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CHAPTER IV

RESULTS

Bangkok

January

GPM	P	T	Td	RH	e_s	e	N
3	1012.9	25.9	19.4	60	37.796	22.67760	360
1531	850	16.1	9.8	66	18.290	12.07140	285
3160	700	9.0	-2.2	46	11.474	5.27804	217
5875	500	-6.2	-17.3	41	3.622	1.48502	153

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get:-

$$\Delta N = N_s - N_{1003}$$

$$= 360 - 307$$

$$= 53$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 53 \times 10^{-6}} = \frac{1}{1 - 0.338}$$

$$= \frac{1}{0.662} = 1.50$$

$$k = 1.50$$

Bangkok

February

GPM	P	T	Td	RH	e_s	e	N
3	1011.2	27.6	21.8	71	36.924	26.216040	369
1532	850	17.2	11.2	67	19.614	13.141380	286
3157	700	8.5	0.2	58	11.092	6.211520	222
5871	500	-5.5	-18.4	35.5	3.846	1.365330	152

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\Delta N = N_s - N_{1003}$$

$$= 369 - 307$$

$$= 62$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 62 \times 10^{-6}} = \frac{1}{1 - 0.396}$$

$$= \frac{1}{0.604} = 1.66$$

$$k = 1.66$$

Bangkok

March

GPM	P	T	Td	e_s	e	N
3	1010.2	29.0	23.5	40.055	29.039875	278
1532	850	18.6	12.0	21.422	14.138520	288
3164	700	8.6	-0.1	11.168	7.315040	227
5874	500	-6.0	-19.8	3.685	1.216050	152
7584	400	-16.9	-28.5	1.384	0.491320	124
9676	300	-32.8	-43.0	0.2828	0.097566	98

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\Delta N = N_s - N_{1003}$$

$$= 378 - 313$$

$$= 65$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 65 \times 10^{-6}} = \frac{1}{1 - 0.415}$$

$$= \frac{1}{0.595} = 1.68$$

$$k = 1.68$$

Bangkok

April

GPM	P	T	Td	RH	e_s	e	N
3	1008.6	30.2	24.4	71	42.919	30.472490	382
1515	850	19.7	14.2	70.5	22.942	16.174110	296
3160	700	9.5	2.2	61	11.867	7.238870	226
5877	500	-5.4	-15.9	43	3.879	1.667970	154
7599	400	-15.9	-25.6	43	1.520	0.653600	124

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\Delta N = N_s - N_{1003}$$

$$= 382 - 322$$

$$= 60$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 60 \times 10^{-6}} = \frac{1}{1 - 0.395}$$

$$= \frac{1}{0.605} = 1.66$$

$$k = 1.66$$

Bangkok

May

GPM	P	T	Td	RH	e_s	e	N
3	1007.0	29.6	24.9	76	41.466	31.514160	387
1501	850	19.4	15.1	76	22.518	17.113680	300
3148	700	10.1	4.5	68	12.355	8.401400	231
5870	500	-5.1	-11.3	62	3.981	2.468220	157
7594	400	-15.2	-22.6	53	1.622	0.859660	125
9699	300	-30.7	-38.6	46	0.353	0.162380	97

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\Delta N = N_s - N_{1003}$$

$$= 387 - 325$$

$$= 62$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 62 \times 10^{-6}} = \frac{1}{1 - 0.395}$$

$$= \frac{1}{0.605} = 1.66$$

$$k = 1.66$$

Bangkok

June

GPM	P	T	Td	RH	e_s	e	N
3	1006.5	28.8	24.4	77	39.594	30.48738	384
1493	850	19.0	15.2	79	21.964	17.35156	302
3139	700	10.1	5.5	73	12.355	9.01915	234
5865	500	-4.9	-9.8	68	4.049	2.45332	159
7591	400	-15.0	-21.1	60	1.652	0.99120	126
9700	300	-30.0	37.7	47	0.3759	0.176673	97

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\triangle N = N_s - N_{1003}$$

$$= 384 - 318$$

$$= 66.$$

$$\triangle H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \text{ x,66 x } 10^{-6}} = \frac{1}{1 - 0.42}$$

$$= \frac{1}{0.58} = 1.72$$

$$k = 1.72$$

Bangkok

July

GPM	P	T	Td	RH	e_s	e	N
3	1006.8	28.4	24.1	78	38.686	30.17580	383
1492	850	18.6	14.6	78	21.422	16.70916	300
3137	700	9.8	5.2	73	12.108	8.83884	233
5858	500	-5.4	-9.8	71	3.879	2.75409	159
7580	400	-15.4	-21.3	61	1.592	0.97112	125
9684	300	-30.9	-37.5	53	0.3457	0.183221	97

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\Delta N = N_s - N_{1003}$$

$$= 383 - 325$$

$$= 58.$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 58 \times 10^{-6}} = \frac{1}{1 - 0.37}$$

$$= \frac{1}{0.63} = 1.59$$

$$k = 1.59$$

Bangkok

August

GPM	P	T	Td	RH	e_s	e	N
3	1006.7	28.2	24.1	73	38.239	27.91447	374
1488	850	18.5	14.9	79	21.288	16.81752	300
3132	700	9.7	5.9	78	12.027	9.38106	236
5854	500	-5.2	-9.3	73	3.947	2.88131	160
7578	400	-15.1	-20.1	66	1.637	1.08042	126
9681	300	-30.8	-37.1	55	0.3494	0.19217	97

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\Delta N = N_s - N_{1003}$$

$$= 374 - 325$$

$$= 49$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 49 \times 10^{-6}} = \frac{1}{1 - 0.312}$$

$$= \frac{1}{0.688} = 1.46$$

$$k = 1.46$$

Bangkok

September

GPM	P	T	Td	RH	e_s	N
3	1007.5	27.8	24.4	82	37.358	386
1495	850	18.1	15.1	83	20.760	321
3136	700	9.6	5.8	77	11.947	236
5857	500	-5.5	-9.3	75	3.846	160
7580	400	-15.4	-20.6	64	1.592	126
9683	300	-30.0	-37.6	47	0.3798	97

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\Delta N = N_s - N_{1003}$$

$$= 386 - 321$$

$$= 65$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 65 \times 10^{-6}} = \frac{1}{1 - 0.337}$$

$$= \frac{1}{0.663} = 1.51$$

$$k = 1.51$$

Bangkok

October

GPM	P	T	Td	RH	e_s	N
3	1010.0	27.7	24.2	81	37.140	385
1518	850	17.3	13.4	77	19.739	295
3154	700	8.8	3.3	68	11.320	229
5869	500	-5.8	-13.0	57	3.748	156
7586	400	-15.8	-23.6	51	1.534	125
9686	300	-31.3	-38.9	95	0.3315	97

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\Delta N = N_s - N_{1003}$$

$$= 385 - 327.5$$

$$= 57.5$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 57 \times 10^{-6}} = \frac{1}{1 - 0.366}$$

$$= \frac{1}{0.654} = 1.53$$

$$k = 1.53$$

Bangkok

November

GPM	P	T	Td	RH	e_s	N
3	1011.6	26.9	22.7	78	35.440	376
1524	850	16.4	11.5	73	18.643	288
3156	700	8.8	1.2	59	11.320	224
5873	500	-5.4	-13.4	53	3.879	156
7592	400	-16.0	-25.4	44	1.506	125
9689	300	-31.8	-41.6	37	0.3145	97

From the graph interpolated at the surface of the earth and at the elevation of 1003 metres. We get :-

$$\Delta N = N_s - N_{1003}$$

$$= 376 - 313$$

$$= 63$$

$$\Delta H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 63 \times 10^{-6}} = \frac{1}{1 - 0.403}$$

$$= \frac{1}{0.597} = 1.67$$

$$k = 1.67$$

Bangkok

December

GPM	P	T	Td	RH	e_s	N
3	1012.7	25.7	19.8	76	33.016	268
1530	850	15.1	9.5	69	17.154	282
3156	700	9.1	-1.0	57	11.552	223
5872	500	-5.6	-20.6	29	3.813	150
7588	400	-16.8	-27.3	40	1.397	124
9677	300	-32.6	-45.3	27	0.2889	102

