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DATA BASE: NDP-058A (2-1998)

TITLE: Carbon Dioxide Emission Estimates from Fossil-Fuel Burning,
Hydraulic Cement Production, and Gas Flaring for 1995 on a
One Degree Grid Cell Basis.

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The data base contains:

- (A) Documentation on the 1995 gridded carbon dioxide (CO2) emission data (in units of 1000 metric tons C per year per one degree latitude by one degree longitude grid cell).
 - (B) Detailed data file description.
 - (C) FORTRAN program to read the gridded CO2 emission data file.
 - (D) SAS code to read the gridded CO2 emission data file.
 - (E) Simple summary statistics.
 - (F) CDIAC's quality assurance checks.
 - (G) Instructions on how to obtain the data and documentation.
 - (H) References.
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(A) Documentation

Analogous to the data presented in NDP-058 (which includes estimates for 1950, 1960, 1970, 1980, and 1990; Andres et al., 1996b), this document presents the summed emissions from fossil-fuel burning, hydraulic cement production and gas flaring for 1995. National CO2 emission estimates derived from the 1995 United Nations Energy Statistics Database (U.N., 1997), hydraulic cement production estimates compiled by the U.S. Department of Interior's Bureau of Mines (USDO, 1995), and supplemental data on gas flaring obtained from the U.S. Department of Energy's Energy Information Administration were processed by Marland et al. (1997) following the methods of Marland and Rotty (1984). The only change in the methodology used to calculate the national CO2 emission estimates for 1995 was the implementation of separate carbon coefficients for soft and hard coal; the emissions estimates in NDP058 were calculated using a single carbon coefficient to characterize the carbon content of all coals.

To distribute the national emission estimates from 1995 within each country, the population data base developed by Li (1996a) and documented by CDIAC (DB1016: Li, 1996b) was used as proxy. Previously, Andres et al. (1996a) had used a 1984 human population data set (Goddard Institute of Space Studies, Lerner et al., 1988) as proxy for gridding the 1950 through 1990 emission estimates within countries. The structure of the gridded 1995 emission data file differs, consequently, from the 1950-1990 gridded emission files (CDIAC:

NDP-058) in that individual grid cells may have been partitioned into more than one country analogous to Li's population data base. A country's representation in a grid cell is quantified by the percentage of that country's land area in a particular grid cell and identified by its United Nations identification code. The percentages and United Nations identification codes were used to allocate the national CO2 emissions estimates to the grid cells. Only those grid cells with a United Nations identification code, population estimate and carbon emission estimate are listed in the data file. Grid cells representing more than one country are repeated for each country represented. Note that to calculate national estimates from the data file, one has to sum by United Nations identification code. To calculate emissions for each grid cell or by latitude one has to sum by grid cell (latitude and longitude), or by latitude, respectively.

A number of manipulations of Li's population data base were necessary to properly distribute the national 1995 CO2 emission estimates. When CO2 emission estimates were available for locations not represented in Li's population data base (DB1016) we added those locations and calculated the representation (percentage) of the added country as grid cell information. The following seven sections summarize the changes:

1) Li's alphanumeric identification codes were converted to numeric codes, and to United Nations codes where possible:

- C04 to 904 Canary-Islands
- B03 to 903 Jersey
- B02 to 902 Gaza-Strip
- B01 to 901 Guernsey
- B10 to 910 Israeli-occ-ter.
- C11 to 911 St.-Martin
- C16 to 0 Ocean
- C07 to 579 Jan-Mayen, to add to Norway
- B07 to 654 St.-Helena

2) A number of Li's identification codes were changed to match the energy statistics UN codes:

- 250 to 251: France, to include Monaco
- 380 to 382: Italy, to include San Marino
- 578 to 579: Jan-Mayen, to be included with Norway
- 744 to 579: Svalbard, to be include in Norway
- 414 to 415: Kuwait, to include part of the Neutral Zone
- 682 to 684: Saudi Arabia, to include part of the Neutral Zone
- 886 to 887: Yemen (UN code 886) and
- 720 to 887: Democratic Yemen (UN code 720) merged on 22 May, 1990 to form a single state (UN code 887);
- 756 to 757: Liechtenstein, to join Switzerland (percentages had to be adjusted)
- 583 to 316: for Guam
- 584 to 582: for Carolina, Mariana, and Marshall Islands, but excluding Guam
- 585 to 582: for Carolina, Mariana, and Marshall Islands, but excluding Guam
- 580 to 582: for Carolina, Mariana, and Marshall Islands, but excluding Guam

