



# **ECMWF MODEL LEVELS DEFINITIONS**

## Table giving details of the 16 model level definitions

The following is the list of a(N) and b(b) accompanied with half level, ph, and full level, pf, corresponding values of pressure for a surface pressure of PS[hPa]= 1013.250.

NLEV=16                      PS[hPa]=1013.250

N:	a:	b:	ph[hPa]:	pf[hPa]:
0	0.000000	0.000000000	0.0000	
1	5000.000000	0.000000000	50.0000	25.0000
2	9890.519531	0.001720764	100.6488	75.3244
3	14166.304688	0.013197623	155.0355	127.8421
4	17346.066406	0.042217135	216.2372	185.6364
5	19121.152344	0.093761623	286.2155	251.2263
6	19371.250000	0.169571340	365.5307	325.8731
7	18164.472656	0.268015683	453.2116	409.3711
8	15742.183594	0.384274483	546.7880	499.9998
9	12488.050781	0.510830879	642.4799	594.6339
10	8881.824219	0.638268471	735.5438	689.0118
11	5437.539063	0.756384850	820.7823	778.1631
12	2626.257813	0.855612755	893.2122	856.9973
13	783.296631	0.928746223	948.8851	921.0486
14	0.000000	0.972985268	985.8773	967.3812
15	0.000000	0.992281914	1005.4296	995.6535
16	0.000000	1.000000000	1013.2500	1009.3399

## Table giving details of the 19 model level definitions

The following is the list of a(N) and b(N) accompanied with half level, ph, and full level, pf, corresponding values of pressure for a surface pressure of PS[hPa]= 1013.250.

NLEV=19		PS [hPa] =1013.250		
N:	a:	b:	ph [hPa] :	pf [hPa] :
0	0.000000	0.0000000000	0.0000	
1	2000.000000	0.0000000000	20.0000	10.0000
2	4000.000000	0.0000000000	40.0000	30.0000
3	6046.110595	0.0003389933	60.8046	50.4023
4	8267.927560	0.0033571866	86.0809	73.4428
5	10609.513232	0.0130700434	119.3384	102.7096
6	12851.100169	0.0340771467	163.0397	141.1890
7	14698.498086	0.0706498323	218.5709	190.8053
8	15861.125180	0.1259166826	286.1963	252.3836
9	16116.236610	0.2011954093	365.0236	325.6100
10	15356.924115	0.2955196487	453.0045	409.0141
11	13621.460403	0.4054091989	546.9955	500.0000
12	11101.561987	0.5249322235	642.9032	594.9493
13	8127.144155	0.6461079479	735.9403	689.4218
14	5125.141747	0.7596983769	821.0158	778.4781
15	2549.969411	0.8564375573	893.2850	857.1504
16	783.195032	0.9287469142	948.8848	921.0849
17	0.000000	0.9729851852	985.8772	967.3810
18	0.000000	0.9922814815	1005.4292	995.6532
19	0.000000	1.0000000000	1013.2500	1009.3396

## Table giving details of the 31 model level definitions

The following is the list of a(N) and b(N) accompanied with half level, ph, and full level, pf, corresponding values of pressure for a surface pressure of PS[hPa]= 1013.250.

NLEV=31		PS [hPa] =1013.250		
N:	a:	b:	ph [hPa] :	pf [hPa] :
0	0.000000	0.0000000000	0.0000	
1	2000.000000	0.0000000000	20.0000	10.0000
2	4000.000000	0.0000000000	40.0000	30.0000
3	6000.000000	0.0000000000	60.0000	50.0000
4	8000.000000	0.0000000000	80.0000	70.0000
5	9976.135361	0.0003908582	100.1574	90.0787
6	11820.539617	0.0029197006	121.1638	110.6606
7	13431.393926	0.0091941320	143.6299	132.3968
8	14736.356909	0.0203191555	167.9520	155.7909
9	15689.207458	0.0369748598	194.3569	181.1544
10	16266.610500	0.0594876397	222.9420	208.6494
11	16465.005734	0.0878949492	253.7096	238.3258
12	16297.619332	0.1220035886	286.5963	270.1530
13	15791.598604	0.1614415235	321.4966	304.0465
14	14985.269630	0.2057032385	358.2815	339.8891
15	13925.517858	0.2541886223	396.8118	377.5467
16	12665.291662	0.3062353873	436.9459	416.8789
17	11261.228878	0.3611450218	478.5425	457.7442
18	9771.406290	0.4182022749	521.4575	500.0000
19	8253.212096	0.4766881754	565.5364	543.4970
20	6761.341326	0.5358865832	610.6005	588.0685
21	5345.914240	0.5950842740	656.4283	633.5144
22	4050.717678	0.6535645569	702.7315	679.5799
23	2911.569385	0.7105944258	749.1255	725.9285
24	1954.805296	0.7654052430	795.0949	772.1102
25	1195.889791	0.8171669567	839.9533	817.5241
26	638.148911	0.8649558510	882.7980	861.3757
27	271.626545	0.9077158297	922.4593	902.6287
28	72.063577	0.9442132326	957.4447	939.9520
29	0.000000	0.9729851852	985.8772	971.6610
30	0.000000	0.9922814815	1005.4292	995.6532
31	0.000000	1.0000000000	1013.2500	1009.3396

## Table giving details of the 40 model level definitions

The following is the list of a(N) and b(N) accompanied with half level, ph, and full level, pf, corresponding values of pressure for a surface pressure of PS[hPa]=1013.25.

