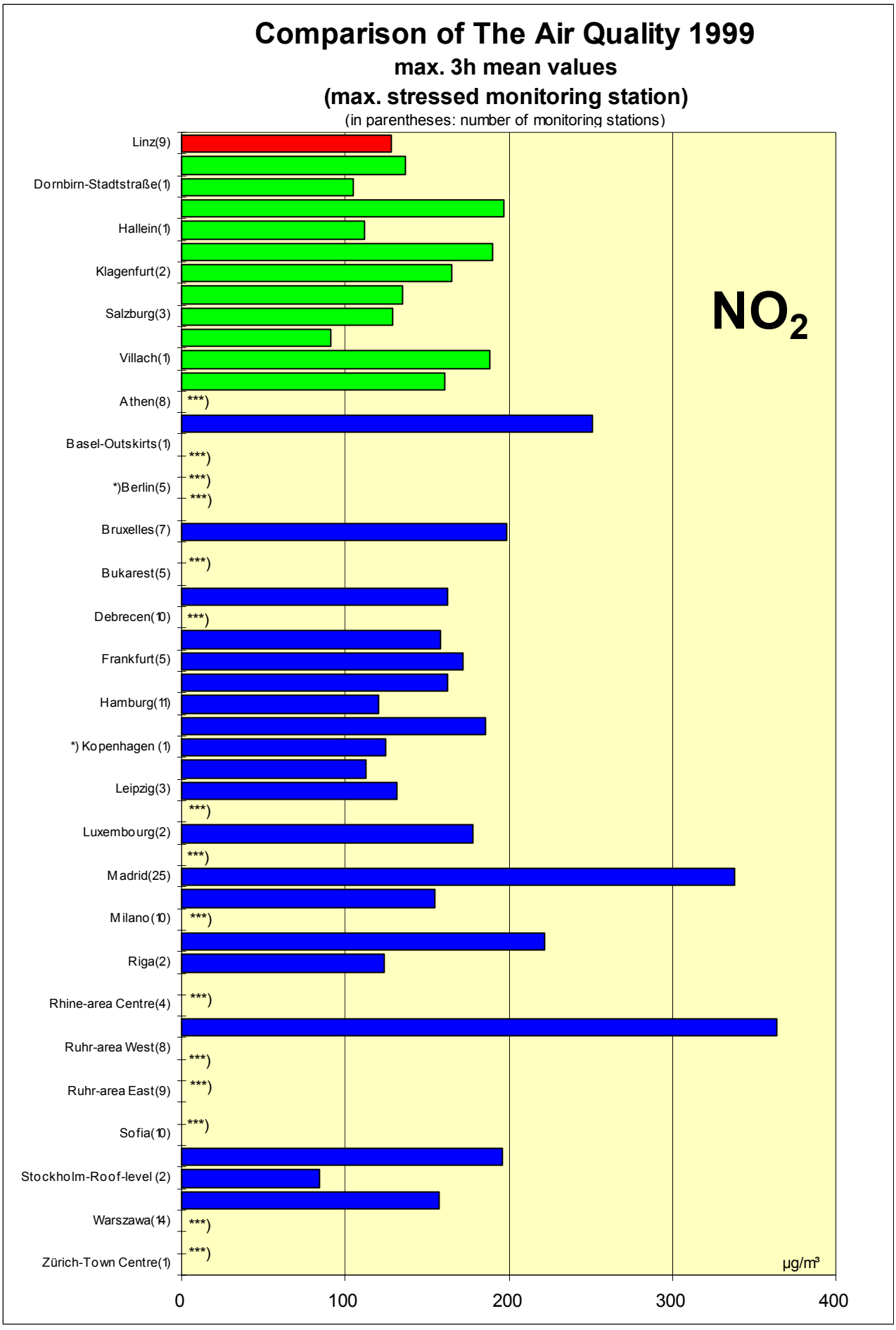
1999

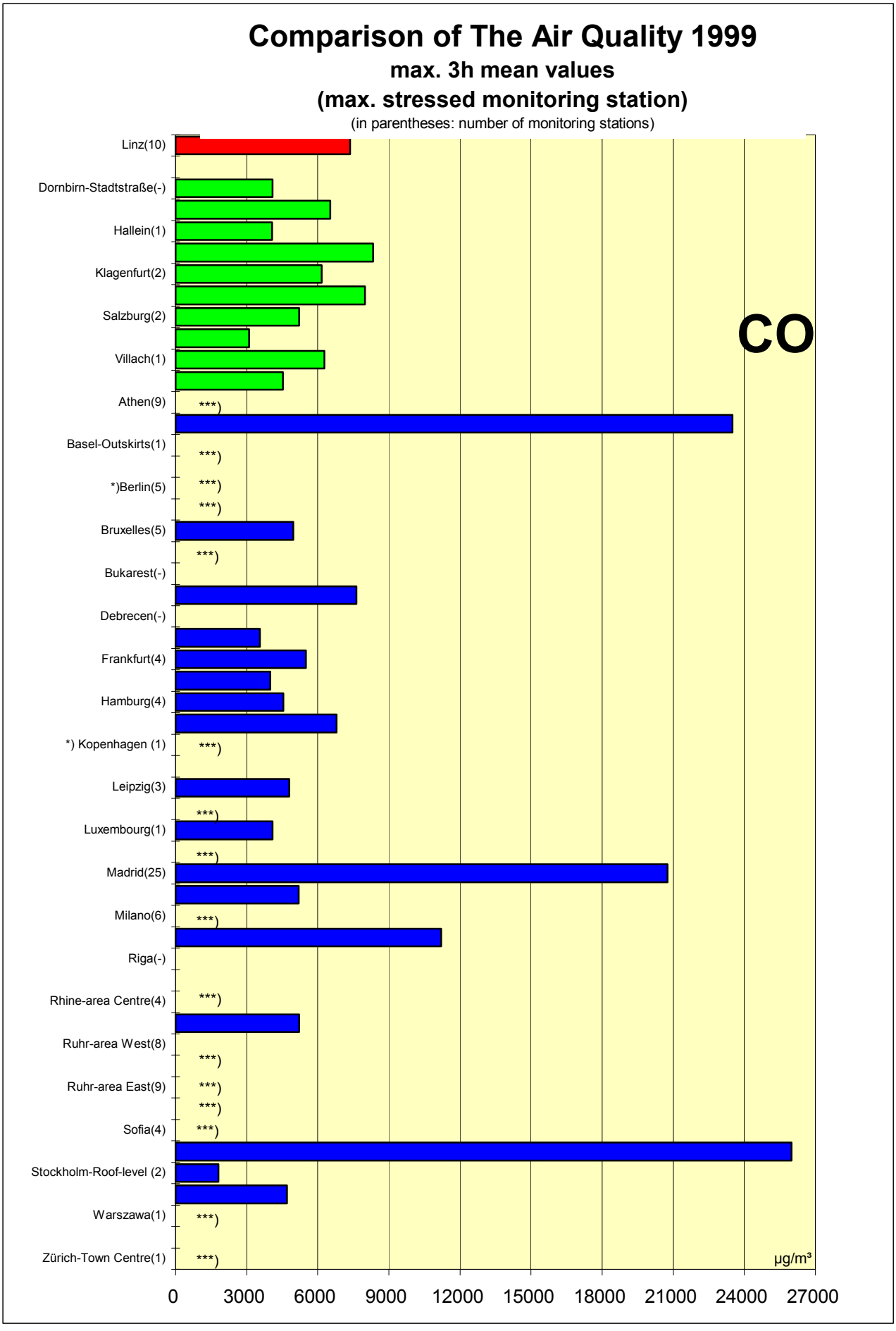
Max. 3h- Mean Values

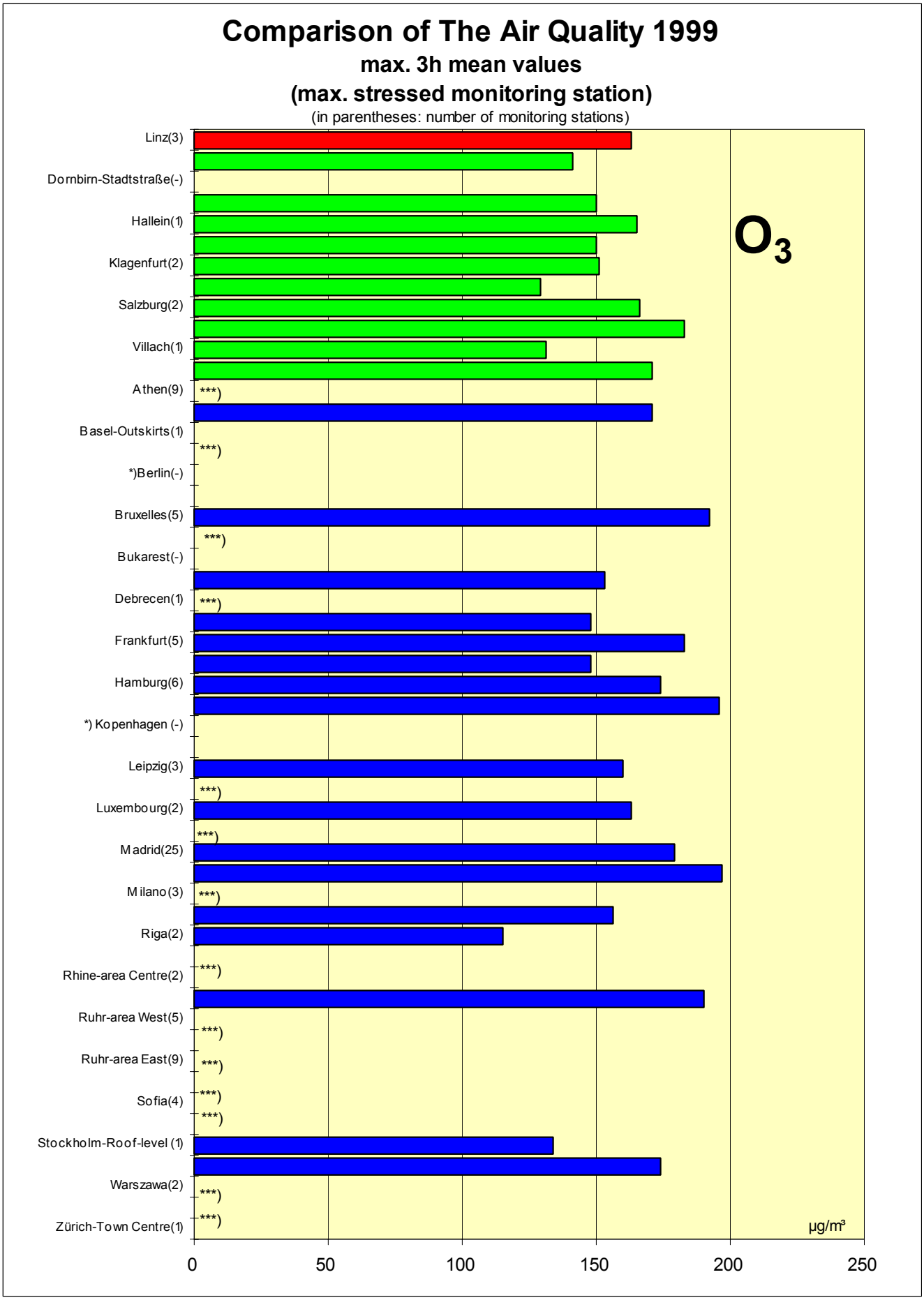

Comparison of The Air Quality 1999
max. 3h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
SO2
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(3)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(9)
Basel-Outskirts(1)
*)Berlin(3)
Bruxelles(7)
Bukarest(5)
Debrecen(10)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(5)
Riga(2)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(10)
Stockholm-Roof-level (1)
Warszawa(16)
Zürich-Town Centre(1)
***)
µg/m³
0
50
100
150
200
250
300
350


Comparison of The Air Quality 1999
max. 3h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
particulate matter
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(1)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(-)
Basel-Outskirts(1)
*)Berlin(-)
Bruxelles(4)
Bukarest(5)
Debrecen(2)
Frankfurt(5)
Hamburg(6)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(1)
Madrid(24)
Milano(1)
Riga(-)
Rhine-area Centre(5)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(8)
Stockholm-Roof-level (-)
Warszawa(4)
Zürich-Town Centre(1)
***)
µg/m3
0
150
300
450
600
750
900
1050
1200
1350
1500
1650


Comparison of The Air Quality 1999
max. 3h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(-)
Klagenfurt(2)
Salzburg(-)
Villach(1)
Athen(8)
Basel-Outskirts(1)
*)Berlin(5)
Bruxelles(7)
Bukarest(-)
Debrecen(1)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
Riga(-)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(-)
Zürich-Town Centre(1)
***)
µg/m³
0
300
600
900
1200
1500


Comparison of The Air Quality 1999
max. 3h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO2
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(1)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(8)
Basel-Outskirts(1)
*)Berlin(5)
Bruxelles(7)
Bukarest(5)
Debrecen(10)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
Riga(2)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(10)
Stockholm-Roof-level (2)
Warszawa(14)
Zürich-Town Centre(1)
***)
µg/m³
0
100
200
300
400


Comparison of The Air Quality 1999
max. 3h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
CO
Linz(10)
Dornbirn-Stadtstraße(-)
Hallein(1)
Klagenfurt(2)
Salzburg(2)
Villach(1)
Athen(9)
Basel-Outskirts(1)
*)Berlin(5)
Bruxelles(5)
Bukarest(-)
Debrecen(-)
Frankfurt(4)
Hamburg(4)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(1)
Madrid(25)
Milano(6)
Riga(-)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(1)
Zürich-Town Centre(1)
***)
µg/m³
0
3000
6000
9000
12000
15000
18000
21000
24000
27000


Comparison of The Air Quality 1999
max. 3h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
O3
µg/m³
Linz(3)
Dornbirn-Stadtstraße(-)
Hallein(1)
Klagenfurt(2)
Salzburg(2)
Villach(1)
Athen(9)
Basel-Outskirts(1)
*)Berlin(-)
Bruxelles(5)
Bukarest(-)
Debrecen(1)
Frankfurt(5)
Hamburg(6)
*) Kopenhagen (-)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(3)
Riga(2)
Rhine-area Centre(2)
Ruhr-area West(5)
Ruhr-area East(9)
Sofia(4)
Stockholm-Roof-level (1)
Warszawa(2)
Zürich-Town Centre(1)
***)
0
50
100
150
200
250

Luftgütevergleich

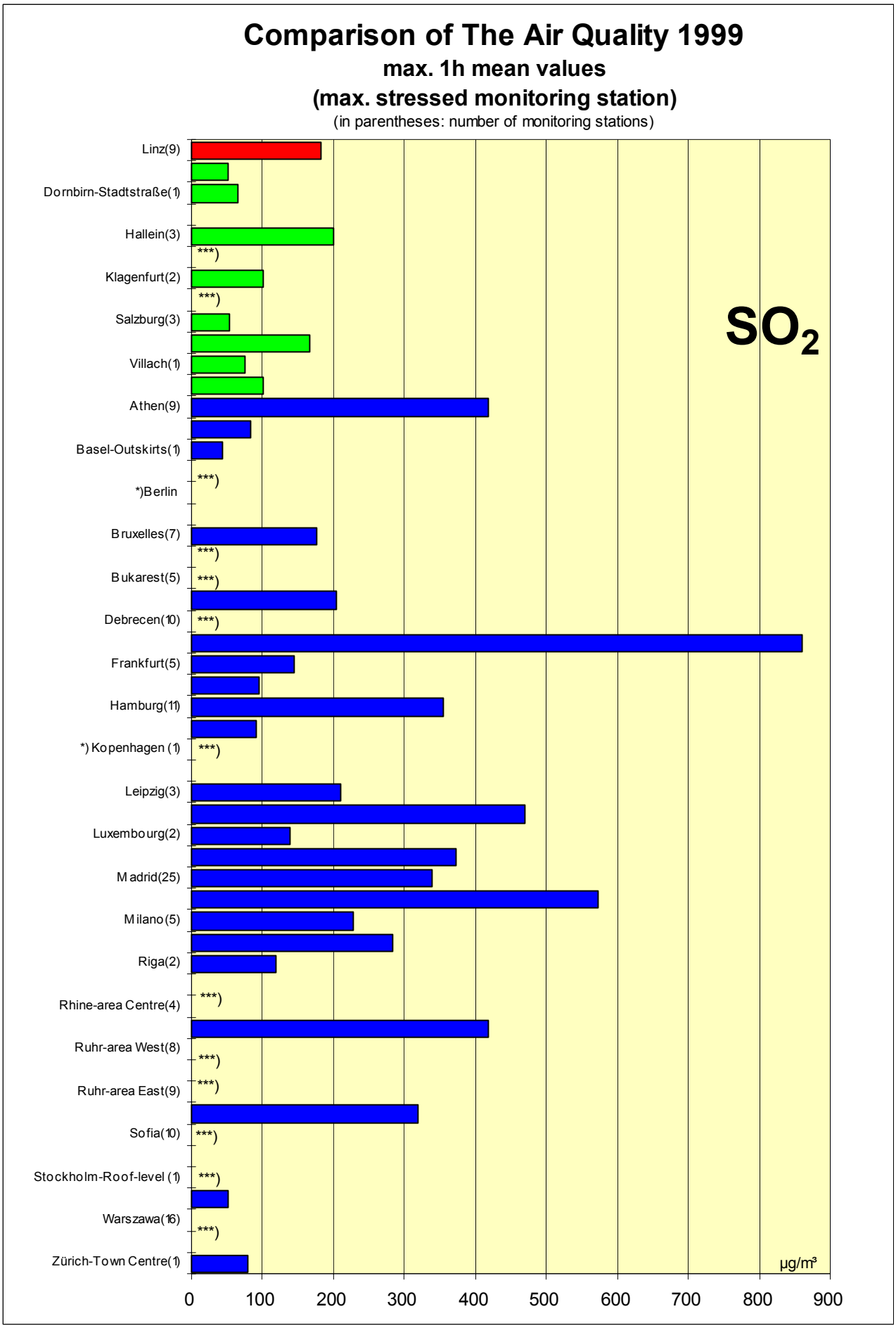
1999

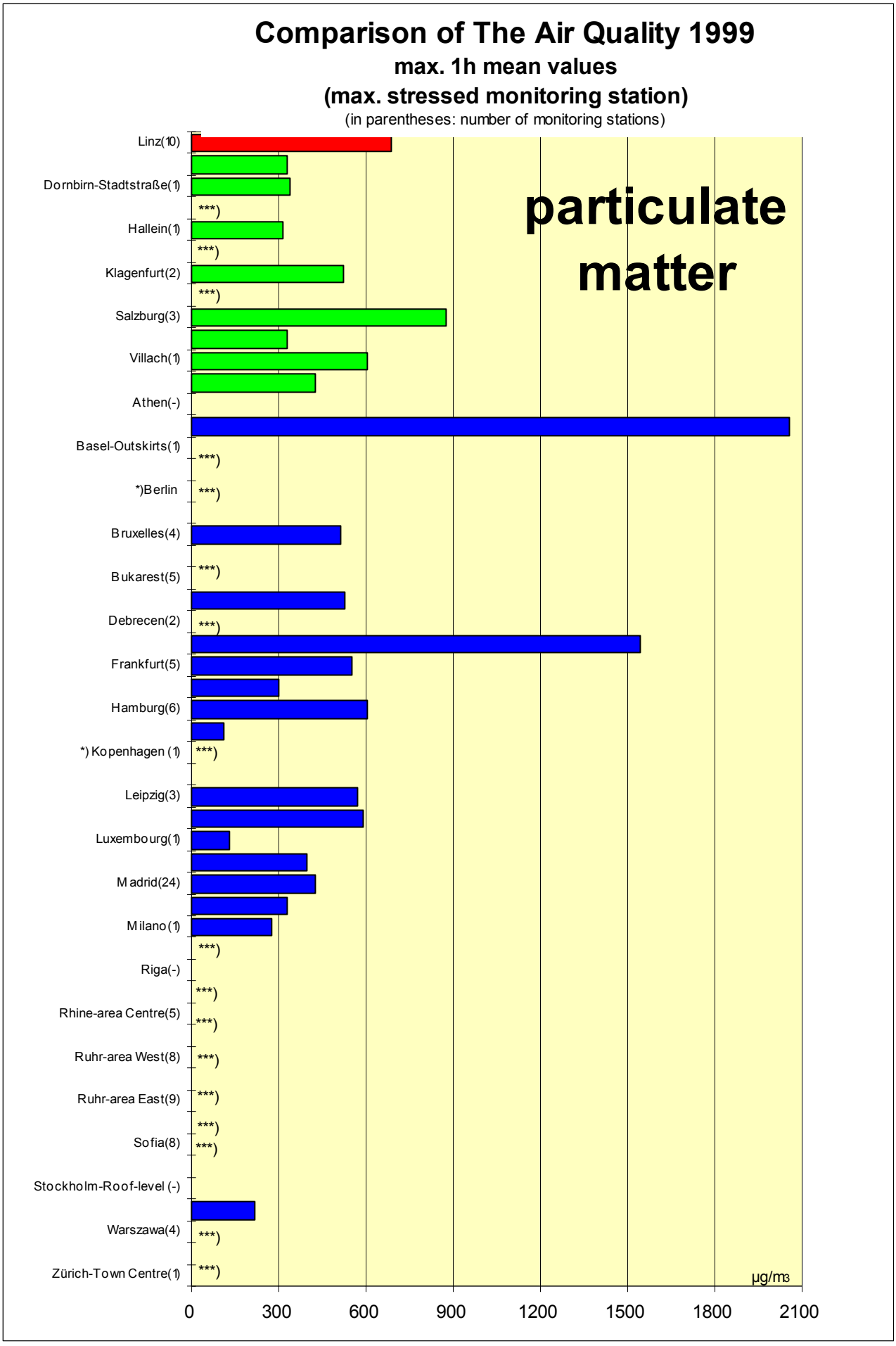
max. 1h-Mittelwerte

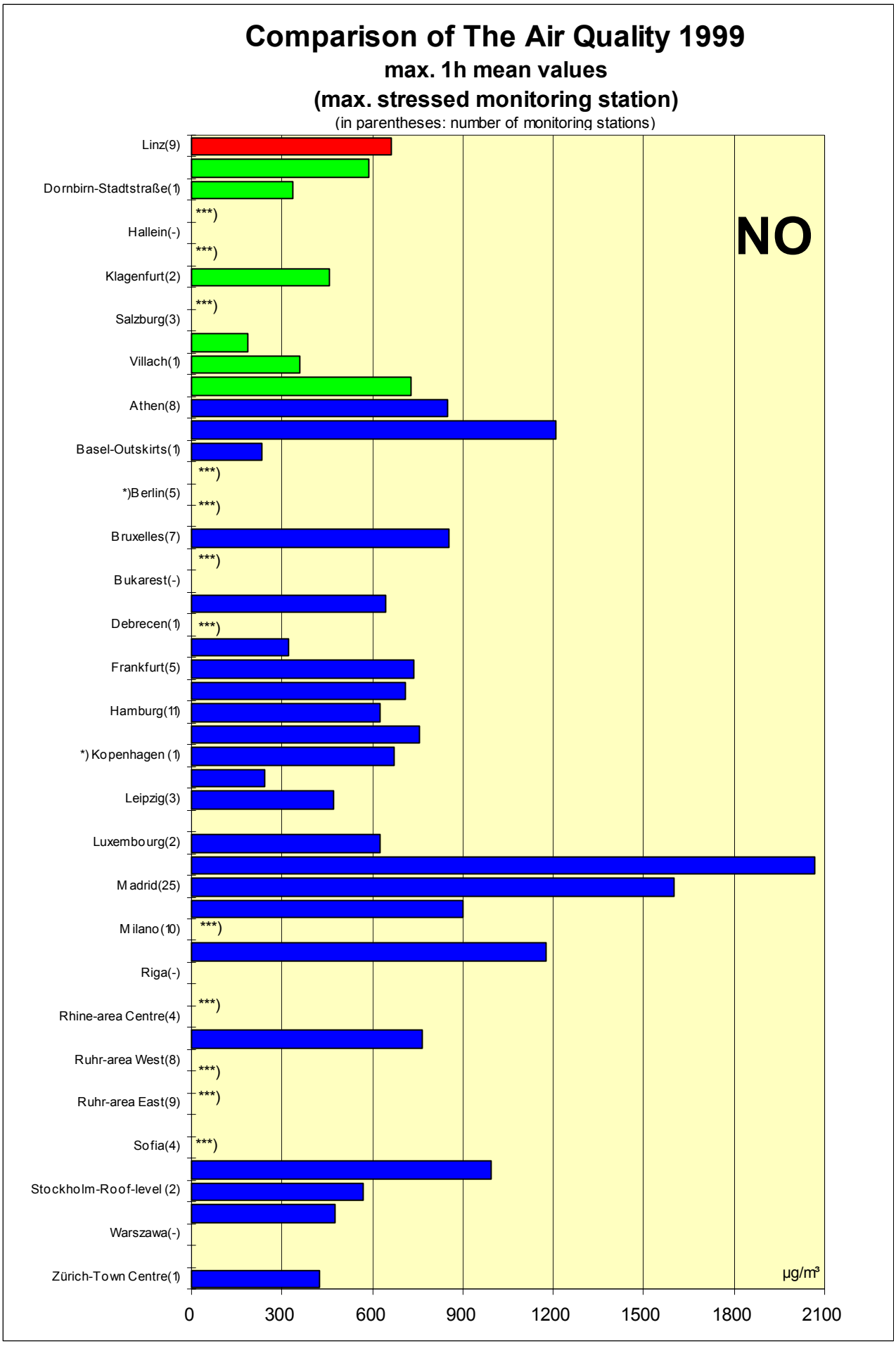
Comparison of The Air Quality

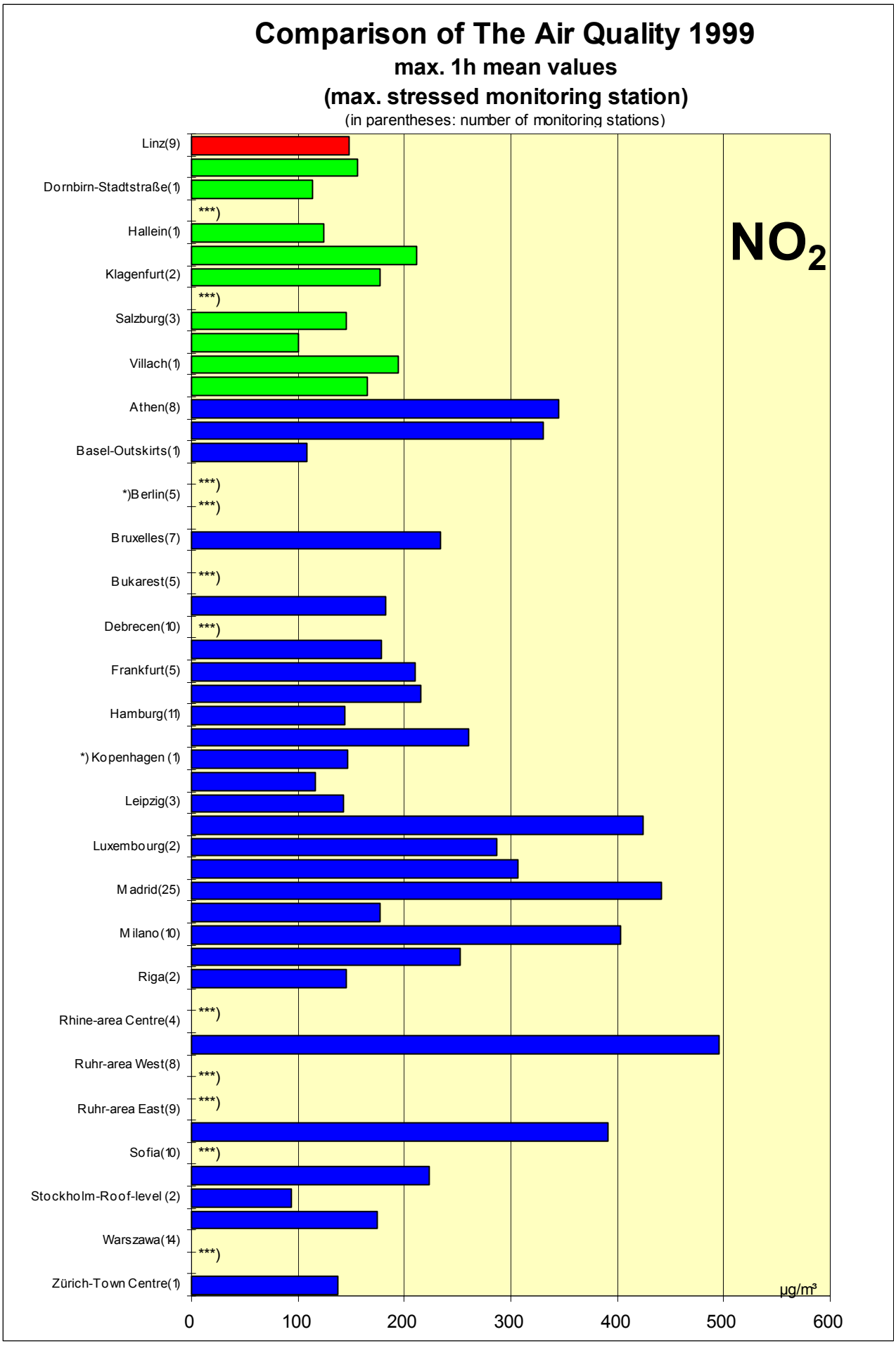
1999

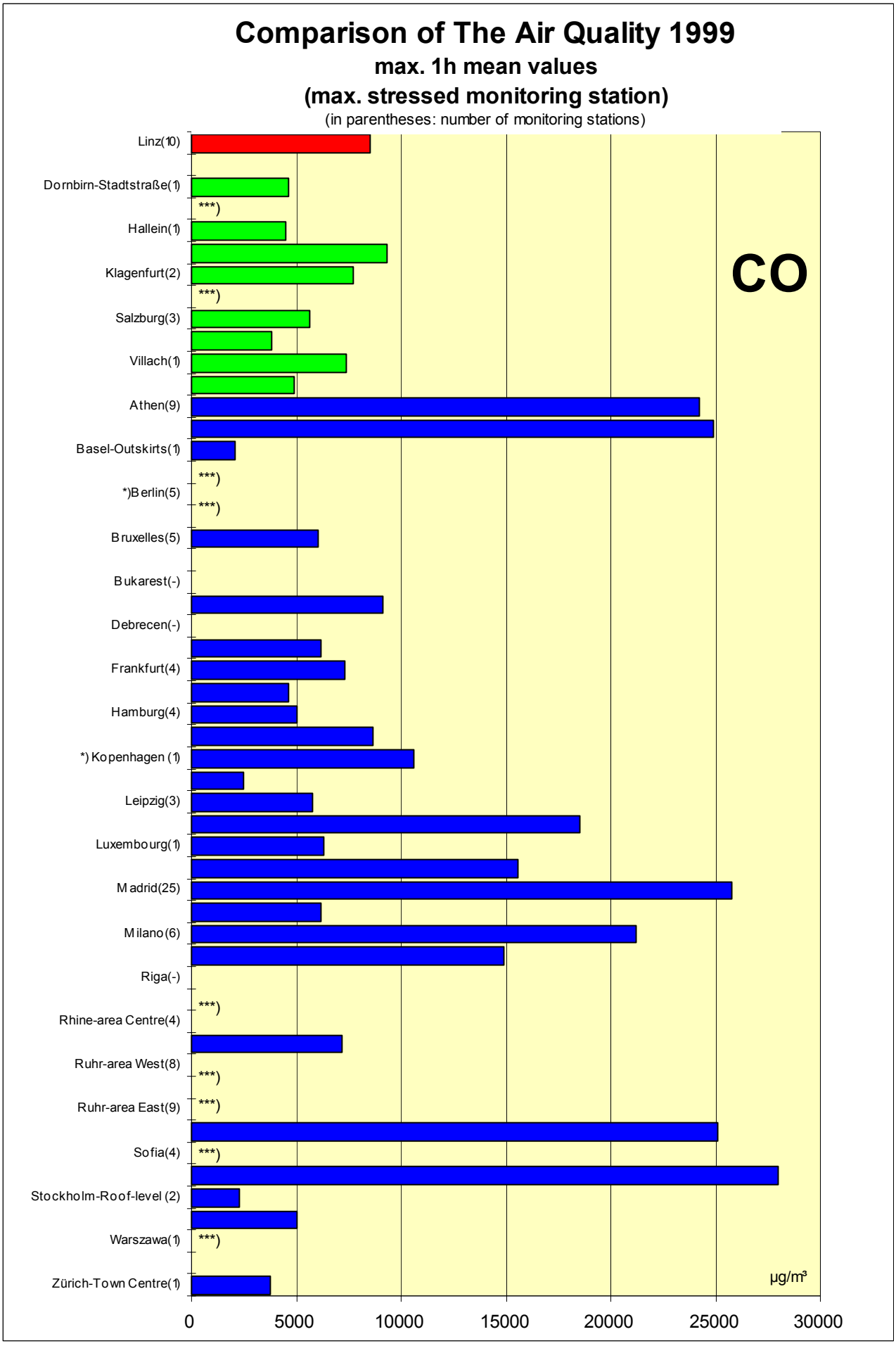
Max. 1h-Mean Values

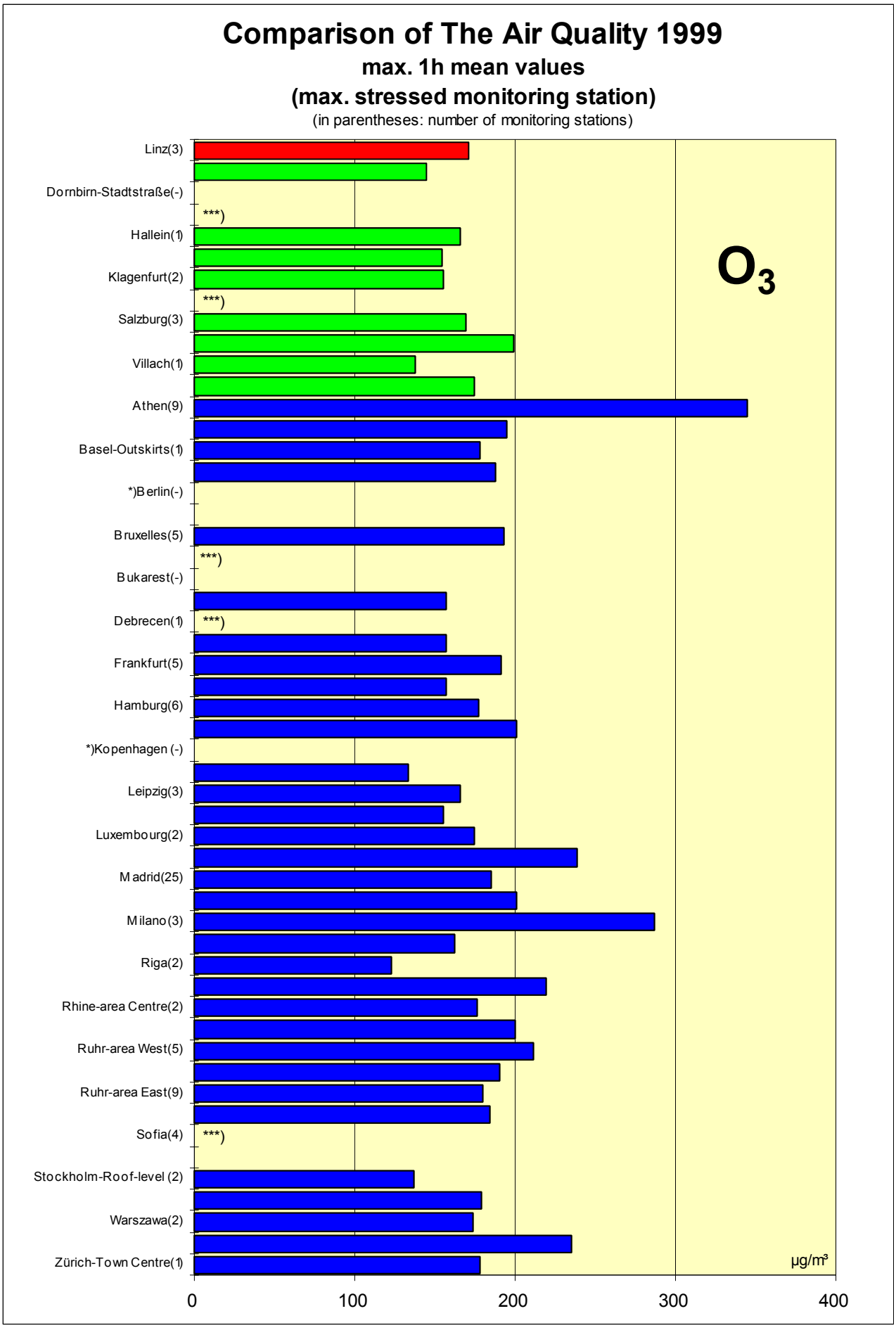

Comparison of The Air Quality 1999
max. 1h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
SO2
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(3)
***)
Klagenfurt(2)
***)
Salzburg(3)
Villach(1)
Athen(9)
Basel-Outskirts(1)
*)Berlin
***)
Bruxelles(7)
***)
Bukarest(5)
***)
Debrecen(10)
***)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
***)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(5)
Riga(2)
Rhine-area Centre(4)
***)
Ruhr-area West(8)
***)
Ruhr-area East(9)
***)
Sofia(10)
***)
Stockholm-Roof-level (1)
***)
Warszawa(16)
***)
Zürich-Town Centre(1)
µg/m³
0
100
200
300
400
500
600
700
800
900