3) A number of locations and UN identificarion codes were added:

- 659 added: St-Kitts, 1 gridcell

(lat=17.5 and long=-62.5; perc=100)
570 added: Niue, 2 grid cells
(lat=-18.5 and long=-169.5,
lat=-19.5 and long=-169.5; perc=50)
462 added: Maldives, 3 grid cells
(lat=2.5 and long=73.5,
lat=3.5 and long=73.5,
lat=4.5 and long=73.5; perc=33.3)
184 added: Cook Island, 5 grid cells
(lat=-19.5 and long=-159.5,
lat=-19.5 and long=-158.5,
lat=-19.5 and long=-157.5,
lat=-18.5 and long=-162.5,
lat=-18.5 and long=-159.5; perc=20)
016 added: Ammerican Samoa, 1 grid cell
(lat=-14.5 and long=-171.5; perc=100)
666 added: St Pierre, 1 grid cell
(lat=45.5 and long=-55.5; perc=100)
872 added: Wake island, 1 grid cell
(lat=18.5 and long=166.5; perc=100)
520 added: Nauru, 1 grid cell
(lat=-0.5 and long=167.5; perc=100)

- 4) Czechoslovakia (formerly with UN-id 200) was split and percentages adjusted:
203: Czech Republic for cells west 17 of degrees E and north of 49 degrees N at 17.5 degrees E (perc=100.*perc/59.643).
703: Slovakia for cells east of 18 E and south of 49 degrees N at 17.5 degrees E (perc=100.*perc/40.355).
- 5) The Socialist Federal Republic of Yugoslavia (formerly with UN-id 890) was split and percentages adjusted:
70: Bosnia (perc=perc*100/15.169)
long=16.5 and lat=44.5
long=17.5 and lat le 44.5 and lat ge 43.5
long=18.5 and lat le 44.5 and lat ge 43.5
long=19.5 and lat=43.5
long=19.5 and lat=44.5
807: Macedonia (perc=perc*100/9.461)
long ge 21.5 and lat le 41.5
long=22.5 and lat=42.5
705: Slovenia (perc=perc*100/8.088)
long le 14.5 and lat ge 44.5
long=15.5 and lat=46.5
191: Croatia (perc=perc*100/17.023)
long=14.5 and lat= 44.5
long=15.5 and lat le 45.5
long=16.5 and lat ge 45.5
long=16.5 and lat= 43.5
long=17.5 and lat=42.5
long=17.5 and lat ge 45.5
long=18.5 and lat= 45.5
long=18.5 and lat=45.5
891: Yugoslavia (perc=perc*100/50.262)
long=18.5 and lat=42.5
long=19.5 and lat=41.5
long=19.5 and lat=42.5
long=19.5 and lat=45.5

long=19.5 and lat=46.5
long=20.5
long=21.5 and lat=42.5
long ge 21.5 and lat ge 43.5

(6) A number of population percentages were adjusted slightly in order to complete the distribution of all national CO2 estimates (i.e., so that the sum of all grid cells equals more closely the sum of the national totals) (note that only the first four adjustment caused significant improvement in the national fossil-fuel estimates):

Country	Adjustment factor
Russian Federation (3307 cells):	100/99.8969
United States (1310 cells):	100/99.9478
China (1075 cells):	100/99.9673
Brazil (799 cells):	100/99.9885
Australia (790 cells):	100/99.9687
India (356 cells):	100/99.9841
Kazakhstan (404 cells):	100/99.9850
Mexico (243 cells):	100/99.9863
Iran (195 cells):	100/99.9868
Indonesia (316 cells):	100/99.9871
Canada (2086 cells):	100/99.9972

(7) Antarctic and ocean cells were deleted.

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(B) Detailed data file (ff95.dat) description

Parameter columns
lat 1-6
long 8-13
ff95 16-23
popli 26-35
perc 38-46
unid 48-50
name 53-72

where:

lat and long indicate the center point of a grid cell in decimal degrees.

ff95 is the 1995 grid cell CO2 emission estimate from fossil-fuel burning, cement production, and gas flaring expressed in thousand metric tons carbon.

popli is Li's (1996b) population estimate for a grid cell for a specific country.

perc is the percentage of the national population of a country represented in a grid cell.

unid is the United Nations identification code.

name is the name of the country as identified by Li (1996b).

