



Description of the AVHRR Pathfinder Matchups

Available Matchup Files

Matchup databases are produced separately for each year, month and satellite. For instance, in 1988 there were two polar orbiters carrying five-channel AVHRRs: NOAA-9 and NOAA-11 (which became operational in November 1988). The matchup files are named according to the following convention:

g_SSSS_vNN.N_YYMM.matchups.jpg,

where g indicates "global" matchups, SSSS indicates the satellite carrying the AVHRR for which data are extracted, e.g., "noa9" for NOAA-9 or "no11" for NOAA-11. VNN indicates the version number of the files distributed (the current release is Version 19.0, or "v19.0". YY indicates the last two digits of the year, e.g., "92" for 1992, and MM indicates the month. The matchup files available at present, their size, and the number of records they contain are listed in [Appendix A](#). The matchup files can be obtained from the AVHRR Oceans Pathfinder group at NASA JPL. Detailed instructions on how to get the matchup files are provided below.

Number of Matchups by Source of *In Situ* SST

Table 4 shows the number of matchups from each source of *in situ* SSTs for each satellite and year. Some sources have fairly constant numbers (e.g., the NDBC buoys or the Japanese buoys). In contrast, it is apparent that the number of AOML and TOGA/TAO records increased considerably in recent years as part of TOGA-related efforts. This resulted from an increased number of drifting buoys deployed, the expansion of the TOGA/TAO array, and the switch to modern electronics in the TOGA/TAO which allowed the storage of hourly SST measurements, rather than values averaged over several hours.

Table 4a. Number of NOAA-7 matchups by source of *in situ* and year. The first line for each year represents the total number of records from each source. The second line represents the number of records which passed the cloud tests (initial and tree tests) for each source.

NOTE: This table will be filled as soon as NOAA-7 matchups become available. For the time being, it should be considered as a placeholder.

Matchups by In Situ Source – NOAA-7

Year	NDBC	Japan	TOGA	UK	AOML	MEDS	NATO	TOTAL
1981	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1982	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1983	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1984	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 4b. Same as Table 4a, but for NOAA-9.

Matchups by In Situ Source – NOAA-9

Year	NDBC	Japan	TOGA	UK	AOML	MEDS	NATO	TOTAL
1985	24492	736	50	0	0	12201	0	37479
	3612	133	8	0	0	1243	0	4996

1986	25721	934	485	0	0	28394	0	55534
	3578	170	107	0	0	3213	0	7068
1987	27852	845	3179	0	0	25845	0	57721
	3306	128	417	0	0	2889	0	6740
1988	24042	402	2807	0	9108	11906	0	48265
	3131	35	586	0	1056	1275	0	6083

Table 4c. Same as Table 4a, but for NOAA-11.**Matchups by In Situ Source – NOAA-11**

Year	NDBC	Japan	TOGA	UK	AOML	MEDS	NATO	TOTAL
1988	3779	50	553	0	2461	917	0	7760
	651	3	117	0	215	105	0	1091
1989	30421	438	3313	0	7423	13869	0	55464
	4330	70	597	0	830	1582	0	7409
1990	29853	681	1604	0	20190	20747	0	73075
	4388	104	145	0	2201	2256	0	9094
1991	25985	729	5873	238	20934	36756	0	90515
	4388	96	983	13	2263	4053	0	11358
1992	30657	671	14452	0	64264	46003	341	156388
	4070	99	2214	0	7247	5201	30	18861
1993	31073	399	11235	0	86183	43092	0	171982
	4310	55	1963	0	10343	5150	0	21821
1994	22897	308	19142	1004	54401	39624	168	137544
	2970	69	3780	65	6829	4852	8	18573

Table 4d. Same as Table 4a, but for NOAA-9 gap data.**Matchups by In Situ Source – NOAA-9 Gap**

Year	NDBC	Japan	TOGA	UK	AOML	MEDS	NATO	TOTAL
1994	10126	232	8619	1003	7544	7606	0	35130
	1472	31	1469	51	902	659	0	4584
1995	3107	52	3014	105	2256	2172	0	10706
	423	4	505	3	252	160	0	1347

Table 4e. Same as Table 4a, but for NOAA-14.**Matchups by In Situ Source – NOAA-14**

Year	NDBC	Japan	TOGA	UK	AOML	MEDS	NATO	TOTAL
1995	35977	353	11907	1058	102966	60138	0	212399
	4974	56	2492	75	12790	7156	0	27543
1996	37974	500	22307	1481	140148	58552	0	260962
	6016	81	4364	135	18336	8528	0	37460
1997	31922	718	17466	0	109416	52589	0	212111
	5097	131	2621	0	13858	6965	0	28672
1998	35886	730	16631	0	130583	59528	0	243358
	6334	108	2554	0	14390	10017	0	33403
1999	37134	601	15290	0	200618	57341	0	310984
	6666	89	2748	0	26470	7318	0	43291

Number of Matchups by Latitudinal Zone

The development and validation of SST algorithms that perform uniformly throughout the world's oceans requires that the Pathfinder matchups have a wide geographic distribution. Table 5 shows the number of matchups for each database by latitudinal zone representing tropical (0–25°), temperate (25–50°) and subpolar (> 50°) regimes, for both Southern and Northern hemispheres. In the future,

efforts should be made to enhance the number of matchups in high latitudes and throughout the Southern Hemisphere.