Comparison of The Air Quality 1999
max. 1h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
particulate matter
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(1)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(-)
Basel-Outskirts(1)
*)Berlin
Bruxelles(4)
Bukarest(5)
Debrecen(2)
Frankfurt(5)
Hamburg(6)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(1)
Madrid(24)
Milano(1)
Riga(-)
Rhine-area Centre(5)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(8)
Stockholm-Roof-level (-)
Warszawa(4)
Zürich-Town Centre(1)
***)
µg/m3
0
300
600
900
1200
1500
1800
2100


Comparison of The Air Quality 1999
max. 1h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO
Linz(9)
Dornbirn-Stadtstraße(1)
Hallein(-)
Klagenfurt(2)
Salzburg(3)
Villach(1)
Athen(8)
Basel-Outskirts(1)
*)Berlin(5)
Bruxelles(7)
Bukarest(-)
Debrecen(1)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
Riga(-)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(9)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(-)
Zürich-Town Centre(1)
***)
µg/m³
0
300
600
900
1200
1500
1800
2100


Comparison of The Air Quality 1999
max. 1h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO2
Linz(9)
Dornbirn-Stadtstraße(1)
***)
Hallein(1)
Klagenfurt(2)
***)
Salzburg(3)
Villach(1)
Athen(8)
Basel-Outskirts(1)
*)Berlin(5)
***)
***)
Bruxelles(7)
Bukarest(5)
***)
Debrecen(10)
***)
Frankfurt(5)
Hamburg(11)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(10)
Riga(2)
Rhine-area Centre(4)
***)
Ruhr-area West(8)
***)
Ruhr-area East(9)
***)
Sofia(10)
***)
Stockholm-Roof-level (2)
Warszawa(14)
***)
Zürich-Town Centre(1)
µg/m³
0
100
200
300
400
500
600


Comparison of The Air Quality 1999
max. 1h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
CO
Linz(10)
Dornbirn-Stadtstraße(1)
***)
Hallein(1)
Klagenfurt(2)
***)
Salzburg(3)
Villach(1)
Athen(9)
Basel-Outskirts(1)
***)
*)Berlin(5)
***)
Bruxelles(5)
Bukarest(-)
Debrecen(-)
Frankfurt(4)
Hamburg(4)
*) Kopenhagen (1)
Leipzig(3)
Luxembourg(1)
Madrid(25)
Milano(6)
Riga(-)
***)
Rhine-area Centre(4)
Ruhr-area West(8)
***)
Ruhr-area East(9)
***)
Sofia(4)
***)
Stockholm-Roof-level (2)
Warszawa(1)
***)
Zürich-Town Centre(1)
µg/m³
0
5000
10000
15000
20000
25000
30000


Comparison of The Air Quality 1999
max. 1h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
O3
Linz(3)
Dornbirn-Stadtstraße(-)
***)
Hallein(1)
Klagenfurt(2)
***)
Salzburg(3)
Villach(1)
Athen(9)
Basel-Outskirts(1)
*)Berlin(-)
Bruxelles(5)
***)
Bukarest(-)
Debrecen(1)
***)
Frankfurt(5)
Hamburg(6)
*)Kopenhagen (-)
Leipzig(3)
Luxembourg(2)
Madrid(25)
Milano(3)
Riga(2)
Rhine-area Centre(2)
Ruhr-area West(5)
Ruhr-area East(9)
Sofia(4)
***)
Stockholm-Roof-level (2)
Warszawa(2)
Zürich-Town Centre(1)
µg/m³
0
100
200
300
400

Luftgütevergleich

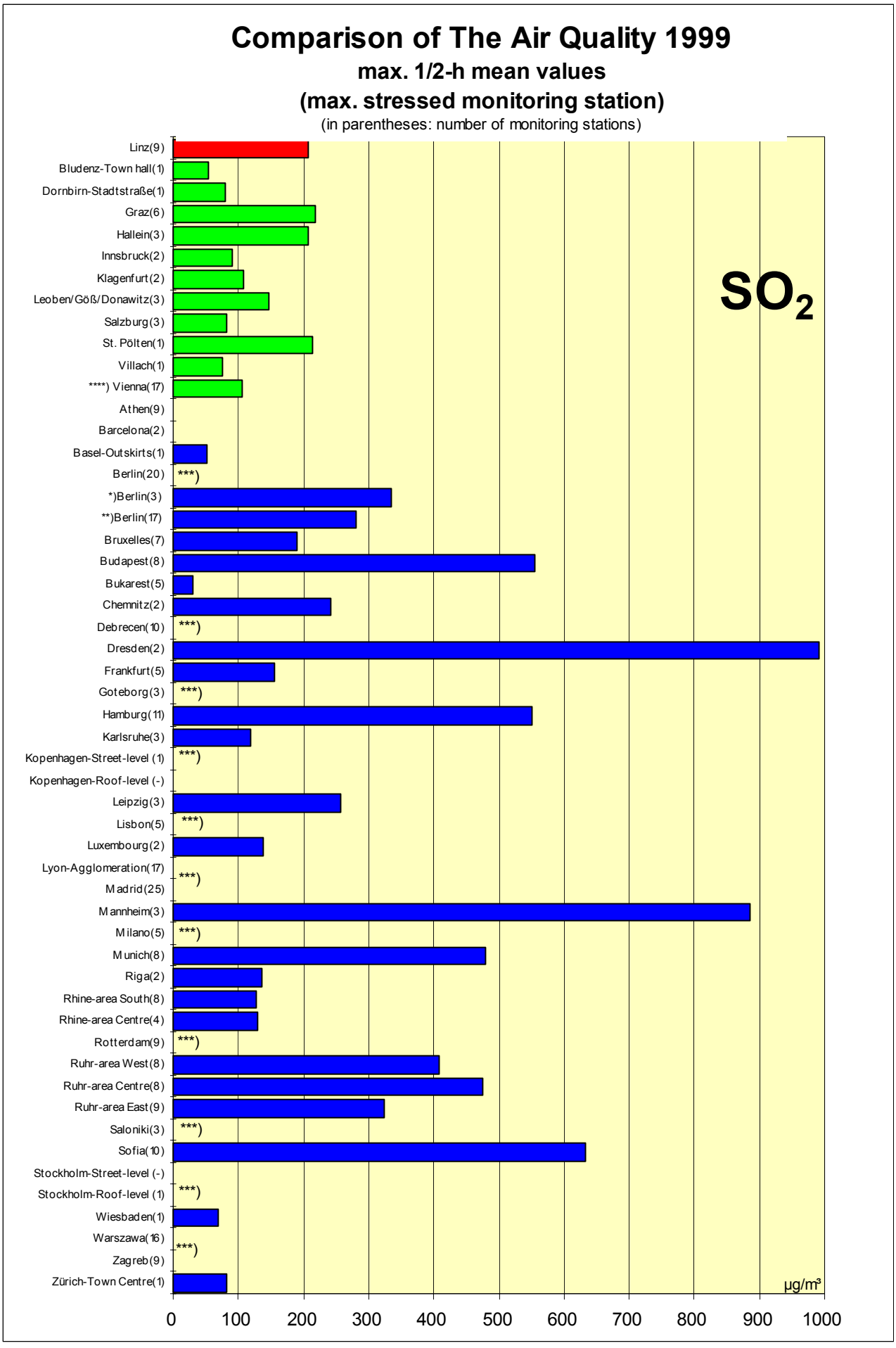
1999

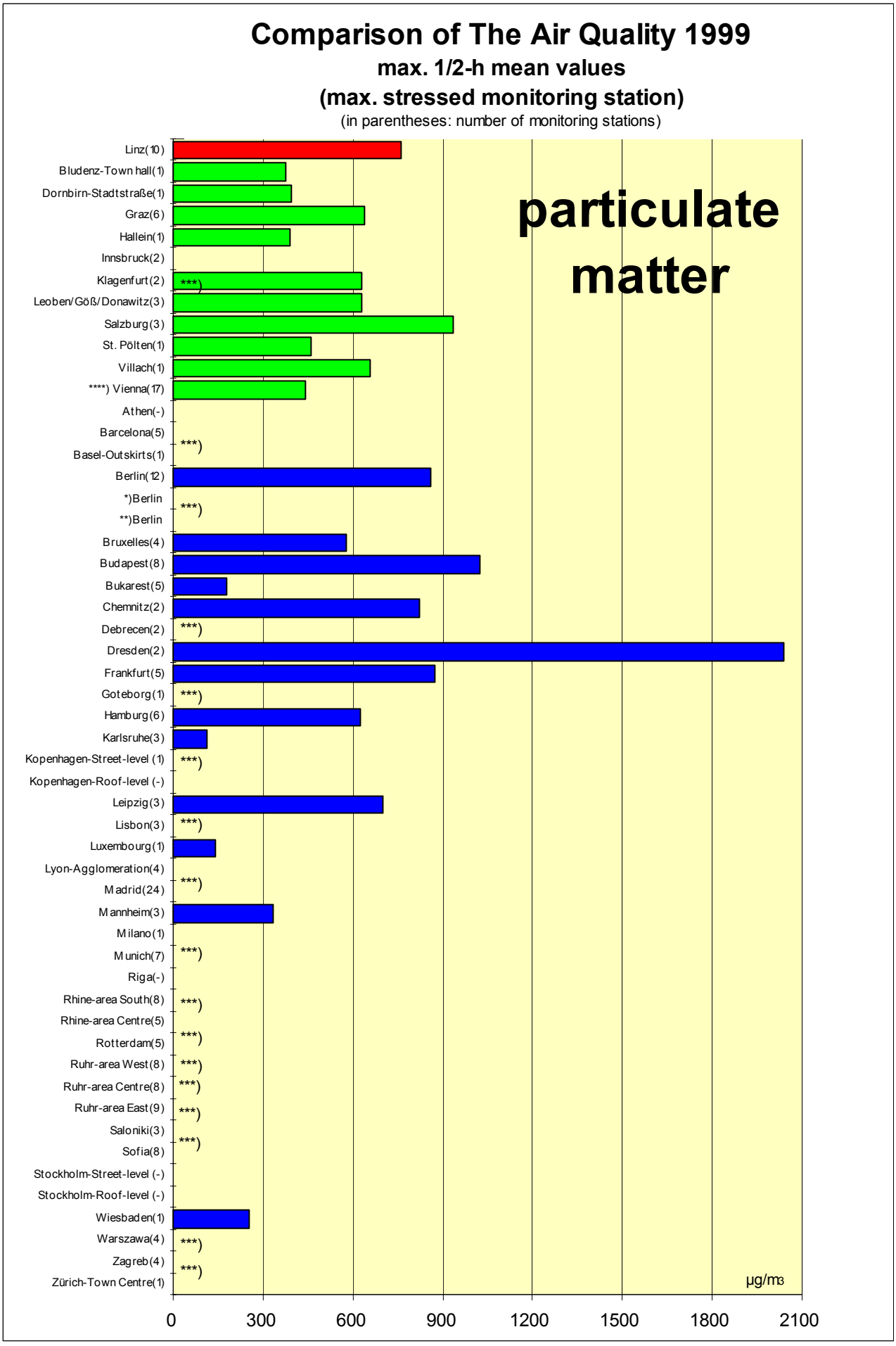
max. Halbstunden-Mittelwerte

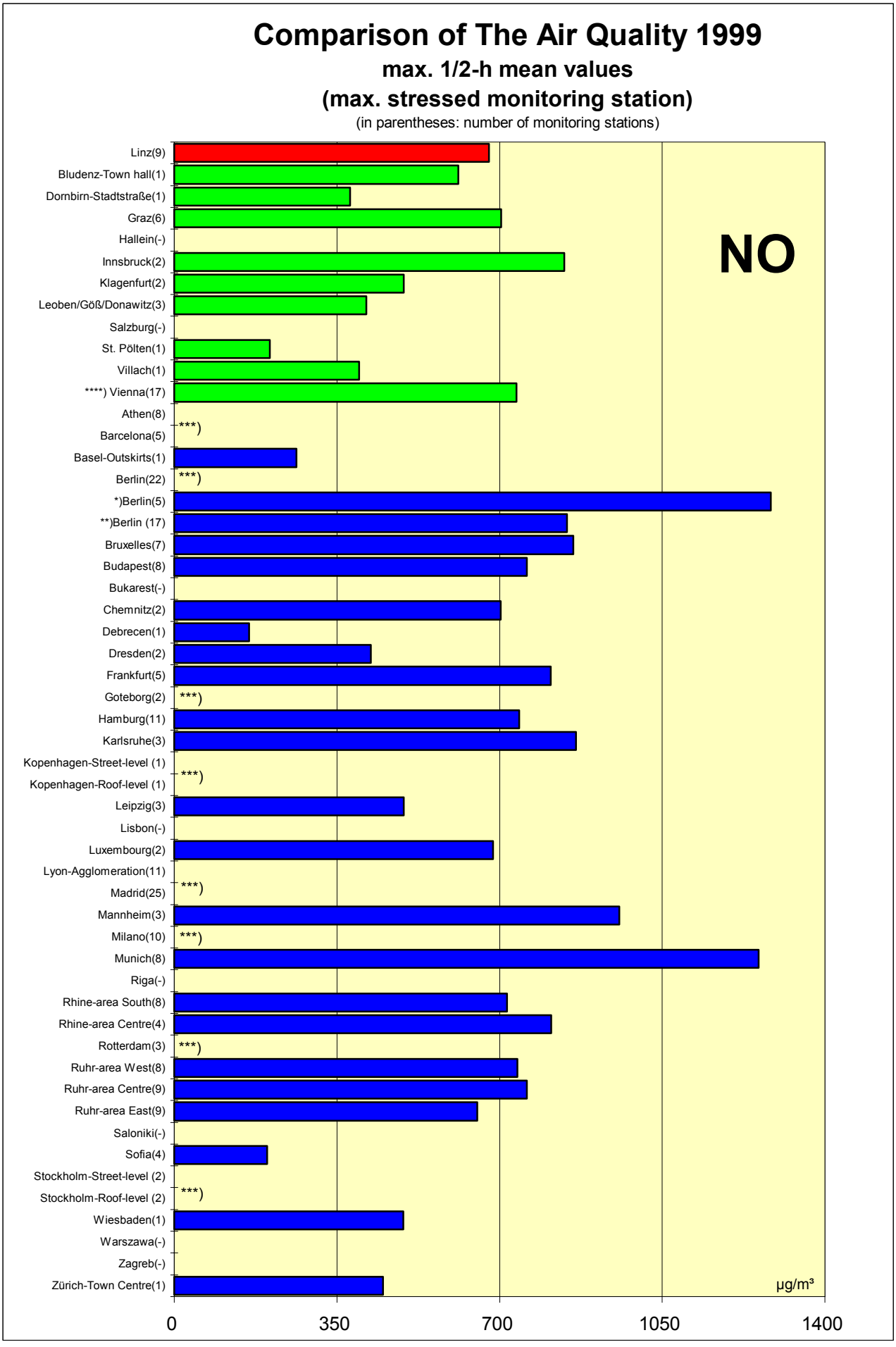
Comparison of The Air Quality

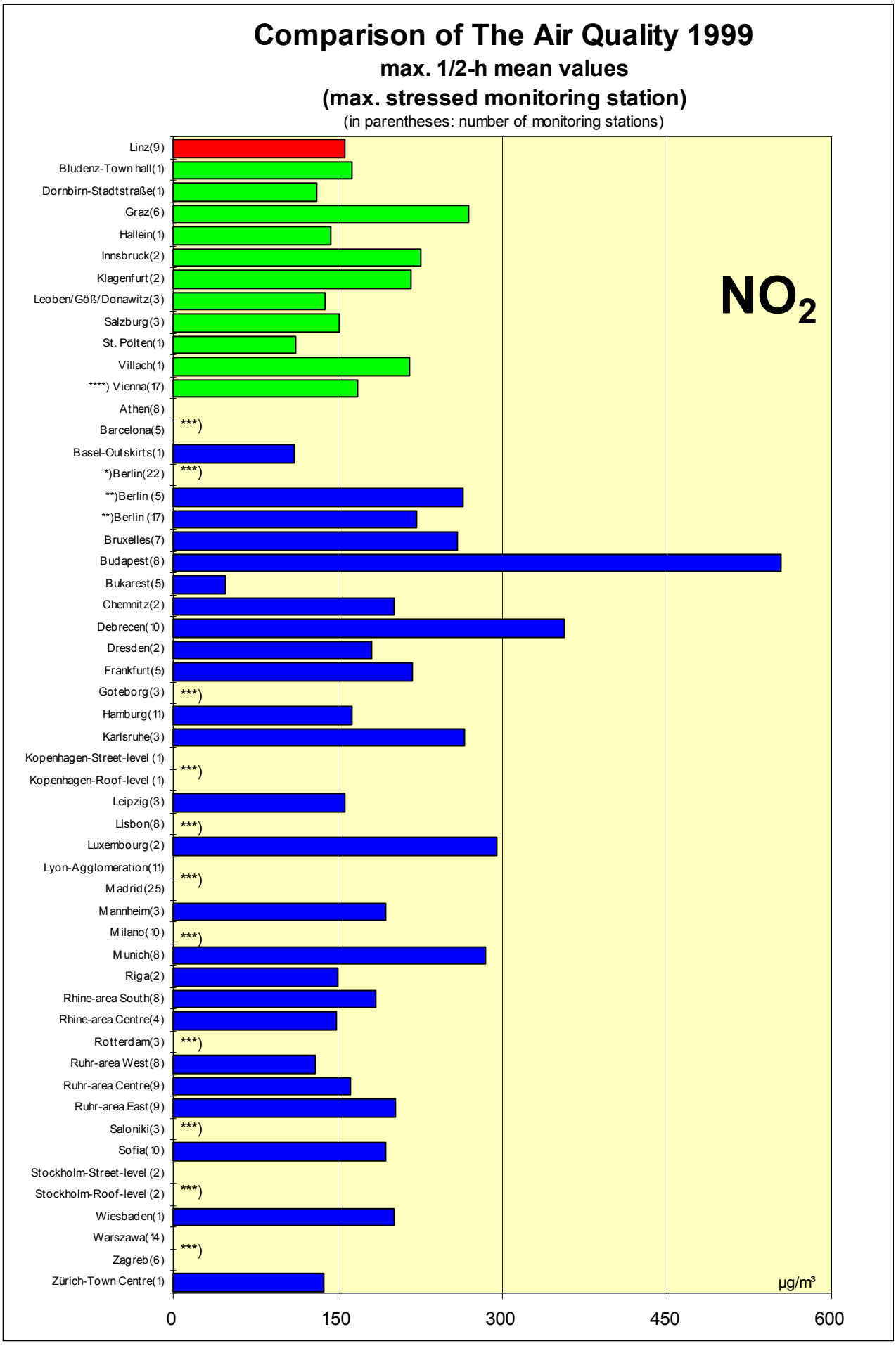
1999

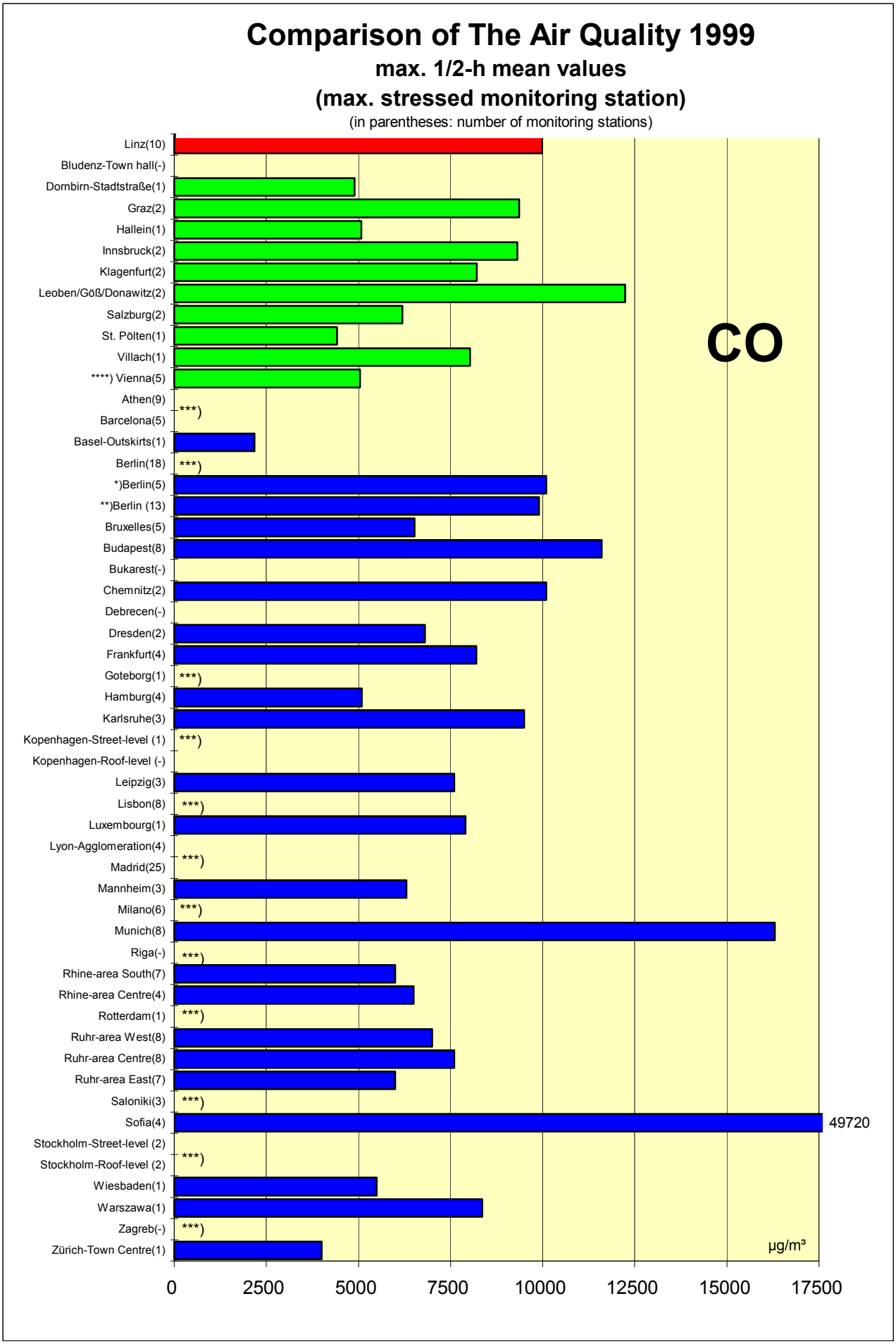
Max. 1/2h-Mean Values

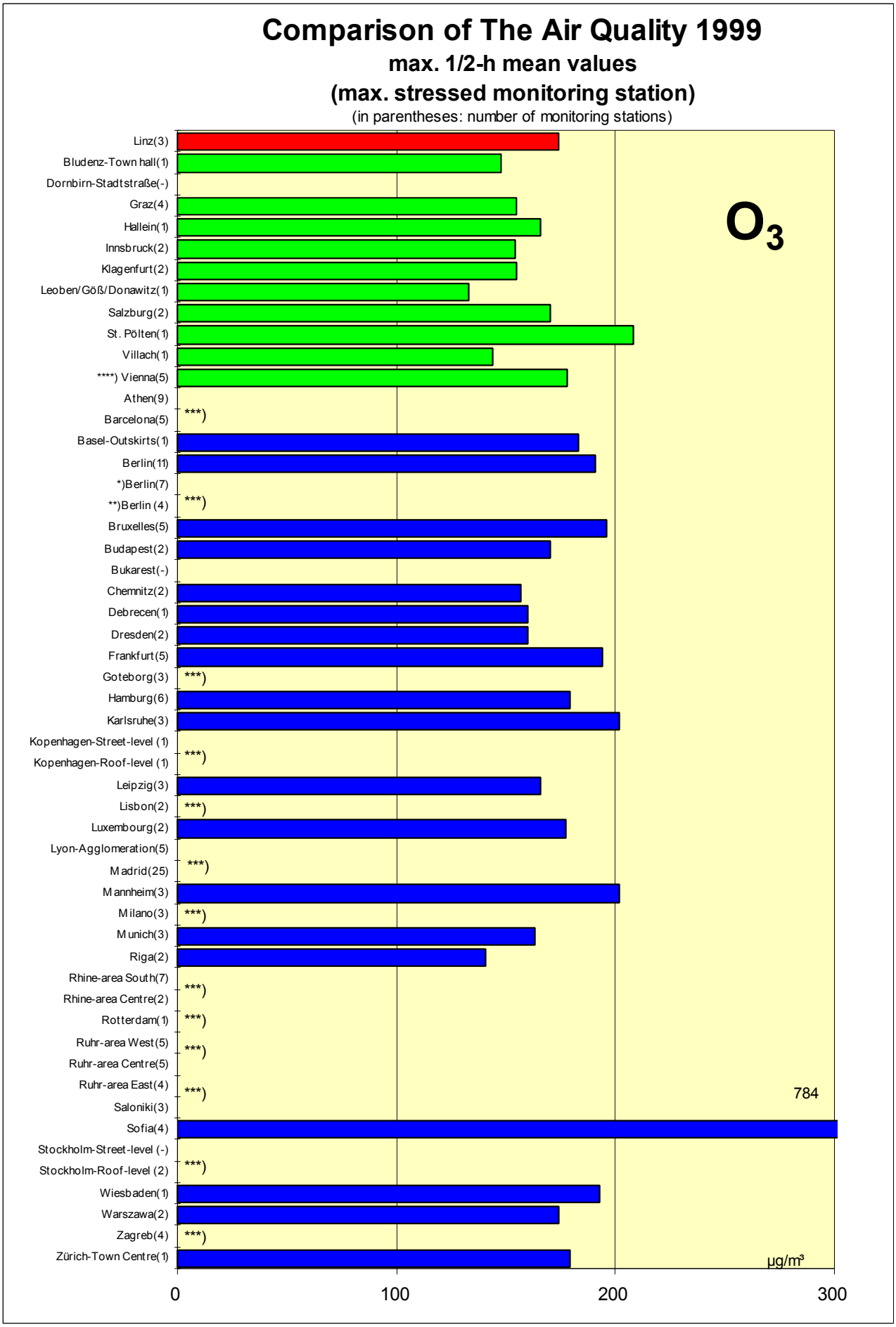

Comparison of The Air Quality 1999
max. 1/2-h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
SO2
Linz(9)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(1)
Graz(6)
Hallein(3)
Innsbruck(2)
Klagenfurt(2)
Leoben/Göß/Donawitz(3)
Salzburg(3)
St. Pölten(1)
Villach(1)
****) Vienna(17)
Athen(9)
Barcelona(2)
Basel-Outskirts(1)
Berlin(20)
***)
*)Berlin(3)
**)Berlin(17)
Bruxelles(7)
Budapest(8)
Bukarest(5)
Chemnitz(2)
Debrecen(10)
***)
Dresden(2)
Frankfurt(5)
Goteborg(3)
***)
Hamburg(11)
Karlsruhe(3)
Kopenhagen-Street-level (1)
***)
Kopenhagen-Roof-level (-)
Leipzig(3)
Lisbon(5)
***)
Luxembourg(2)
Lyon-Agglomeration(17)
***)
Madrid(25)
Mannheim(3)
Milano(5)
***)
Munich(8)
Riga(2)
Rhine-area South(8)
Rhine-area Centre(4)
Rotterdam(9)
***)
Ruhr-area West(8)
Ruhr-area Centre(8)
Ruhr-area East(9)
Saloniki(3)
***)
Sofia(10)
Stockholm-Street-level (-)
Stockholm-Roof-level (1)
***)
Wiesbaden(1)
Warszawa(16)
***)
Zagreb(9)
Zürich-Town Centre(1)
µg/m³
0
100
200
300
400
500
600
700
800
900
1000