Note: the data can easily be retrieved into spreadsheet software, given that

the data are arranged in space delimited columns.

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(C) FORTRAN program to read the gridded CO2 emission data file.

```
Program readff95
c double precision to avoid round-off errors
  real*8 lat, long, popli, ff95, perc, spop, sff95, sperc
  character*20 name
  open(10, file='ff95.dat', status='old')
c prepare for summations:
  spop=0.d0
  sff95=0.d0
  sperc=0.d0
  do 100 i=1,19969
    read(10,10, end=911) lat, long, ff95, popli, perc, unid, name
10    format(f6.1,x,f6.1,2x,f8.2,2x,e10.0,2x,f8.4,2x,f3.1,2x,a20)
    write(12,10) lat, long, ff95, popli, perc, unid, name
    spop=spop+popli
    sperc=sperc+perc
    sff95=sff95+ff95
100  continue
911  continue
    i=i-1
c write summations to screen:
  write(*,*) 'spop=', spop
  write(*,*) 'sperc=', sperc
  write(*,*) 'sff95=', sff95
  write(*,*) 'lines read=', i
  stop
end
```

Result:

```
spop= 5291059610.00000
sperc= 22099.6375999998
sff95= 6172868.54000011
lines read= 19969
```

=====
(D) SAS code to read the gridded CO2 emission data file.

```
data fin;
infile 'ff95.dat';
input @1 lat 6.1 @8 long 6.1 @16 ff95 8.2 @26 popli 10.
@38 perc 8.4 @48 unid 3. @53 name $char20.;
proc sort;
by unid;
proc means noprint;
by unid;
var perc ff95 popli;
id name;
output out=sums sum=sperc sff95 spop;
data sums;
set sums;
file 'out';
put @10 unid 3. @15 name $char20. @37 _freq_ 4. @43 sff95 8.1
```

@53 sperc 8.4 @64 spop 10.;

The file 'out' is printed as section (E)

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(E) Summary statistics concerning the data file:

UN-id	name	# of cells	National emission summed percentage for 1995	total population estimates (Li, 1996b)	total
4	Afghanistan	92	338.7	99.9977	16556000
8	Albania	8	503.8	99.9970	3250001
12	Algeria	251	24907.5	99.9952	24960006
16	American-Samoa	1	74.5	100.0000	0
20	Andorra	1	0.0	100.0000	55300
24	Angola	131	1255.5	99.9985	9194019
660	Anguilla	2	0.0	100.0000	6900
28	Antigua-and-Barbuda	1	87.9	100.0000	65000
32	Argentina	345	35330.6	99.9900	32321997
51	Armenia	15	996.3	100.0000	3373239
533	Aruba	3	491.5	100.0000	61000
36	Australia	790	79096.7	99.9943	17065026
40	Austria	22	16180.2	100.0078	7712003
31	Azerbaijan	21	11619.7	99.9970	7138480
44	Bahamas	13	466.1	100.0038	255000
48	Bahrain	2	4047.8	100.0010	503000
50	Bangladesh	27	5713.1	99.9960	113684002
52	Barbados	2	224.7	100.0000	257000
112	Belarus	46	16184.4	99.9961	10197931
56	Belgium	12	28333.9	100.0000	9934999
84	Belize	7	113.0	100.0040	189000
204	Benin	18	173.1	100.0004	4621998
60	Bermuda	1	123.9	100.0000	61000
64	Bhutan	13	65.1	99.9920	1539000
68	Bolivia	122	2858.9	99.9974	7171003
70	Bosnia-Herzegovina	7	503.2	100.0000	3608983
72	Botswana	64	611.9	99.9946	1238001
76	Brazil	799	68012.4	99.9942	149041985
96	Brunei	2	2246.8	100.0000	257000
100	Bulgaria	22	15475.5	100.0080	8991000
854	Burkina	38	261.2	99.9972	8993000
108	Burundi	6	58.1	100.0040	5492001
116	Cambodia	27	136.4	100.0006	8336002
120	Cameroon	61	1130.5	99.9955	11523998
124	Canada	2086	118927.3	99.9972	26646873
904	Canary-Islands	4	0.0	0.0000	0
132	Cape-Verde	2	31.0	100.0000	363000
136	Cayman-Islands	3	83.7	100.0000	25500
140	Central-African-Rep.	70	64.5	99.9946	3007998
148	Chad	131	25.9	100.0009	5552996
152	Chile	135	12036.7	99.9953	13173003
156	China	1075	871310.9	99.9965	1130311683
170	Colombia	130	18428.6	99.9952	32299987
174	Comoros	1	18.4	100.0000	543000
178	Congo	47	346.3	99.9982	2228998