Table 5a. Number of NOAA-7 matchups by latitudinal zone and year. The first line for each year represents the total number of records in each latitudinal band. The second line represents the number of records which passed the cloud tests (initial and tree tests) for each latitude band.

NOTE: This table will be filled as soon as NOAA-7 matchups become available. For the time being, it should be considered as a placeholder.

Matchups by Latitude Band – NOAA-7

Year	< 50°S	50–25°S	25°–0°S	0–25°N	25–50°N	> 50°N
1981	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
1982	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
1983	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
1984	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A

Table 5b. Same as Table 5a, but for NOAA-9.

Matchups by Latitude Band – NOAA-9

Year	< 50°S	50–25°S	25°–0°S	0–25°N	25–50°N	> 50°N
1985	915	4923	3854	3411	21963	2413
	100	441	421	486	3331	217
1986	908	9895	9867	9446	21721	3697
	60	984	1313	1276	3113	322
1987	787	10353	9603	9329	24342	3307
	41	1032	1220	1330	2886	231
1988	497	6224	6868	9825	22047	2804
	31	683	957	1259	2936	217

Table 5c. Same as Table 5a, but for NOAA-11.

Matchups by Latitude Band – NOAA-11

Year	< 50°S	50–25°S	25°–0°S	0–25°N	25–50°N	> 50°N
1988	43	801	1236	2334	3214	132
	3	87	197	202	597	5
1989	248	6898	7436	8085	30194	2603
	26	685	1129	972	4410	187
1990	472	7895	9318	15369	36554	3197
	20	814	1179	1667	5219	195
1991	1756	16707	13560	18357	35251	497
	146	1558	1998	2101	5143	31
1992	2464	25148	25509	31281	63071	9365
	139	2297	3557	4025	8265	578
1993	993	23450	27956	30647	79172	10124
	78	2085	4107	4091	10684	776
1994	1383	17764	24446	23835	56963	13153
	85	1553	4604	3474	7888	969

Table 5d. Same as Table 5a, but for NOAA-9 gap data.

Matchups by Latitude Band – NOAA-9 Gap

Year	< 50°S	50–25°S	25°–0°S	0–25°N	25–50°N	> 50°N
1994	518	3215	6614	6605	13940	4238

	45	370	1236	909	1826	198
1995	302	1462	2111	2448	3521	862
	16	146	419	368	360	38

Table 5e. Same as Table 5a, but for NOAA-14.

Matchups by Latitude Band – NOAA-14						
Year	< 50°S	50–25°S	25°–0°S	0–25°N	25–50°N	> 50°N
1995	3729	36111	28470	37259	88114	18716
	238	3116	5080	5925	12019	1165
1996	4235	48559	38083	49270	96577	24238
	341	5132	6755	8000	15029	2203
1997	2504	44859	27302	32217	80587	24642
	192	4675	4008	5220	12549	2028
1998	3412	52753	28402	41644	92598	24549
	250	5247	4048	6198	15914	1746
1999	2152	53138	60416	76076	94870	24332
	201	5967	9988	10008	15066	2061

Geographic Distribution of Pathfinder Matchups

The geographic distribution of Pathfinder matchups by year and satellite can be viewed by clicking in the appropriate year and AVHRR cell of Table 6. Only those matchups flagged as "cloud free" are plotted. In the figures, the dots indicate the NDBC moored buoys, the diamonds are the Japanese moored buoys, triangles are the UK buoys and the squares are the TOGA/TAO buoys. Small pink points indicate AOML drifters, whereas small crosses denote MEDS drifters. NATO drifters are indicated as small yellow dots. Note, however, that not all of the data sources are available for all years (see Table 4).

Table 6. List of available maps of matchups by satellite and year. Click on the appropriate cell to view the desired map.

Geographic Distribution of Matchups by Satellite and Year				
NOAA-7	NOAA-9	NOAA-11	NOAA-9 Gap	NOAA-14
1981	1985	1988	1994 & 1995	1995
1982	1986	1989		1996
1983	1987	1990		1997
1984	1988	1991		1998
		1992		1999
		1993		
		1994		

How to Get a Copy of the Matchup Files

The matchup files can be obtained from the AVHRR Oceans Pathfinder group at NASA's Jet Propulsion Laboratory. For more information go to URL http://podaac.jpl.nasa.gov/DATA_CATALOG/sst.html *, or contact Dr. Jorge Vazquez ([e-mail: jv@pacific.jpl.nasa.gov](mailto:jv@pacific.jpl.nasa.gov)).

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