Comparison of The Air Quality 1999
max. 1/2-h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
particulate matter
Linz(10)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(1)
Graz(6)
Hallein(1)
Innsbruck(2)
Klagenfurt(2)
Leoben/Göß/Donawitz(3)
Salzburg(3)
St. Pölten(1)
Villach(1)
****) Vienna(17)
Athen(-)
Barcelona(5)
Basel-Outskirts(1)
Berlin(12)
*)Berlin
**)Berlin
Bruxelles(4)
Budapest(8)
Bukarest(5)
Chemnitz(2)
Debrecen(2)
Dresden(2)
Frankfurt(5)
Goteborg(1)
Hamburg(6)
Karlsruhe(3)
Kopenhagen-Street-level (1)
Kopenhagen-Roof-level (-)
Leipzig(3)
Lisbon(3)
Luxembourg(1)
Lyon-Agglomeration(4)
Madrid(24)
Mannheim(3)
Milano(1)
Munich(7)
Riga(-)
Rhine-area South(8)
Rhine-area Centre(5)
Rotterdam(5)
Ruhr-area West(8)
Ruhr-area Centre(8)
Ruhr-area East(9)
Saloniki(3)
Sofia(8)
Stockholm-Street-level (-)
Stockholm-Roof-level (-)
Wiesbaden(1)
Warszawa(4)
Zagreb(4)
Zürich-Town Centre(1)
***)
µg/m3
0
300
600
900
1200
1500
1800
2100


Comparison of The Air Quality 1999
max. 1/2-h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO
Linz(9)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(1)
Graz(6)
Hallein(-)
Innsbruck(2)
Klagenfurt(2)
Leoben/Göß/Donawitz(3)
Salzburg(-)
St. Pölten(1)
Villach(1)
****) Vienna(17)
Athen(8)
***)
Barcelona(5)
Basel-Outskirts(1)
***)
Berlin(22)
*)Berlin(5)
**)Berlin (17)
Bruxelles(7)
Budapest(8)
Bukarest(-)
Chemnitz(2)
Debrecen(1)
Dresden(2)
Frankfurt(5)
***)
Goteborg(2)
Hamburg(11)
Karlsruhe(3)
Kopenhagen-Street-level (1)
***)
Kopenhagen-Roof-level (1)
Leipzig(3)
Lisbon(-)
Luxembourg(2)
Lyon-Agglomeration(11)
***)
Madrid(25)
Mannheim(3)
***)
Milano(10)
Munich(8)
Riga(-)
Rhine-area South(8)
Rhine-area Centre(4)
***)
Rotterdam(3)
Ruhr-area West(8)
Ruhr-area Centre(9)
Ruhr-area East(9)
Saloniki(-)
Sofia(4)
Stockholm-Street-level (2)
***)
Stockholm-Roof-level (2)
Wiesbaden(1)
Warszawa(-)
Zagreb(-)
Zürich-Town Centre(1)
µg/m³
0
350
700
1050
1400


Comparison of The Air Quality 1999
max. 1/2-h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO2
Linz(9)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(1)
Graz(6)
Hallein(1)
Innsbruck(2)
Klagenfurt(2)
Leoben/Göß/Donawitz(3)
Salzburg(3)
St. Pölten(1)
Villach(1)
****) Vienna(17)
Athen(8)
Barcelona(5)
***)
Basel-Outskirts(1)
*)Berlin(22)
***)
**)Berlin (5)
**)Berlin (17)
Bruxelles(7)
Budapest(8)
Bukarest(5)
Chemnitz(2)
Debrecen(10)
Dresden(2)
Frankfurt(5)
Goteborg(3)
***)
Hamburg(11)
Karlsruhe(3)
Kopenhagen-Street-level (1)
***)
Kopenhagen-Roof-level (1)
Leipzig(3)
Lisbon(8)
***)
Luxembourg(2)
Lyon-Agglomeration(11)
***)
Madrid(25)
Mannheim(3)
Milano(10)
***)
Munich(8)
Riga(2)
Rhine-area South(8)
Rhine-area Centre(4)
Rotterdam(3)
***)
Ruhr-area West(8)
Ruhr-area Centre(9)
Ruhr-area East(9)
Saloniki(3)
***)
Sofia(10)
Stockholm-Street-level (2)
***)
Stockholm-Roof-level (2)
Wiesbaden(1)
Warszawa(14)
***)
Zagreb(6)
Zürich-Town Centre(1)
µg/m³
0
150
300
450
600


Comparison of The Air Quality 1999
max. 1/2-h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
CO
Linz(10)
Bludenz-Town hall(-)
Dornbirn-Stadtstraße(1)
Graz(2)
Hallein(1)
Innsbruck(2)
Klagenfurt(2)
Leoben/Göß/Donawitz(2)
Salzburg(2)
St. Pölten(1)
Villach(1)
****) Vienna(5)
Athen(9)
***)
Barcelona(5)
Basel-Outskirts(1)
Berlin(18)
***)
*)Berlin(5)
**)Berlin (13)
Bruxelles(5)
Budapest(8)
Bukarest(-)
Chemnitz(2)
Debrecen(-)
Dresden(2)
Frankfurt(4)
Goteborg(1)
***)
Hamburg(4)
Karlsruhe(3)
Kopenhagen-Street-level (1)
***)
Kopenhagen-Roof-level (-)
Leipzig(3)
Lisbon(8)
***)
Luxembourg(1)
Lyon-Agglomeration(4)
Madrid(25)
***)
Mannheim(3)
Milano(6)
***)
Munich(8)
Riga(-)
***)
Rhine-area South(7)
Rhine-area Centre(4)
Rotterdam(1)
***)
Ruhr-area West(8)
Ruhr-area Centre(8)
Ruhr-area East(7)
Saloniki(3)
***)
Sofia(4)
49720
Stockholm-Street-level (2)
Stockholm-Roof-level (2)
***)
Wiesbaden(1)
Warszawa(1)
Zagreb(-)
***)
Zürich-Town Centre(1)
µg/m³
0
2500
5000
7500
10000
12500
15000
17500


Comparison of The Air Quality 1999
max. 1/2-h mean values
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
O3
Linz(3)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(-)
Graz(4)
Hallein(1)
Innsbruck(2)
Klagenfurt(2)
Leoben/Göß/Donawitz(1)
Salzburg(2)
St. Pölten(1)
Villach(1)
****) Vienna(5)
Athen(9)
Barcelona(5)
Basel-Outskirts(1)
Berlin(11)
*)Berlin(7)
**)Berlin (4)
Bruxelles(5)
Budapest(2)
Bukarest(-)
Chemnitz(2)
Debrecen(1)
Dresden(2)
Frankfurt(5)
Goteborg(3)
Hamburg(6)
Karlsruhe(3)
Kopenhagen-Street-level (1)
Kopenhagen-Roof-level (1)
Leipzig(3)
Lisbon(2)
Luxembourg(2)
Lyon-Agglomeration(5)
Madrid(25)
Mannheim(3)
Milano(3)
Munich(3)
Riga(2)
Rhine-area South(7)
Rhine-area Centre(2)
Rotterdam(1)
Ruhr-area West(5)
Ruhr-area Centre(5)
Ruhr-area East(4)
Saloniki(3)
Sofia(4)
Stockholm-Street-level (-)
Stockholm-Roof-level (2)
Wiesbaden(1)
Warszawa(2)
Zagreb(4)
Zürich-Town Centre(1)
***)
784
µg/m³
0
100
200
300

Luftgütevergleich

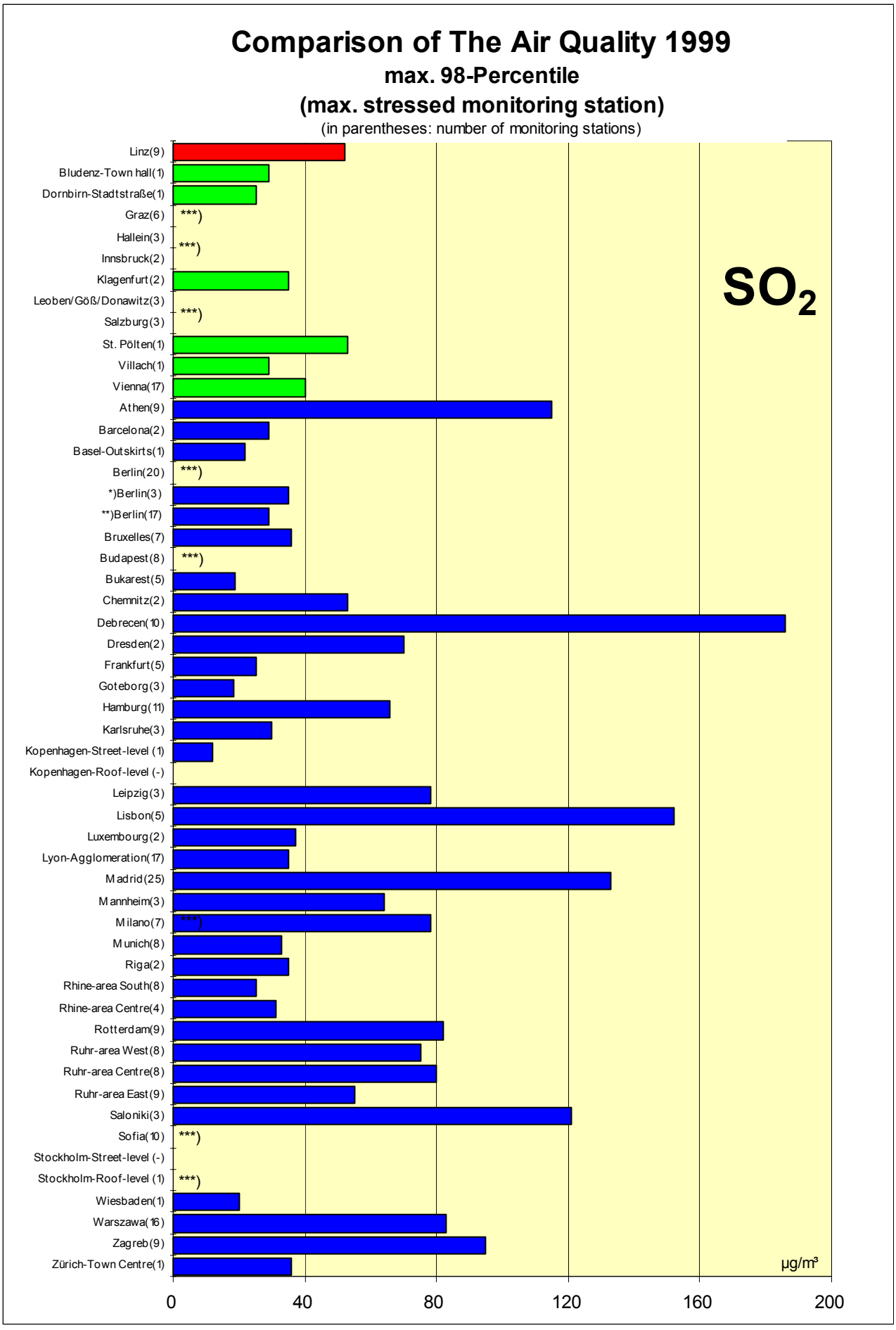
1999

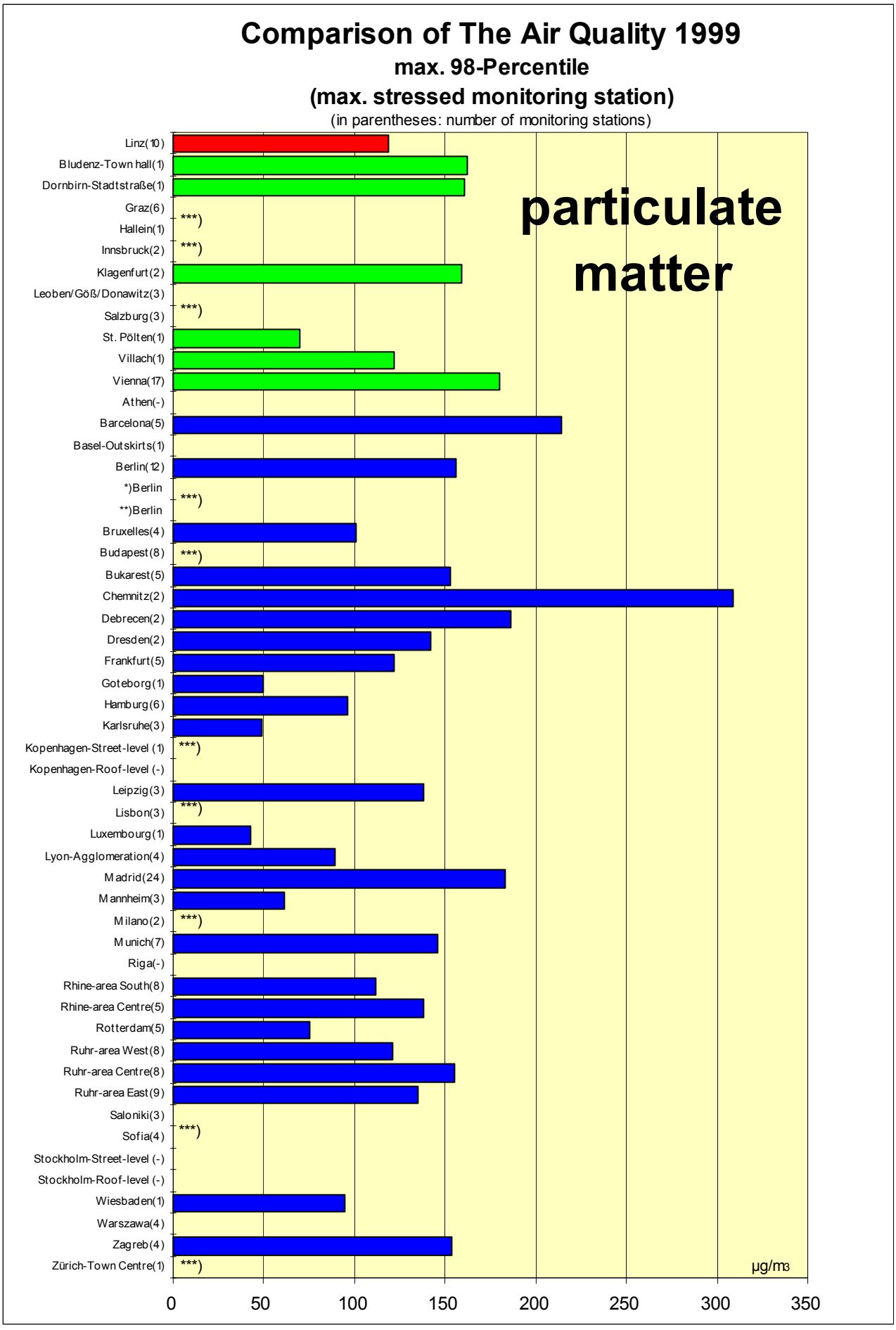
max. 98-Percentil/Jahr

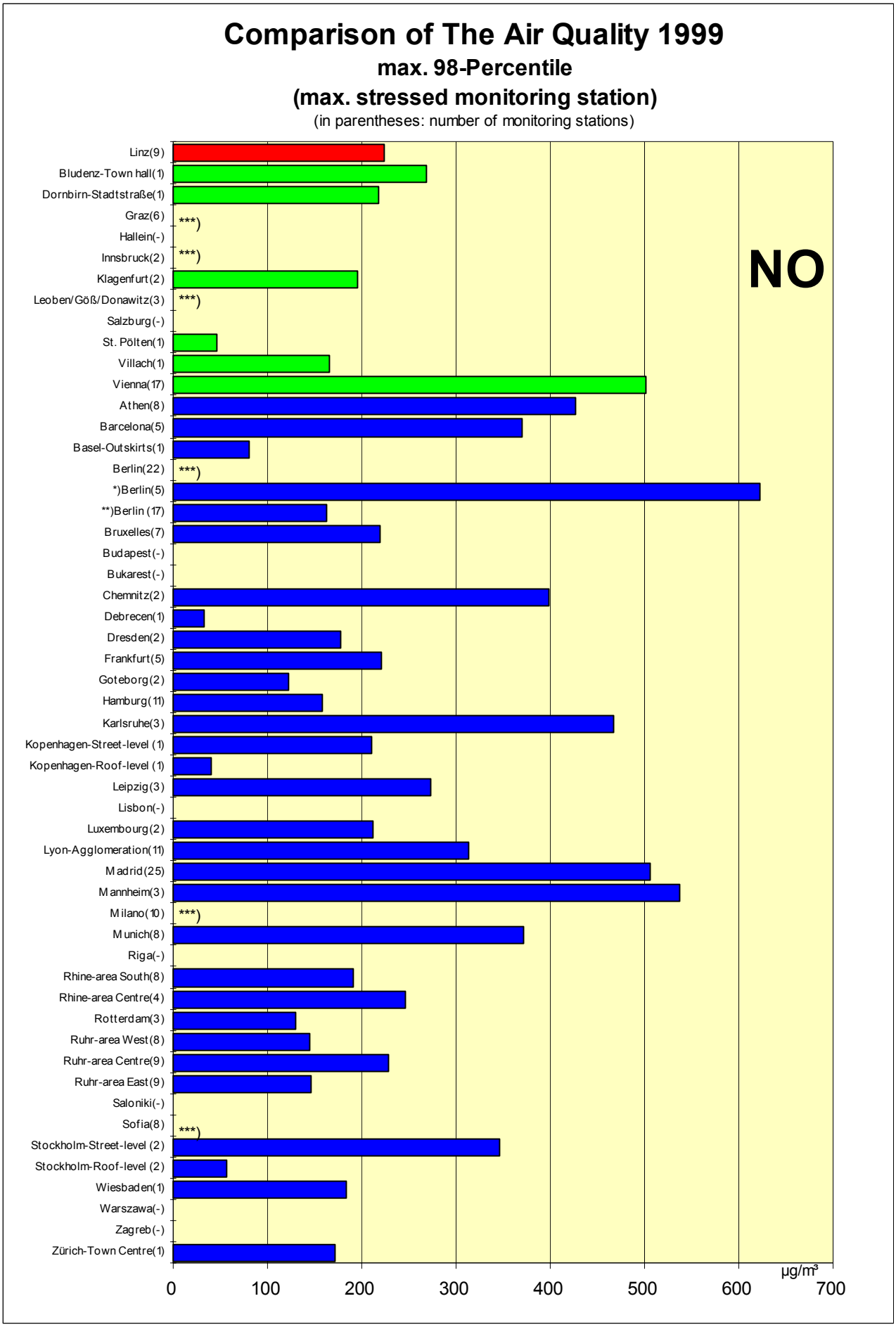
Comparison of The Air Quality

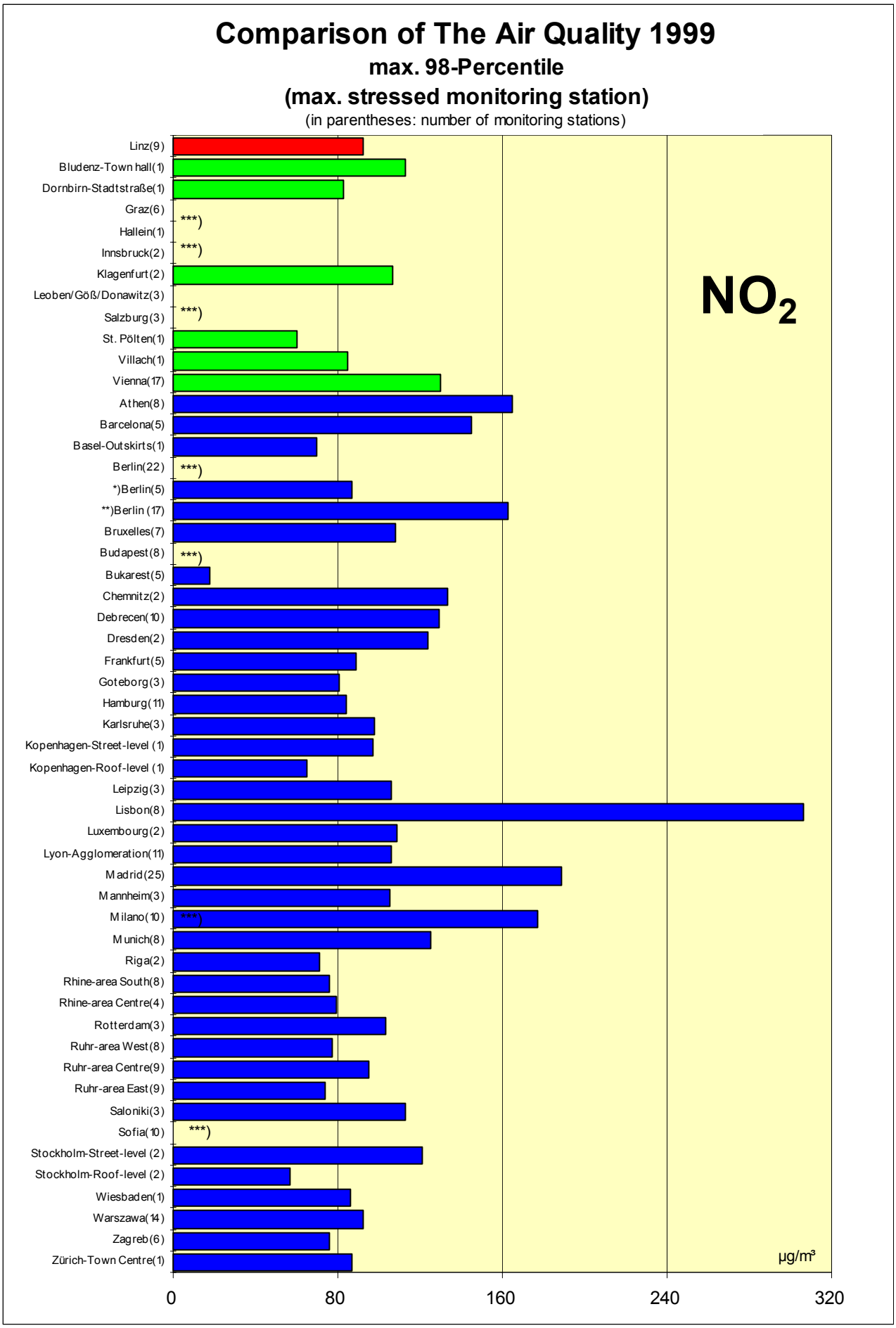
1999

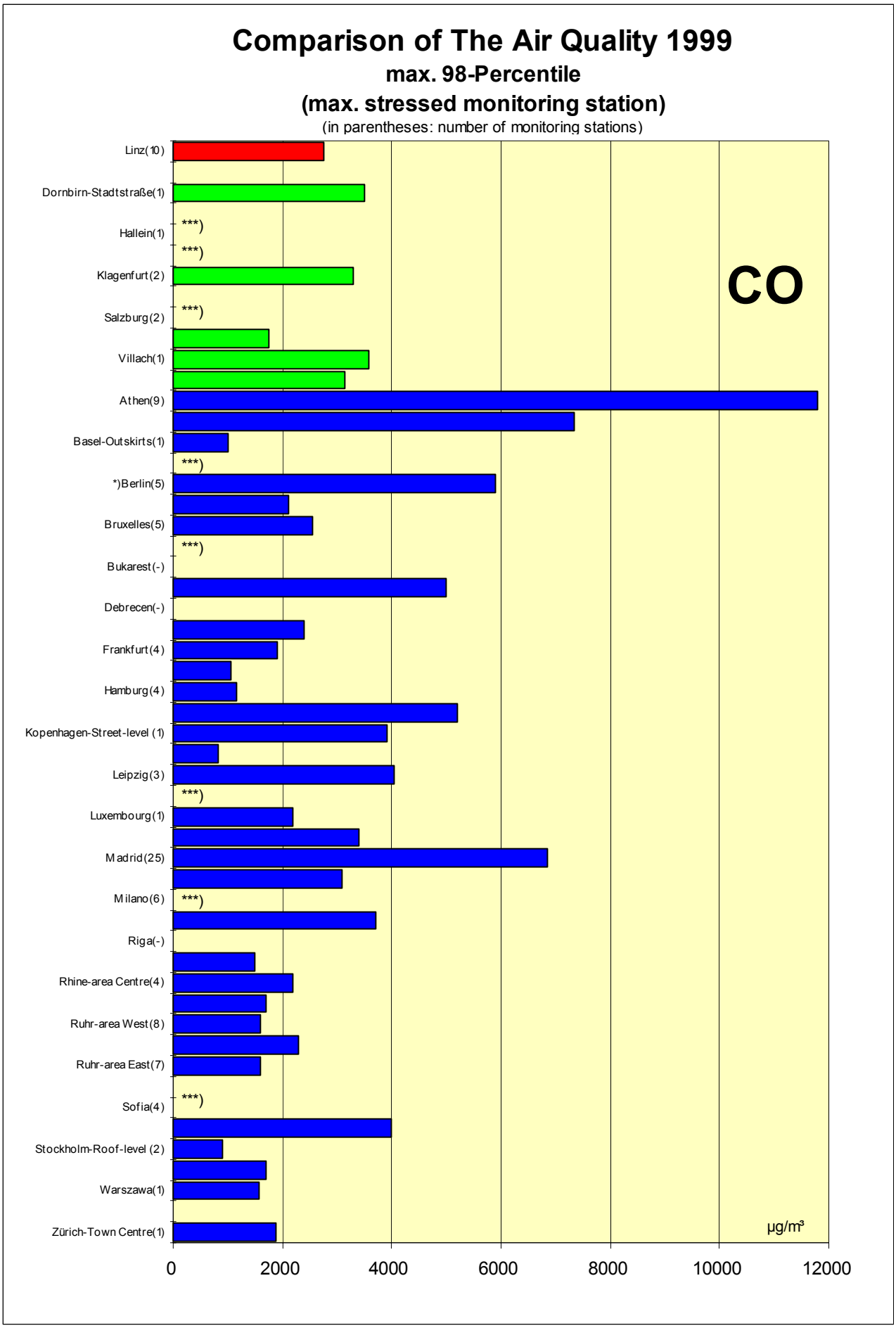
Max. 98-Percentile per Year

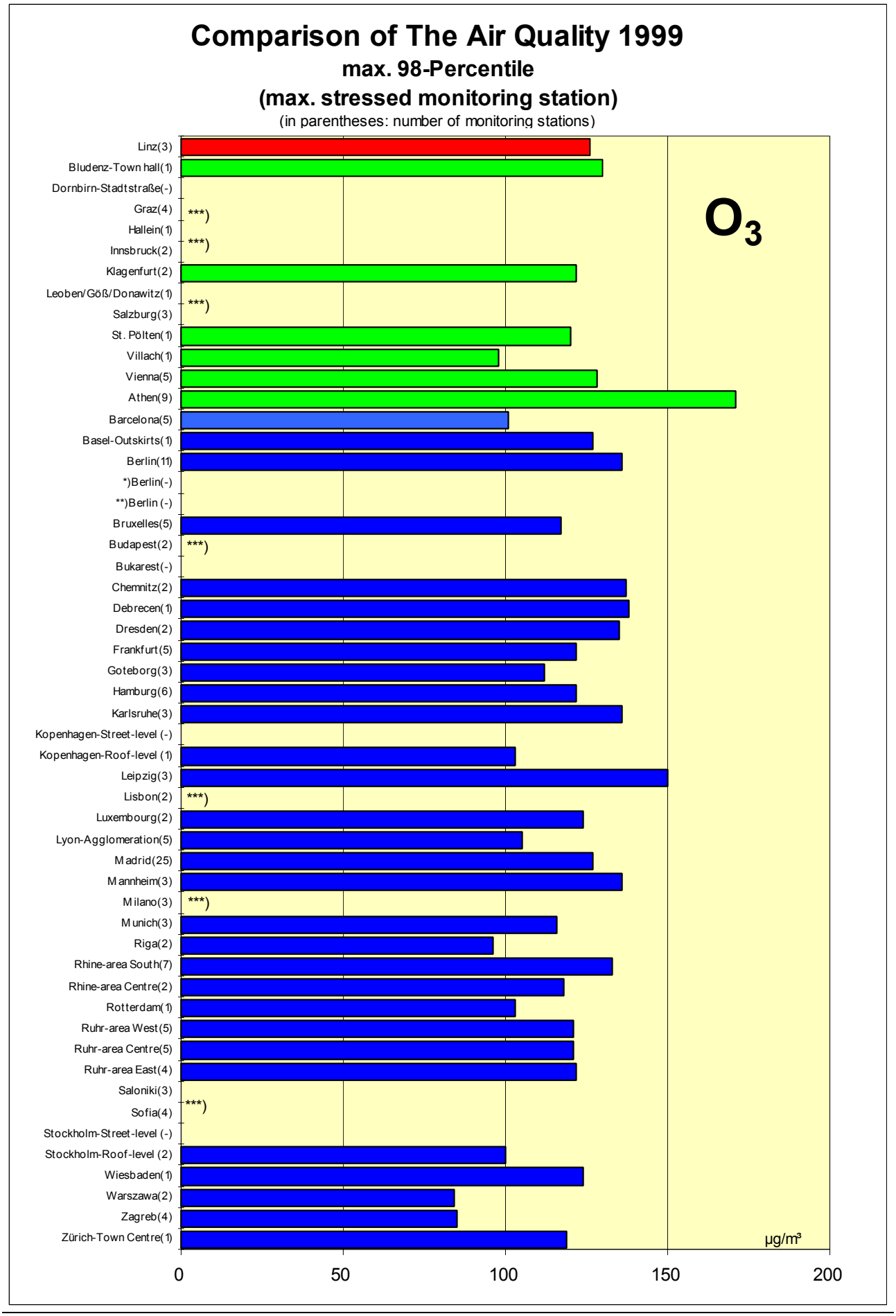

Comparison of The Air Quality 1999
max. 98-Percentile
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
SO2
Linz(9)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(1)
Graz(6)
***)
Hallein(3)
***)
Innsbruck(2)
Klagenfurt(2)
Leoben/Göß/Donawitz(3)
Salzburg(3)
***)
St. Pölten(1)
Villach(1)
Vienna(17)
Athen(9)
Barcelona(2)
Basel-Outskirts(1)
Berlin(20)
***)
*)Berlin(3)
**)Berlin(17)
Bruxelles(7)
Budapest(8)
***)
Bukarest(5)
Chemnitz(2)
Debrecen(10)
Dresden(2)
Frankfurt(5)
Goteborg(3)
Hamburg(11)
Karlsruhe(3)
Kopenhagen-Street-level (1)
Kopenhagen-Roof-level (-)
Leipzig(3)
Lisbon(5)
Luxembourg(2)
Lyon-Agglomeration(17)
Madrid(25)
Mannheim(3)
Milano(7)
***)
Munich(8)
Riga(2)
Rhine-area South(8)
Rhine-area Centre(4)
Rotterdam(9)
Ruhr-area West(8)
Ruhr-area Centre(8)
Ruhr-area East(9)
Saloniki(3)
Sofia(10)
***)
Stockholm-Street-level (-)
Stockholm-Roof-level (1)
***)
Wiesbaden(1)
Warszawa(16)
Zagreb(9)
Zürich-Town Centre(1)
µg/m³
0
40
80
120
160
200


Comparison of The Air Quality 1999
max. 98-Percentile
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
particulate matter
Linz(10)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(1)
Graz(6)
Hallein(1) ***)
Innsbruck(2) ***)
Klagenfurt(2)
Leoben/Göß/Donawitz(3)
Salzburg(3) ***)
St. Pölten(1)
Villach(1)
Vienna(17)
Athen(-)
Barcelona(5)
Basel-Outskirts(1)
Berlin(12)
*)Berlin
)Berlin *)
Bruxelles(4)
Budapest(8) ***)
Bukarest(5)
Chemnitz(2)
Debrecen(2)
Dresden(2)
Frankfurt(5)
Goteborg(1)
Hamburg(6)
Karlsruhe(3)
Kopenhagen-Street-level (1) ***)
Kopenhagen-Roof-level (-)
Leipzig(3)
Lisbon(3) ***)
Luxembourg(1)
Lyon-Agglomeration(4)
Madrid(24)
Mannheim(3)
Milano(2) ***)
Munich(7)
Riga(-)
Rhine-area South(8)
Rhine-area Centre(5)
Rotterdam(5)
Ruhr-area West(8)
Ruhr-area Centre(8)
Ruhr-area East(9)
Saloniki(3)
Sofia(4) ***)
Stockholm-Street-level (-)
Stockholm-Roof-level (-)
Wiesbaden(1)
Warszawa(4)
Zagreb(4)
Zürich-Town Centre(1) ***)
µg/m3
0
50
100
150
200
250
300
350