184	Cook-Isl.	5	5.9	100.0000	0
188	Costa-Rica	11	1428.2	100.0000	3034999
191	Croatia	10	4643.7	100.0012	4049911
192	Cuba	27	7933.5	100.0043	10608001
196	Cyprus	5	1413.4	100.0010	702000
203	Czech-Republic	16	30581.3	100.0016	9341567
208	Denmark	16	14976.1	100.0052	5139999
262	Djibouti	5	101.3	100.0000	440001
212	Dominica	1	21.8	100.0000	72000
214	Dominican-Republic	8	3212.1	100.0110	7170000
218	Ecuador	34	6176.9	100.0014	10547002
818	Egypt	117	25020.6	99.9912	52425996
222	El-Salvador	6	1415.9	99.9970	5172000
226	Equatorial-Guinea	7	36.0	99.9990	351999
233	Estonia	18	4487.8	99.9964	1580040
230	Ethiopia	130	962.1	99.9930	49830992
238	Falkland-Islands	7	11.2	100.0000	2000
234	Faroe-Islands	1	169.1	100.0000	48000
242	Fiji	7	200.9	100.0060	731000
246	Finland	88	13922.1	99.9929	4986000
251	France	90	92813.4	99.9952	56735007
254	French-Guiana	14	237.8	99.9994	98001
258	French-Polynesia	2	153.2	100.0000	198000
266	Gabon	36	967.2	100.0023	1159001
270	Gambia	4	58.6	99.9980	861000
902	Gaza-Strip	1	0.0	100.0000	624000
268	Georgia	20	2113.6	100.0002	5463671
276	Germany	64	227924.4	100.0020	79364991
288	Ghana	34	1104.4	100.0005	15020001
292	Gibraltar	1	62.0	100.0000	31047
300	Greece	39	20821.4	100.0061	10089000
304	Greenland	770	137.4	99.9999	55559
308	Grenada	1	46.1	100.0000	91000
312	Guadeloupe	1	416.4	100.0000	390000
320	Guatemala	18	1961.9	99.9978	9197001
901	Guernsey	1	0.0	100.0000	57000
324	Guinea	35	294.7	99.9981	5755003
624	Guinea-Bissau	8	62.8	100.0030	964000
328	Guyana	30	254.5	99.9990	796002
332	Haiti	7	174.3	100.0050	6486000
340	Honduras	18	1052.1	100.0092	5137998
344	Hong-Kong	2	8459.0	100.0000	5705000
348	Hungary	20	15249.6	99.9973	10361000
910	Israeli-occ-terr.	1	0.0	100.0000	1584700
352	Iceland	40	492.0	99.9973	254994
356	India	356	248016.9	99.9965	846190994
360	Indonesia	316	80821.2	99.9974	184282991
364	Iran	195	71987.3	99.9982	58266982
368	Iraq	61	27018.3	99.9955	18079998
536	Iraq-Saudi-Arabia-N.	5	0.0	0.0000	0
372	Ireland	20	8797.5	99.9910	3503001
376	Israel	9	12640.8	99.9900	4644999
382	Italy	70	111890.8	99.9963	57661000
384	Ivory-Coast	40	2827.5	99.9955	11980002
388	Jamaica	5	2470.5	100.0080	2402999
392	Japan	81	307523.8	100.0011	123536998
903	Jersey	1	0.0	100.0000	84000
400	Jordan	17	3632.0	100.0050	3282000

