

Appendix table 5-50.

**Citations by world's scientific papers to scientific literature, by region and country/economy: 1990, 1994, and 1999**  
(All fields)

Cited region/country/economy	1990		1994		1999	
	Number	World share (%)	Number	World share (%)	Number	World share (%)
<b>Worldwide</b>						
<b>Total</b> .....	2,098,342	100.0	2,518,783	100.00	2,749,022	100.00
<b>North America</b>						
<b>Total</b> .....	1,181,861	56.32	1,368,391	54.33	1,360,447	49.49
Canada .....	88,705	4.23	106,594	4.23	111,028	4.04
United States .....	1,093,156	52.10	1,261,797	50.10	1,249,419	45.45
<b>Latin America</b>						
<b>Total</b> .....	12,214	0.58	16,508	0.66	26,874	0.98
Antigua and Barbuda .....	1	0.00	0	0.00	0	0.00
Argentina .....	3,136	0.15	3,623	0.14	5,691	0.21
Bahamas .....	8	0.00	5	0.00	2	0.00
Barbados .....	32	0.00	35	0.00	38	0.00
Belize .....	0	0.00	1	0.00	6	0.00
Bolivia .....	19	0.00	38	0.00	88	0.00
Brazil .....	3,437	0.16	5,906	0.23	10,197	0.37
Chile .....	1,472	0.07	1,766	0.07	2,384	0.09
Colombia .....	229	0.01	308	0.01	512	0.02
Costa Rica .....	117	0.01	173	0.01	245	0.01
Cuba .....	110	0.01	133	0.01	389	0.01
Dominican Republic .....	13	0.00	15	0.00	14	0.00
Ecuador .....	18	0.00	53	0.00	108	0.00
El Salvador .....	3	0.00	4	0.00	5	0.00
Grenada .....	0	0.00	0	0.00	1	0.00
Guatemala .....	45	0.00	73	0.00	63	0.00
Guyana .....	6	0.00	7	0.00	6	0.00
Haiti .....	14	0.00	22	0.00	5	0.00
Honduras .....	4	0.00	7	0.00	13	0.00
Jamaica .....	114	0.01	107	0.00	153	0.01
Mexico .....	2,243	0.11	2,824	0.11	5,103	0.19
Nicaragua .....	4	0.00	9	0.00	16	0.00
Panama .....	124	0.01	183	0.01	217	0.01
Paraguay .....	11	0.00	14	0.00	13	0.00
Peru .....	166	0.01	180	0.01	139	0.01
St. Kitts .....	0	0.00	0	0.00	1	0.00
St. Lucia .....	0	0.00	11	0.00	5	0.00
St. Vincents .....	0	0.00	0	0.00	8	0.00
Suriname .....	0	0.00	1	0.00	2	0.00
Trinidad and Tobago .....	56	0.00	47	0.00	57	0.00
Uruguay .....	82	0.00	176	0.01	383	0.01
Venezuela .....	750	0.04	787	0.03	1,010	0.04
<b>Sub-Saharan Africa</b>						
<b>Total</b> .....	8,303	0.40	8,771	0.35	8,466	0.31
Angola .....	0	0.00	3	0.00	1	0.00
Benin .....	3	0.00	19	0.00	29	0.00
Botswana .....	24	0.00	30	0.00	32	0.00
Burkina Faso .....	35	0.00	53	0.00	29	0.00
Burundi .....	13	0.00	5	0.00	19	0.00
Cameroon .....	38	0.00	106	0.00	105	0.00
Cape Verde .....	2	0.00	0	0.00	3	0.00
Central Africa Republic .....	30	0.00	12	0.00	9	0.00
Chad Republic .....	0	0.00	2	0.00	4	0.00
Comoros .....	0	0.00	0	0.00	0	0.00
Congo, Democratic Republic .....	110	0.01	69	0.00	31	0.00
Congo, Republic .....	38	0.00	44	0.00	15	0.00
Côte d'Ivoire .....	65	0.00	113	0.00	102	0.00

See explanatory notes, if any, and SOURCE at end of table.