From the graph interpolated at the surface at the earth and at the elevation of 1003 metres. We get :-

$$\triangle N = N_s - N_{1003}$$

$$= 368 - 310$$

$$= 58$$

$$\triangle H = H_s - H_{1003}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 58 \times 10^{-6}} = \frac{1}{1 - 0.37}$$

$$= \frac{1}{0.63} = 1.59$$

$$k = 1.59$$

Chiengmai

January

GPM	P	T	Td	RH	e_s	e	N
314	1014.6	21.0	14.7	67	24.861	16.656870	340
1532	850	14.5	8.4	67	16.503	11.057010	279
3147	700	6.8	-6.4	38.5	9.8765	3.802452	212

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 340 - 287.5$$

$$= 52.5$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 52.5 \times 10^{-6}} = \frac{1}{1 - 0.334}$$

$$= \frac{1}{0.666} = 1.50$$

$$k = 1.50$$

Chiengmai

February

GPM	P	T	Td	RH	e_s	e	N
314	1011.8	23.1	14.5	55	28.256	15.540800	333
1522	850	17.1	7.7	71	19.490	13.837900	289
3149	700	7.6	-3.2	47	10.433	4.903510	217

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 333 - 280$$

$$= 53$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 53 \times 10^{-6}} = \frac{1}{1 - 0.318}$$

$$= \frac{1}{0.662} = 1.51$$

$$k = 1.51$$

Chiengmai

March

GPM	P	T	Td	RH	e_s	e	N
314	1009.7	26.0	15.6	53	33.608	17.812240	336
1522	850	19.4	9.8	54	22.518	12.159720	279
3160	700	7.5	-1.4	53	10.362	5.49186	220

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 336 - 287.5$$

$$= 48.5$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 48.5 \times 10^{-6}} = \frac{1}{1 - 0.305}$$

$$= \frac{1}{0.691} = 1.45$$

$$k = 1.45$$

Chiengmai

April

GPM	P	T	Td	RH	e_s	e	N
314	1007.5	28.8	18.7	55	39.594	21.776700	348
1505	850	21.3	12.6	58	25.323	14.687340	287
3160	700	9.8	1.8	58	12.108	7.022640	225

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 348 - 295$$

$$= 53$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 53 \times 10^{-6}} = \frac{1}{1 - 0.336}$$

$$= \frac{1}{0.664} = 1.51$$

$$k = 1.51$$

Chiengmai

May

GPM	P	T	Td	RH	e_s	e	N
314	1006.1	28.9	22.1	67	39.824	26.682080	368
1486	850	19.5	15.6	79	22.659	23.449000	328
3135	700	10.4	6.3	76	12.606	9.580560	236
5863	500	-4.5	-10.7	57	4.190	2.388300	157
7591	400	-14.6	-20.9	59	1.714	1.011260	128

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 368 - 315$$

$$= 53$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 53 \times 10^{-6}} = \frac{1}{1 - 0.336}$$

$$= \frac{1}{0.664} = 1.51$$

$$k = 1.51$$

Chiengmai

June

GPM	P	T	Td	RH	e_s	e	N
314	1005.0	27.8	22.9	75	37.358	-	373
1470	850	18.4	15.4	83	21.155	17.55865	304
3117	700	10.7	7.0	78	12.860	10.0308	238
5853	500	-4.0	-8.2	72	4.372	3.14784	160
7588	400	-13.6	-19.2	63	1.878	1.18314	126

From the graph interpolated at the surface of the earth and the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 373 - 312.5$$

$$= 60.5$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 60.5 \times 10^{-6}} = \frac{1}{1 - 0.386}$$

$$= \frac{1}{0.614} = 1.63$$

$$k = 1.63$$

Chiengmai

July

GPM	P	T	Td	RH	e_s	e	N
314	1005.3	27.4	22.8	76	36.495	27.7362	374
1473	850	18.4	15.6	84	21.155	17.7702	304
3118	700	10.2	6.5	78	12.438	9.70164	237
5848	500	-4.6	-8.6	74	4.154	3.07396	160
7577	400	-14.3	-19.7	63	1.762	1.11006	126
9695	300	-29.3	-34.6	60	0.4084	0.24504	97

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 374 - 310$$

$$= 64$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 64 \times 10^{-6}} = \frac{1}{1 - 0.407}$$

$$= \frac{1}{0,593} = 1.69$$

$$k = 1.69$$

Chiengmai

August

GPM	P	T	Td	RH	e_s	e	N
314	1005.4	27.0	23.1	79	35.649	28.61271	377
1468	850	18.1	15.6	86	20.760	17.8536	305
3110	700	9.9	6.7	81	12.190	9.8739	238
5838	500	-4.8	8.9	73	4.084	3.07396	161
7567	400	-14.5	-19.7	65	1.730	1.11006	126
9678	300	-29.4	-35.0	58.5	0.4042	0.24504	97

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 377 - 322.5$$

$$= 54.5$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 54.5 \times 10^{-6}} = \frac{1}{1 - 0.347}$$

$$= \frac{1}{0.653} = 1.53$$

$$k = 1.53$$

Chiengmai

September

GPM	P	T	Td	RH	e_s	e	N
314	1007.2	26.9	23.2	81	35.440	28.70640	380
1482	850	17.4	14.7	83	19.864	16.48712	300
3125	700	9.3	6.0	80	11.708	9.3664	236
5846	500	-5.2	-10.6	66	3.947	2.60502	158
7570	400	-15.0	-21.3	59	1.652	0.97468	126
9682	300	-29.9	-37.3	48	0.3838	0.184224	96

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 380 - 320$$

$$= 60$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 60 \times 10^{-6}} = \frac{1}{1 - 0.383}$$

$$= \frac{1}{0.617} = 1.62$$

$$k = 1.62$$

Chiengmai

October

GPM	P	T	Td	RH	e_s	e	N
314	1011.2	26.1	22.1	79	33.807	26.70753	374
1518	850	17.0	13.7	82	19.367	20.18700	317
3151	700	8.5	3.4	69	11.092	7.65348	229
5864	500	-5.8	-13.7	53	3.748	1.98644	165
7584	400	-15.7	-23.6	51	1.584	0.78948	125
9687	300	-31.1	-40.4	40	0.3385	0.13540	97

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 374 - 322.5$$

$$= 51.5$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 51.5 \times 10^{-6}} = \frac{1}{1 - 0.328}$$

$$= \frac{1}{0.672} = 1.49$$

$$k = 1.49$$

Chiengmai

November

GPM	P	T	Td	RH	e_s	e	N
314	1013.5	24.3	19.5	75	30.373	22.77975	360
1532	850	16.1	12.7	80	18290	14.6320	294
3158	700	7.8	1.4	65	10.577	6.87505	226

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 360 - 305$$

$$= 55$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 55 \times 10^{-6}} = \frac{1}{1 - 0.35}$$

$$= \frac{1}{0.65} = 1.54$$

$$k = 1.54$$

Chiengmai

December

GPM	P	T	Td	RH	e_s	e	N
314	1015.1	21.5	15.4	68	25.635	17.4318	343
1530	850	13.6	10.0	79	15.567	12.2979	286
3155	700	8.0	-0.3	56	10.722	6.00432	222

From the graph interpolated at the surface of the earth and at the elevation of 1314 metres. We get :-

$$\triangle N = N_s - N_{1314}$$

$$= 343 - 290$$

$$= 53$$

$$\triangle H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 53 \times 10^{-6}} = \frac{1}{1 - 0.338}$$

$$= \frac{1}{0.662} = 1.51$$

$$k = 1.51$$

Songkhla

January

GPM	P	T	Td	RH	e_s	e	N
5	1011.9	26.7	22.4	78	35.025	27.3195	376
1524	850	15.6	12.3	81	17.713	14.3475	293
3154	700	8.8	0.1	55	11.320	6.2260	222
5864	500	-6.0	-17.6	39	3.685	1.4372	153
7557	400	-16.4	-31.9	25	1.451	0.3628	123
9673	300	-32.3	-47.6	20.5	0.2983	0.0612	97