Comparison of The Air Quality 1999
max. 98-Percentile
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO
Linz(9)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(1)
Graz(6)
***)
Hallein(-)
Innsbruck(2)
***)
Klagenfurt(2)
Leoben/Göß/Donawitz(3)
***)
Salzburg(-)
St. Pölten(1)
Villach(1)
Vienna(17)
Athen(8)
Barcelona(5)
Basel-Outskirts(1)
Berlin(22)
***)
*)Berlin(5)
**)Berlin (17)
Bruxelles(7)
Budapest(-)
Bukarest(-)
Chemnitz(2)
Debrecen(1)
Dresden(2)
Frankfurt(5)
Goteborg(2)
Hamburg(11)
Karlsruhe(3)
Kopenhagen-Street-level (1)
Kopenhagen-Roof-level (1)
Leipzig(3)
Lisbon(-)
Luxembourg(2)
Lyon-Agglomeration(11)
Madrid(25)
Mannheim(3)
Milano(10)
***)
Munich(8)
Riga(-)
Rhine-area South(8)
Rhine-area Centre(4)
Rotterdam(3)
Ruhr-area West(8)
Ruhr-area Centre(9)
Ruhr-area East(9)
Saloniki(-)
Sofia(8)
***)
Stockholm-Street-level (2)
Stockholm-Roof-level (2)
Wiesbaden(1)
Warszawa(-)
Zagreb(-)
Zürich-Town Centre(1)
µg/m³
0
100
200
300
400
500
600
700


Comparison of The Air Quality 1999
max. 98-Percentile
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
NO2
Linz(9)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(1)
Graz(6)
Hallein(1) ***)
Innsbruck(2) ***)
Klagenfurt(2)
Leoben/Göß/Donawitz(3)
Salzburg(3) ***)
St. Pölten(1)
Villach(1)
Vienna(17)
Athen(8)
Barcelona(5)
Basel-Outskirts(1)
Berlin(22) ***)
*)Berlin(5)
**)Berlin (17)
Bruxelles(7)
Budapest(8) ***)
Bukarest(5)
Chemnitz(2)
Debrecen(10)
Dresden(2)
Frankfurt(5)
Goteborg(3)
Hamburg(11)
Karlsruhe(3)
Kopenhagen-Street-level (1)
Kopenhagen-Roof-level (1)
Leipzig(3)
Lisbon(8)
Luxembourg(2)
Lyon-Agglomeration(11)
Madrid(25)
Mannheim(3)
Milano(10) ***)
Munich(8)
Riga(2)
Rhine-area South(8)
Rhine-area Centre(4)
Rotterdam(3)
Ruhr-area West(8)
Ruhr-area Centre(9)
Ruhr-area East(9)
Saloniki(3)
Sofia(10) ***)
Stockholm-Street-level (2)
Stockholm-Roof-level (2)
Wiesbaden(1)
Warszawa(14)
Zagreb(6)
Zürich-Town Centre(1)
µg/m³
0
80
160
240
320


Comparison of The Air Quality 1999
max. 98-Percentile
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
CO
Linz(10)
Dornbirn-Stadtstraße(1)
Hallein(1)
Klagenfurt(2)
Salzburg(2)
Villach(1)
Athen(9)
Basel-Outskirts(1)
*)Berlin(5)
Bruxelles(5)
Bukarest(-)
Debrecen(-)
Frankfurt(4)
Hamburg(4)
Kopenhagen-Street-level (1)
Leipzig(3)
Luxembourg(1)
Madrid(25)
Milano(6)
Riga(-)
Rhine-area Centre(4)
Ruhr-area West(8)
Ruhr-area East(7)
Sofia(4)
Stockholm-Roof-level (2)
Warszawa(1)
Zürich-Town Centre(1)
***)
µg/m³
0
2000
4000
6000
8000
10000
12000


Comparison of The Air Quality 1999
max. 98-Percentile
(max. stressed monitoring station)
(in parentheses: number of monitoring stations)
O3
Linz(3)
Bludenz-Town hall(1)
Dornbirn-Stadtstraße(-)
Graz(4)
Hallein(1)
Innsbruck(2)
Klagenfurt(2)
Leoben/Göß/Donawitz(1)
Salzburg(3)
St. Pölten(1)
Villach(1)
Vienna(5)
Athen(9)
Barcelona(5)
Basel-Outskirts(1)
Berlin(11)
*)Berlin(-)
**)Berlin (-)
Bruxelles(5)
Budapest(2)
Bukarest(-)
Chemnitz(2)
Debrecen(1)
Dresden(2)
Frankfurt(5)
Goteborg(3)
Hamburg(6)
Karlsruhe(3)
Kopenhagen-Street-level (-)
Kopenhagen-Roof-level (1)
Leipzig(3)
Lisbon(2)
Luxembourg(2)
Lyon-Agglomeration(5)
Madrid(25)
Mannheim(3)
Milano(3)
Munich(3)
Riga(2)
Rhine-area South(7)
Rhine-area Centre(2)
Rotterdam(1)
Ruhr-area West(5)
Ruhr-area Centre(5)
Ruhr-area East(4)
Saloniki(3)
Sofia(4)
Stockholm-Street-level (-)
Stockholm-Roof-level (2)
Wiesbaden(1)
Warszawa(2)
Zagreb(4)
Zürich-Town Centre(1)
***)
µg/m³
0
50
100
150
200

Jahresvergleich

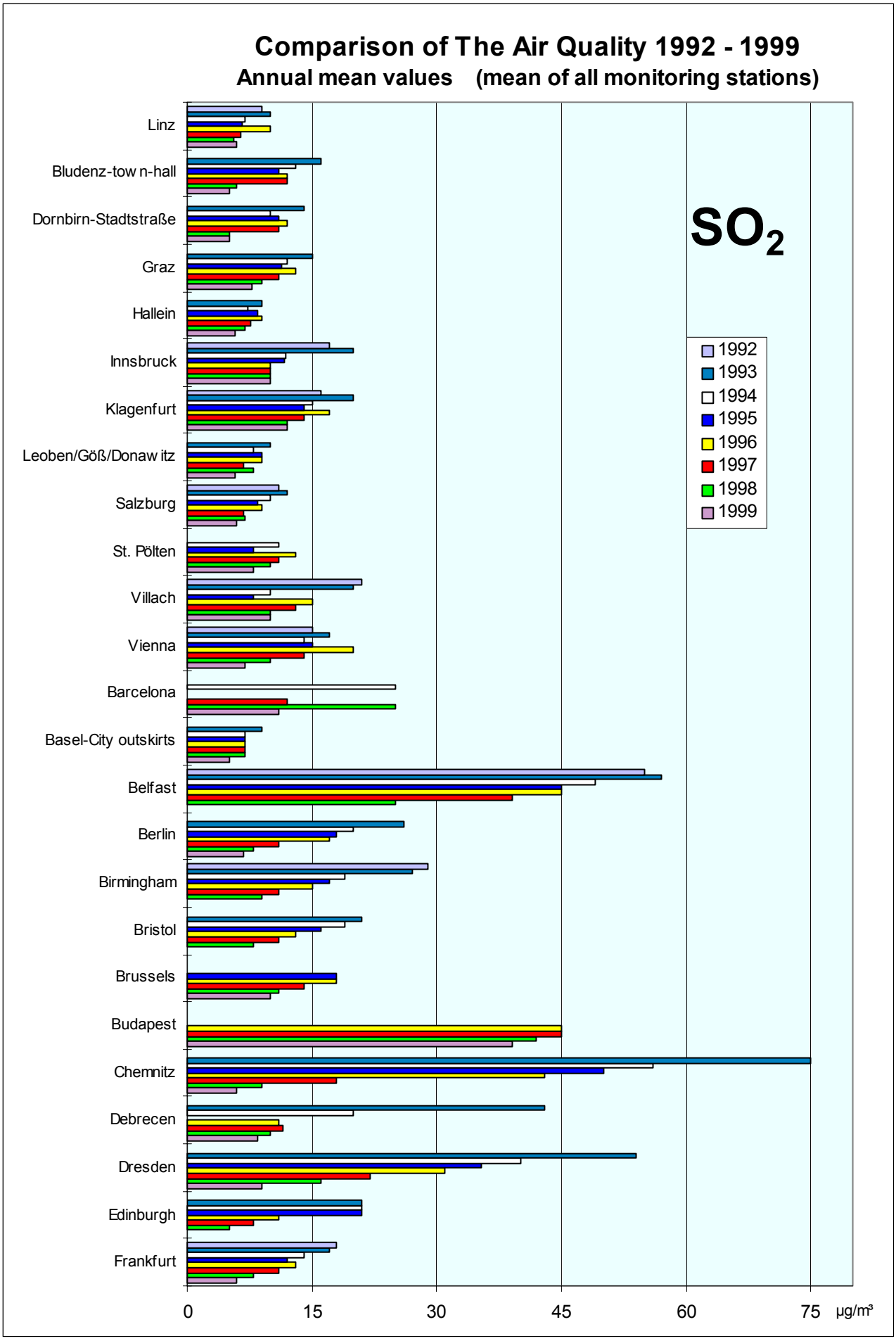
1992 - 1999

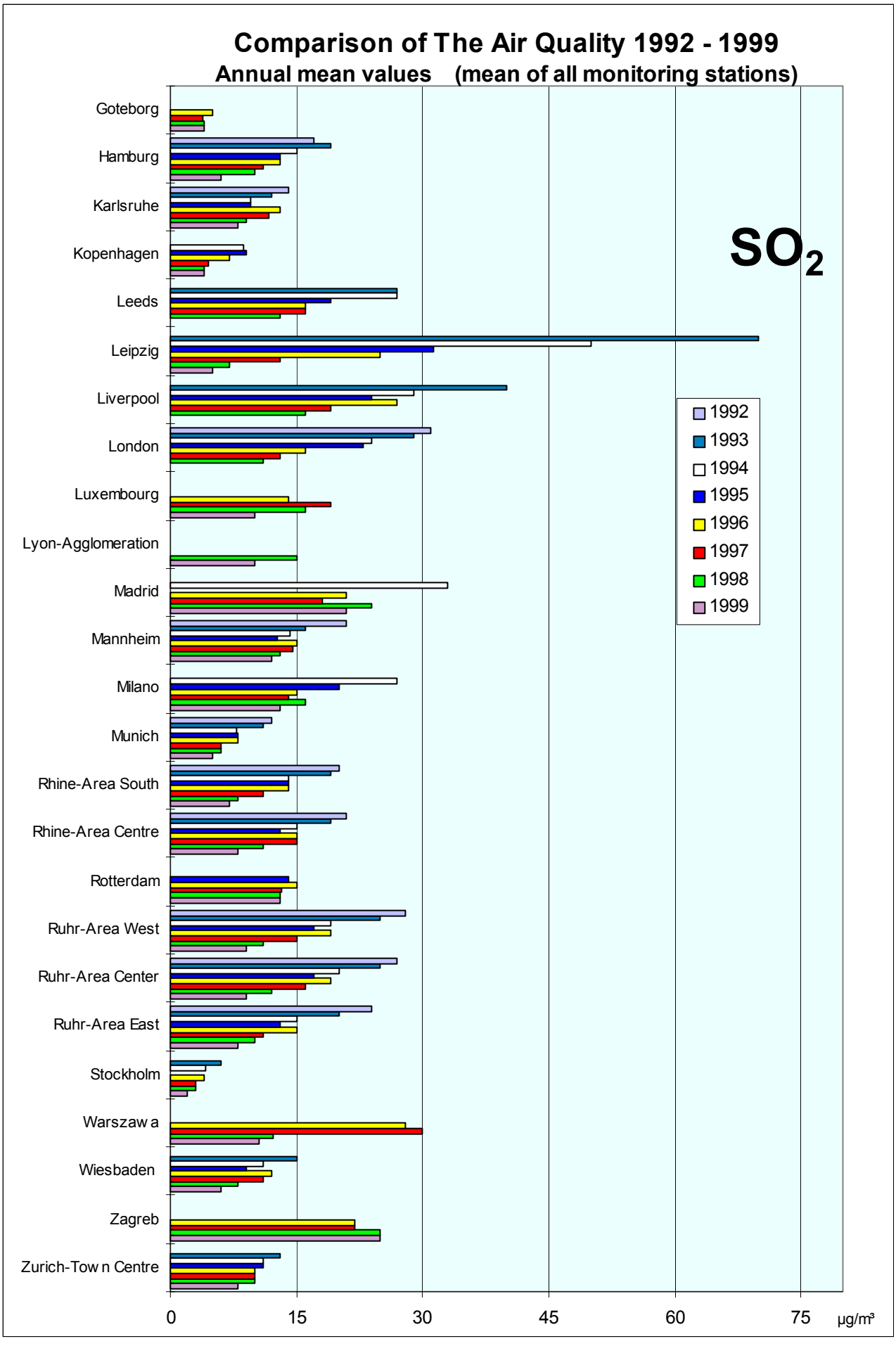
Jahresmittelwerte

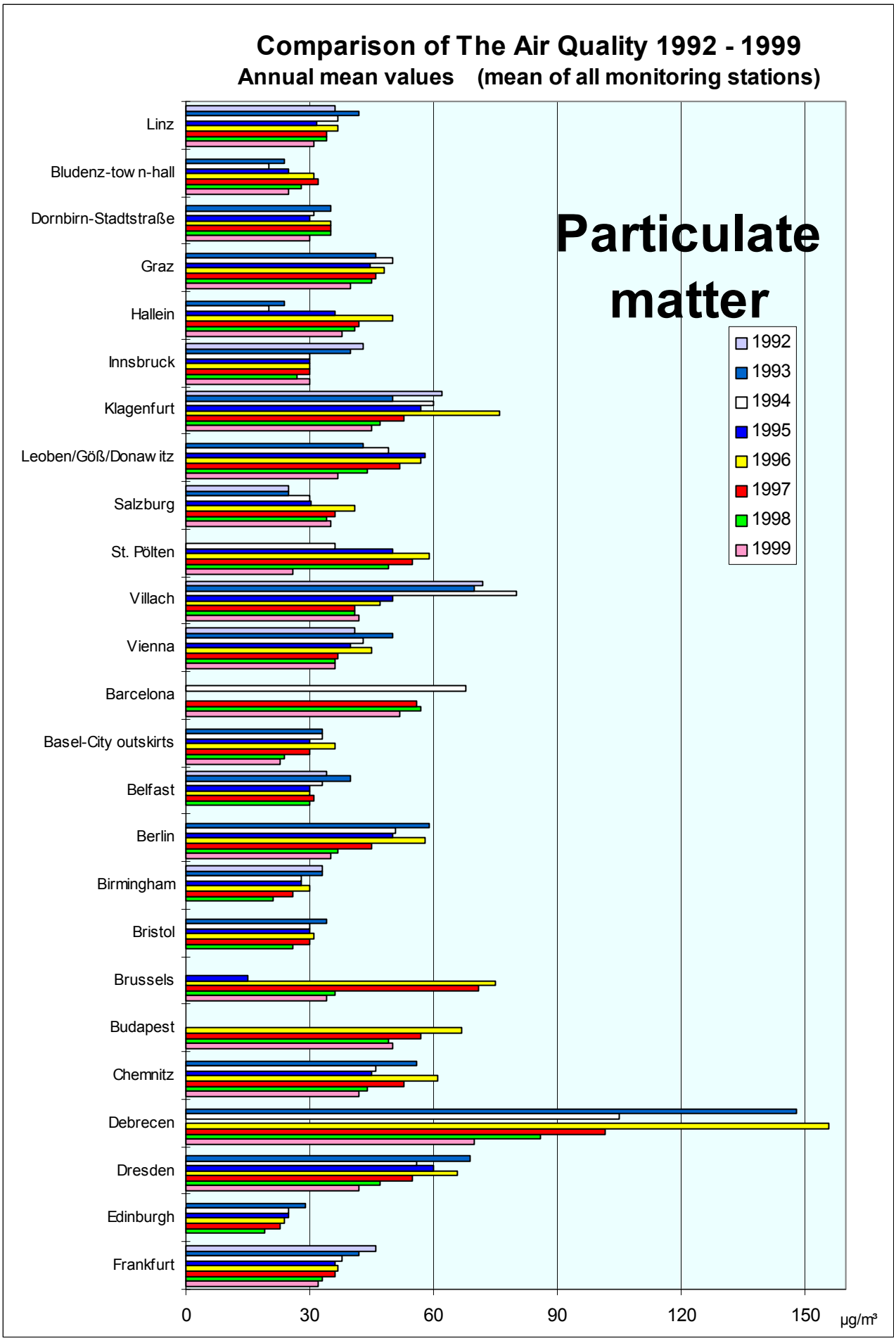
Comparison of The Air Quality Over The Years

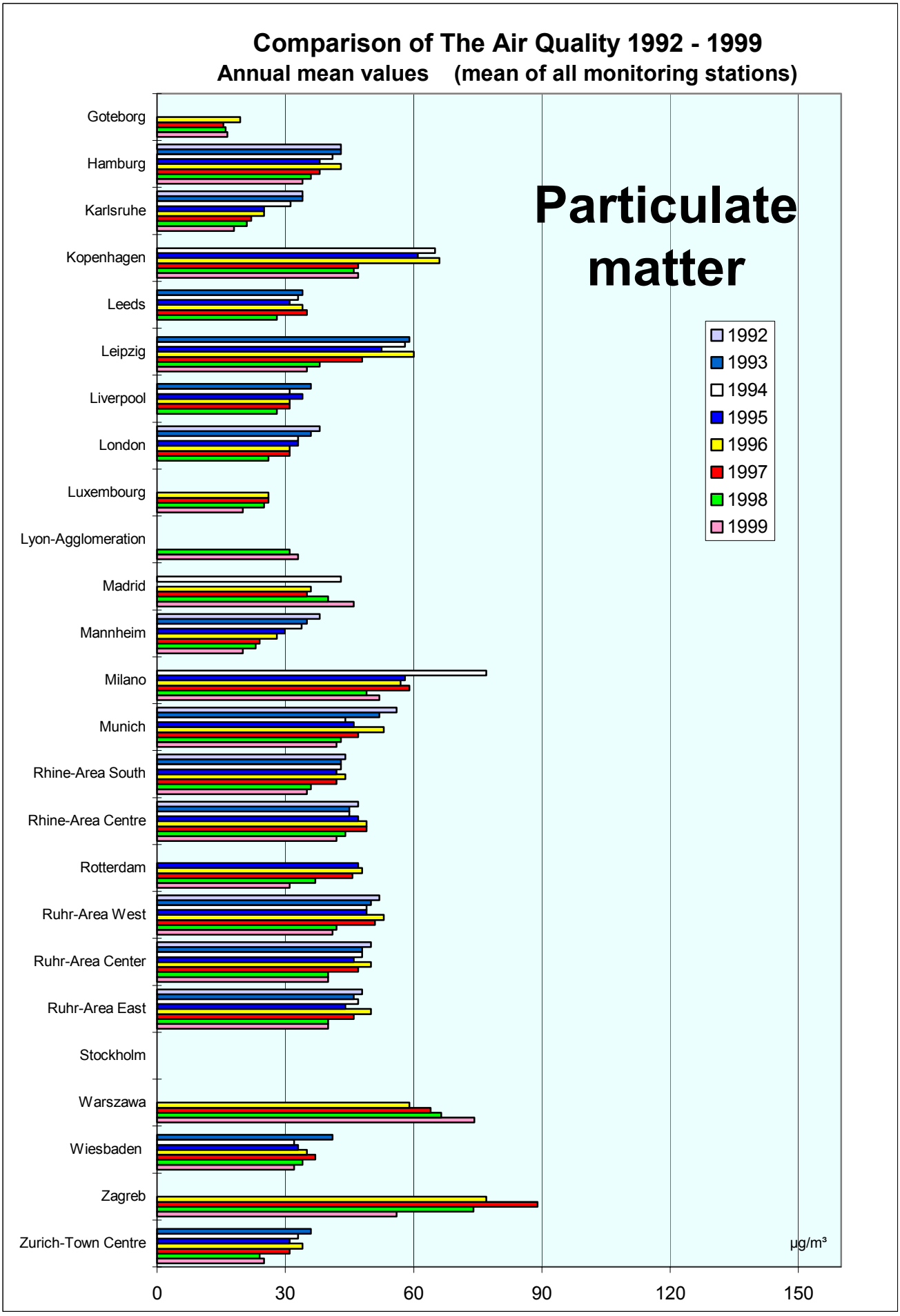
1992 - 1999

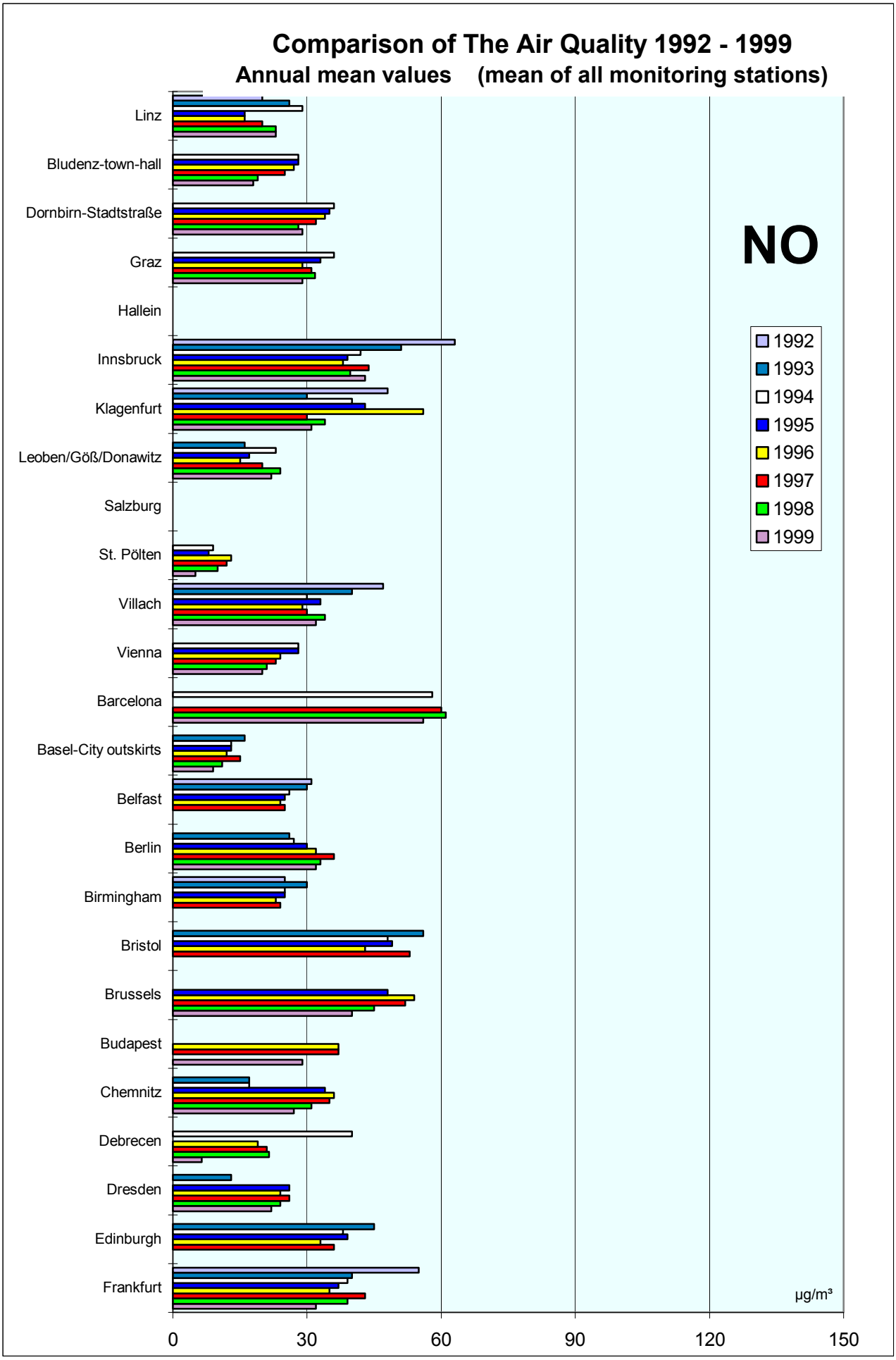
Annual Mean Values

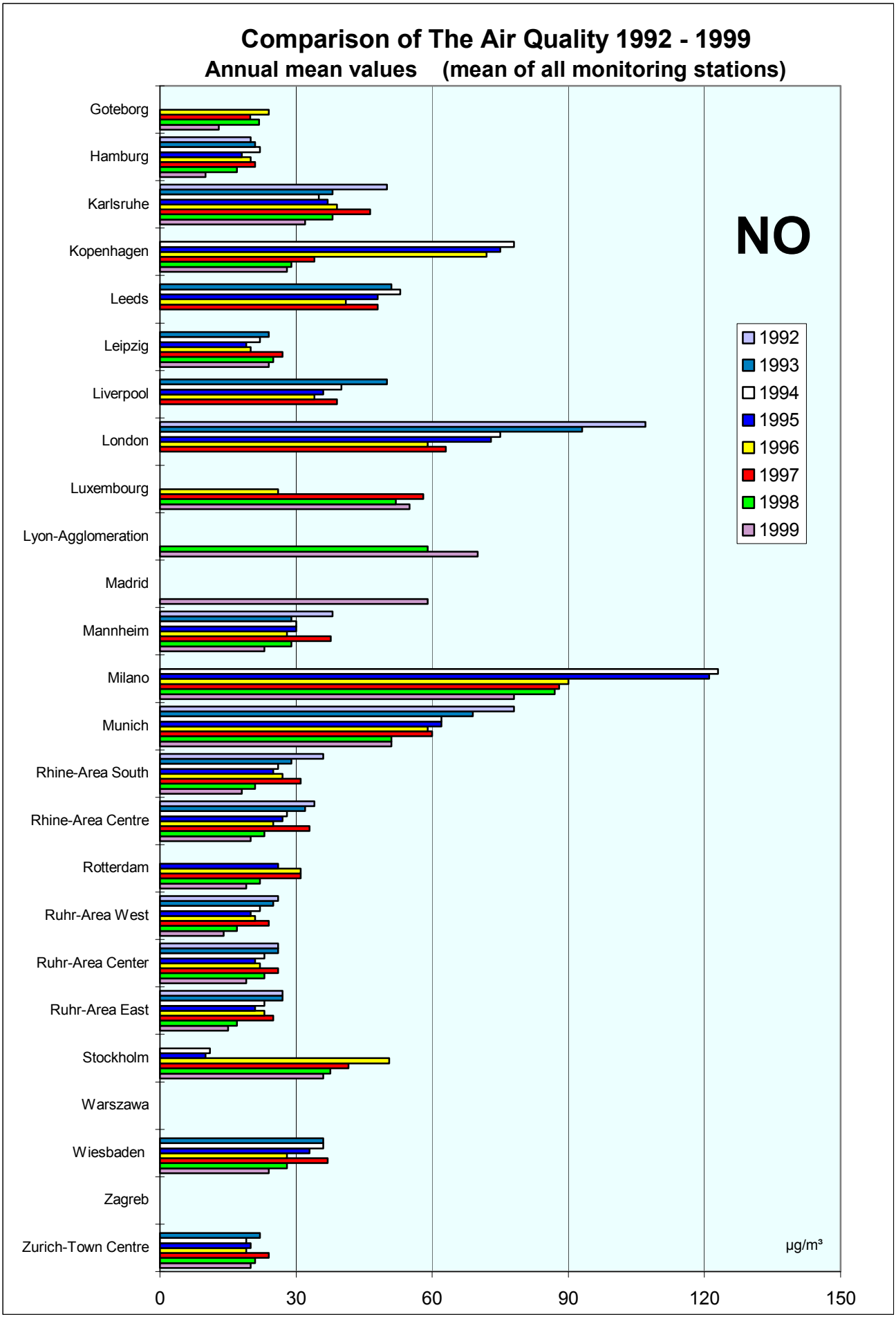

Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
SO2
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
0
15
30
45
60
75
µg/m³

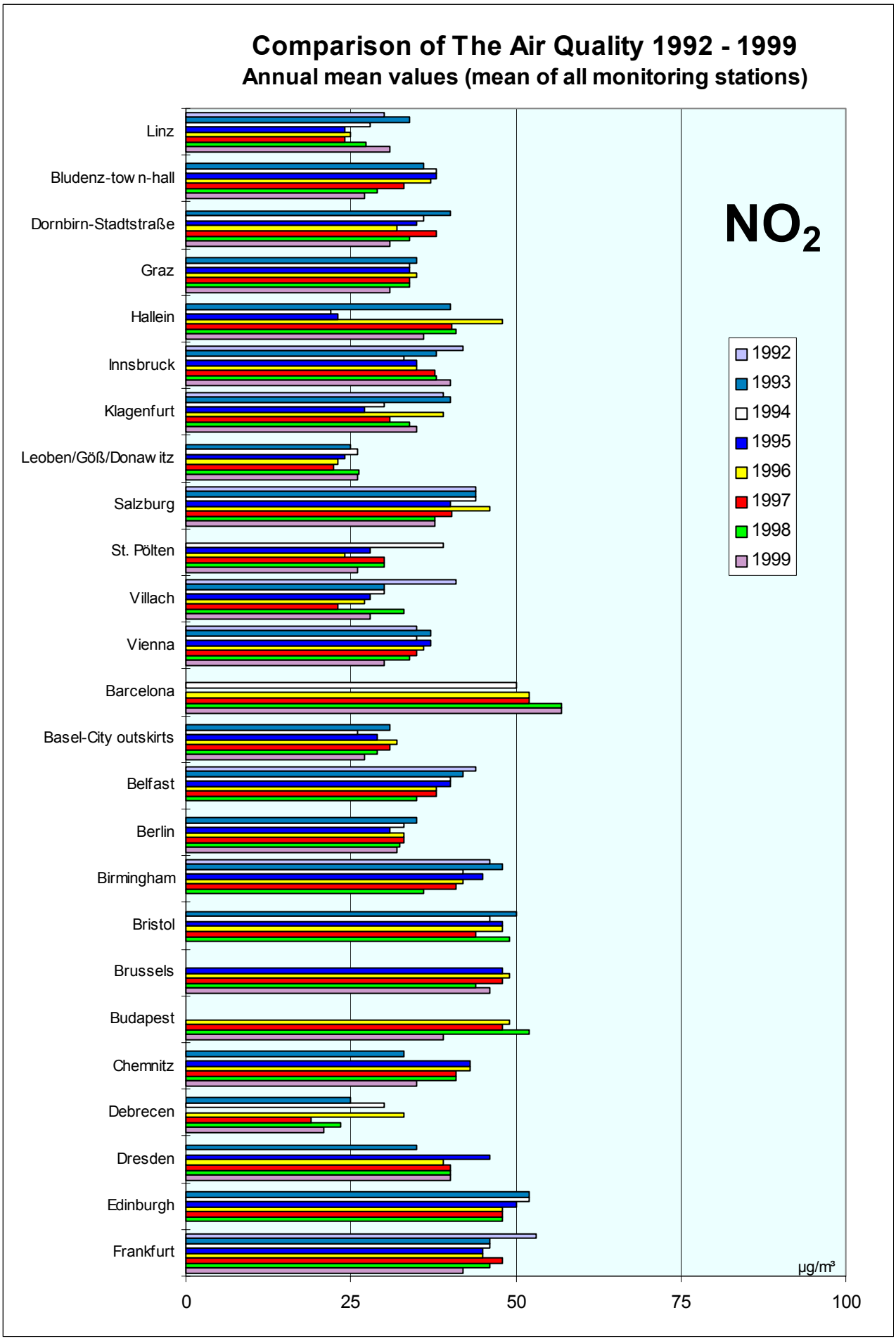

Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
SO2
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszaw a
Wiesbaden
Zagreb
Zurich-Tow n Centre
1992
1993
1994
1995
1996
1997
1998
1999
0
15
30
45
60
75
µg/m³