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(All fields)

Cited region/country/economy	1990		1994		1999	
	Number	World share (%)	Number	World share (%)	Number	World share (%)
<b>Sub-Saharan Africa</b>						
Djibouti .....	1	0.00	6	0.00	1	0.00
Equatorial Guinea .....	0	0.00	0	0.00	1	0.00
Eritrea .....	0	0.00	0	0.00	1	0.00
Ethiopia .....	104	0.00	140	0.01	149	0.01
Gabon Republic .....	40	0.00	46	0.00	59	0.00
Gambia .....	0	0.00	0	0.00	179	0.01
Ghana .....	30	0.00	66	0.00	97	0.00
Guinea Republic .....	4	0.00	3	0.00	8	0.00
Guinea-Bissau .....	2	0.00	7	0.00	17	0.00
Kenya .....	797	0.04	634	0.03	695	0.03
Lesotho .....	4	0.00	5	0.00	1	0.00
Liberia .....	17	0.00	23	0.00	6	0.00
Madagascar .....	10	0.00	25	0.00	37	0.00
Malawi .....	45	0.00	44	0.00	89	0.00
Mali .....	12	0.00	19	0.00	47	0.00
Mauritania .....	1	0.00	1	0.00	2	0.00
Mauritius .....	1	0.00	10	0.00	8	0.00
Mozambique .....	13	0.00	9	0.00	16	0.00
Namibia .....	0	0.00	25	0.00	29	0.00
Niger .....	13	0.00	43	0.00	49	0.00
Nigeria .....	714	0.03	598	0.02	406	0.01
Rwanda .....	31	0.00	38	0.00	22	0.00
Sao Tome and Principe .....	0	0.00	0	0.00	0	0.00
Senegal .....	0	0.00	0	0.00	236	0.01
Seychelles .....	0	0.00	3	0.00	18	0.00
Sierra Leone .....	23	0.00	17	0.00	13	0.00
Somalia .....	10	0.00	12	0.00	3	0.00
South Africa .....	5,656	0.27	5,930	0.24	5,170	0.19
Sudan .....	84	0.00	120	0.00	86	0.00
Swaziland .....	2	0.00	7	0.00	7	0.00
Tanzania .....	88	0.00	155	0.01	256	0.01
Togo .....	6	0.00	13	0.00	11	0.00
Uganda .....	30	0.00	35	0.00	110	0.00
Zambia .....	39	0.00	57	0.00	62	0.00
Zimbabwe .....	168	0.01	224	0.01	196	0.01
<b>Near East and North Africa</b>						
<b>Total</b> .....	21,605	1.03	23,993	0.95	28,854	1.05
Algeria .....	112	0.01	156	0.01	184	0.01
Bahrain .....	29	0.00	36	0.00	32	0.00
Egypt .....	1,225	0.06	1,444	0.06	1,700	0.06
Iran .....	112	0.01	204	0.01	657	0.02
Iraq .....	209	0.01	98	0.00	20	0.00
Israel .....	17,930	0.85	19,859	0.79	23,444	0.85
Jordan .....	187	0.01	175	0.01	181	0.01
Kuwait .....	438	0.02	309	0.01	333	0.01
Lebanon .....	60	0.00	50	0.00	108	0.00
Libya .....	48	0.00	25	0.00	23	0.00
Morocco .....	104	0.00	204	0.01	472	0.02
North Yemen .....	3	0.00	19	0.00	0	0.00
Oman .....	6	0.00	42	0.00	67	0.00
Qatar .....	27	0.00	42	0.00	21	0.00
Saudi Arabia .....	955	0.05	973	0.04	1,014	0.04
South Yemen .....	1	0.00	3	0.00	0	0.00
Syria .....	35	0.00	88	0.00	86	0.00
Tunisia .....	108	0.01	183	0.01	287	0.01
United Arab Emirates .....	16	0.00	83	0.00	214	0.01