398	Kazakhstan	404	60447.5	99.9975	16744198
404	Kenya	67	1824.2	99.9980	23584999
296	Kiribati	2	5.9	100.0000	71000
415	Kuwait	6	13297.5	100.0020	2143000
417	Kyrgyzstan	42	1490.8	100.0035	4412880
418	Laos	38	84.4	100.0046	4202002
428	Latvia	21	2542.9	99.9957	2682306
422	Lebanon	4	3641.3	99.9980	2740000
426	Lesotho	8	0.0	100.0000	1747001
430	Liberia	17	87.1	100.0004	2574999
434	Libya	173	10753.4	99.9944	4545007
440	Lithuania	21	4043.0	99.9997	3727035
442	Luxembourg	3	2527.9	100.0000	414000
446	Macau	1	335.7	100.0000	463000
807	Macedonia	4	2934.3	100.0000	2250871
450	Madagascar	72	306.5	100.0030	12009996
454	Malawi	21	197.8	100.0080	9581999
458	Malaysia	52	29095.7	100.0033	17891003
462	Maldives	3	50.2	99.9000	0
466	Mali	138	126.7	99.9943	9214001
470	Malta	1	470.9	100.0000	354000
474	Martinique	2	556.4	100.0000	361000
478	Mauritania	114	837.3	100.0000	2024001
480	Mauritius	1	407.0	100.0000	1075000
175	Mayotte	1	0.0	100.0000	94300
484	Mexico	243	97662.1	99.9977	84486010
316	Micronesia	3	1128.6	100.0000	111000
498	Moldova	14	2951.9	100.0015	4366792
492	Monaco	1	0.0	100.0000	29800
496	Mongolia	234	2308.0	99.9951	2189973
500	Montserrat	1	11.7	100.0000	12400
504	Morocco	60	7994.7	99.9951	25061003
508	Mozambique	101	270.8	99.9999	14200010
104	Myanmar	91	1919.5	99.9956	41825003
516	Namibia	94	0.0	99.9968	1438997
520	Nauru	1	37.7	100.0000	0
524	Nepal	28	417.5	99.9890	19570999
528	Netherlands	14	37089.8	99.9920	14944000
530	Netherlands-Antilles	2	1761.6	100.0000	175000
540	New-Caledonia	9	468.0	100.0030	168001
554	New-Zealand	60	7489.0	99.9998	3329998
558	Nicaragua	20	737.5	100.0033	3675999
562	Niger	130	305.1	99.9930	7730998
566	Nigeria	100	24757.4	99.9937	108541998
570	Niue	2	0.8	100.0000	0
408	North-Korea	27	70138.3	99.9997	21771002
579	Norway	153	19774.1	99.9991	4242011
512	Oman	45	3116.5	99.9980	1524000
586	Pakistan	115	23294.5	99.9943	118121999
582	Palau-Islands	6	65.3	100.0000	15100
591	Panama	15	1882.4	100.0006	2418001
598	Papua-New-Guinea	70	677.5	99.9945	3875001
600	Paraguay	53	1036.2	100.0020	4277001
604	Peru	145	8340.4	99.9946	21549997
608	Philippines	69	16690.5	99.9940	62437000
612	Pitcairn	1	0.0	100.0000	61
616	Poland	57	92258.2	99.9974	38118994
620	Portugal	16	14172.0	99.9990	9868001

630	Puerto-Rico	4	4239.9	100.0080	3530000
634	Qatar	5	7920.6	100.0030	427001
638	Reunion	2	424.5	100.0000	604000
642	Romania	44	33050.0	100.0014	23207000
643	Russian-Federation	3307	496181.9	99.9922	148546837
646	Rwanda	5	133.6	100.0000	7027001
674	San-Marino	1	0.0	0.0000	0
678	Sao-Tome	2	20.9	100.0000	119000
684	Saudi-Arabia	211	69389.0	99.9960	14870010
686	Senegal	28	836.4	100.0078	7326997
690	Seychelles	1	44.4	100.0000	71000
694	Sierra-Leone	12	120.6	100.0000	4150998
702	Singapore	1	17377.1	100.0000	2710000
703	Slovakia	15	10381.1	99.9971	6319435
705	Slovenia	7	3196.1	99.9865	1924022
90	Solomon-Islands	16	43.5	100.0062	319999
706	Somalia	80	3.1	100.0006	8677003
710	South-Africa	153	83455.7	99.9918	37958996
410	South-Korea	19	101957.7	99.9951	43377000
724	Spain	82	63211.7	100.0019	38958995
144	Sri-Lanka	12	1606.5	99.9965	17217000
659	St-Kitts-(81-)	1	26.0	100.0000	0
666	St-Pierre	1	19.3	100.0000	0
654	St.-Helena	1	1.7	100.0000	7100
662	St.-Lucia	3	51.9	100.0000	133000
911	St.-Martin	1	0.0	0.0000	0
670	St.-Vincent	1	34.3	100.0000	107000
736	Sudan	246	955.0	99.9918	25202978
740	Suriname	17	587.0	99.9950	422001
748	Swaziland	6	123.8	100.0000	751000
752	Sweden	106	12168.8	99.9930	8565999
757	Switzerland	13	10603.7	99.9982	6740452
760	Syria	33	12561.5	100.0028	12355001
762	Tadzhikistan	37	1021.0	100.0028	5359952
158	Taiwan	8	47538.4	99.9983	20352966
834	Tanzania	97	665.8	99.9954	25993015
764	Thailand	74	47773.0	99.9990	54676995
768	Togo	13	203.3	99.9950	3530998
776	Tonga	1	28.5	100.0000	96000
780	Trinidad	2	4669.5	99.9980	1236000
788	Tunisia	28	4178.2	99.9972	8057002
792	Turkey	109	45281.6	99.9974	55991002
795	Turkmenistan	76	7733.0	99.9953	3714270
796	Turks-Caicos-Isl.	2	0.0	100.0000	12350
800	Uganda	33	284.8	99.9991	17560001
804	Ukraine	107	119594.5	99.9959	51938119
784	United-Arab-Emirates	17	18643.1	100.0040	1588998
826	United-Kingdom	58	147956.0	99.9948	57620998
840	United-States	1310	1407257	99.9946	248769679
858	Uruguay	26	1467.9	99.9936	3093999
860	Uzbekistan	80	26985.7	99.9988	20702528
548	Vanuatu	6	16.7	99.9960	149999
862	Venezuela	106	49190.0	99.9931	19320998
704	Vietnam	57	8654.2	99.9990	66687999
92	Virgin-Islands-(UK)	1	14.2	100.0000	16600
850	Virgin-Islands-(USA)	1	3121.5	100.0000	107000
872	Wake-Isl.	1	16.8	100.0000	0
732	Western-Sahara	35	57.0	99.9960	158000