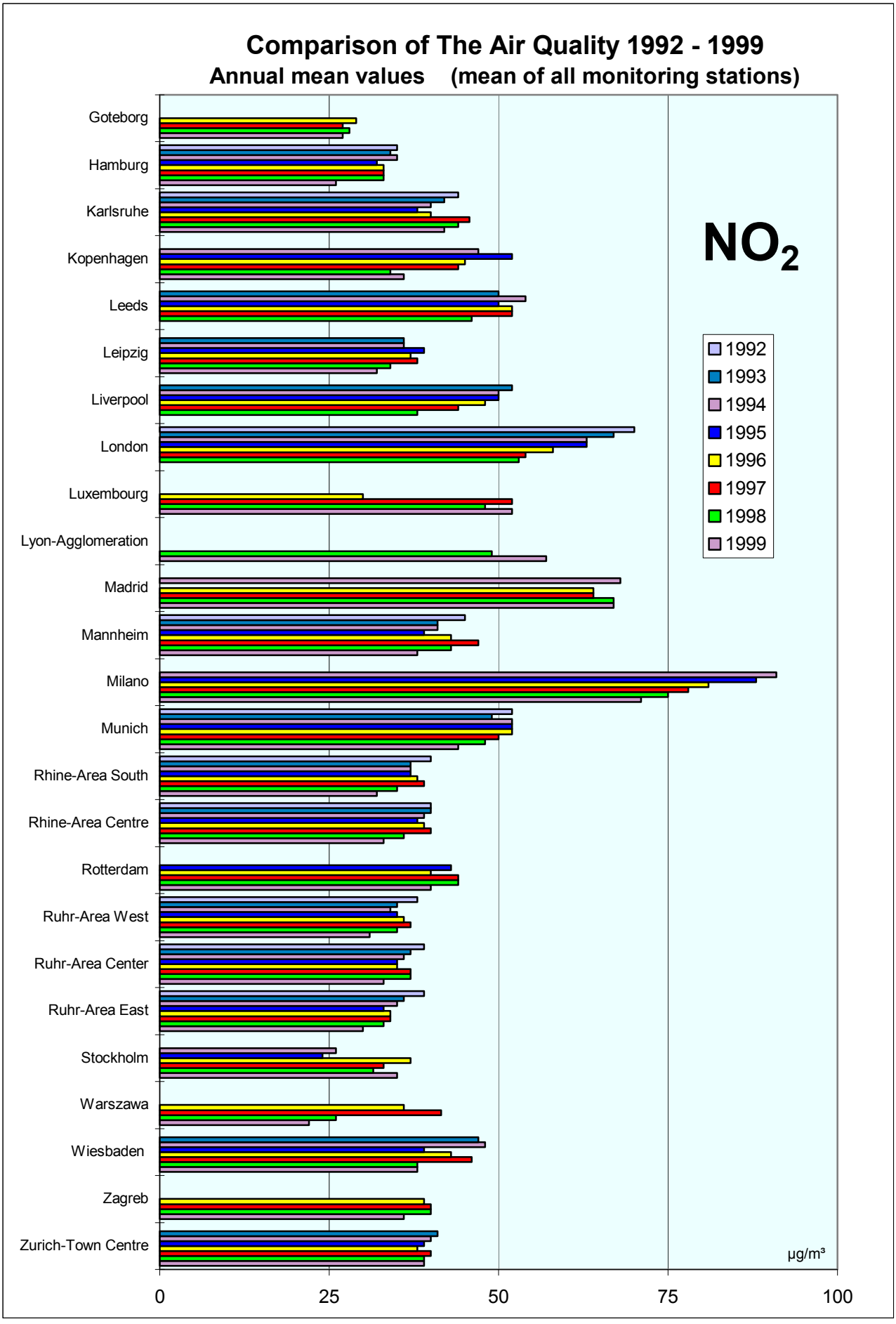

Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
Particulate matter
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
0
30
60
90
120
150
µg/m³


Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
Particulate matter
1992
1993
1994
1995
1996
1997
1998
1999
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
µg/m³
0
30
60
90
120
150


Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
NO
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
30
60
90
120
150


Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
NO
1992
1993
1994
1995
1996
1997
1998
1999
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
µg/m³
0
30
60
90
120
150


Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
NO2
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
25
50
75
100


Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
NO2
1992
1993
1994
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1996
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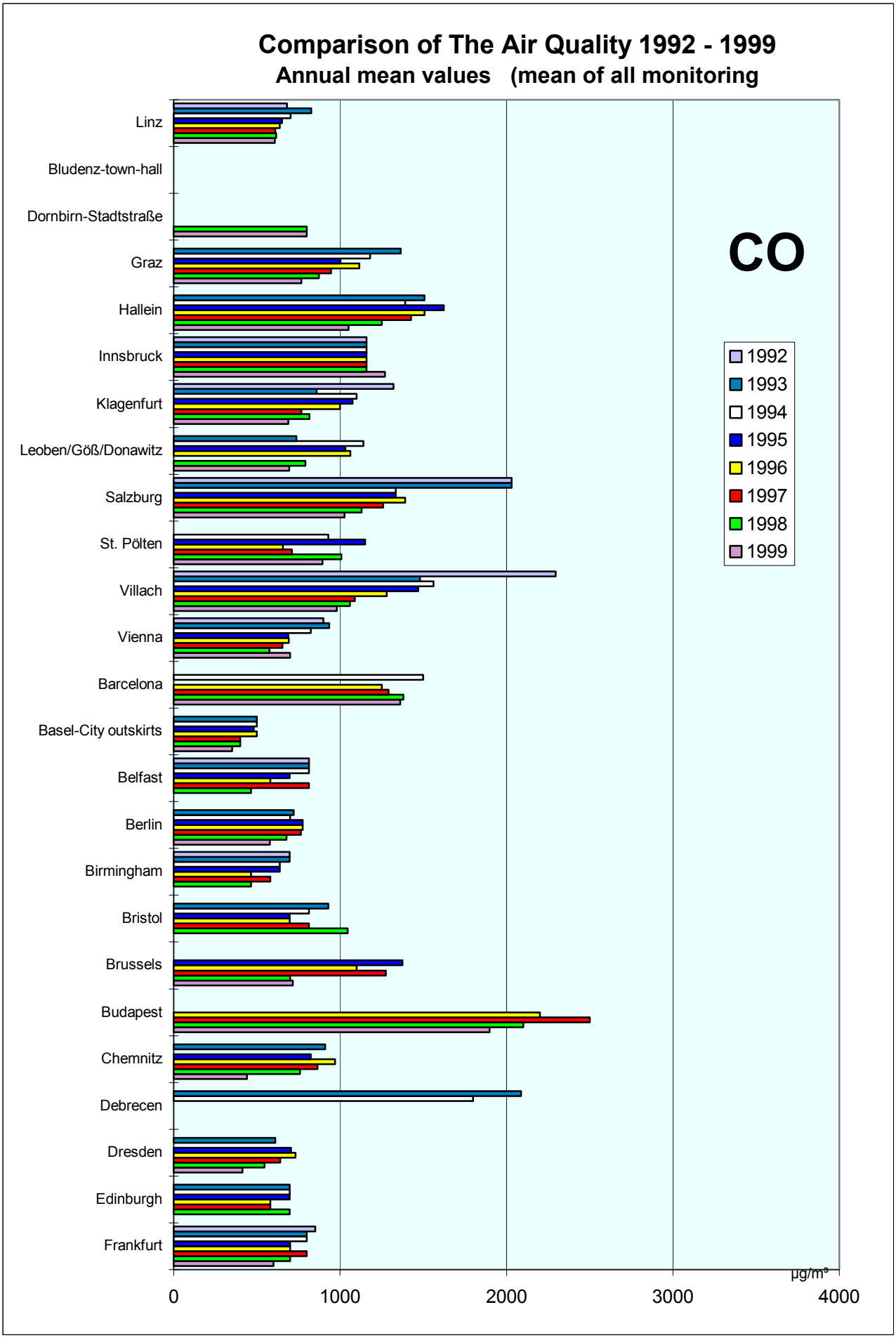
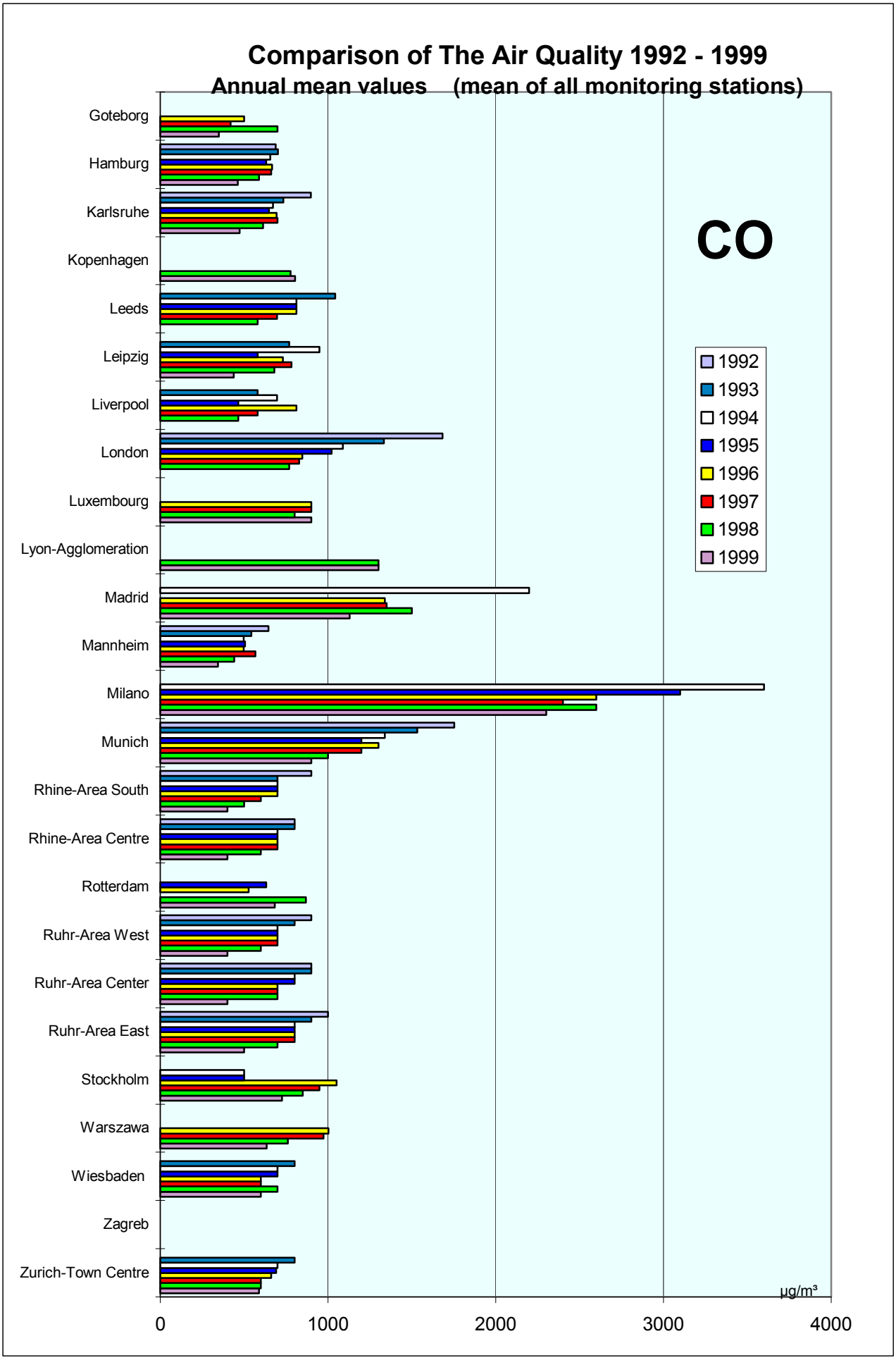
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
µg/m³
0
25
50
75
100


Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring
CO
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
1000
2000
3000
4000


Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
CO
1992
1993
1994
1995
1996
1997
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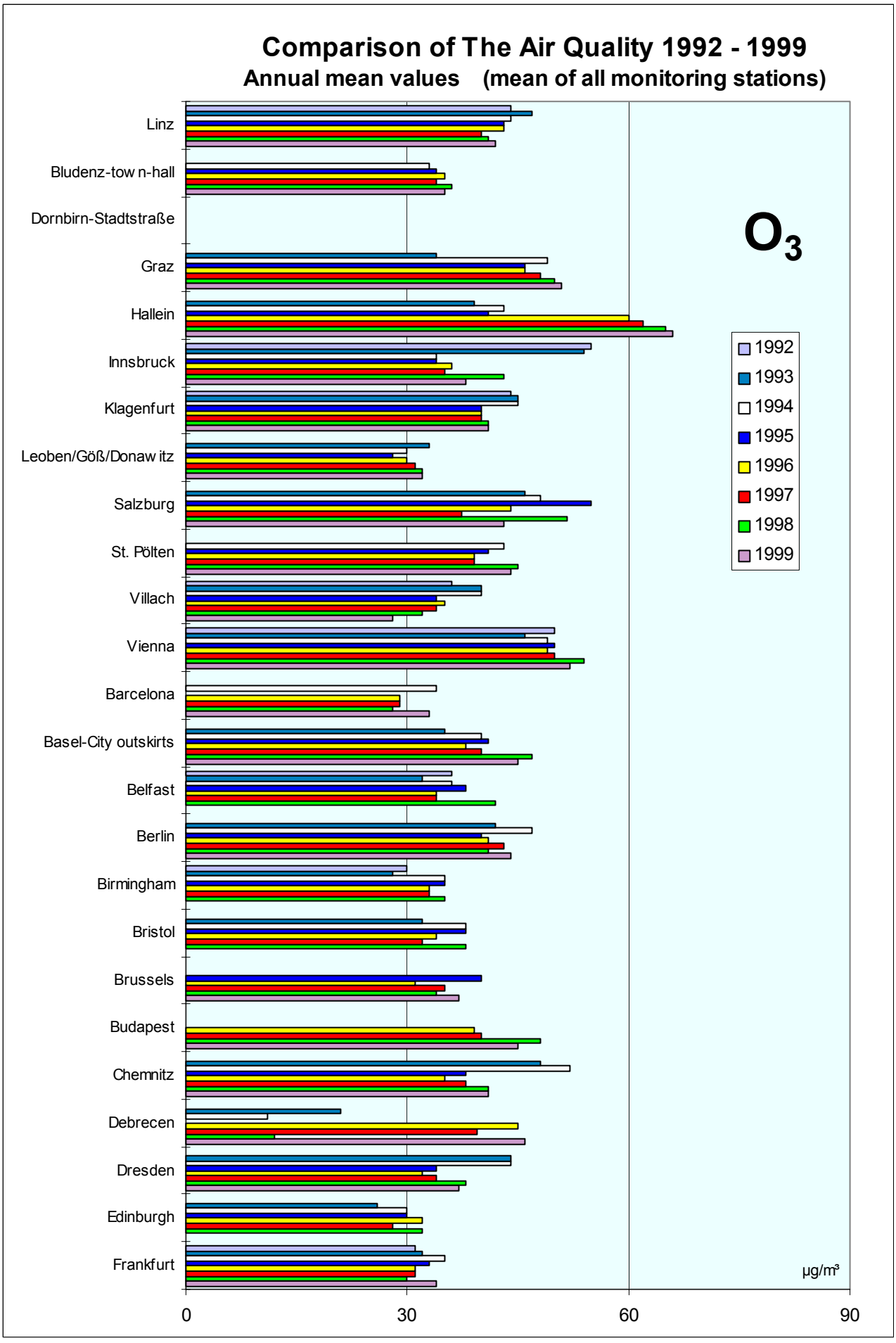
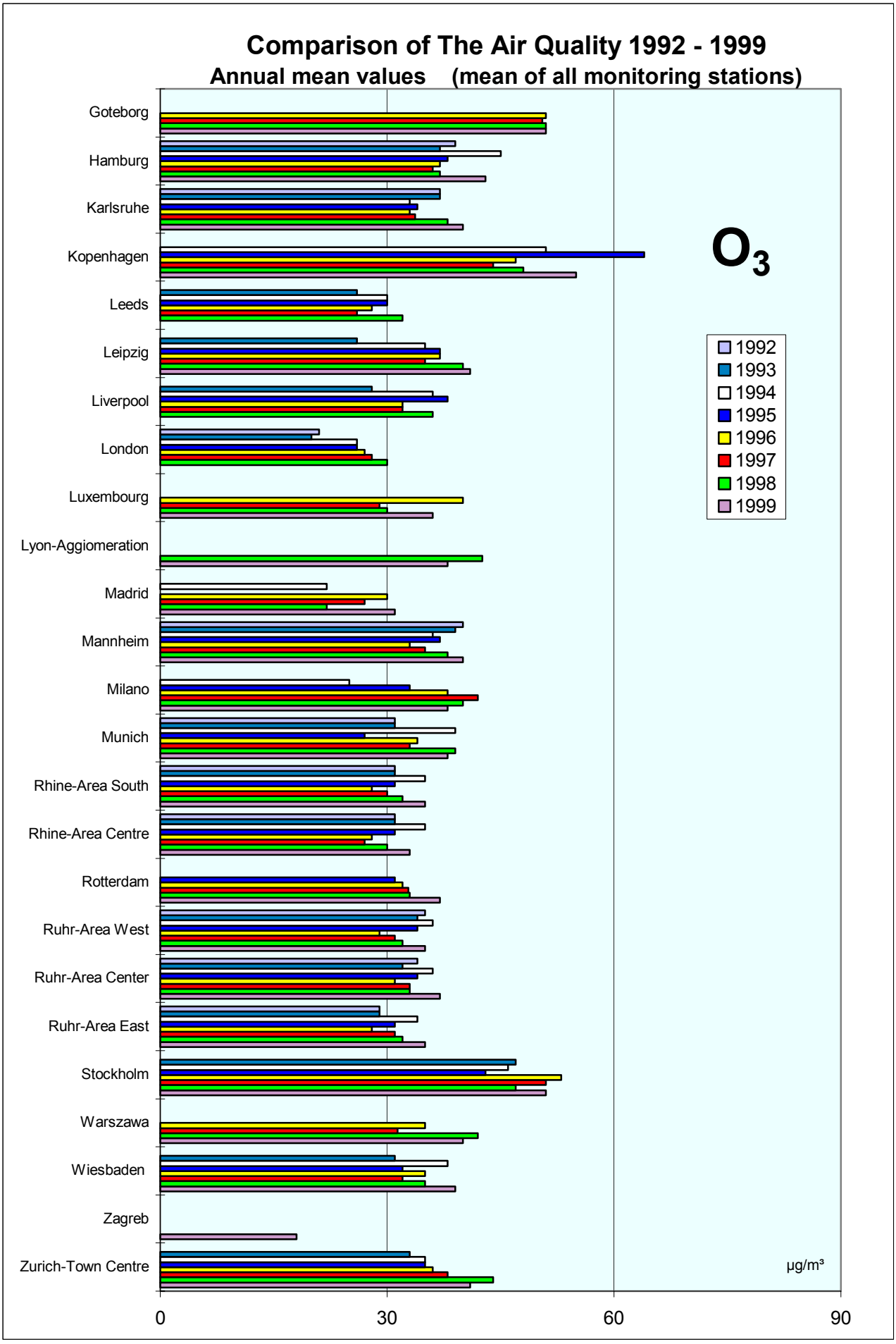
1999
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
µg/m³
0
1000
2000
3000
4000


Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
O3
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
30
60
90


Comparison of The Air Quality 1992 - 1999
Annual mean values (mean of all monitoring stations)
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Aggiomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
O3
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
30
60
90

Jahresvergleich

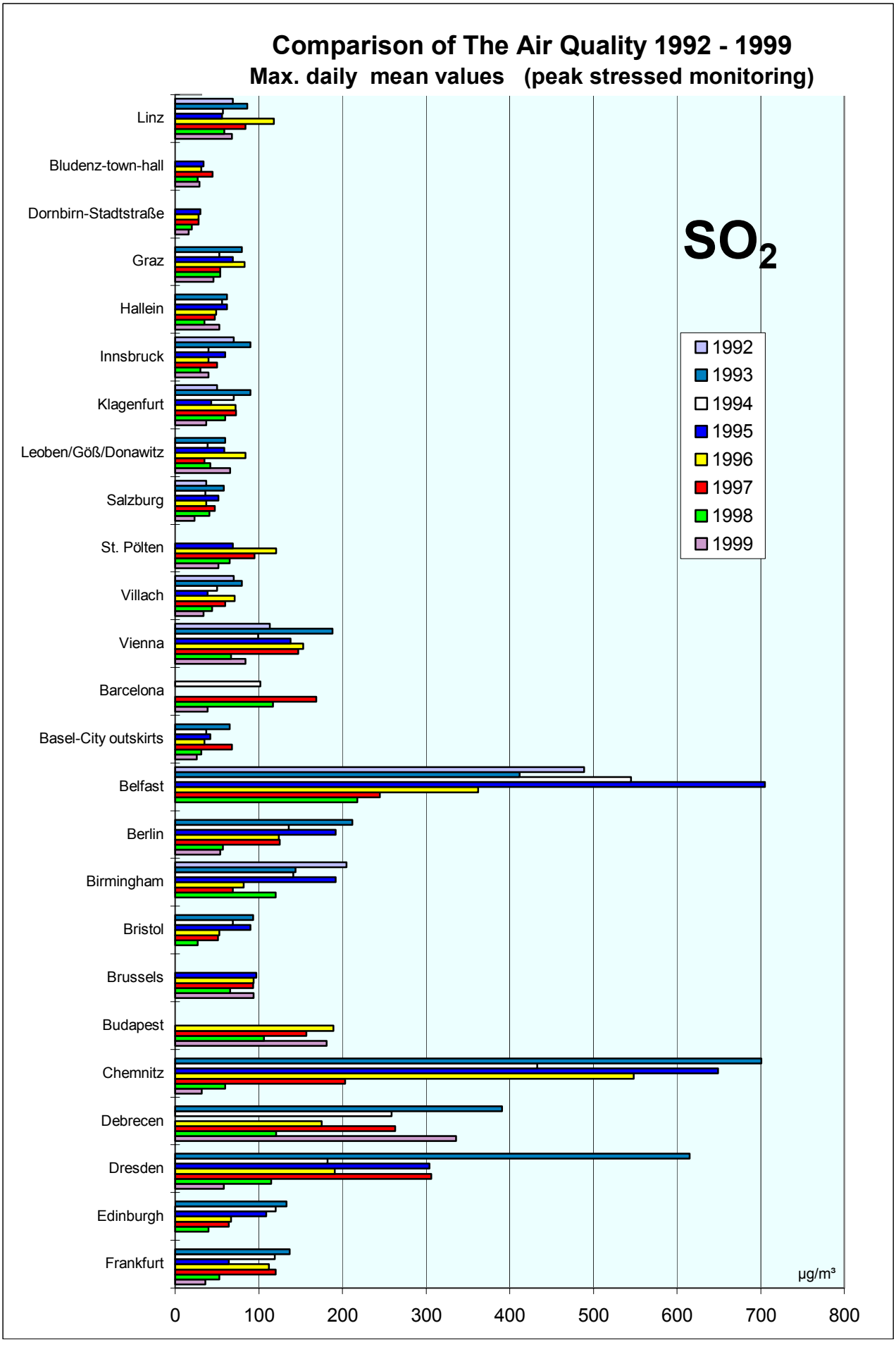
1992 - 1999

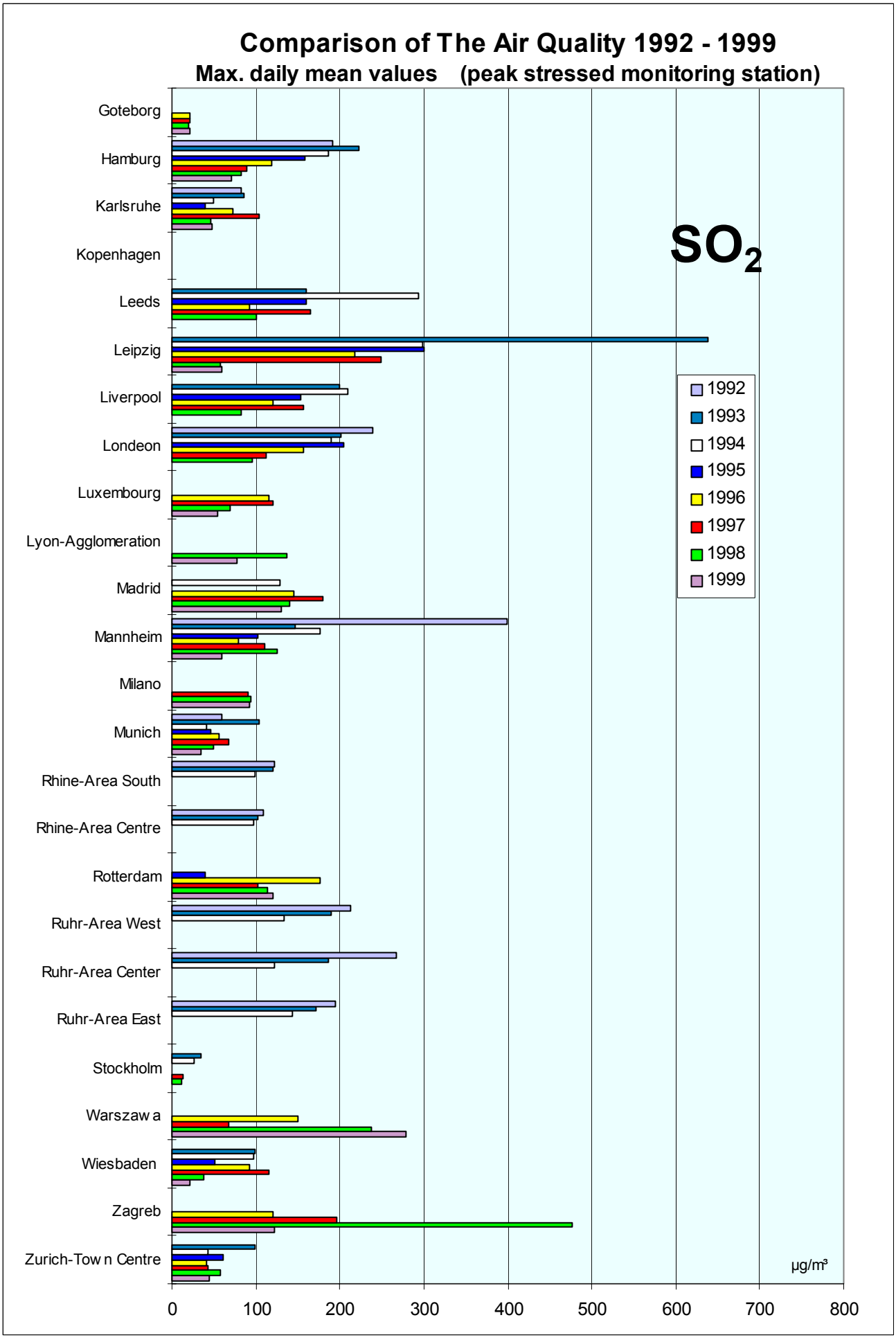
max. Tagesmittelwerte

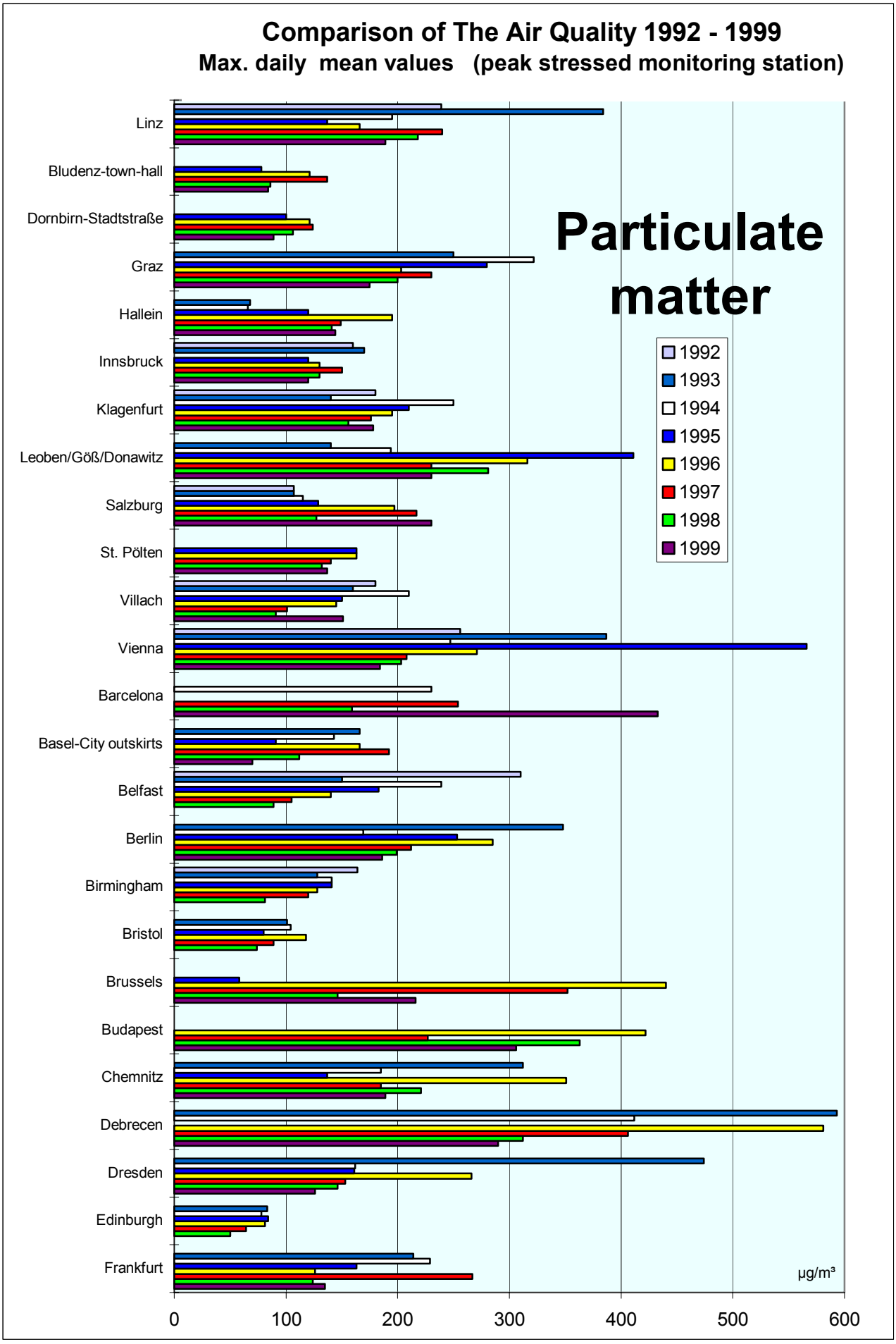
Comparison of The Air Quality Over The Years