NLEV=40		PS [hPa] =1013.25		
N:	a:	b:	ph [hPa] :	pf [hPa] :
0	0.000000	0.0000000000	0.0000	
1	2000.000000	0.0000000000	20.0000	10.0000
2	4000.000000	0.0000000000	40.0000	30.0000
3	6000.000000	0.0000000000	60.0000	50.0000
4	8000.000000	0.0000000000	80.0000	70.0000
5	9988.882813	0.0001971156	100.0886	90.0443
6	11914.523438	0.0015112918	120.6766	110.3826
7	13722.941406	0.0048841573	142.1783	131.4274
8	15369.730469	0.0110761747	164.9202	153.5493
9	16819.476563	0.0206778906	189.1466	177.0334
10	18045.183594	0.0341211632	215.0251	202.0859
11	19027.695313	0.0516904071	242.6523	228.8387
12	19755.109375	0.0735338330	272.0593	257.3558
13	20222.207031	0.0996747017	303.2175	287.6384
14	20429.863281	0.1300225258	336.0440	319.6307
15	20384.480469	0.1643843055	370.4072	353.2256
16	20097.402344	0.2024759650	406.1328	388.2700
17	19584.328125	0.2439331412	443.0085	424.5707
18	18864.750000	0.2883229256	480.7907	461.8996
19	17961.359375	0.3351548910	519.2093	500.0000
20	16899.468750	0.3838921785	557.9734	538.5914
21	15706.449219	0.4339629412	596.7774	577.3754
22	14411.125000	0.4847716093	635.3061	616.0418
23	13043.218750	0.5357099175	673.2403	654.2732
24	11632.757813	0.5861684084	710.2627	691.7515
25	10209.500000	0.6355474591	746.0635	728.1631
26	8802.355469	0.6832686067	780.3455	763.2045
27	7438.804688	0.7287858129	812.8303	796.5879
28	6144.316406	0.7715966105	843.2634	828.0469
29	4941.777344	0.8112534285	871.4203	857.3419
30	3850.913330	0.8473749161	897.1118	884.2660
31	2887.696533	0.8796569109	920.1893	908.6505
32	2063.779785	0.9078838825	940.5511	930.3702
33	1385.912598	0.9319403172	958.1477	949.3494
34	855.361816	0.9518215060	972.9868	965.5672
35	467.333496	0.9676452279	985.1399	979.0633
36	210.393890	0.9796627164	994.7472	989.9435
37	65.889236	0.9882701039	1002.0236	998.3854
38	7.367743	0.9940194488	1007.2639	1004.6437
39	0.000000	0.9976301193	1010.8487	1009.0563
40	0.000000	1.0000000000	1013.2500	1012.0494

## Table giving details of the 50 model level definitions

The following is the list of a(N) and b(N) accompanied with half level, ph, and full level, pf, corresponding values of pressure for a surface pressure of PS[hPa]= 1013.250.

**NLEV=50**                      **PS [hPa] =1013.250**

N:	a:	b:	ph [hPa] :	pf [hPa] :
0	0.000000	0.0000000000	0.0000	
1	20.006149	0.0000000000	0.2001	0.1000
2	43.297810	0.0000000000	0.4330	0.3165
3	75.346230	0.0000000000	0.7535	0.5932
4	115.082146	0.0000000000	1.1508	0.9521
5	161.897491	0.0000000000	1.6190	1.3849
6	215.896912	0.0000000000	2.1590	1.8890
7	278.005798	0.0000000000	2.7801	2.4695
8	350.138184	0.0000000000	3.5014	3.1407
9	435.562286	0.0000000000	4.3556	3.9285
10	539.651489	0.0000000000	5.3965	4.8761
11	668.615540	0.0000000000	6.6862	6.0413
12	828.398987	0.0000000000	8.2840	7.4851
13	1026.366943	0.0000000000	10.2637	9.2738
14	1271.644531	0.0000000000	12.7164	11.4901
15	1575.537842	0.0000000000	15.7554	14.2359
16	1952.054443	0.0000000000	19.5205	17.6380
17	2418.549805	0.0000000000	24.1855	21.8530
18	2996.526611	0.0000000000	29.9653	27.0754
19	3712.626221	0.0000000000	37.1263	33.5458
20	4599.856934	0.0000000000	45.9986	41.5624
21	5699.114746	0.0000000000	56.9911	51.4949
22	6998.388184	0.0000000000	69.9839	63.4875
23	8507.411133	0.0001003604	85.1758	77.5798
24	10181.707031	0.0006727143	102.4987	93.8372
25	11883.089844	0.0031633405	122.0362	112.2674
26	13442.915039	0.0092923399	143.8446	132.9404
27	14736.354492	0.0203191563	167.9519	155.8983
28	15689.206055	0.0369748585	194.3568	181.1544
29	16266.609375	0.0594876409	222.9420	208.6494
30	16465.003906	0.0878949761	253.7096	238.3258
31	16297.620117	0.1220036149	286.5964	270.1530
32	15791.597656	0.1614415050	321.4966	304.0465
33	14985.269531	0.2057032585	358.2815	339.8891
34	13925.519531	0.2541885972	396.8118	377.5466
35	12665.294922	0.3062353730	436.9459	416.8789
36	11261.230469	0.3611450195	478.5425	457.7442
37	9771.406250	0.4182022810	521.4575	500.0000
38	8253.210938	0.4766881466	565.5364	543.4969
39	6761.339844	0.5358865857	610.6005	588.0684
40	5345.917969	0.5950842500	656.4283	633.5144
41	4050.718750	0.6535645723	702.7315	679.5798
42	2911.570313	0.7105944157	749.1255	725.9285
43	1954.804688	0.7654052377	795.0949	772.1102
44	1195.890625	0.8171669841	839.9534	817.5242
45	638.148438	0.8649558425	882.7980	861.3756