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Cited region/country/economy	1990		1994		1999	
	Number	World share (%)	Number	World share (%)	Number	World share (%)
<b>Western Europe</b>						
<b>Total</b> .....	629,039	29.98	790,820	31.40	939,901	34.19
Albania .....	0	0.00	10	0.00	20	0.00
Andorra .....	0	0.00	0	0.00	1	0.00
Austria .....	7,736	0.37	11,074	0.44	15,818	0.58
Belgium .....	16,170	0.77	20,078	0.80	23,840	0.87
Bosnia .....	0	0.00	0	0.00	18	0.00
Croatia .....	0	0.00	0	0.00	1,131	0.04
Cyprus .....	16	0.00	17	0.00	93	0.00
Denmark .....	16,538	0.79	20,027	0.80	21,962	0.80
Finland .....	11,383	0.54	14,883	0.59	20,584	0.75
France .....	88,890	4.24	112,437	4.46	131,443	4.78
Germany (East) .....	6,182	0.29	3,568	0.14	0	0.00
Germany .....	115,261	5.49	151,407	6.01	191,198	6.96
Greece .....	2,432	0.12	3,650	0.14	5,730	0.21
Iceland .....	265	0.01	334	0.01	584	0.02
Ireland .....	2,399	0.11	3,589	0.14	4,773	0.17
Italy .....	38,844	1.85	57,241	2.27	76,520	2.78
Liechtenstein .....	15	0.00	17	0.00	30	0.00
Luxemborg .....	15	0.00	21	0.00	80	0.00
Macedonia .....	0	0.00	0	0.00	82	0.00
Malta .....	2	0.00	10	0.00	34	0.00
Monaco .....	45	0.00	75	0.00	89	0.00
Netherlands .....	42,953	2.05	56,780	2.25	65,292	2.38
Norway .....	8,229	0.39	9,624	0.38	11,114	0.40
Portugal .....	962	0.05	1,768	0.07	3,313	0.12
San Marino .....	0	0.00	1	0.00	1	0.00
Slovenia .....	0	0.00	0	0.00	1,352	0.05
Spain .....	14,443	0.69	26,313	1.04	44,577	1.62
Sweden .....	39,019	1.86	44,082	1.75	46,742	1.70
Switzerland .....	35,619	1.70	42,136	1.67	49,236	1.79
Turkey .....	755	0.04	1,333	0.05	3,512	0.13
United Kingdom .....	178,765	8.52	207,565	8.24	219,866	8.00
Vatican .....	6	0.00	4	0.00	5	0.00
Yugoslavia .....	2,095	0.10	2,776	0.11	861	0.03
<b>Eastern Europe</b>						
<b>Total</b> .....	42,145	2.01	49,609	1.97	56,488	2.05
Armenia .....	0	0.00	0	0.00	179	0.01
Azerbaijan .....	0	0.00	0	0.00	59	0.00
Bulgaria .....	1,174	0.06	1,637	0.06	1,669	0.06
Byelarus .....	0	0.00	0	0.00	715	0.03
Czech Republic .....	0	0.00	0	0.00	4,754	0.17
Czechoslovakia .....	4,299	0.20	5,496	0.22	2	0.00
Estonia .....	0	0.00	0	0.00	649	0.02
Georgia .....	0	0.00	0	0.00	149	0.01
Hungary .....	4,171	0.20	4,575	0.18	5,372	0.20
Kazakhstan .....	0	0.00	0	0.00	76	0.00
Kyrgyzstan .....	0	0.00	0	0.00	12	0.00
Latvia .....	0	0.00	0	0.00	340	0.01
Lithuania .....	0	0.00	0	0.00	490	0.02
Moldova .....	0	0.00	0	0.00	122	0.00
Poland .....	7,331	0.35	8,329	0.33	10,380	0.38
Romania .....	486	0.02	594	0.02	1,128	0.04
Russia .....	0	0.00	0	0.00	25,431	0.93
Slovakia .....	0	0.00	0	0.00	1,892	0.07
Tajikistan .....	0	0.00	0	0.00	15	0.00
Turkmenistan .....	0	0.00	0	0.00	3	0.00
USSR .....	24,684	1.18	28,978	1.15	0	0.00