882	Western-Samoa	2	36.0	100.0000	160000
887	Yemen	55	3932.8	99.9972	11684005
891	Yugoslavia	18	9015.8	99.9975	11957216
180	Zaire	232	572.6	99.9922	37390987
894	Zambia	90	655.9	99.9912	8137997
716	Zimbabwe	47	2656.6	99.9940	9947006

Total # lines in data file: 19969
 Total 1995 CO2 emissions: 6172868.6 (1000 metric tons C)
 Total population: 5291059610
 Total percentage: 22099.62 (use only to verify data transport)

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(F) CDIAC's quality assurance checks.

- 1) The population divisions of Czechlovakia and the former Socialist Federal Republic of Yugoslavia were checked against the 1995 U.N. population statistics provided by the U.N. Statistical Office.
- 2) The national populations were checked against values published in DB1016 (Li, 1996b)
- 3) The gridded national fossil-fuel emission summations were checked against the values available in NDP-030 (Boden, 1998; Marland et al, 1997)) (the largest difference is 8 units for the United Kingdom).
- 4) The summed national emissions published in NDP030R8 amounted to 6172918 units of 1000 metric tons C. The summed gridded national estimates presented here amount to 6172869 units of 1000 metric tons C. The total difference of 49 units (due to roundoff) is less than 0.001%.
- 5) Latitudinal summations of the gridded emssions were compared with previously published gridded data (NDP-058) and a graph produced (lat.gif).

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(G) Instructions on how to obtain the data and documentation.

This data base (NDP-058A) and the related NDP-058 and NDP-030/R8 are available free of charge from CDIAC. The files are available from CDIAC's anonymous FTP (file transfer protocol) area via the Internet. Obtaining the data from CDIAC's anonymous FTP area requires a computer with FTP software and access to the Internet. Commands used to obtain the data base are shown below. For additional information, contact CDIAC.

```
>ftp cdiac.esd.ornl.gov or >ftp 128.219.24.36
Login: anonymous
Password: YOU@your internet address
Guest login ok, access restrictions apply.
ftp> cd pub/ndp058b/
ftp> dir
ftp> mget files
ftp> quit
```

CDIAC's World Wide Web home page's address: <http://cdiac.esd.ornl.gov>

For non-FTP data acquisitions (e.g., IBM- or MacIntosh-formatted floppy

diskettes; 8200 or 8500 format 8-mm tape), users may request data from CDIAC using the following information:

Address: Carbon Dioxide Information Analysis Center
Oak Ridge National Laboratory
P.O. Box 2008
Oak Ridge, Tennessee 37831-6335, U.S.A.

Telephone: (423) 574-3645 (Voice)
(423) 574-2232 (Fax)

Electronic mail: cdiac@ornl.gov

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(H) References.

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