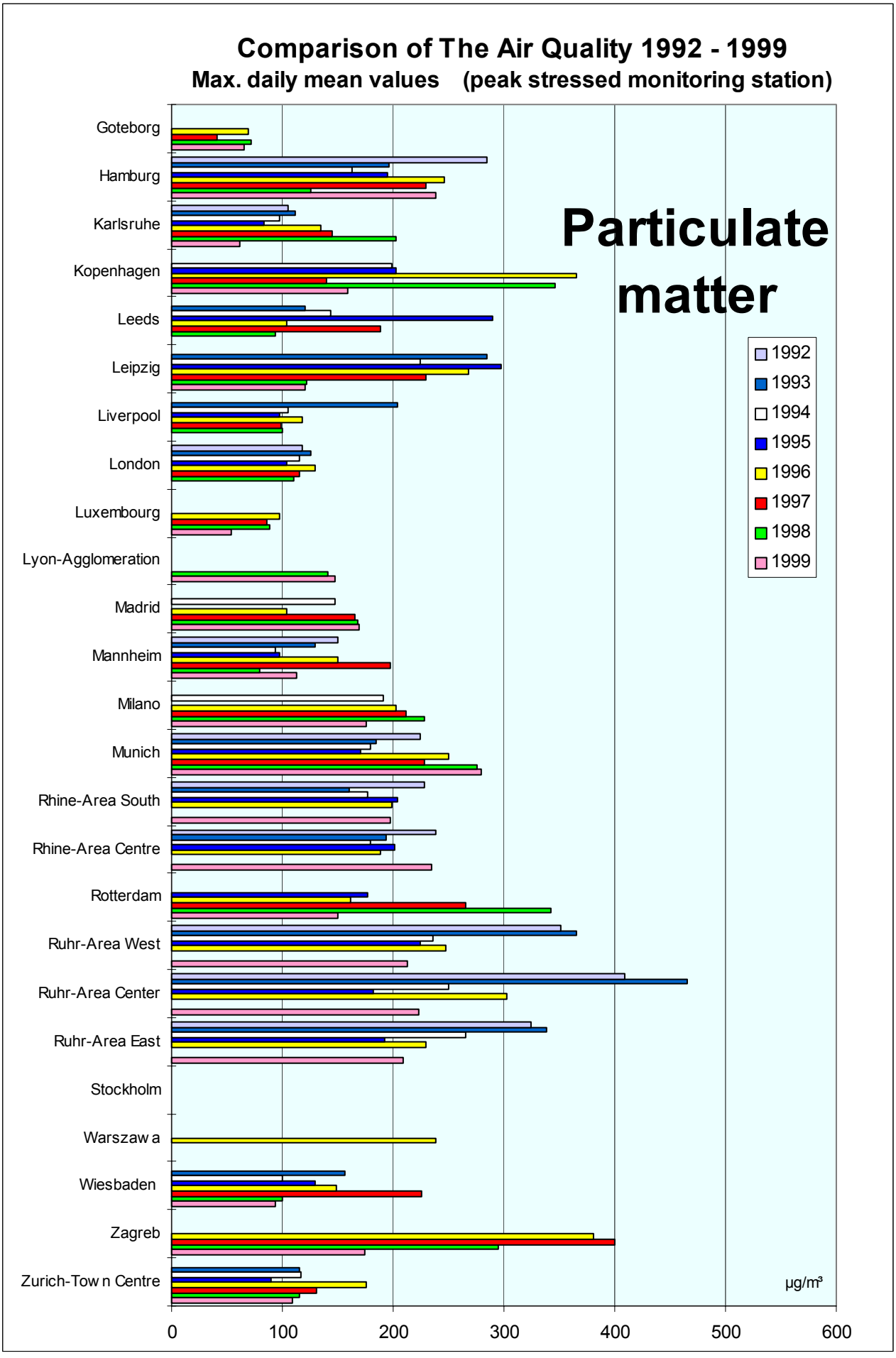
1992 - 1999

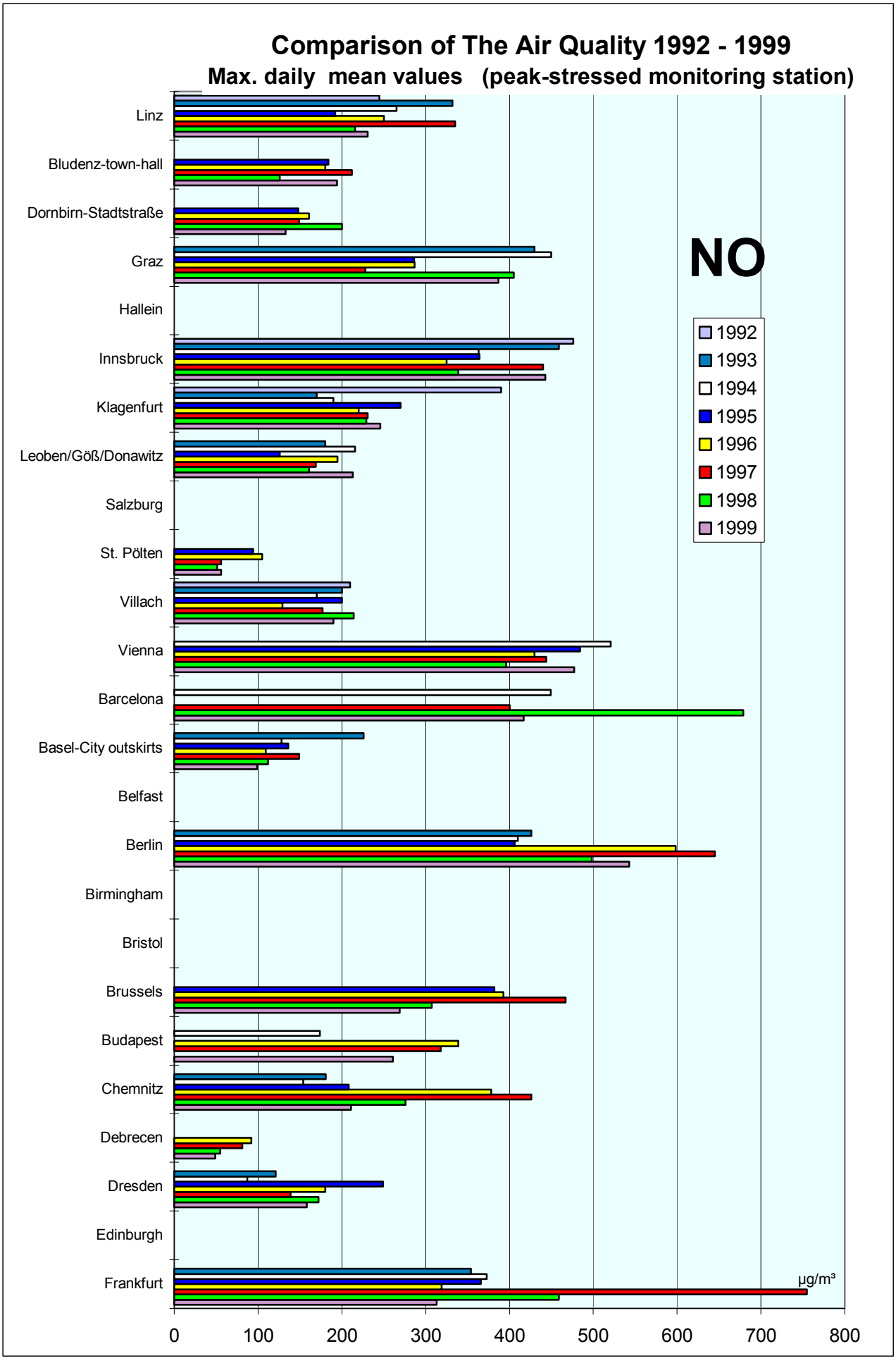
Max. Daily Mean Values

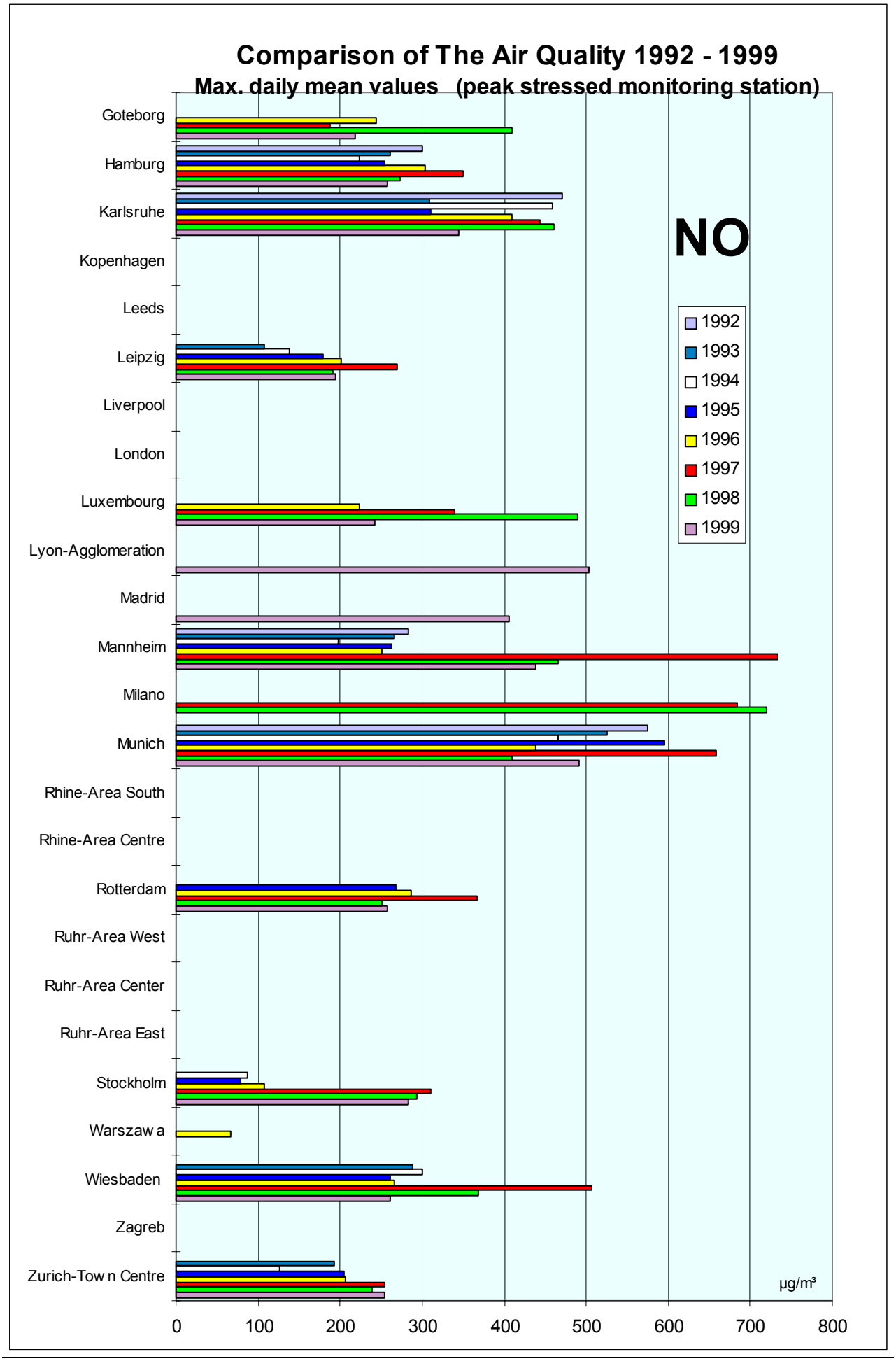

Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak stressed monitoring)
SO2
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
100
200
300
400
500
600
700
800

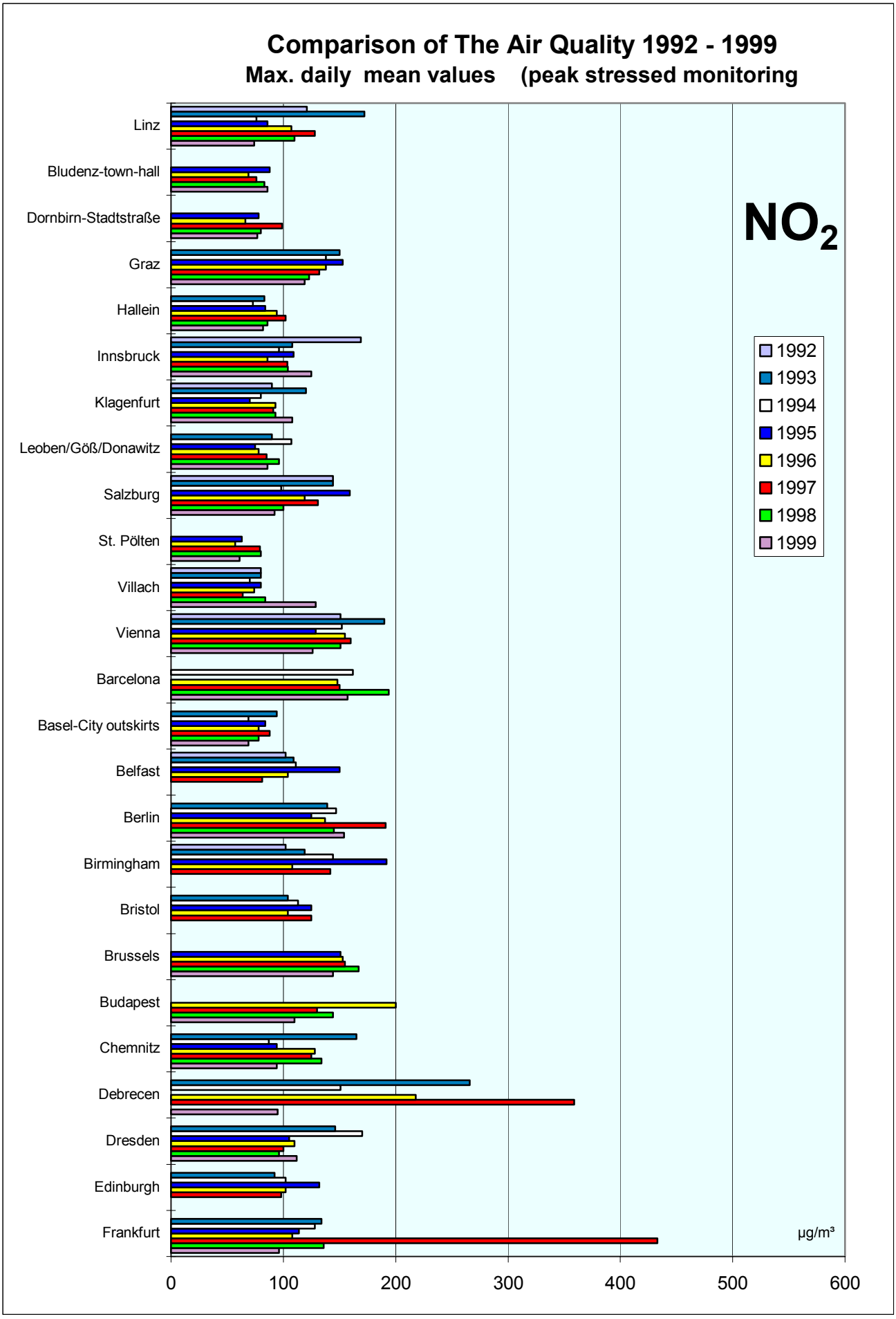

Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak stressed monitoring station)
SO2
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
Londeon
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszaw a
Wiesbaden
Zagreb
Zurich-Tow n Centre
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
100
200
300
400
500
600
700
800

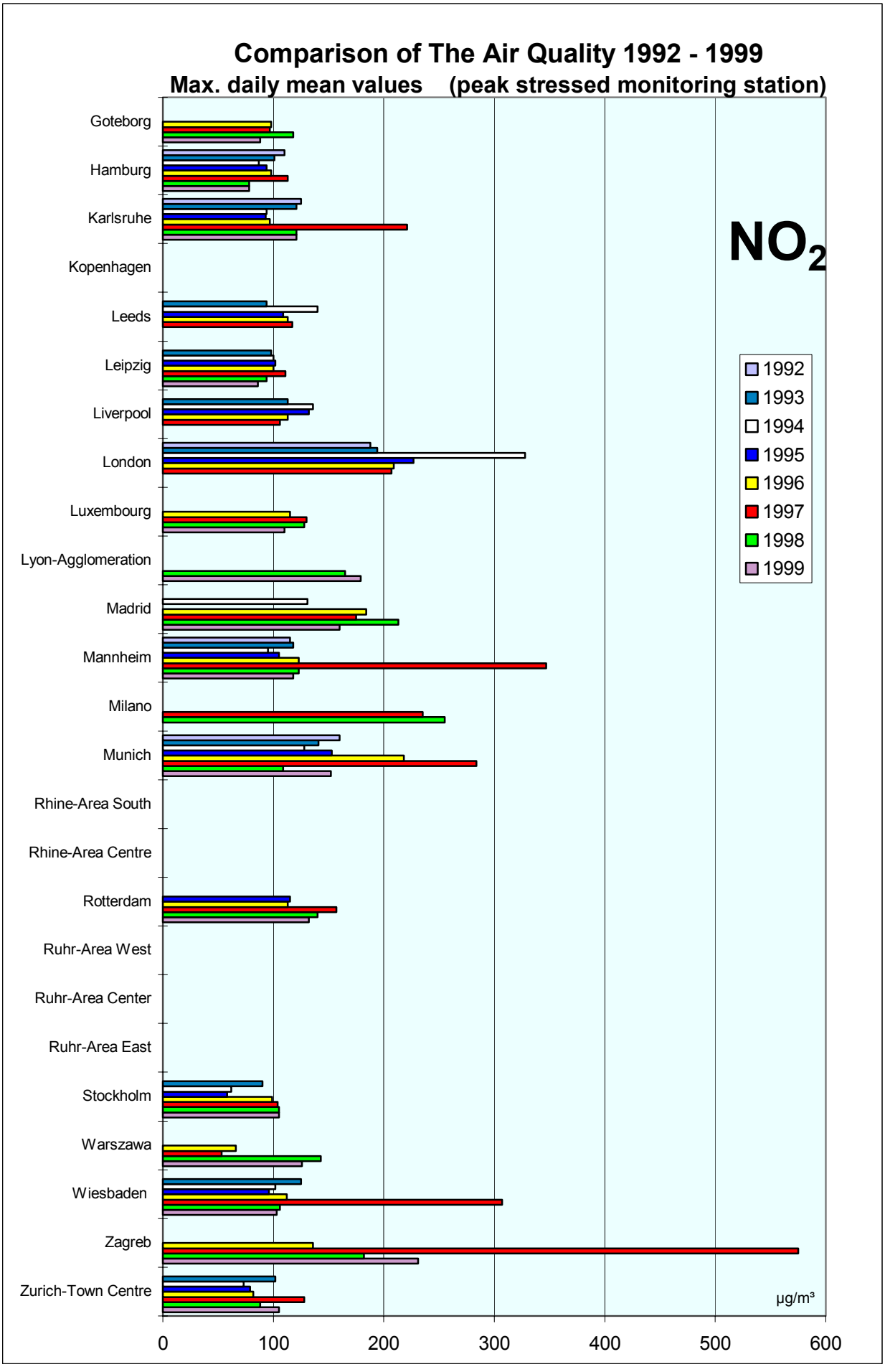

Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak stressed monitoring station)
Particulate matter
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
100
200
300
400
500
600

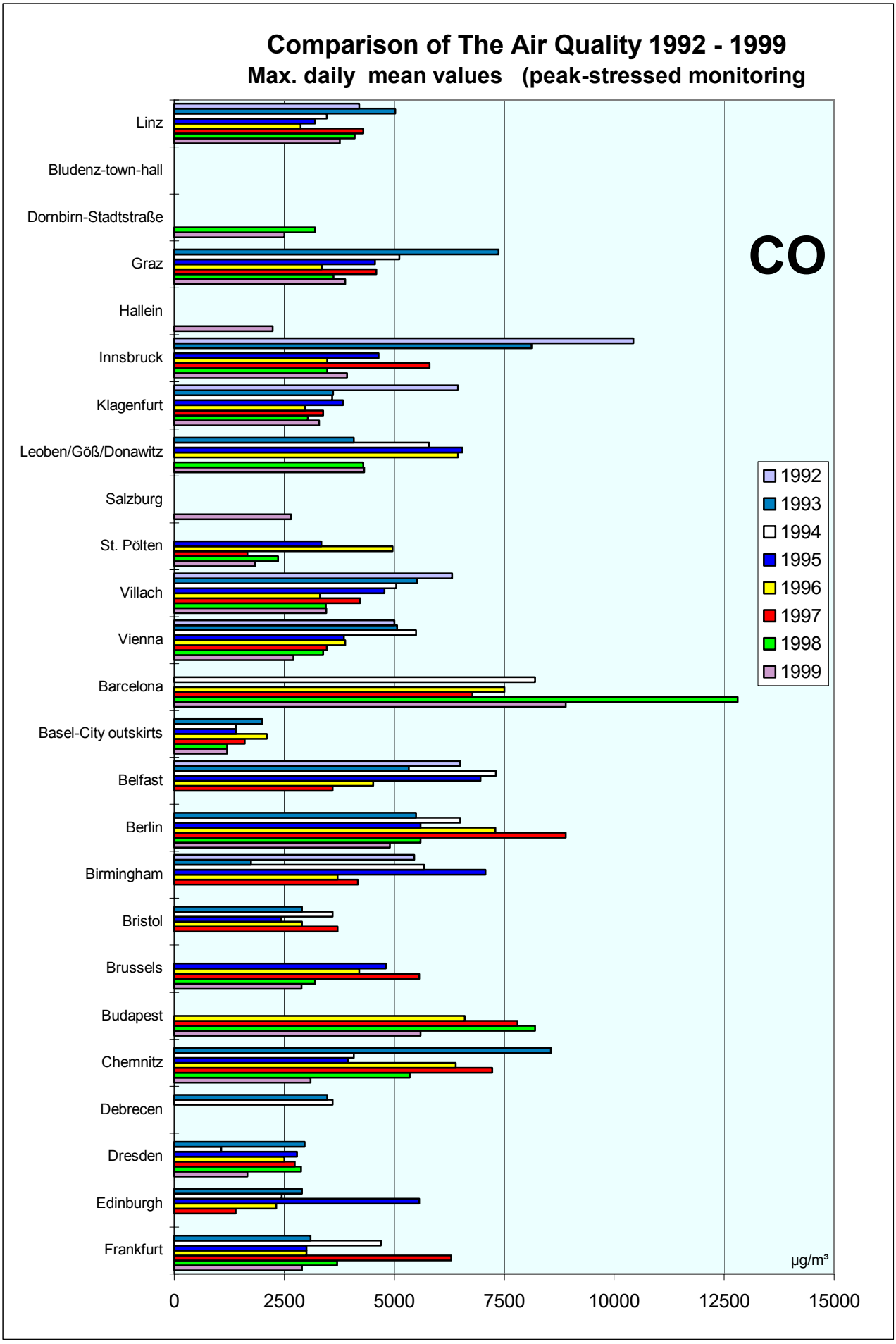

Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak stressed monitoring station)
Particulate matter
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszaw a
Wiesbaden
Zagreb
Zurich-Tow n Centre
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
100
200
300
400
500
600

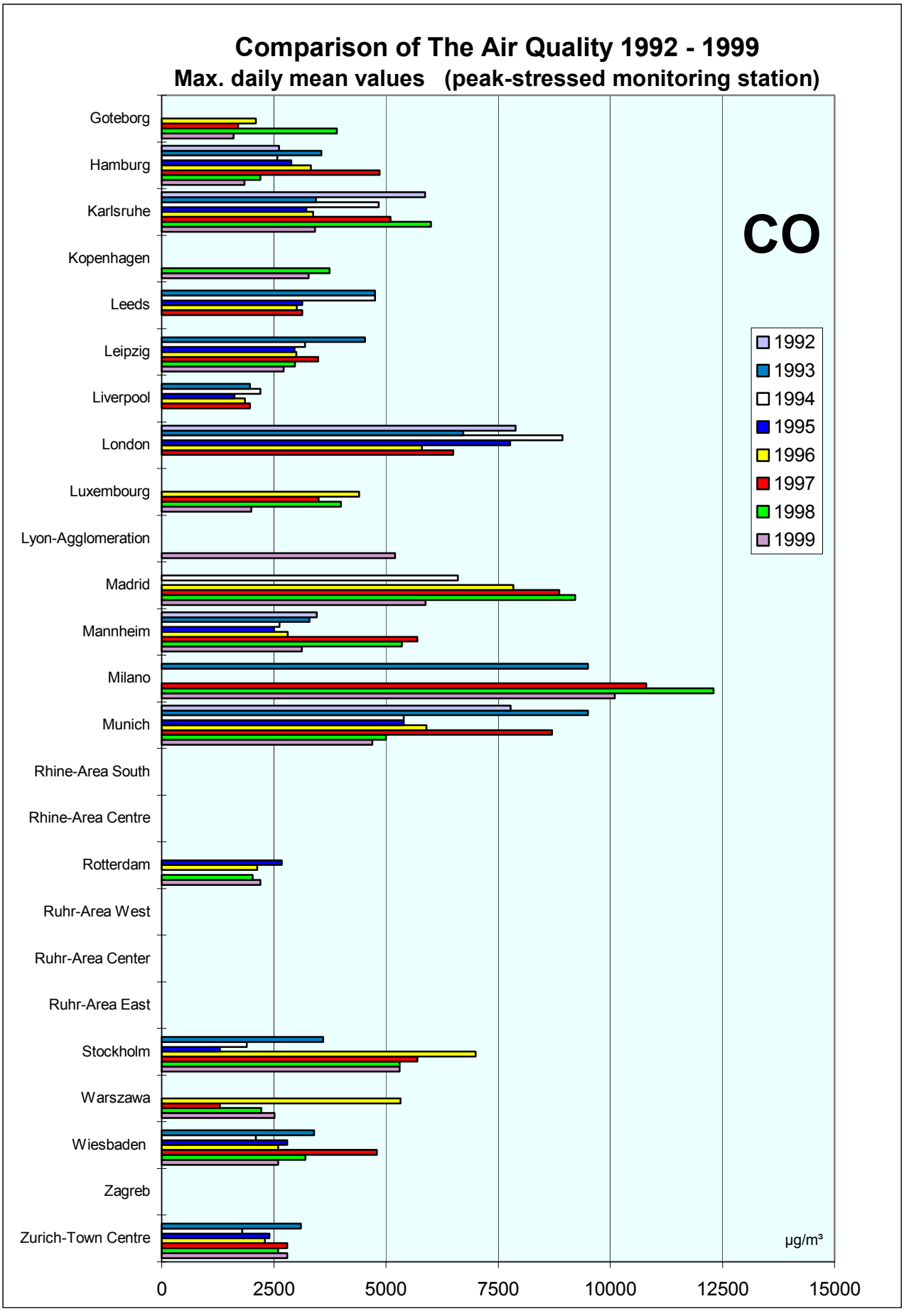

Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak-stressed monitoring station)
NO
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
100
200
300
400
500
600
700
800

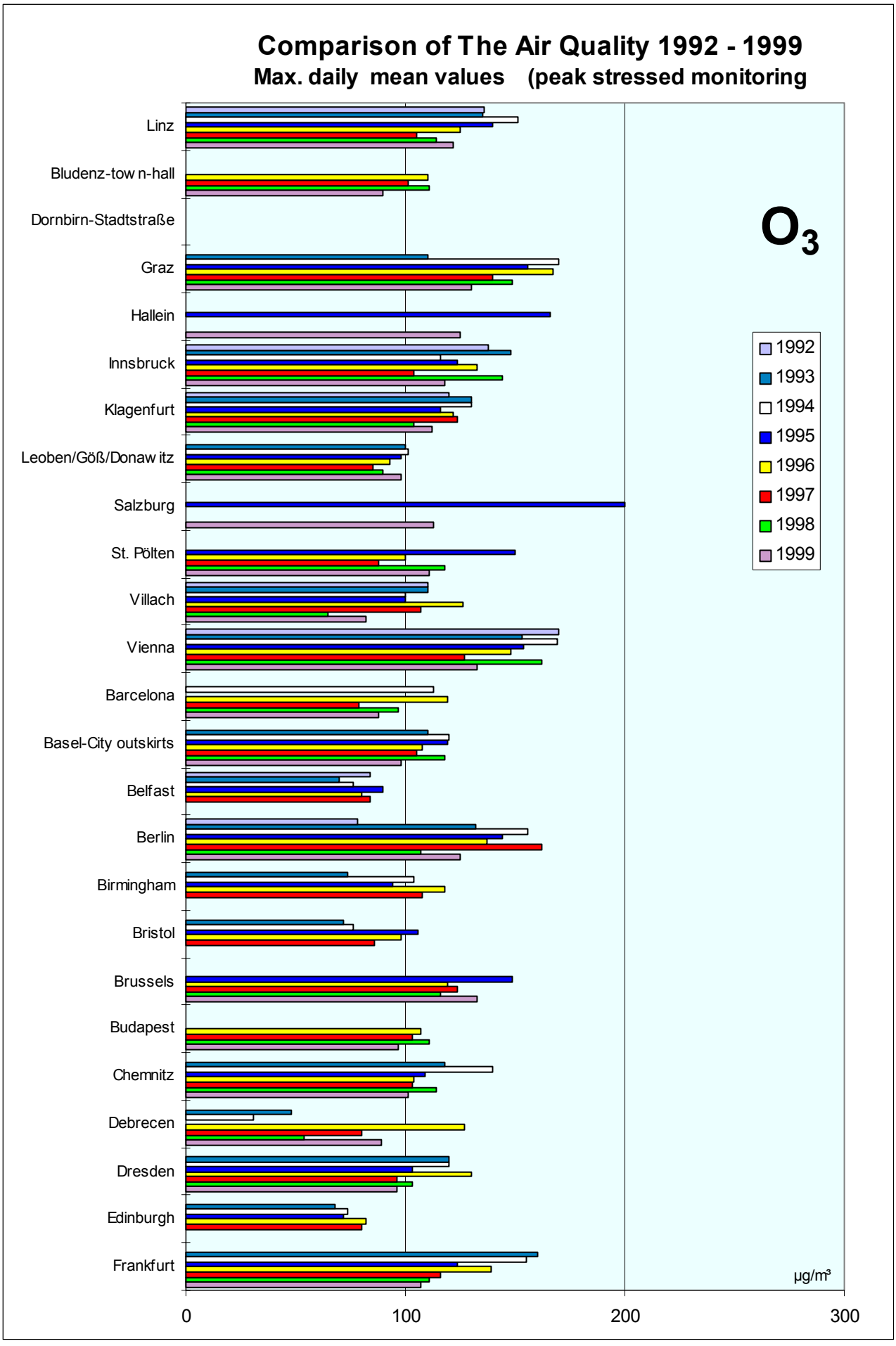

Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak stressed monitoring station)
NO
1992
1993
1994
1995
1996
1997
1998
1999
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszaw a
Wiesbaden
Zagreb
Zurich-Tow n Centre
µg/m³
0
100
200
300
400
500
600
700
800

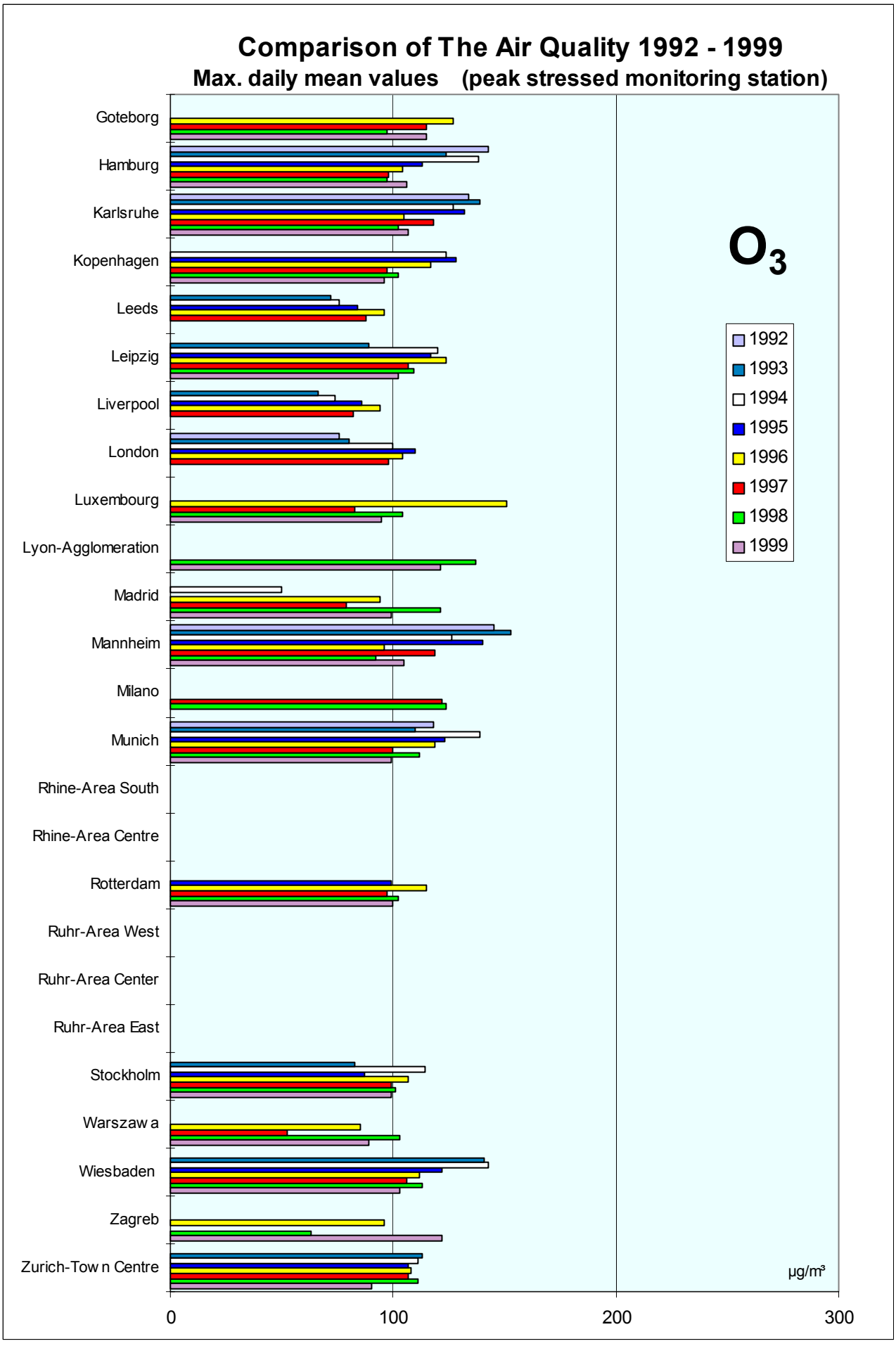

Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak stressed monitoring
NO2
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
100
200
300
400
500
600


Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak stressed monitoring station)
NO2
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
100
200
300
400
500
600


Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak-stressed monitoring
CO
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
2500
5000
7500
10000
12500
15000


Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak-stressed monitoring station)
CO
1992
1993
1994
1995
1996
1997
1998
1999
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
µg/m³
0
2500
5000
7500
10000
12500
15000


Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak stressed monitoring
O3
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
100
200
300


Comparison of The Air Quality 1992 - 1999
Max. daily mean values (peak stressed monitoring station)
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszaw a
Wiesbaden
Zagreb
Zurich-Tow n Centre
O3
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
100
200
300