46	271.625000	0.9077158570	922.4594	902.6287
47	72.062500	0.9442132115	957.4447	939.9520
48	0.000000	0.9729852080	985.8773	971.6609
49	0.000000	0.9922814965	1005.4292	995.6533
50	0.000000	1.0000000000	1013.2500	1009.3396

## Table giving details of the 60 model level definitions

The following is the list of a(N) and b(b) accompanied with half level, ph, and full level, pf, corresponding values of pressure for a surface pressure of PS[hPa]= 1013.250.

**NLEV=60**

**PS [hPa] =1013.250**

N:	a:	b:	ph [hPa] :	pf [hPa] :
0	0.000000	0.00000000	0.000	
1	20.000000	0.00000000	0.200	0.100
2	38.425343	0.00000000	0.384	0.292
3	63.647804	0.00000000	0.636	0.510
4	95.636963	0.00000000	0.956	0.796
5	134.483307	0.00000000	1.345	1.151
6	180.584351	0.00000000	1.806	1.575
7	234.779053	0.00000000	2.348	2.077
8	298.495789	0.00000000	2.985	2.666
9	373.971924	0.00000000	3.740	3.362
10	464.618134	0.00000000	4.646	4.193
11	575.651001	0.00000000	5.757	5.201
12	713.218079	0.00000000	7.132	6.444
13	883.660522	0.00000000	8.837	7.984
14	1094.834717	0.00000000	10.948	9.892
15	1356.474609	0.00000000	13.565	12.257
16	1680.640259	0.00000000	16.806	15.186
17	2082.273926	0.00000000	20.823	18.815
18	2579.888672	0.00000000	25.799	23.311
19	3196.421631	0.00000000	31.964	28.882
20	3960.291504	0.00000000	39.603	35.784
21	4906.708496	0.00000000	49.067	44.335
22	6018.019531	0.00000000	60.180	54.624
23	7306.631348	0.00000000	73.066	66.623
24	8765.053711	0.00007582	87.727	80.397
25	10376.126953	0.00046139	104.229	95.978
26	12077.446289	0.00181516	122.614	113.421
27	13775.325195	0.00508112	142.902	132.758
28	15379.805664	0.01114291	165.089	153.995
29	16819.474609	0.02067788	189.147	177.118
30	18045.183594	0.03412116	215.025	202.086
31	19027.695313	0.05169041	242.652	228.839
32	19755.109375	0.07353383	272.059	257.356
33	20222.205078	0.09967469	303.217	287.638
34	20429.863281	0.13002251	336.044	319.631
35	20384.480469	0.16438432	370.407	353.226
36	20097.402344	0.20247594	406.133	388.270
37	19584.330078	0.24393314	443.009	424.571
38	18864.750000	0.28832296	480.791	461.900
39	17961.357422	0.33515489	519.209	500.000
40	16899.468750	0.38389215	557.973	538.591

41	15706.447266	0.43396294	596.777	577.375
42	14411.124023	0.48477158	635.306	616.042
43	13043.218750	0.53570992	673.240	654.273
44	11632.758789	0.58616841	710.263	691.752
45	10209.500977	0.63554746	746.064	728.163
46	8802.356445	0.68326861	780.346	763.205
47	7438.803223	0.72878581	812.830	796.588
48	6144.314941	0.77159661	843.263	828.047
49	4941.778320	0.81125343	871.420	857.342
50	3850.913330	0.84737492	897.112	884.266
51	2887.696533	0.87965691	920.189	908.651
52	2063.779785	0.90788388	940.551	930.370
53	1385.912598	0.93194032	958.148	949.349
54	855.361755	0.95182151	972.987	965.567
55	467.333588	0.96764523	985.140	979.063
56	210.393890	0.97966272	994.747	989.944
57	65.889244	0.98827010	1002.024	998.385
58	7.367743	0.99401945	1007.264	1004.644
59	0.000000	0.99763012	1010.849	1009.056
60	0.000000	1.00000000	1013.250	1012.049