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 376 - 317.5$$

$$= 58.5$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 58.5 \times 10^{-6}} = \frac{1}{1 - 0.372}$$

$$= \frac{1}{0.628} = 1.60$$

$$k = 1.60$$

Songkhla

February

GPM	P	T	Td	RH	e_s	e	N
5	1011.4	27.1	27.8	77	35.859	27.6114	376
1518	850	16.6	10.0	65	18.882	12.2734	282
3152	700	9.4	-3.0	42	11.787	4.9505	216
5868	500	-5.3	-18.6	34	3.913	1.3304	152
7561	400	-16.6	-33.8	21	1.424	0.2990	123
9668	300	-32.2	-48.0	19.5	0.3014	0.0588	97

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1314}$$

$$= 376 - 315$$

$$= 61.$$

$$\Delta H = H_s - H_{1314}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 61 \times 10^{-6}} = \frac{1}{1 - 0.395}$$

$$= \frac{1}{0.605} = 1.65$$

$$k = 1.65$$

Songkhla

March

GPM	P	T	Td	RH	e_s	e	N
5	1010.7	27.5	23.2	78	36.709	28.633020	380
1512	850	17.7	11.9	69	202.244	13.968360	289
3150	700	9.4	-1.4	58	11.787	6.836460	224
5866	500	-5.8	-18.7	35	3.748	1.311800	152
7565	400	-16.1	-29.4	31	1.492	.448400	121
9678	300	-31.8	-45.3	25	0.3145	.109208	97

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 380 - 322.5$$

$$= 57.5$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 57.5 \times 10^{-6}} = \frac{1}{1 - 0.367}$$

$$= \frac{1}{0.633} = 1.58$$

$$k = 1.58$$

Songkhla

April

GPM	P	T	Td	RH	e_s	e	N
5	1009.3	28.4	24.0	77	38.686	29.788220	382
1502	850	18.6	12.0	69	21.422	14.781180	291
3153	700	9.4	0.5	54	11.787	6.364980	222
5862	500	-5.4	-16.7	40	3.879	1.551600	145
7573	400	-15.9	-29.6	29.5	1.520	.448400	121
2674	300	-31.6	-42.4	34	0.3212	.109208	97

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 328 - 322.5$$

$$= 59.5$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 59.5 \times 10^{-6}} = \frac{1}{1 - 0.38}$$

$$= \frac{1}{0.63} = 1.61$$

$$k = 1.61$$

Songkhla

May

GPM	P	T	Td	RH	e_s	e	N
5	1008.5	28.7	24.1	76	39.365	29.91740	382
1500	850	18.7	13.8	75	21.556	11.512830	277
3143	700	9.9	3.6	66	12.190	8.045400	230
5862	500	-5.4	-11.7	61	3.879	2.366190	145
7575	400	-15.3	-22.9	52	1.607	.835640	108
9689	300	-30.7	-40.7	40	0.3530	.141200	96

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 382 - 323$$

$$= 59$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 59 \times 10^{-6}} =$$

$$= \frac{1}{1 - 0.372} = \frac{1}{0.628}$$

$$k = 1.6$$

Songkhla

June

GPM	P	T	Td	RH	e_s	e	N
5	1008.8	28.4	23.6	76	38.686	29.401360	381
1503	850	18.6	12.9	69	21.422	14.781180	291
3145	700	9.7	2.6	62	12.027	7.456740	227
5864	500	-5.7	-12.1	61	3.781	2.306210	157
7580	400	-16.2	-23.1	56	1.478	.827680	126
9682	300	-31.2	-39.7	42	0.3350	.140700	97

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 381 - 317.5$$

$$= 63.5$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 63.5 \times 10^{-6}} = \frac{1}{1 - 0.405}$$

$$= \frac{1}{0.595} = 1.68$$

$$k = 1.68$$

Songkhla

July

GPM	P	T	Td	RH	e_s	e	N
5	1009.0	28.1	23.3	75	38.017	28.512750	377
1500	850	18.0	12.6	71	20.630	14.647300	291
3135	700	9.0	2.5	91	11.474	10.441340	242
5857	500	-6.1	-12.5	16.5	3.653	.602745	149
7567	400	-16.1	-27.4	37	1.492	.552040	124
9660	300	-32.0	40.3	43	.3079	.132391	97

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 377 - 315$$

$$= 62$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 62 \times 10^{-6}} = \frac{1}{1 - 0.395}$$

$$= \frac{1}{0.605} = 1.66$$

$$k = 1.66$$

Songkhla

August

GPM	P	T	Td	RH	e_s	e	N
5	1009.0	28.1	23.2	74	38.017	28.132580	376
1493	850	17.8	12.7	73	20.372	14.871560	292
3137	700	9.1	3.0	93	11.552	10.743360	243
5844	500	-6.1	-11.4	67	3.653	2.447510	158
7573	400	-15.9	-25.4	44	1.520	.668800	125
9662	300	-31.9	-39.9	45	.3112	.140040	91

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 376 - 322.5$$

$$= 53.5$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 53.5 \times 10^{-6}} = \frac{1}{1 - 0.34}$$

$$= \frac{1}{0.66} = 1.52$$

$$k = 1.52$$

Songkhla

September

GPM	P	T	Td	RH	e_s	e	N
5	1009.5	27.9	23.2	76	37.576	28.55776	378
1502	850	17.5	12.3	72	19.990	14.3928	291
3138	700	8.6	3.2	69	11.168	7.705920	229
5847	500	-6.5	-11.2	69	3.529	2.43501	158
7562	400	-16.6	-23	58	-1.424	.82592	26
9655	300	-32.3	-40.1	46	.0983	.044235	97

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - H_{1005}$$

$$= 378 - 322.5$$

$$= 55.5$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 55.5 \times 10^{-6}} = \frac{1}{1 - 0.355}$$

$$= \frac{1}{0.645} = 1.65$$

$$k = 1.65$$

Songkhla

October

GPM	P	T	Td	RH	e_s	e	N
5	1010.3	27.3	23.7	81	36.282	29.38842	383
1511	850	17.2	13.9	81	19.614	15.887340	298
3147	700	8.7	4.0	72	11.243	8.094960	193
5861	500	-6.2	-11.4	67	3.622	2.426740	158
7570	400	-16.5	-24.0	52	1.437	.74724	125
9654	300	-31.9	-39.3	47	.3112	.146264	97

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 383 - 325$$

$$= 58$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 58 \times 10^{-6}} = \frac{1}{1 - 0.37}$$

$$= \frac{1}{0.63} = 1.55$$

$$k = 1.55$$

Songkhla

November

GPM	P	T	Td	RH	e_s	e	N
5	1010.6	26.7	23.6	83	35.025	29.070750	382
1507	850	16.1	12.6	80	18.290	14.632000	294
3138	700	8.3	2.9	69	10.943	7.550670	229
5847	500	-6.4	-13.0	59	3.560	2.100400	157
7550	400	-16.8	-24.2	53	1.397	.740410	121
9657	300	-32.3	-41.2	41	0.2983	.122303	98

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 382 - 325$$

$$= 57.$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 7370 \times 57 \times 10^{-6}} = \frac{1}{1 - 0.365}$$

$$= \frac{1}{0.635} = 1.54$$

$$k = 1.54$$

Songkhla

December

GPM	P	T	Td	RH	e_s	e	N
5	1011.5	26.5	23.0	81	34.615	28.038150	379
1512	850	15.8	12.1	79	17.942	12.174180	292
3141	700	8.2	1.1	61	10.869	6.630090	224
5849	500	-6.4	-18.8	36	3.560	1.281600	152
7558	400	-16.4	-31.1	27	1.451	.391770	123
9656	300	-32.6	-44.3	30	.2889	.086670	97