Jahresvergleich

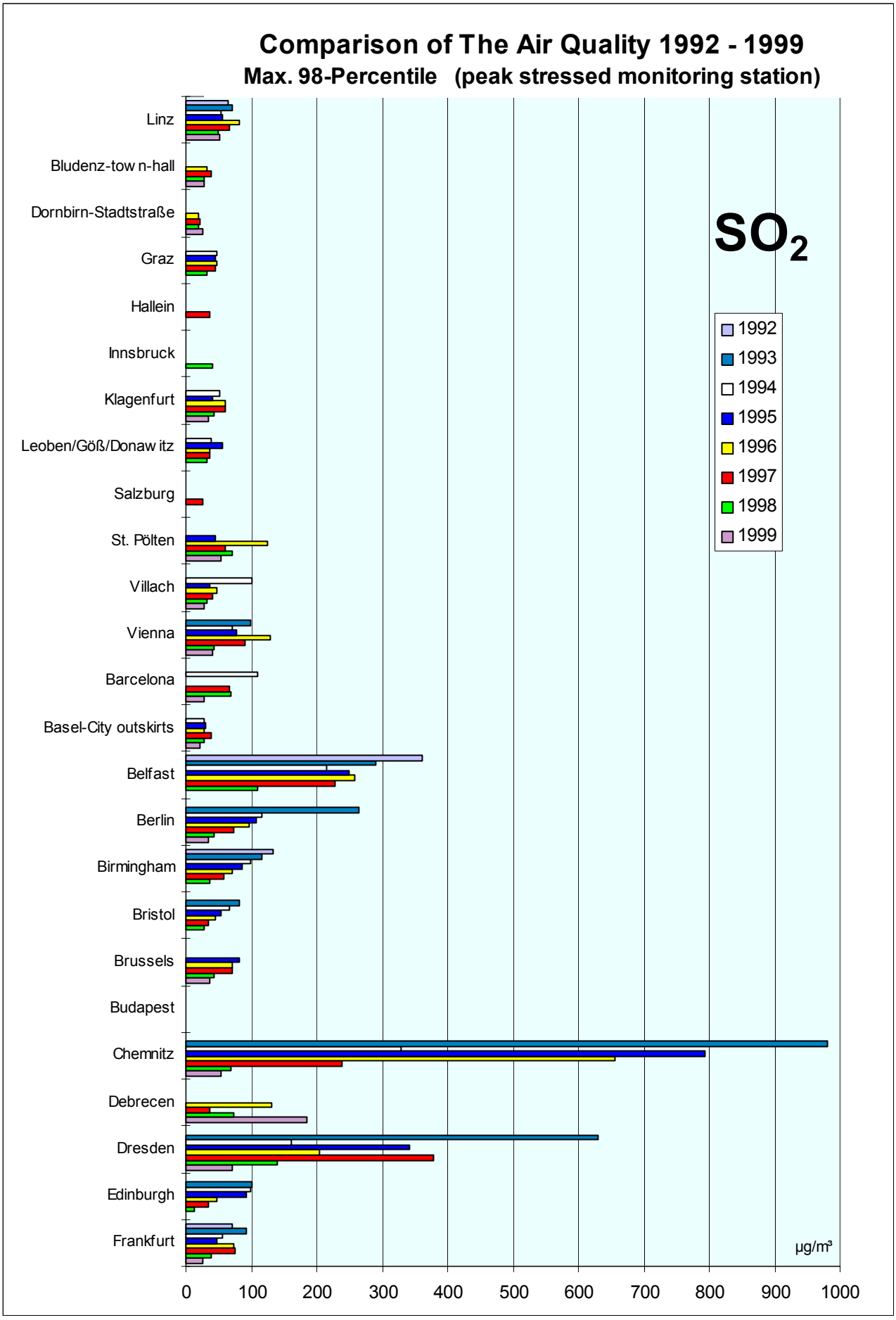
1992 - 1999

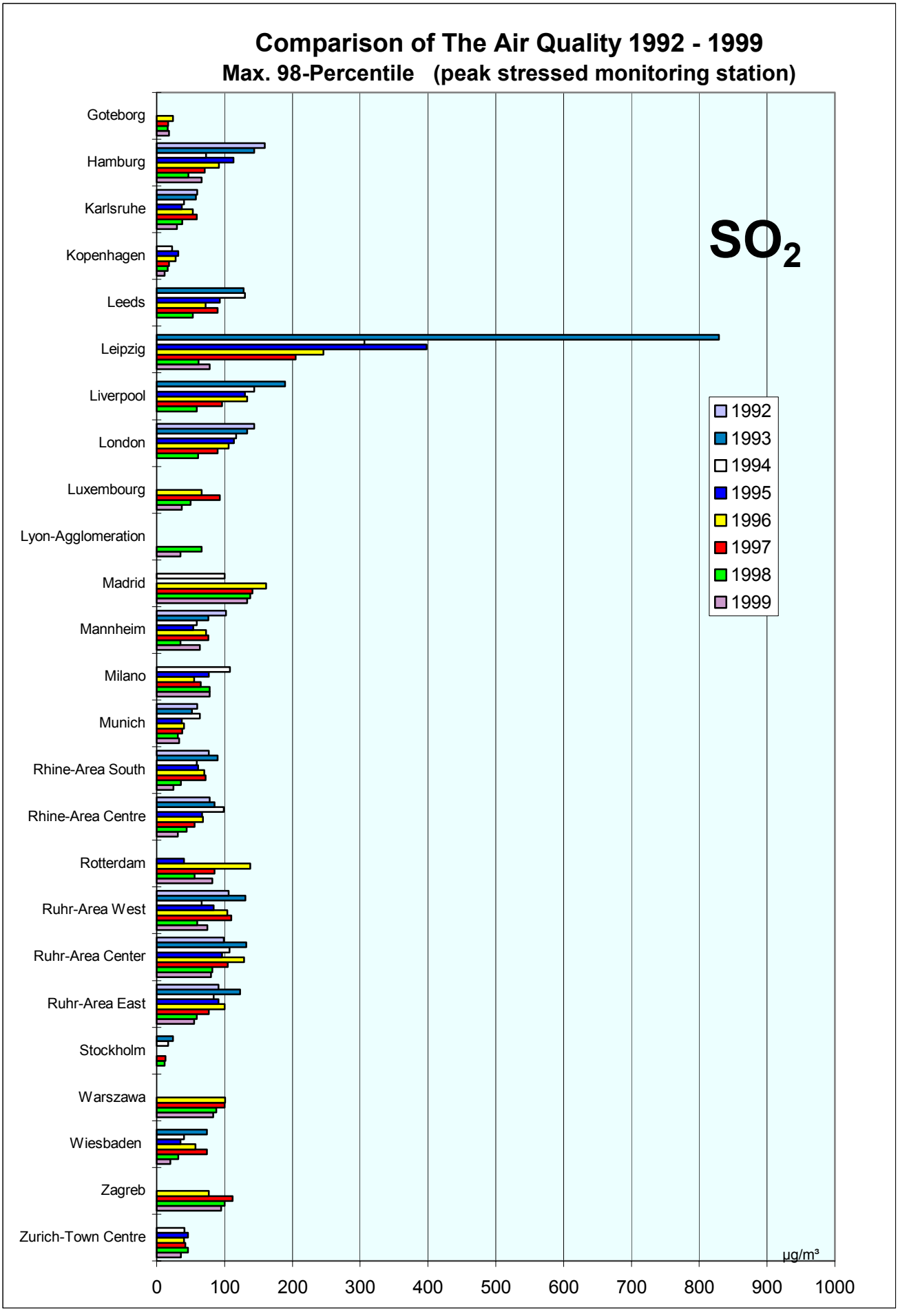
max. 98-Percentile

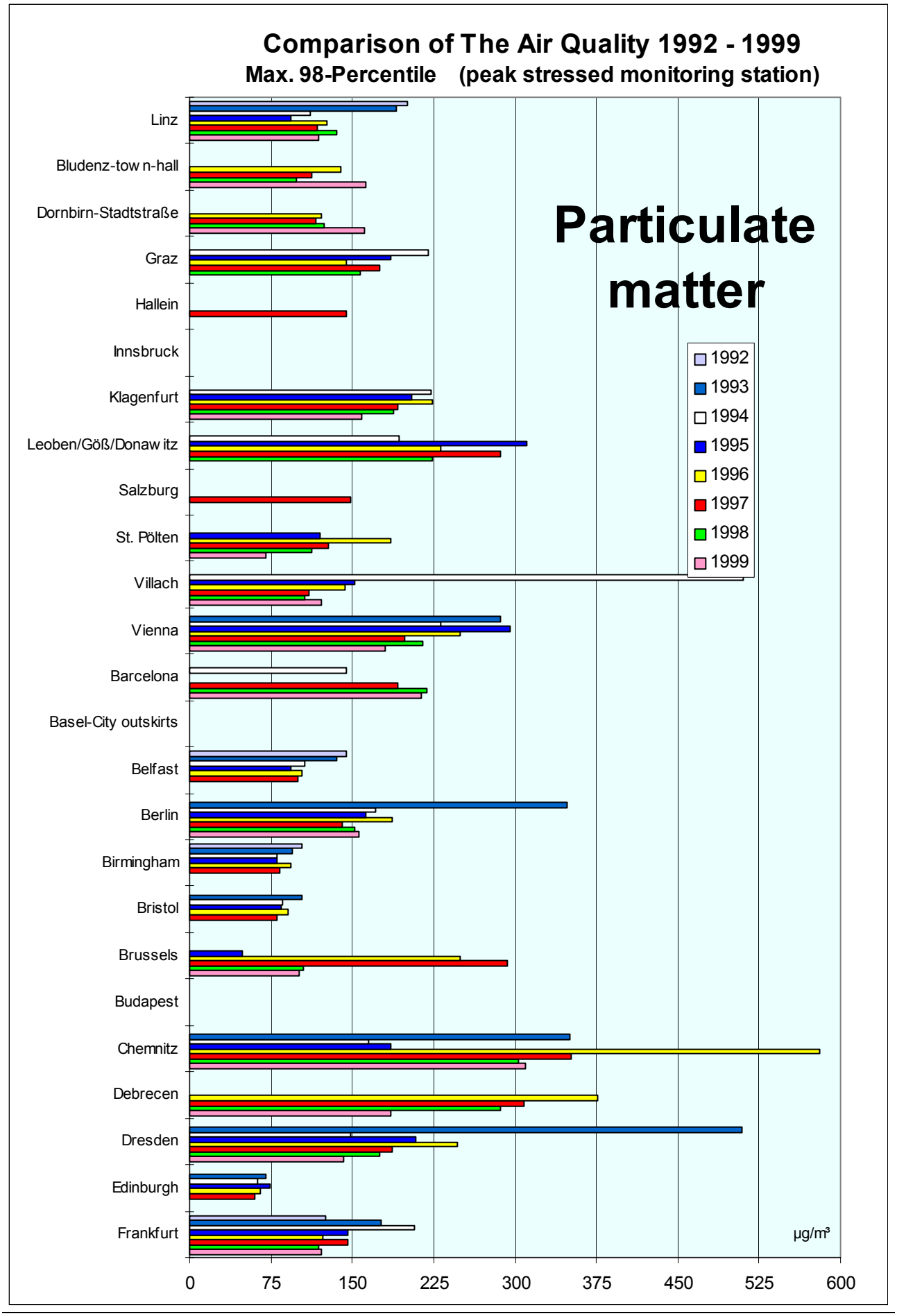
Comparison of The Air Quality Over The Years

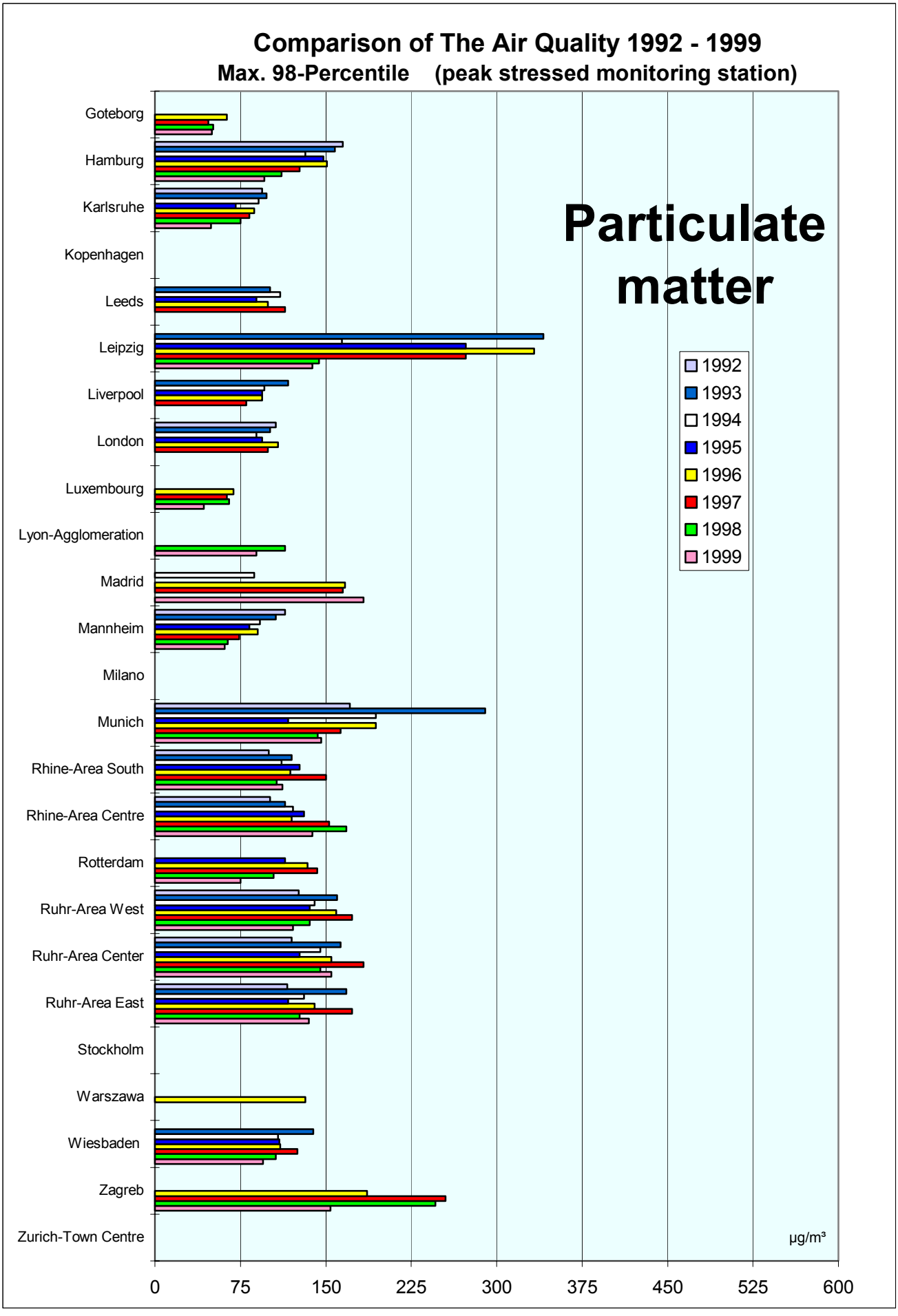
1992 - 1999

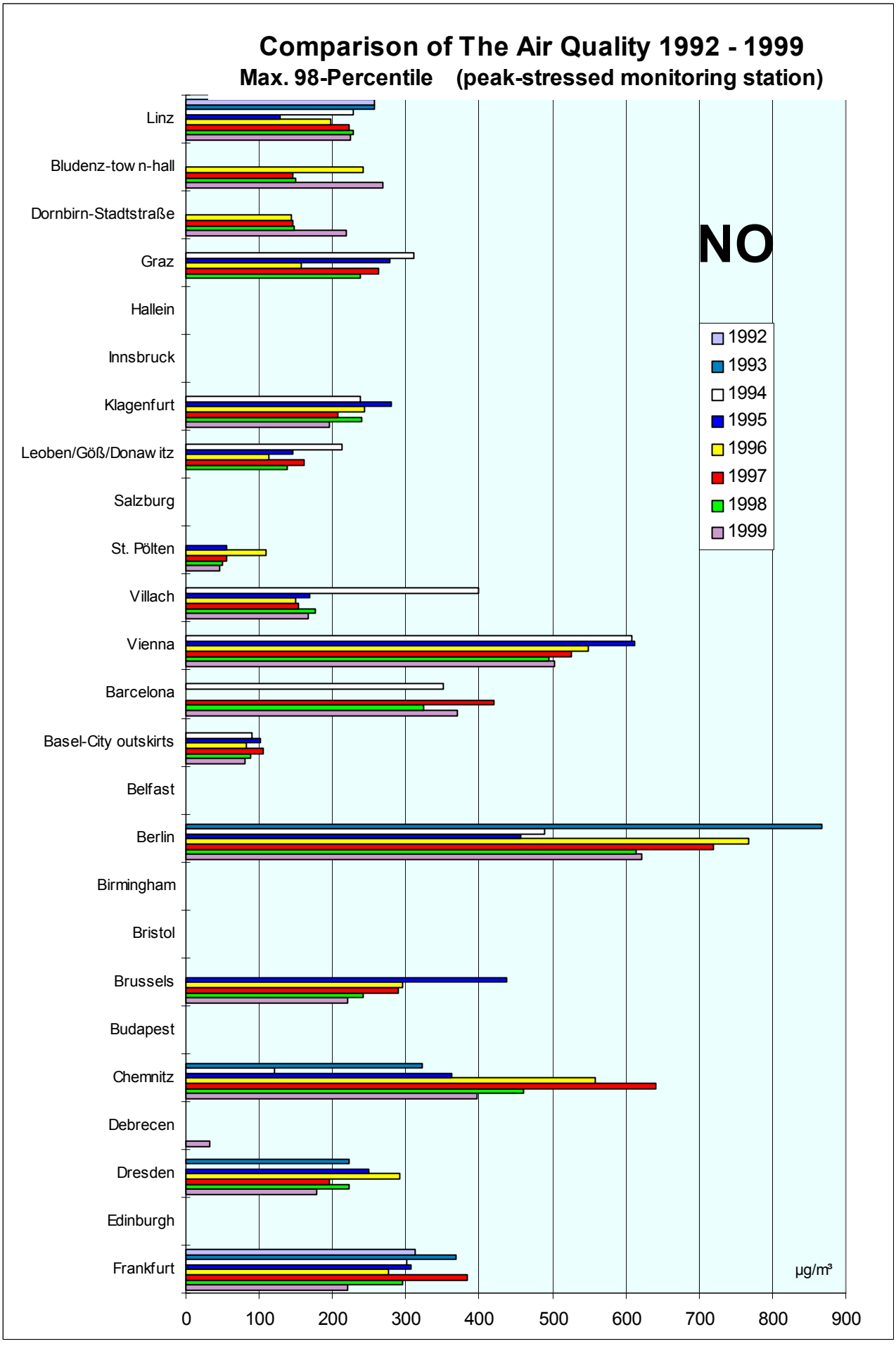
Max. 98-Percentiles

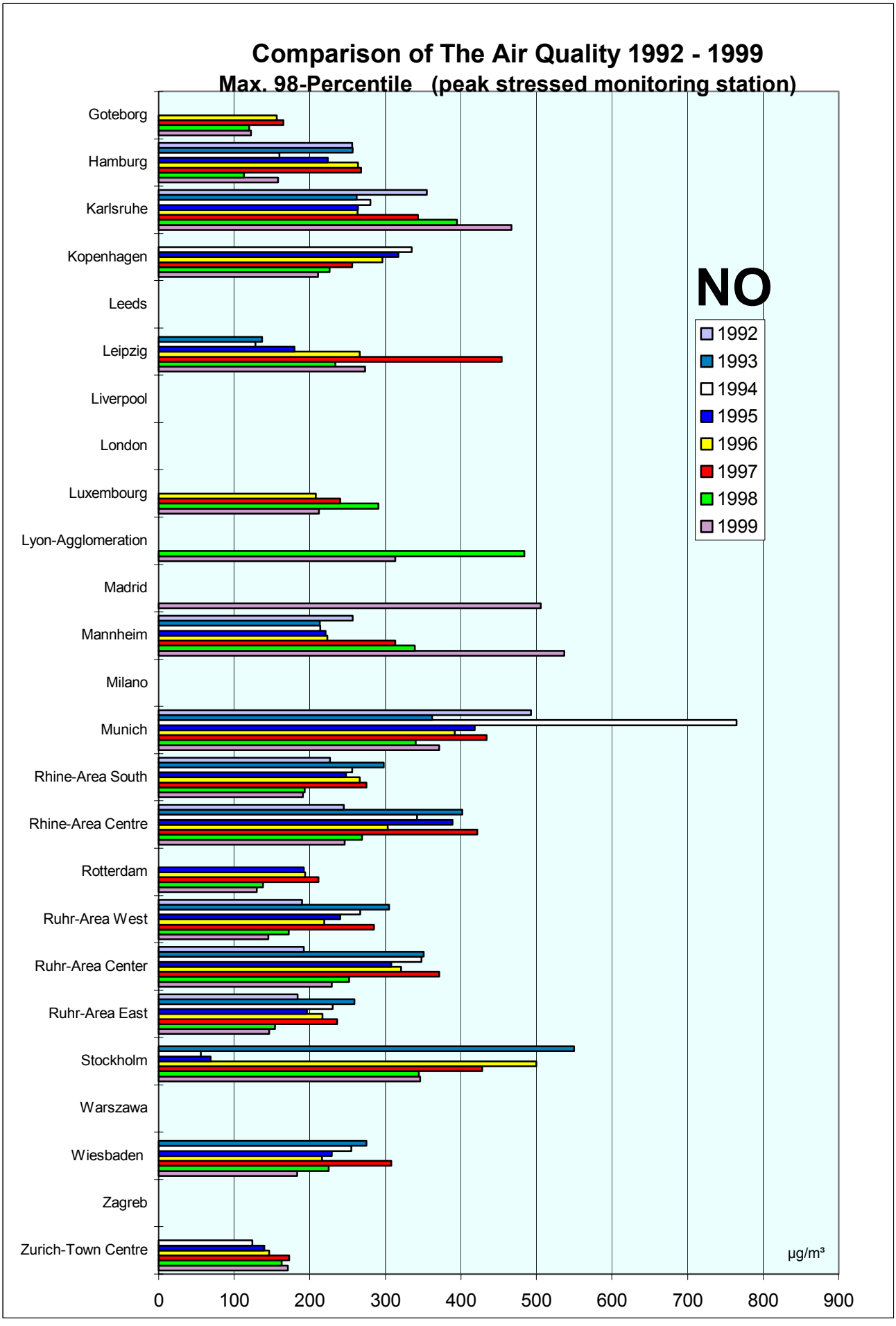

Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak stressed monitoring station)
SO2
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
100
200
300
400
500
600
700
800
900
1000

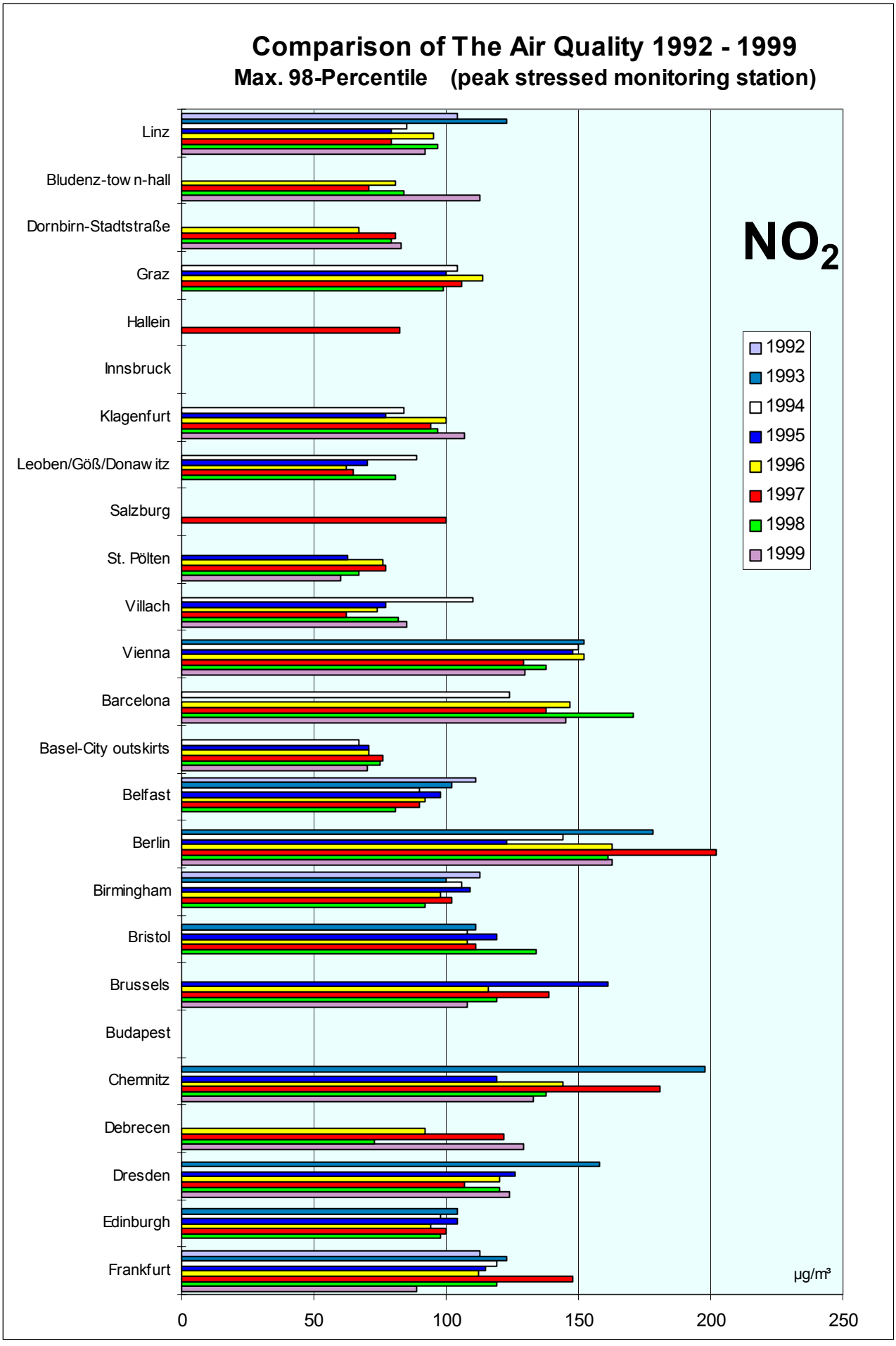

Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak stressed monitoring station)
SO2
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
100
200
300
400
500
600
700
800
900
1000

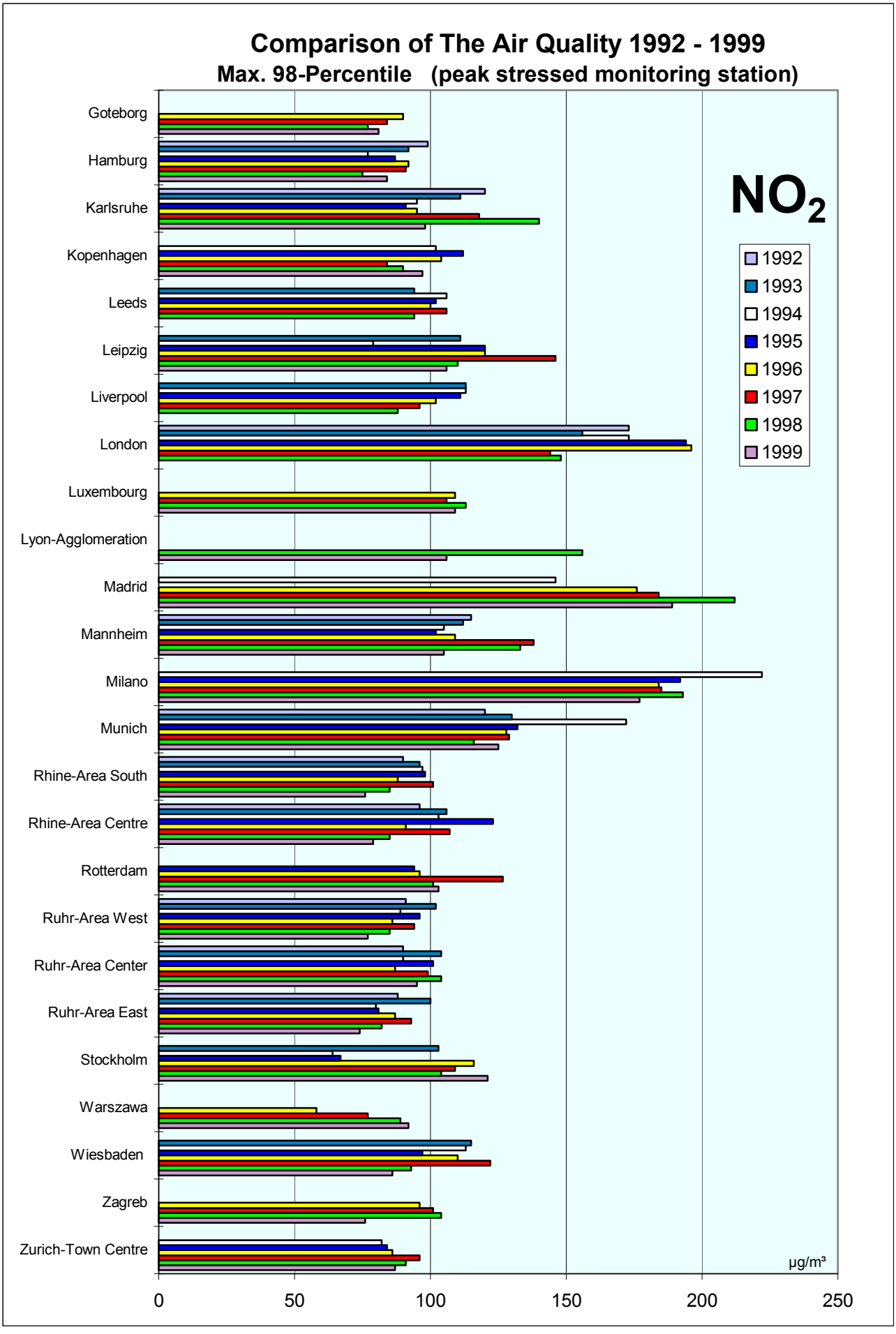

Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak stressed monitoring station)
Particulate matter
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
75
150
225
300
375
450
525
600

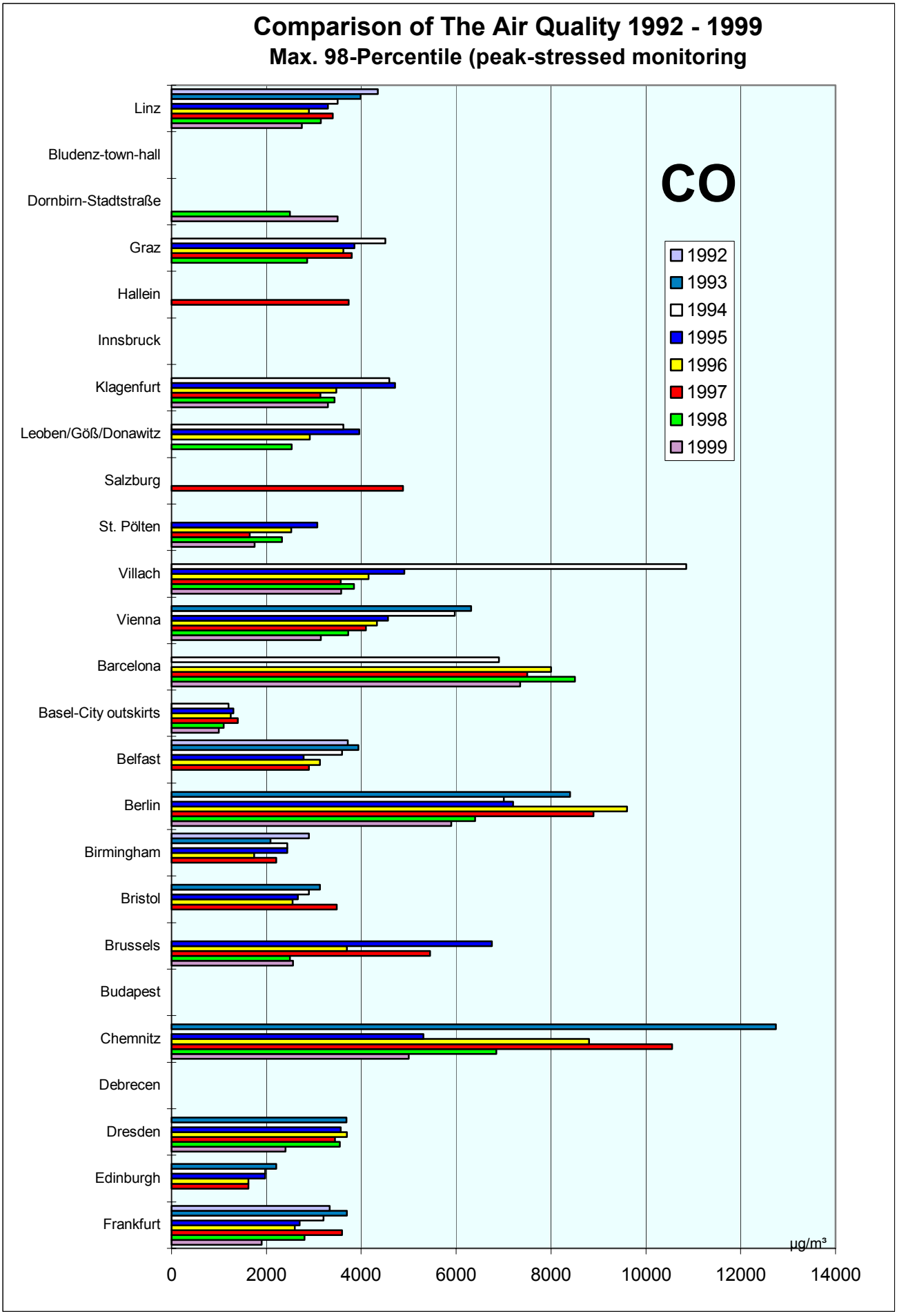

Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak stressed monitoring station)
Particulate matter
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
75
150
225
300
375
450
525
600