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Cited region/country/economy	1990		1994		1999	
	Number	World share (%)	Number	World share (%)	Number	World share (%)
Ukraine .....	0	0.00	0	0.00	2,877	0.10
Uzbekistan .....	0	0.00	0	0.00	174	0.01
<b>Asia</b>						
<b>Total</b> .....	153,294	7.31	208,603	8.28	263,941	9.60
Afghanistan .....	1	0.00	1	0.00	0	0.00
Bangladesh .....	221	0.01	203	0.01	286	0.01
Bhutan .....	0	0.00	1	0.00	0	0.00
Brunei .....	6	0.00	5	0.00	20	0.00
Cambodia .....	0	0.00	0	0.00	2	0.00
China .....	4,666	0.22	8,660	0.34	15,846	0.58
Hong Kong .....	1,309	0.06	2,445	0.10	5,793	0.21
India .....	12,046	0.57	15,179	0.60	16,928	0.62
Indonesia .....	119	0.01	168	0.01	338	0.01
Japan .....	128,642	6.13	167,901	6.67	194,341	7.07
Laos .....	0	0.00	1	0.00	3	0.00
Malaysia .....	277	0.01	400	0.02	631	0.02
Mongolia .....	5	0.00	15	0.00	50	0.00
Myanmar .....	34	0.00	28	0.00	16	0.00
North Korea .....	7	0.00	1	0.00	0	0.00
Nepal .....	18	0.00	61	0.00	65	0.00
Pakistan .....	257	0.01	344	0.01	389	0.01
Philippines.....	350	0.02	315	0.01	508	0.02
South Korea .....	1,335	0.06	3,462	0.14	11,271	0.41
Singapore.....	689	0.03	1,700	0.07	3,052	0.11
Sri Lanka .....	179	0.01	151	0.01	126	0.00
Taiwan .....	2,626	0.13	6,773	0.27	13,267	0.48
Thailand .....	507	0.02	789	0.03	1,009	0.04
<b>Pacific</b>						
<b>Total</b> .....	49,881	2.38	52,088	2.07	64,051	2.33
Australia .....	42,416	2.02	44,066	1.75	54,589	1.99
Fiji .....	43	0.00	16	0.00	12	0.00
Kiribati .....	0	0.00	0	0.00	0	0.00
Maldives .....	0	0.00	0	0.00	3	0.00
Marsh Islands .....	0	0.00	1	0.00	8	0.00
Micronesia.....	0	0.00	0	0.00	5	0.00
New Zealand .....	7,220	0.34	7,796	0.31	9,141	0.33
Nauru .....	1	0.00	0	0.00	0	0.00
Papau New Guinea .....	148	0.01	97	0.00	101	0.00
Solom Islands .....	5	0.00	13	0.00	4	0.00
Tonga .....	0	0.00	4	0.00	1	0.00
Tuvalu .....	0	0.00	0	0.00	0	0.00
Vanuatu .....	3	0.00	4	0.00	5	0.00
Vietnam .....	43	0.00	88	0.00	181	0.01
Western Samoa.....	2	0.00	3	0.00	1	0.00

NOTES: Citations are on the basis of a three-year window with a two-year lag; for example, 1999 citations counts are articles published in 1999 citing articles published in 1995-97. Nationality of the cited paper is determined by the institutional address of the cited paper. Germany has citation data to unified Germany starting in 1992, and citation data to former West Germany prior to 1992. Former USSR consist of present East European and Central Asian countries that were former members.

SOURCES: Institute for Scientific Information, Science Citation and Social Citation Indexes; CHI Research, Inc., Science Indicators database; and National Science Foundation, Division of Science Resources Statistics (NSF/SRS).