From the graph interpolated at the surface of the earth and at the elevation of 1005 metres. We get :-

$$\Delta N = N_s - N_{1005}$$

$$= 379 - 320$$

$$= 59$$

$$\Delta H = H_s - H_{1005}$$

$$= -1 \text{ km}$$

$$k = \frac{1}{1 - 6370 \times 59 \times 10^{-6}} = \frac{1}{1 - 0.375}$$

$$= \frac{1}{0.625} \quad 1.6$$

$$k = 1.6$$

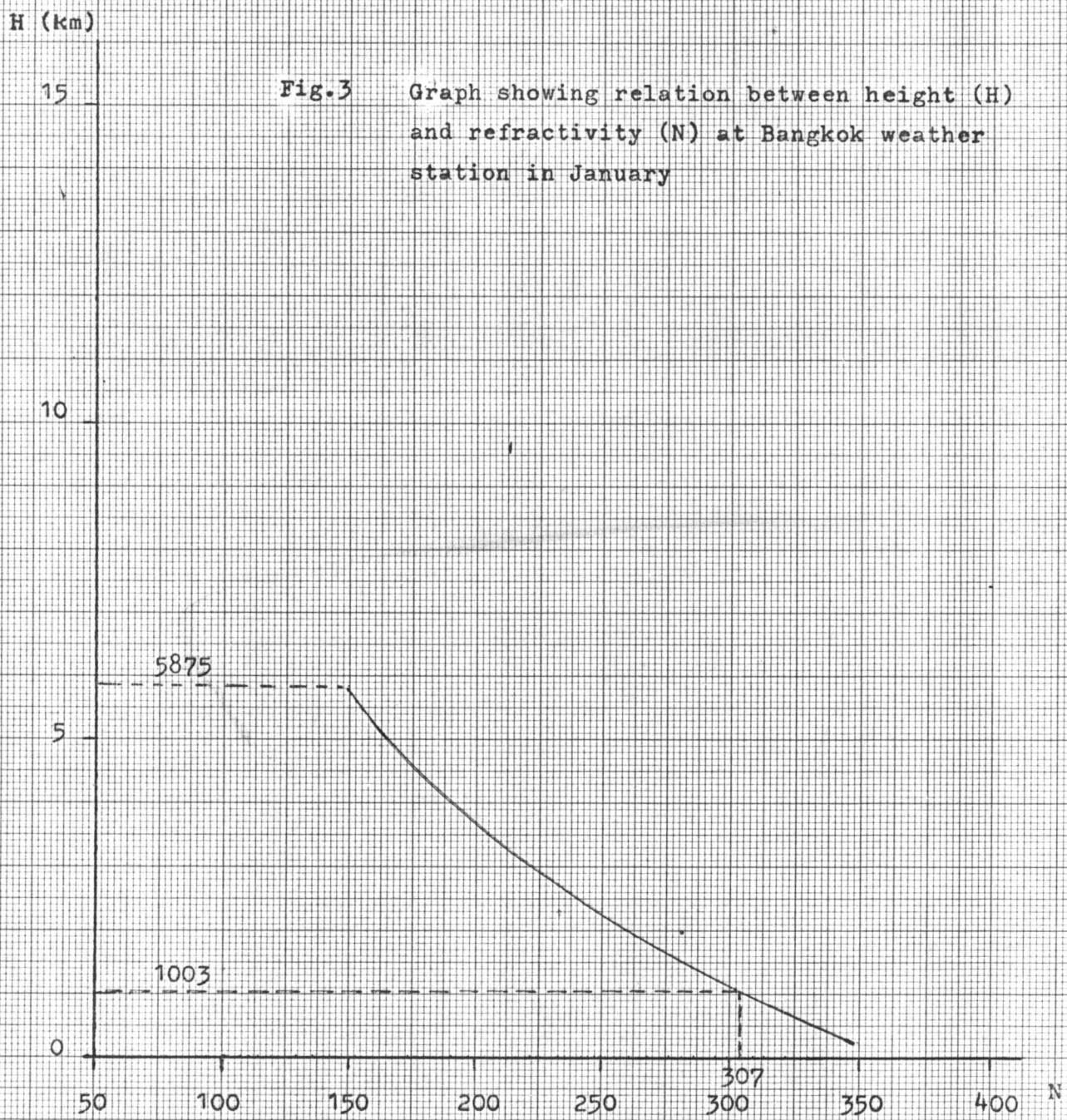

Fig.3 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in January

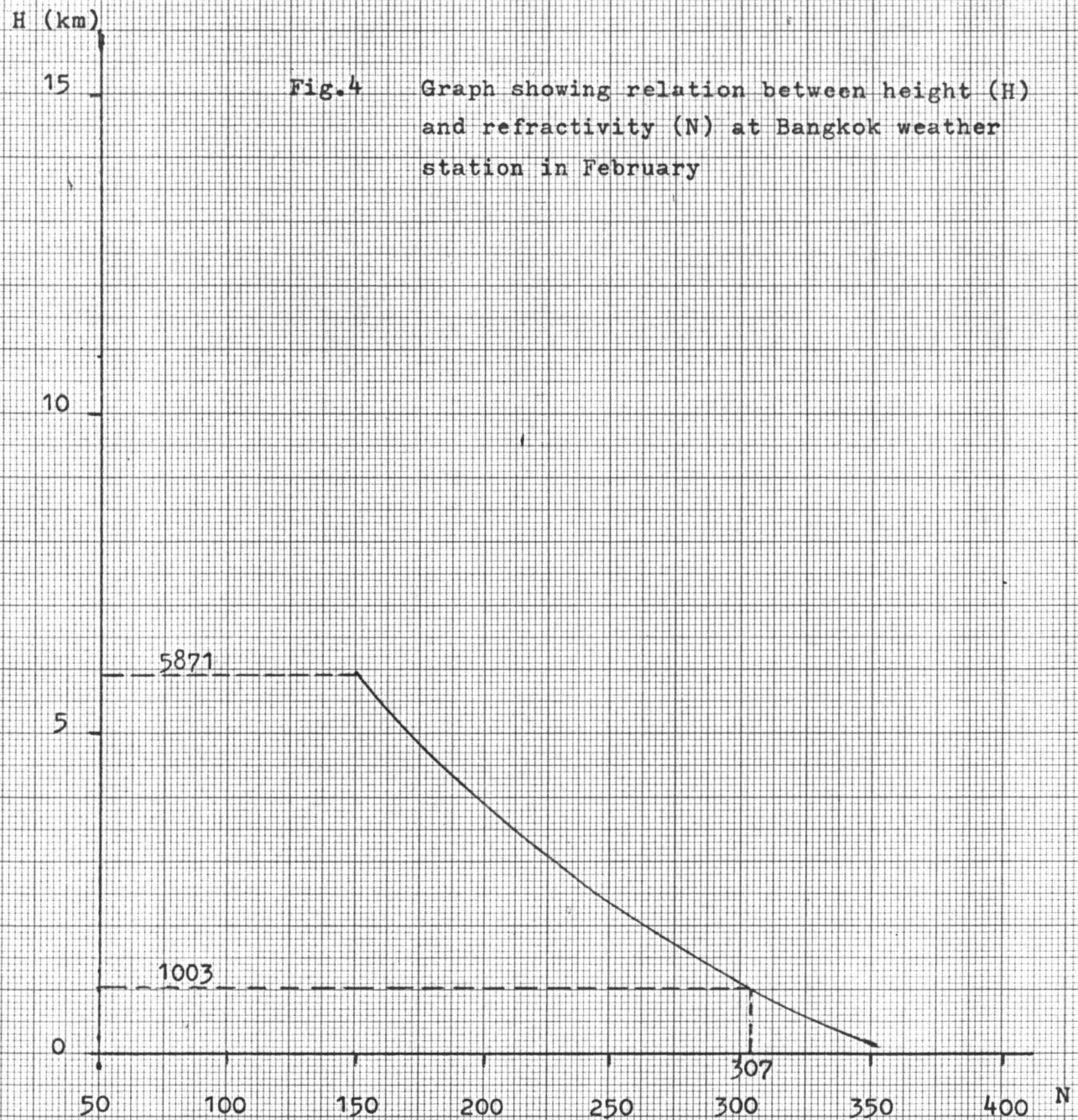

Fig.4 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in February