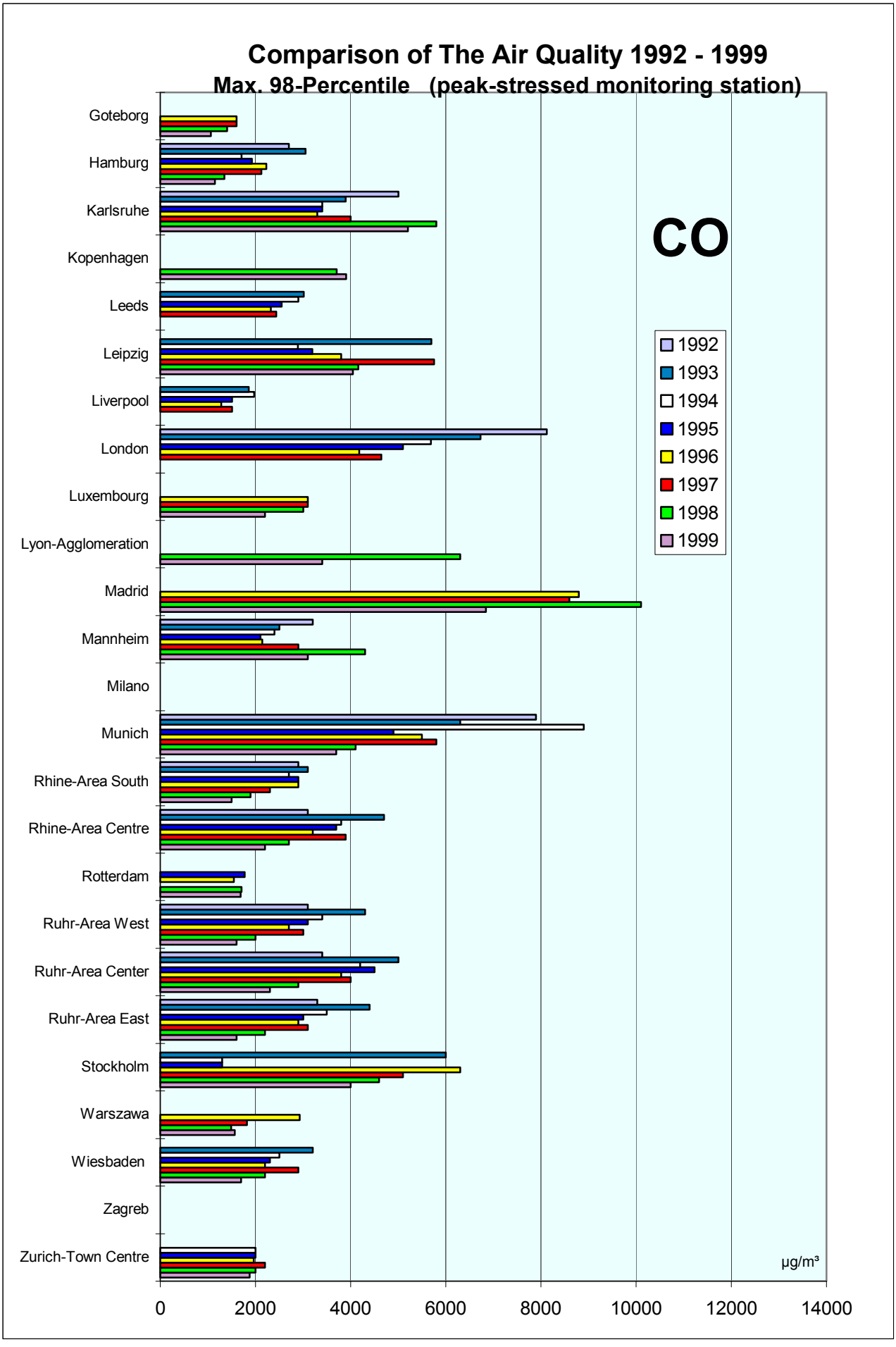

Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak-stressed monitoring station)
NO
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
100
200
300
400
500
600
700
800
900

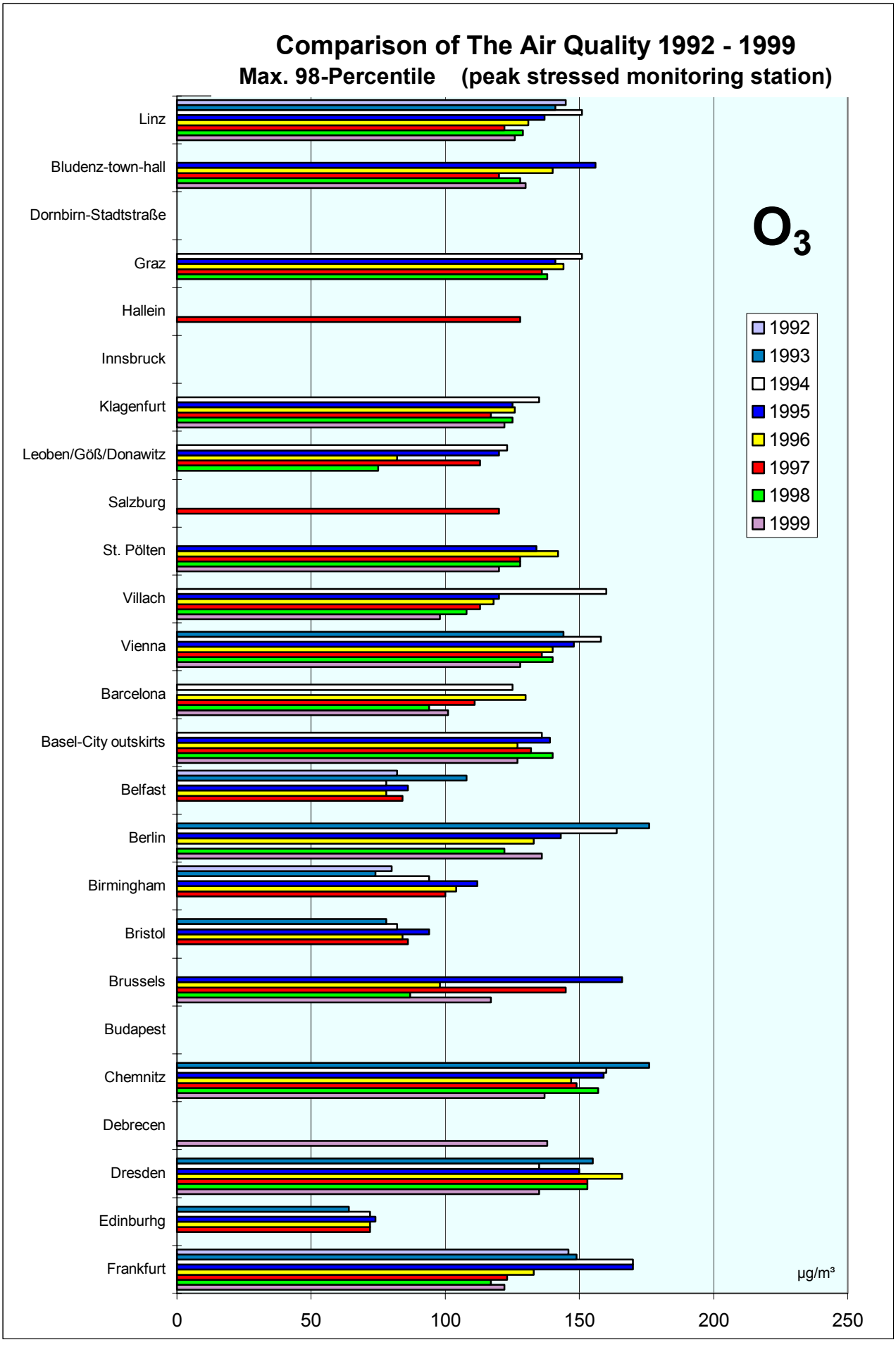

Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak stressed monitoring station)
NO
1992
1993
1994
1995
1996
1997
1998
1999
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
µg/m³
0
100
200
300
400
500
600
700
800
900

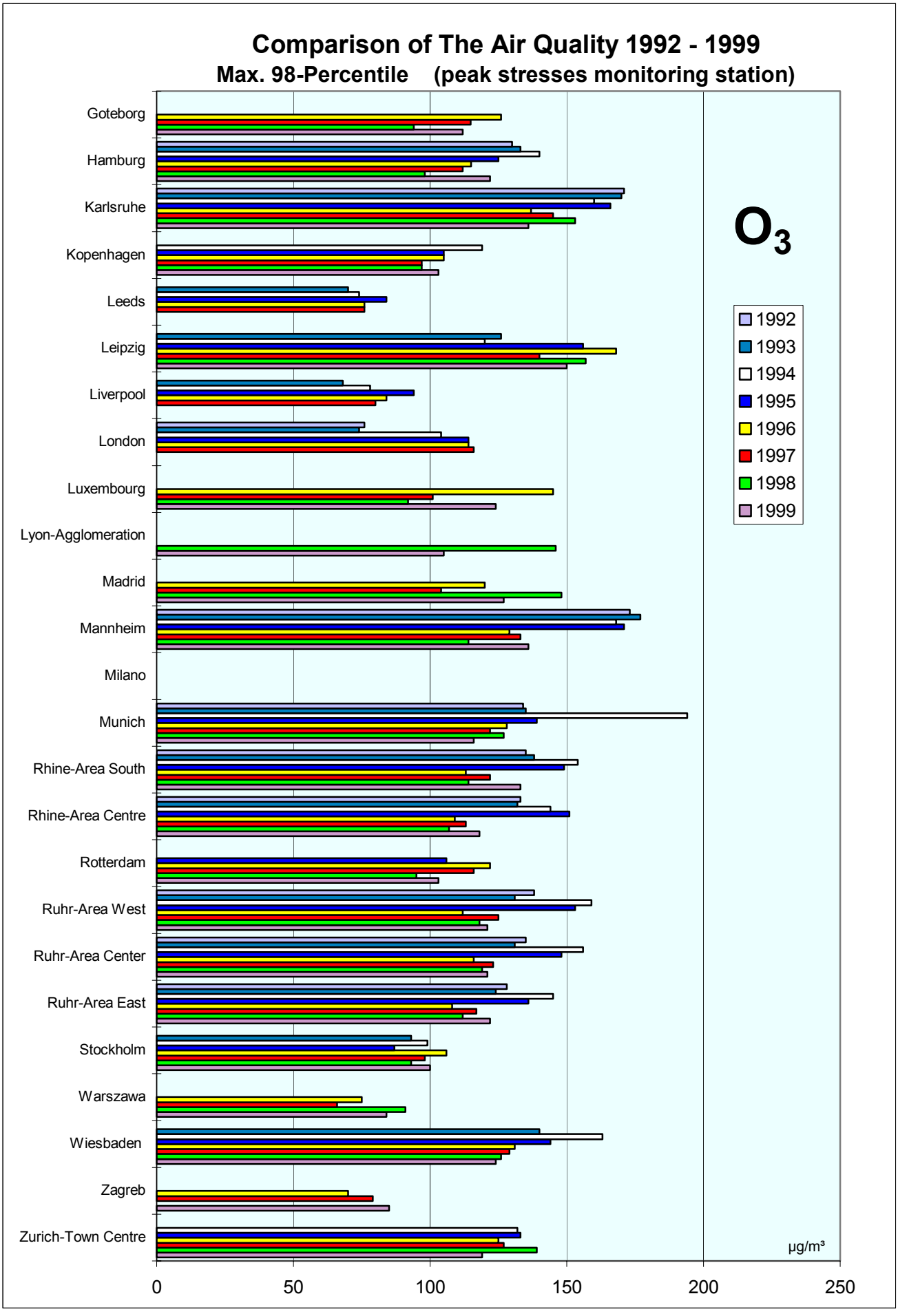

Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak stressed monitoring station)
NO2
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-tow n-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donaw itz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
50
100
150
200
250


Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak stressed monitoring station)
NO2
1992
1993
1994
1995
1996
1997
1998
1999
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
µg/m³
0
50
100
150
200
250


Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak-stressed monitoring
CO
1992
1993
1994
1995
1996
1997
1998
1999
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburgh
Frankfurt
µg/m³
0
2000
4000
6000
8000
10000
12000
14000


Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak-stressed monitoring station)
CO
1992
1993
1994
1995
1996
1997
1998
1999
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
µg/m³
0
2000
4000
6000
8000
10000
12000
14000


Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak stressed monitoring station)
Linz
Bludenz-town-hall
Dornbirn-Stadtstraße
Graz
Hallein
Innsbruck
Klagenfurt
Leoben/Göß/Donawitz
Salzburg
St. Pölten
Villach
Vienna
Barcelona
Basel-City outskirts
Belfast
Berlin
Birmingham
Bristol
Brussels
Budapest
Chemnitz
Debrecen
Dresden
Edinburhg
Frankfurt
O3
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
50
100
150
200
250


Comparison of The Air Quality 1992 - 1999
Max. 98-Percentile (peak stresses monitoring station)
Goteborg
Hamburg
Karlsruhe
Kopenhagen
Leeds
Leipzig
Liverpool
London
Luxembourg
Lyon-Agglomeration
Madrid
Mannheim
Milano
Munich
Rhine-Area South
Rhine-Area Centre
Rotterdam
Ruhr-Area West
Ruhr-Area Center
Ruhr-Area East
Stockholm
Warszawa
Wiesbaden
Zagreb
Zurich-Town Centre
O3
1992
1993
1994
1995
1996
1997
1998
1999
µg/m³
0
50
100
150
200
250

Luftgütekennzahlen

der einzelnen

Vergleichsregionen

Immission Reference Values

Of All Compared Regions

Reference Numbers for Air Quality

1999

Immission-area: Athen

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	9	18	45	96	-	418	-	115
Black smoke	5	55	117	225	-	-	-	205
NO	8	52	229	414	-	851	-	427
NO2	8	57	111	149	-	345	-	165
CO	9	2400	7400	12600	-	24200	-	11800
O3	9	55	101	134	-	345	.-	171

Immission-area: Barcelona

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	2	11	25	39	77	84	-	29
TSP	5	52	88	433	1612	2057	-	214
NO	5	56	201	417	909	1210	-	370
NO2	5	57	123	157	251	331	-	145
CO	5	1360	4500	8900	23500	24900	-	7350
O3	5	33	62	88	171	195	-	101

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Basel - outskirts

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	1	5	12	26	-	44	51	22
TSP	1	23	31	70	-	-	-	-
NO	1	9	24	99	-	232	263	80
NO2	1	27	39	69	-	108	110	70
CO	1	350	600	1200	-	2090	2180	1000
O3	1	45	69	98	-	178	183	127

Immission-area: Berlin

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	*) 3 / **) 20	11/6	18/15	54/42	-	-	335/281	35/29
TSP	12	35	69	186	-	-	859 (max. 1h)	156
NO	*) 5 / **) 17	98/12	267/64	543/245	-	-	1284/845	622/163
NO2	*) 5 / **) 17	56/25	94/46	154/97	-	-	264/222	163/87
CO	*) 5 / **) 13	1300/300	2700/900	4900/2600	-	-	10100/9900	5900/2100
O3	11	44	-	125	-	188	191	136

*) Straßenmessstationen **) übrige Messstationen

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Bludenz - Town hall

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	1	5	12	29	48	51	53	29
TSP	1	25	40	84	251	330	378	162
NO	1	18	45	194	523	587	611	269
NO2	1	27	47	86	137	156	163	113
CO	-	-	-	-	-	-	-	-
O3	1	35	56	90	141	145	148	130

Immission-area: Brussels

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	7	10	21	94	135	177	191	36
PM10	4	27	135	173	410	411	463	81
NO	7	40	129	269	673	853	859	220
NO2	7	46	90	144	199	234	259	108
CO	5	716	1750	2890	4970	6060	6520	2560
O3	5	37	72	133	192	193	196	117

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Budapest

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	8	39	71	181	-	-	554	-
TSP	8	50	100	306	-	-	1023	-
NO	8	29	93	261	-	-	759	-
NO2	8	39	76	110	-	-	554	-
CO	8	1900	4000	6500	-	-	11600	-
O3	2	45	75	97	-	-	170	-

Immission-area: Bukarest

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	5	11	15	24	-	-	31	19
TSP	5	76	150	157	-	-	177	153
NO	-	-	-	-	-	-	-	-
NO2	5	6	19	34	-	-	47	18
CO	-	-	-	-	-	-	-	-
O3	-	-	-	-	-	-	-	-

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Copenhagen (monitoring station at street-level)

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	1	4	-	-	-	-	-	12
TSP	1	47	-	159	-	-	-	97 (95-Perc.)
NO	1	50	-	-	399	671	-	211
NO2	1	47	-	-	125	147	-	97
CO	1	1291	-	3277	-	10581	-	3909
O3	-	-	-	-	-	-	-	-

Immission-area: Copenhagen (monitoring station at roof-level)

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	-	-	-	-	-	-	-	-
TSP	-	-	-	-	-	-	-	-
NO	1	5	-	-	131	243	-	40
NO2	1	25	-	-	113	116	-	65
CO	1	318	-	1058	-	2470	-	825
O3	1	55	-	96	-	133	-	103

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Chemnitz

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	2	6	10	32	124	205	241	53
TSP	2	42	68	189	396	525	822	309
NO	2	27	63	211	527	643	702	398
NO2	2	35	48	94	163	183	201	133
CO	2	441	946	3096	7633	9100	10100	5000
O3	2	41	72	101	153	157	157	137

Immission-area: Debrecen

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	10	8,5	19,6	336	-	-	-	186
TSP	2	70.2	131	290	-	-	-	186
NO	1	6,5	13	49	-	-	161	33
NO2	10	21,2	28	95	-	-	357	129
CO	-	-	-	-	-	-	-	-
O3	1	45,6	62	89	-	-	160	138

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Dornbirn-Rheintal

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	1	5	9	16	37	65	79	25
TSP	1	30	49	89	238	339	393	161
NO	1	29	59	133	289	336	378	218
NO2	1	31	46	77	105	114	131	83
CO	1	800	1500	2500	4100	4600	4900	3500
O3	-	-	-	-	-	-	-	-

Immission-area: Dresden

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	2	9	20	58	316	860	992	70
TSP	2	42	56	126	739	1542	2038	142
NO	2	22	49	158	242	324	423	178
NO2	2	40	60	112	158	179	181	124
CO	2	412	1000	1664	3550	6150	6800	2400
O3	2	37	72	96	148	157	160	135

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Untermain (Greater Frankfurt)

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	5	6	13	36	57	145	155	25
TSP	5	32	52	135	321	553	874	122
NO	5	32	84	313	661	739	810	221
NO2	5	42	54	96	172	210	218	89
CO	4	600	1000	2900	5500	7300	8200	1900
O3	5	34	63	107	183	191	194	122

Immission-area: Goteborg

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	3	3,9	9	21	80	95	-	18,3
PM 10	1	13,1	18	52	140	238	-	39,9
NO	2	13,4	29	219	651	707	-	121,9
NO2	3	27,1	40	88	163	216	-	80,7
CO	1	353	501	1596	4033	4600	-	1060
O3	3	50,9	81	115	148	157	-	112,3

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Graz

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 97,5-Percentile per year (2) (µg/m³)
SO2	6	7,7	19	46	62	-	219	34
TSP	6	39,8	81	175	442	-	641	-
NO	6	29,2	123	387	572	-	703	-
NO2	6	30,7	66	119	197	-	269	-
CO	2	768	1722	3881	6524	-	9358	-
O3	4	51	100	130	150	-	155	-

Immission-area: Hallein

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	3	5,7	-	53	154	200	207	-
TSP	1	38	-	144	285	313	388	-
NO	-	-	-	-	-	-	-	-
NO2	1	36	-	82	112	124	143	-
CO	1	1050	-	2240	4070	4490	5080	-
O3	1	66	-	125	165	166	166	.-

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Hamburg

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	11	6	18	71	179	355	551	66
TSP	6	34	56	238	550	603	623	96
NO	11	10	61	258	464	625	742	158
NO2	11	26	47	78	120	144	163	84
CO	4	463	612	1846	4544	5046	5088	1149
O3	6	43	70	106	174	177	179	122

Immission-area: Innsbruck

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	2	10	-	40	60	-	90	-
TSP	2	30	-	120	350	-	-	-
NO	2	43	-	443	-	-	839	-
NO2	2	39,5	-	125	190	212	226	-
CO	2	1270	-	3930	8340	9310	9310	-
O3	2	37,5	-	118	150	154	154	-

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Karlsruhe

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	3	8	15	48	75	91	118	30
TSP	3	18	24	62	110	112	112	49
NO	3	32	83	344	595	757	864	467
NO2	3	42	53	121	186	261	265	98
CO	3	473	1140	3413	6800	8650	9500	5200
O3	3	40	71	107	196	201	202	136

Immission-area: Klagenfurt

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	2	12	19	37	73	101	109	35
TSP	2	45	74	178	414	521	630	159
NO	2	31	103	246	396	455	494	195
NO2	2	35	63	108	165	177	217	107
CO	2	690	1880	3290	6170	7740	8210	3300
O3	2	41	79	112	151	155	155	122

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Leipzig

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	3	5	8	59	152	210	256	78
TSP	3	35	53	120	358	569	698	138
NO	3	24	80	195	427	471	494	273
NO2	3	32	54	86	132	143	157	106
CO	3	437	1443	2719	4800	5750	7600	4050
O3	3	41	73	102	160	166	166	150

Immission-area: Leoben/Göß/Donawitz

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 97,5-Percentile per year (2) (µg/m³)
SO2	3	5,7	13	66	107	-	147	28
TSP	3	37	115	-	431	-	630	-
NO	3	22,3	81	213	338	-	413	-
NO2	3	26,3	50	86	135	-	139	-
CO	2	694	1712	4314	7998	-	12240	-
O3	1	32	54	98	129	-	133	-

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Linz

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	9	6	14	68	145	183	207	152
TSP	10	30,6	60	189	435	687	763	119
NO	9	23,4	73	231	573	664	677	224
NO2	9	31	50	74	128	148	156	92
CO	10	609	1650	3760	7360	8520	9990	2750
O3	3	42	78	122	163	171	174	126

Immission-area: Lisbon

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	5	4,9	49	173	-	469	-	52
PM 10	3	45	85	155	-	473	-	130 (95-Perc.)
NO	-	-	-	-	-	-	-	-
NO2	8	45,7	95	181	-	424	-	306
CO	8	743	2201	5142	-	18500	-	-
O3	2	31	53	92	-	155	-	-

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Luxemburg

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h- **) mean (2) (µg/m³)	Max. 1 h- mean (2) (µg/m³)	Max. 1/2 h- mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	2	10	25	55	79	138	139	37
TSP	1	20	27	54	93	129	140	43
NO	2	55	80	243	500	624	686	212
NO2	2	52	73	110	178	287	295	109
CO	1	900	1000	2000	4100	6300	7900	2200
O3	2	36	61	95	163	175	177	124

Immission-area: Lyon-Agglomeration

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h- mean (2) (µg/m³)	Max. 1 h- mean (2) (µg/m³)	Max. 1/2 h- mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	17	10	28	77	-	373	-	35
PM 10	4	26	36	118	-	318	-	71
NO	11	70	207	504	-	2065	-	313
NO2	11	57	85	179	-	307	-	106
CO	4	1300	2870	5200	-	15600	-	3400
O3	5	38	86	121	-	239	-	105

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Madrid

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max.**) 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. *) 98-Percentile per year (2) (µg/m³)
SO2	25	21	75	131	254	338	-	133
PM 10	24	37	67	135	290	342	-	146
NO	25	59	201	406	1375	1600	-	506
NO2	25	67	116	160	338	441	-	189
CO	25	1130	3040	5880	20750	25770	-	6840
O3	25	31	72	99	179	185	-	127

*) max. 98 percentile of 1-h-values. Only stations having more than 75% of valid values are considered

**) Static average (not moving average)

Immission-area: Mannheim

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	3	12	22	60	207	573	886	64
TSP	3	20	29	113	218	331	335	61
NO	3	23	65	438	676	899	958	537
NO2	3	38	50	118	155	177	194	105
CO	3	345	666	3123	5200	6150	6300	3100
O3	3	40	71	105	197	201	202	136

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Milan

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max.**) 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. *) 98-Percentile per year (2) (µg/m³)
SO2	5	13	48	92	-	228	-	78 (24h value)
TSP	1	52	77	175	-	276	-	98 (95-Perc.)
NO	10	78	253	-	-	-	-	-
NO2	10	71	105	-	-	403	-	177 (1-h value)
CO	6	2300	5200	10100	-	21200	-	-
O3	3	38	89	-	-	287	-	-

Immission-area: Munich

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	8	5	14	35	101	283	479	33
TSP	7	42	70	279	879	-	-	146
NO	8	51	143	491	1033	1175	1257	371
NO2	8	44	74	152	222	253	285	125
CO	8	900	1800	4700	11200	14900	16300	3700
O3	3	38	63	99	156	162	163	116

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Rhine Area Centre

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	4	8	20	-	-	-	130	31
TSP	5	42	71	235	597	-	-	138
NO	4	20	56	-	-	-	811	246
NO2	4	33	43	-	-	-	149	79
CO	4	400	800	-	-	-	6500	2200
O3	2	33	53	-	-	176	-	118

Immission-area: Rhine Area - South

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	8	7	9	-	-	-	128	25
TSP	8	35	50	197	461	-	-	112
NO	8	18	48	-	-	-	716	191
NO2	8	32	42	-	-	-	184	76
CO	7	400	700	-	-	-	6000	1500
O3	7	35	66	-	-	219	-	133

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Riga

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile Hours (µg/m³)	Daily
SO2	2	10	17	42	94	118	137	35	26
TPS	-	-	-	-	-	-	-	-	-
NO	-	-	-	-	-	-	-	-	-
NO2	2	22	31	85	124	145	150	71	49
CO	-	-	-	-	-	-	-	-	
O3	2	53	72	98	115	123	141	96	83

Immission-area: Rotterdam

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	9	12,9	28	121	343	419	-	82
TSP	5	31,4	49	150	-	-	-	75
NO	3	18,9	34	258	666	764	-	130
NO2	3	39,9	60	132	364	495	-	103
CO	1	683	1026	2200	5213	7170	-	1690
O3	1	37,2	59	100	190	200	-	103

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Central Ruhr-area

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	8	9	34	-	-	-	475	80
TSP	8	40	66	223	711	-	-	155
NO	9	19	79	-	-	-	759	229
NO2	9	33	57	-	-	-	161	95
CO	8	400	900	-	-	-	7600	2300
O3	5	37	64	-	-	190	-	121

Immission-area: Eastern Ruhr-area

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	9	8	17	-	-	-	325	55
TSP	9	40	57	209	623	-	-	135
NO	9	15	39	-	-	-	652	146
NO2	9	30	41	-	-	-	203	74
CO	7	500	800	-	-	-	6000	1600
O3	4	35	59	-	-	180	-	122

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Western Ruhr-area

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	8	9	20	-	-	-	408	75
TSP	8	41	63	213	660	-	-	121
NO	8	14	41	-	-	-	738	145
NO2	8	31	44	-	-	-	129	77
CO	8	400	800	-	-	-	7000	1600
O3	5	35	65	-	-	211	-	121

Immission-area: Saloniki

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	3	41	66	161	-	320	-	121
TSP	3	187	290	588	-	-	-	-
NO	-	-	-	-	-	-	-	-
NO2	3	45	76	131	-	391	-	113
CO	3	2700	4700	15000	-	25100	-	-
O3	3	26	56	122	-	184	-	-

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Salzburg

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	3	6	-	23	44	54	81	-
TSP	3	35	-	230	468	876	937	-
NO	-	-	-	-	-	-	-	-
NO2	3	37,7	-	92	129	145	151	-
CO	2	1025	-	2660	5210	5620	6190	-
O3	2	43	-	113	166	169	170	-

Immission-area: Sofia

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	10	16,9	28	345	-	-	632	-
TSP	8	132	134	1125	-	-	-	-
NO	4	14,1	33	198	-	-	200	-
NO2	10	20,9	27	140	-	-	194	-
CO	4	1018	2298	28000	-	-	49720	-
O3	4	15,1	19	130	-	-	784	-

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Stockholm (monitoring stations at roof-level)

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	1	2,3	4,5	-	-	-	-	-
TSP	-	-	-	-	-	-	-	-
NO	2	7,1	13	69	489	569	-	57
NO2	2	22	28	62	84	94	-	57
CO	2	350	500	900	1800	2300	-	900
O3	2	51	74	99	134	137	-	100

Immission-area: Stockholm (monitoring stations at street-level)

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	-	-	-	-	-	-	-	-
TSP	-	-	-	-	-	-	-	-
NO	2	64	128	283	846	994	-	346
NO2	2	47	66	105	196	224	-	121
CO	2	1100	1700	5300	26000	28000	-	4000
O3	-	-	-	-	-	-	-	-

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: St. Pölten

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	1	8	12	52	107	166	213	53
TSP	1	26	36	137	315	329	459	70
NO	1	5	13	56	148	185	206	46
NO2	1	26	45	61	91	101	111	60
CO	1	893	1310	1840	3100	3840	4420	1750
O3	1	44	74	111	183	199	208	120

Immission-area: Vienna

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max.99,9-Percentil 3-h-mean (2) (µg/m³)	Max.99,9-Percentil 1 h-mean (2) (µg/m³)	Max.99,9-Percentil 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	17	7	17	84	99	102	105	40
TSP	17	36	86	184	366	428	442	180
NO	17	20	191	477	689	729	736	502
NO2	17	30	78	126	161	165	168	130
CO	5	700	1580	2710	4530	4910	5040	3150
O3	5	52	90	133	171	175	178	128

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Villach

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	1	10	16	34	68	75	76	29
TSP	1	42	69	151	325	606	656	122
NO	1	32	79	190	303	357	398	166
NO2	1	28	57	129	188	194	215	85
CO	1	980	1920	3460	6280	7380	8030	3580
O3	1	28	47	82	131	138	144	98

Immission-area: Warszawa

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	16	10,6	-	278	-	-	-	83
PM 10	4	59,4	-	561	-	-	-	417
NO	-	-	-	-	-	-	-	-
NO2	14	22,1	-	126	-	-	-	92
CO	1	635	-	2520	-	-	8362	1560
O3	2	39,9	-	89	-	174	174	84

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: Rhein-Main (Wiesbaden)

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	1	6	11	22	32	52	70	20
TSP	1	32	36	93	166	219	256	95
NO	1	24	52	261	427	477	493	183
NO2	1	38	48	103	157	175	201	86
CO	1	600	800	2600	4700	5000	5500	1700
O3	1	39	63	103	174	179	193	124

Immission-area: Zagreb

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	9	25	67	122	-	-	-	95
TSP	4	56	126	174	-	-	-	154
NO	-	-	-	-	-	-	-	-
NO2	6	36	49	231	-	-	-	76
CO	-	-	-	-	-	-	-	-
O3	4	18	42	122	-	-	-	85
O3 (1h)	1	-	-	-	-	235	-	85

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ

Amt für Natur- und Umweltschutz

Reference Numbers for Air Quality

1999

Immission-area: **Zurich (Centre)**

	# of monitoring stations	annual mean (1) (µg/m³)	Max. monthly mean (2) (µg/m³)	Max. daily mean (2) (µg/m³)	Max. 3-h-mean (2) (µg/m³)	Max. 1 h-mean (2) (µg/m³)	Max. 1/2 h-mean (2) (µg/m³)	Max. 98-Percentile per year (2) (µg/m³)
SO2	1	8	20	44	-	80	82	36
TSP	1	25	36	109	-	-	-	-
NO	1	20	61	255	-	425	449	171
NO2	1	39	46	105	-	137	137	87
CO	1	590	1000	2800	-	3780	4000	1880
O3	1	41	65	90	-	178	179	119

1 arithmetic mean of all monitoring stations of an immission-area

2 highest monitored value of an immission-area

MAGISTRAT LINZ
Amt für Natur- und Umweltschutz