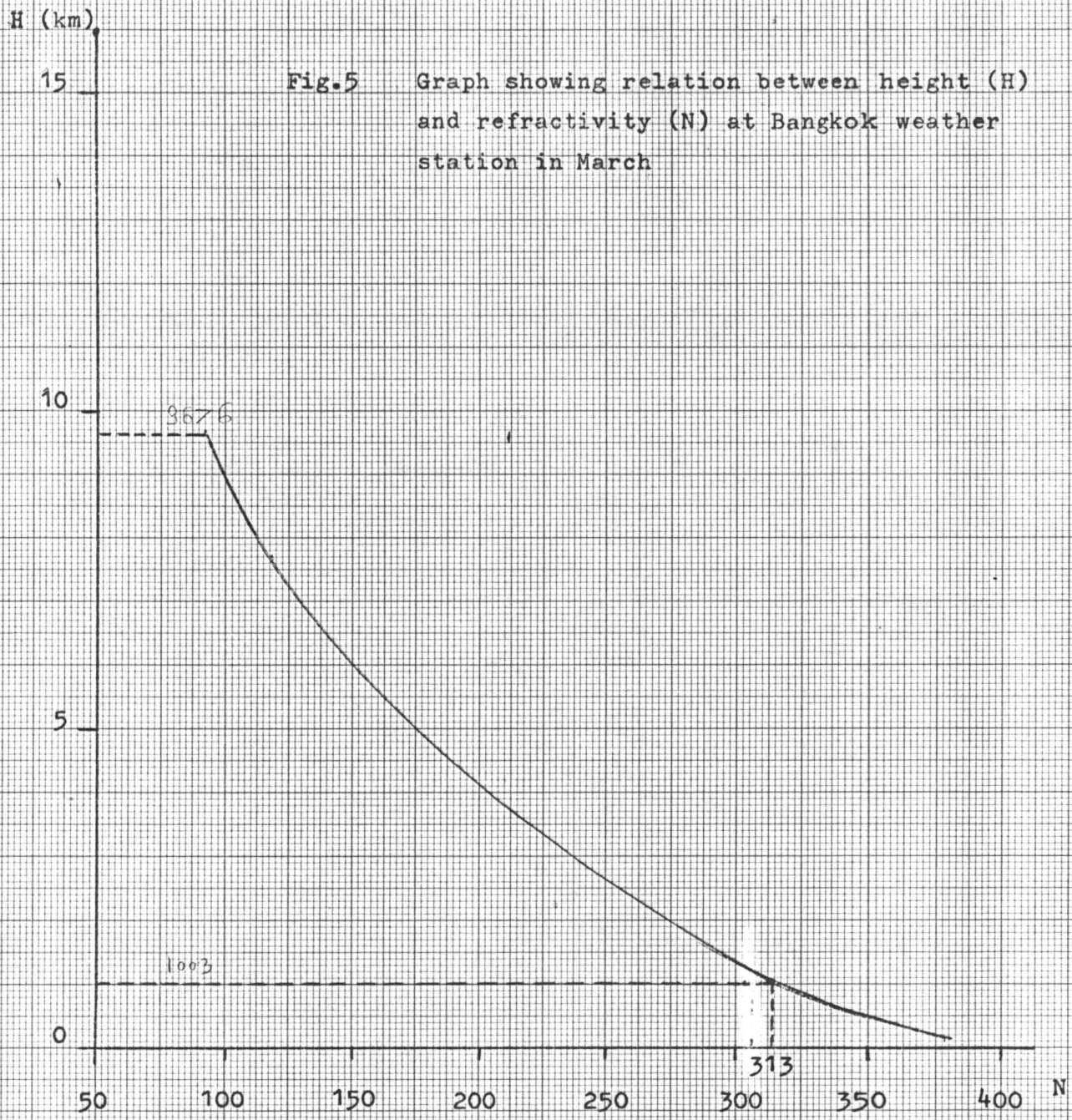

Fig.5 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in March

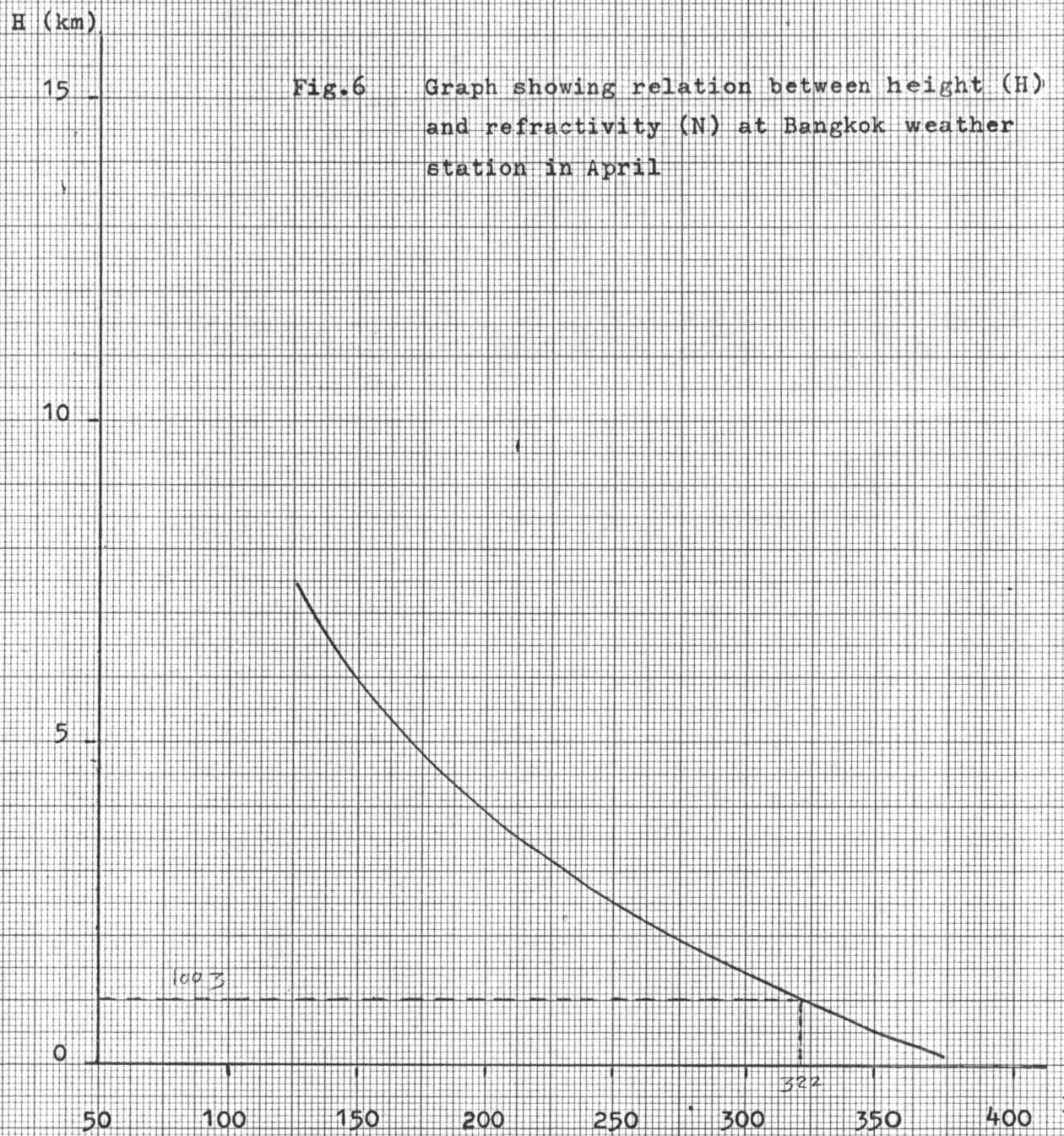

Fig.6 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in April

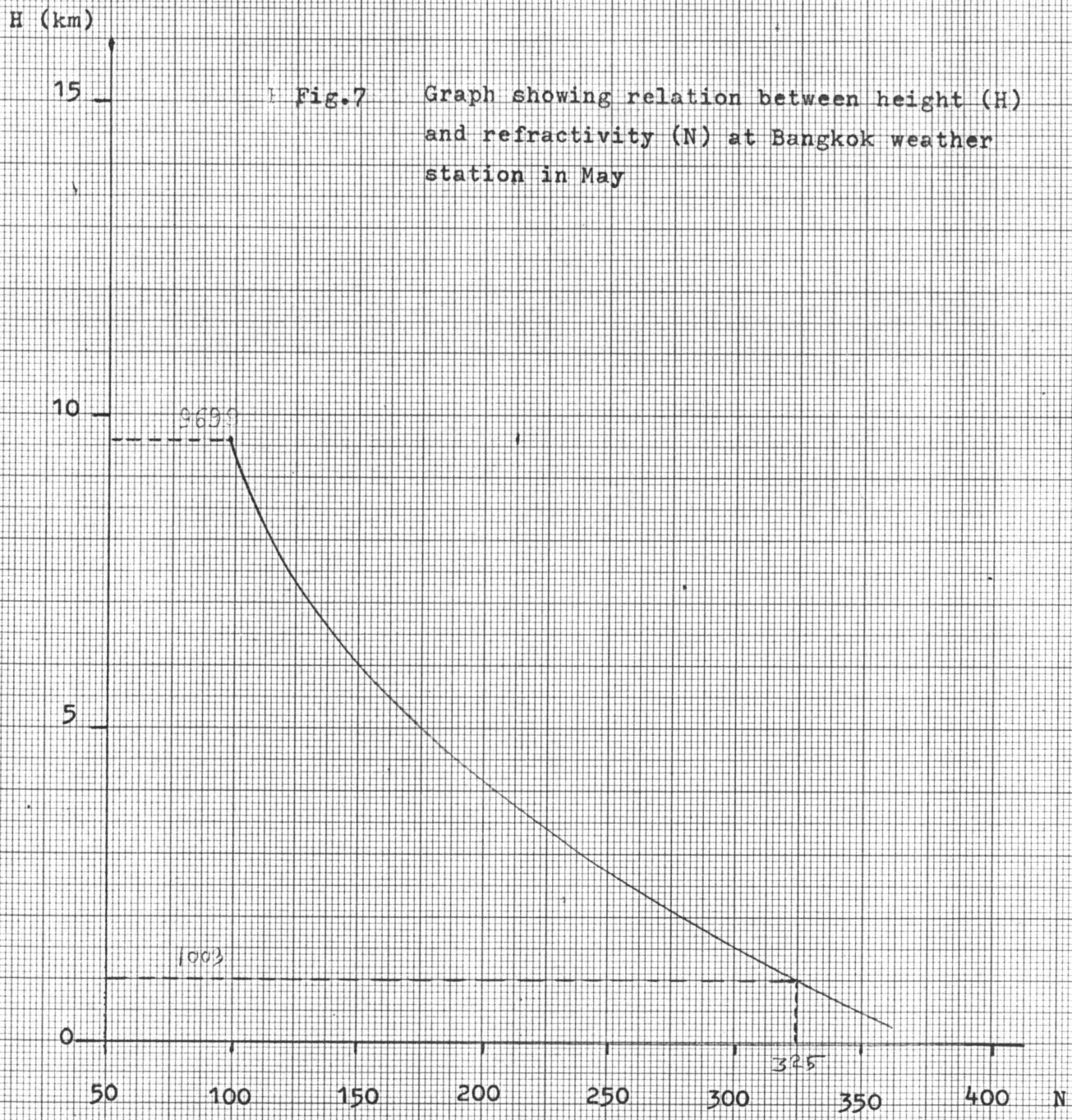

Fig.7 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in May

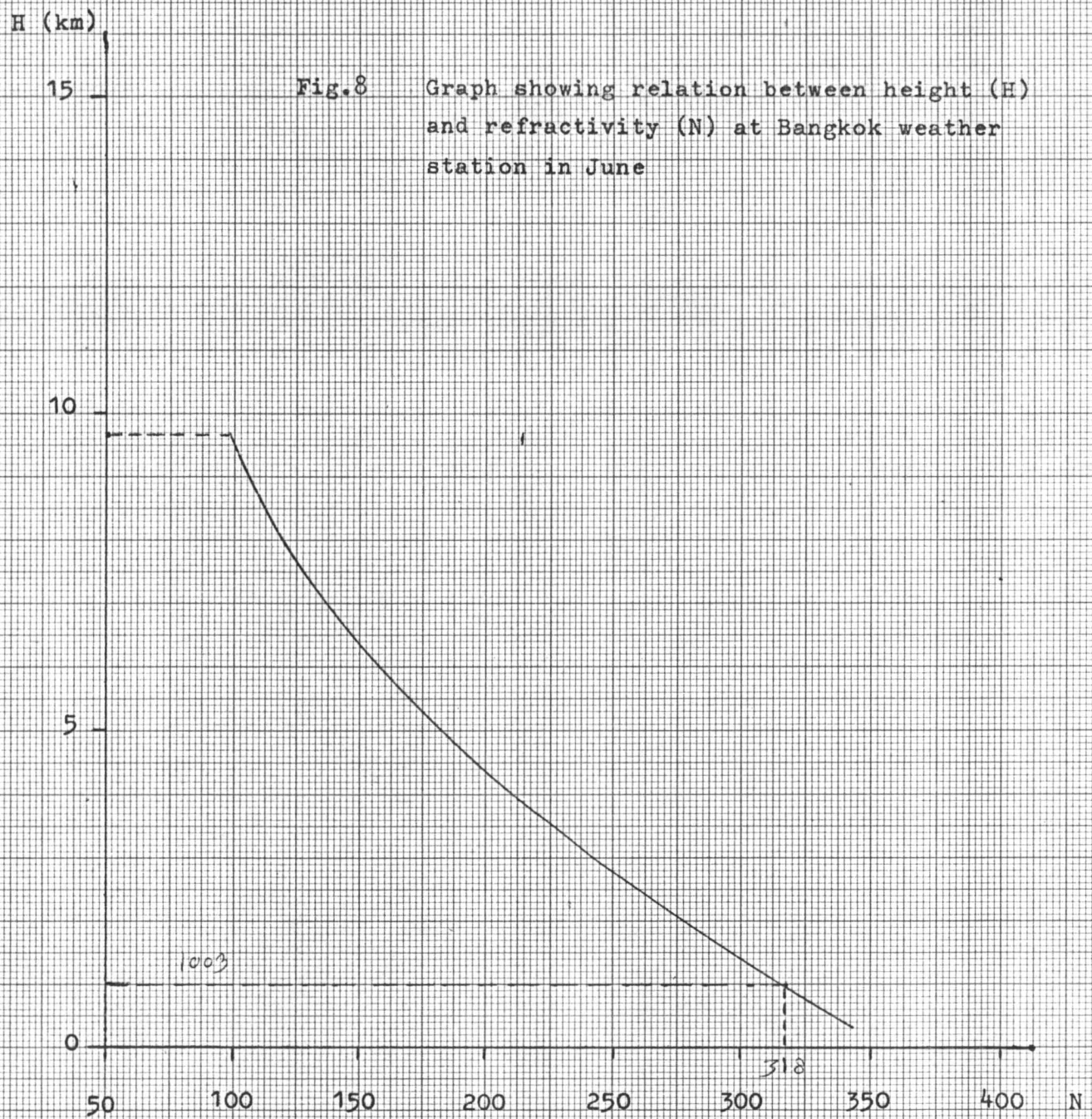

Fig.8 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in June

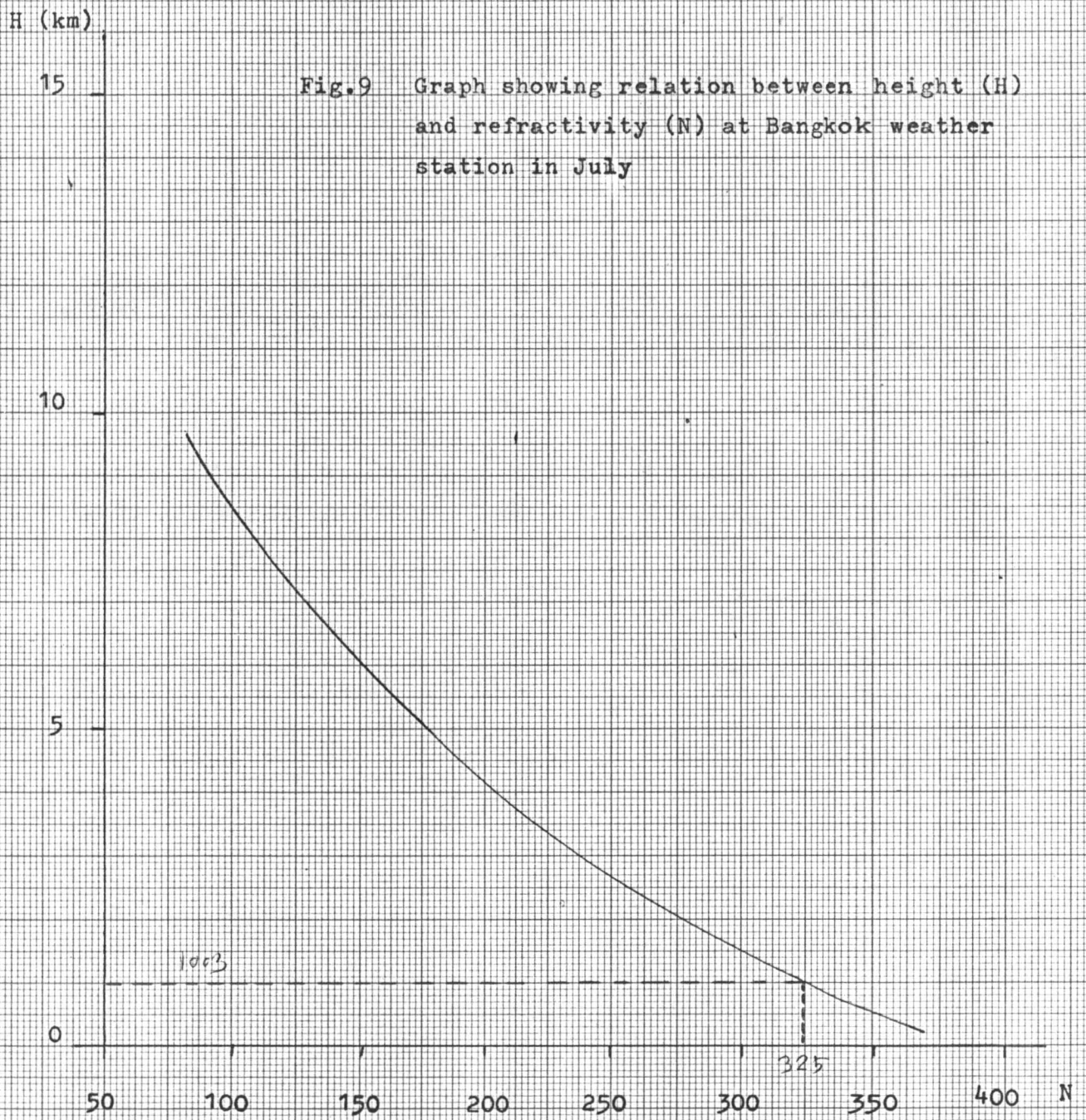

Fig.9 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in July

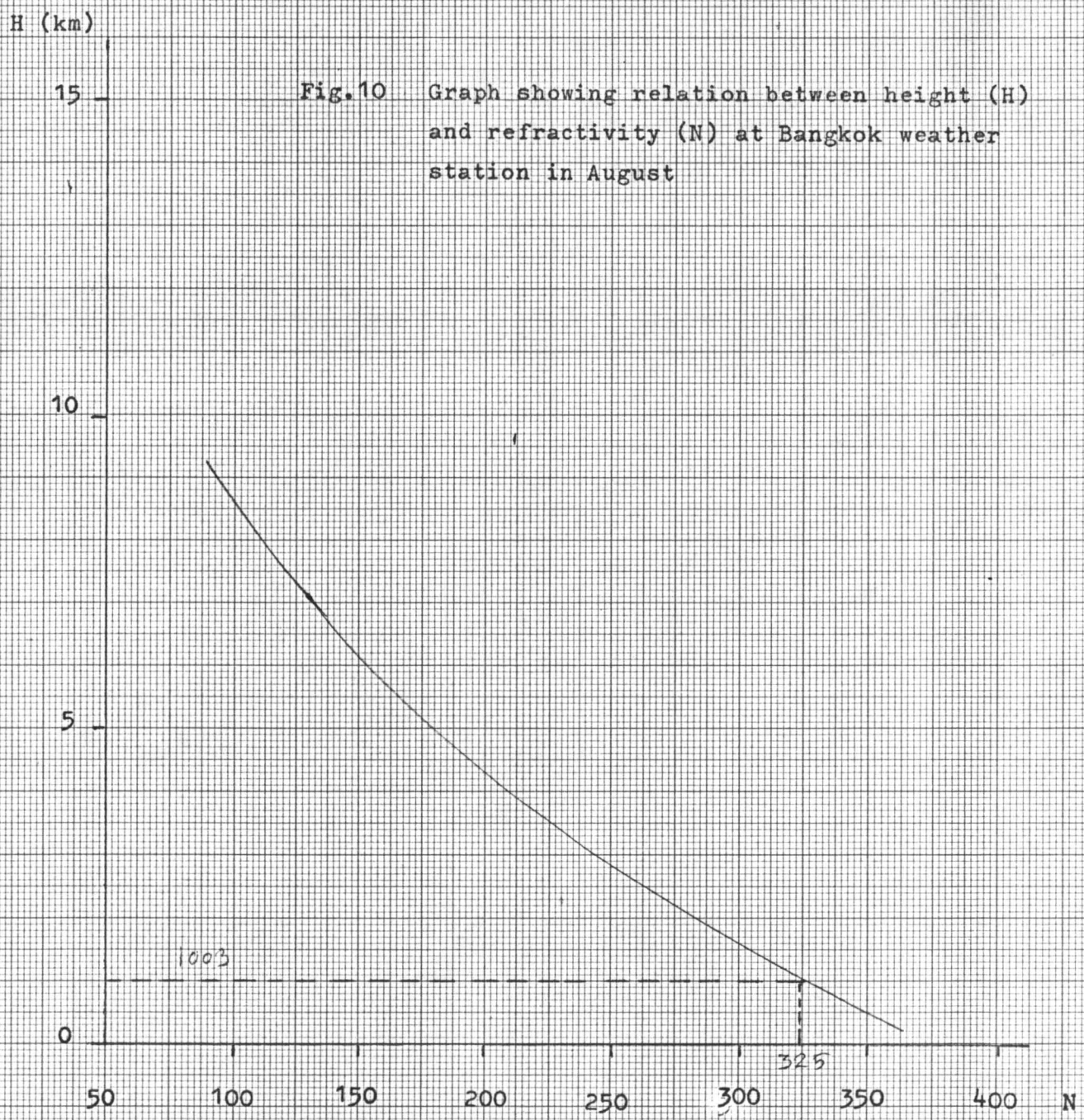

Fig.10 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in August

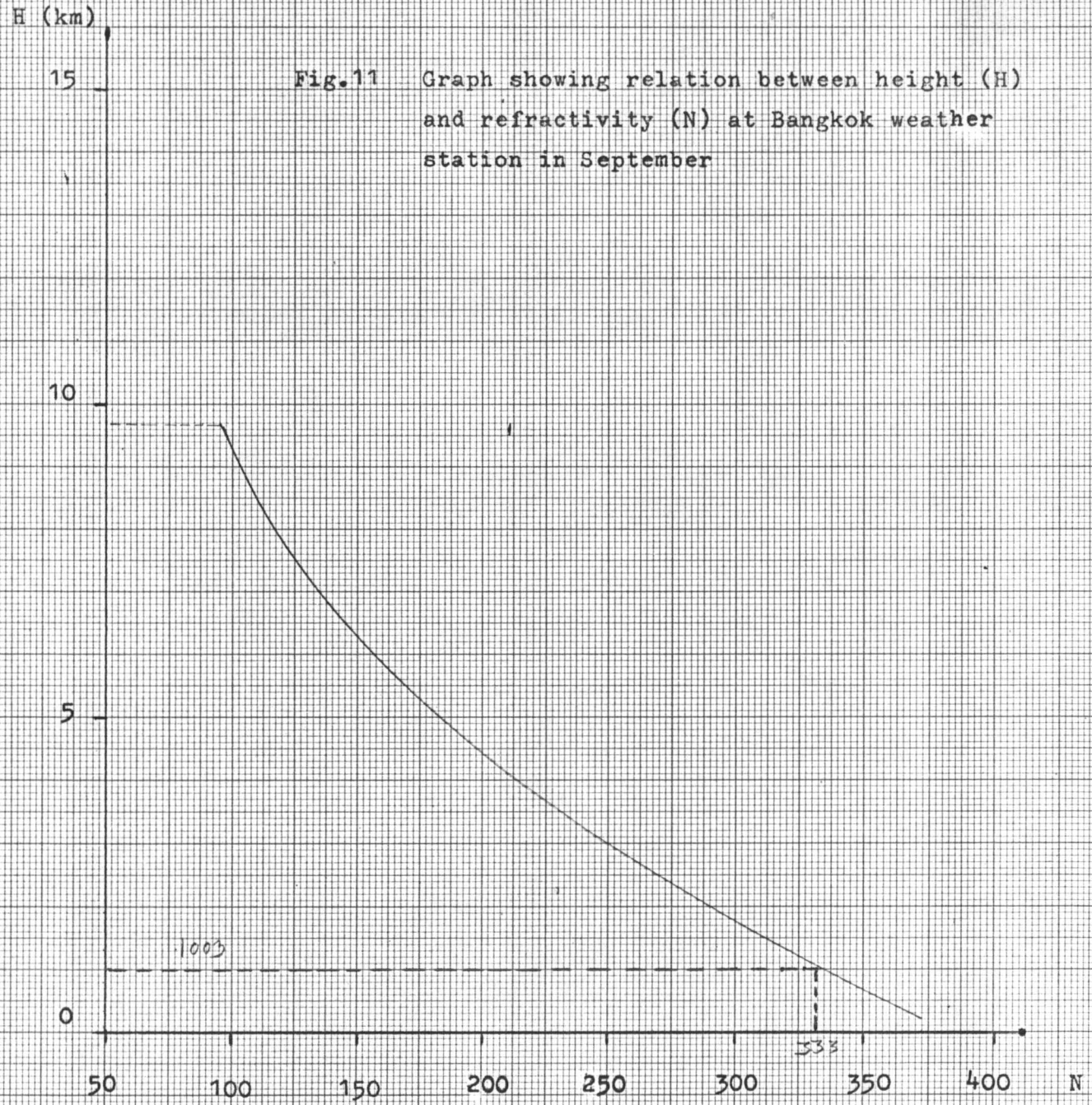

Fig.11 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in September

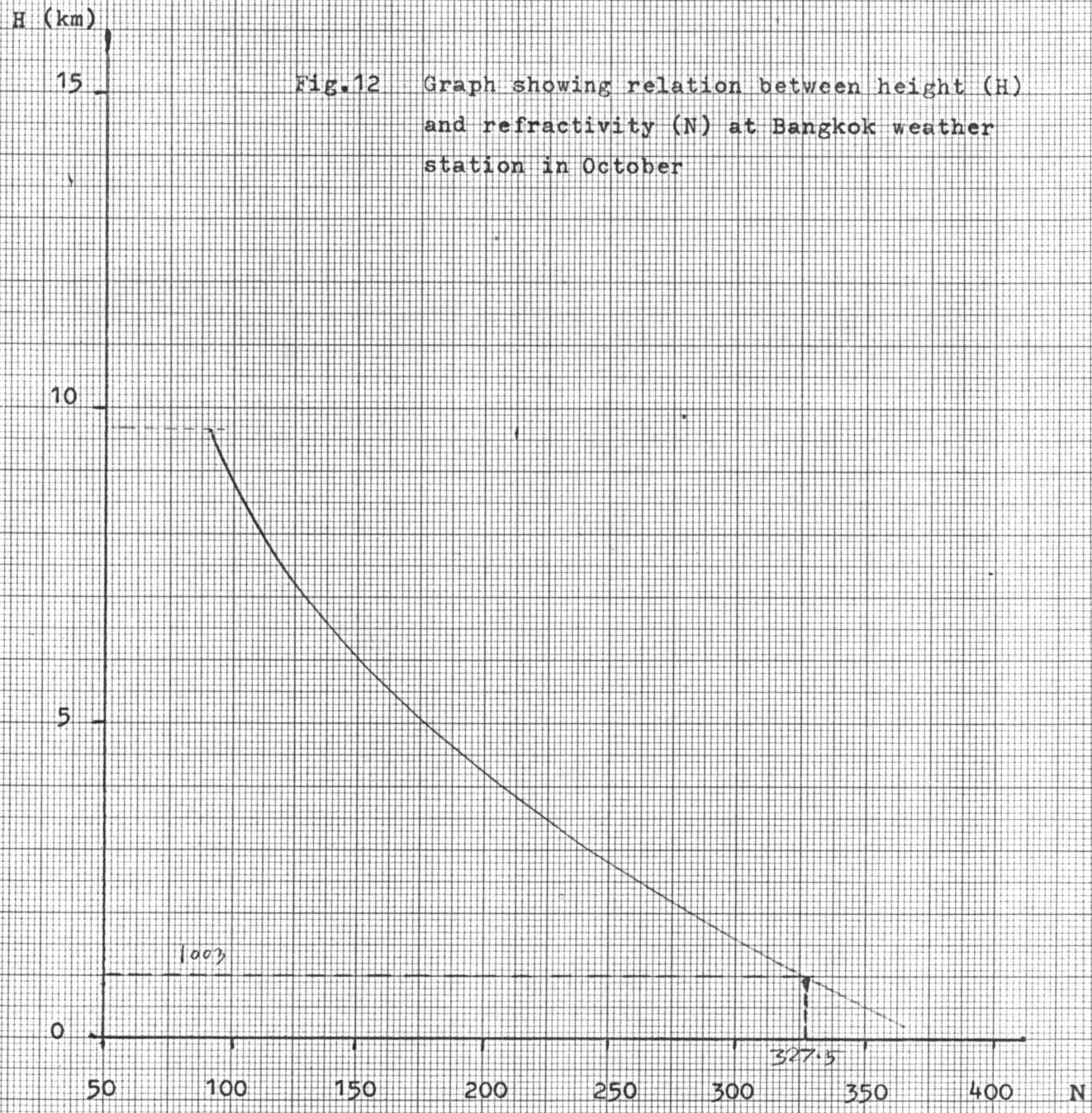

Fig.12 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in October

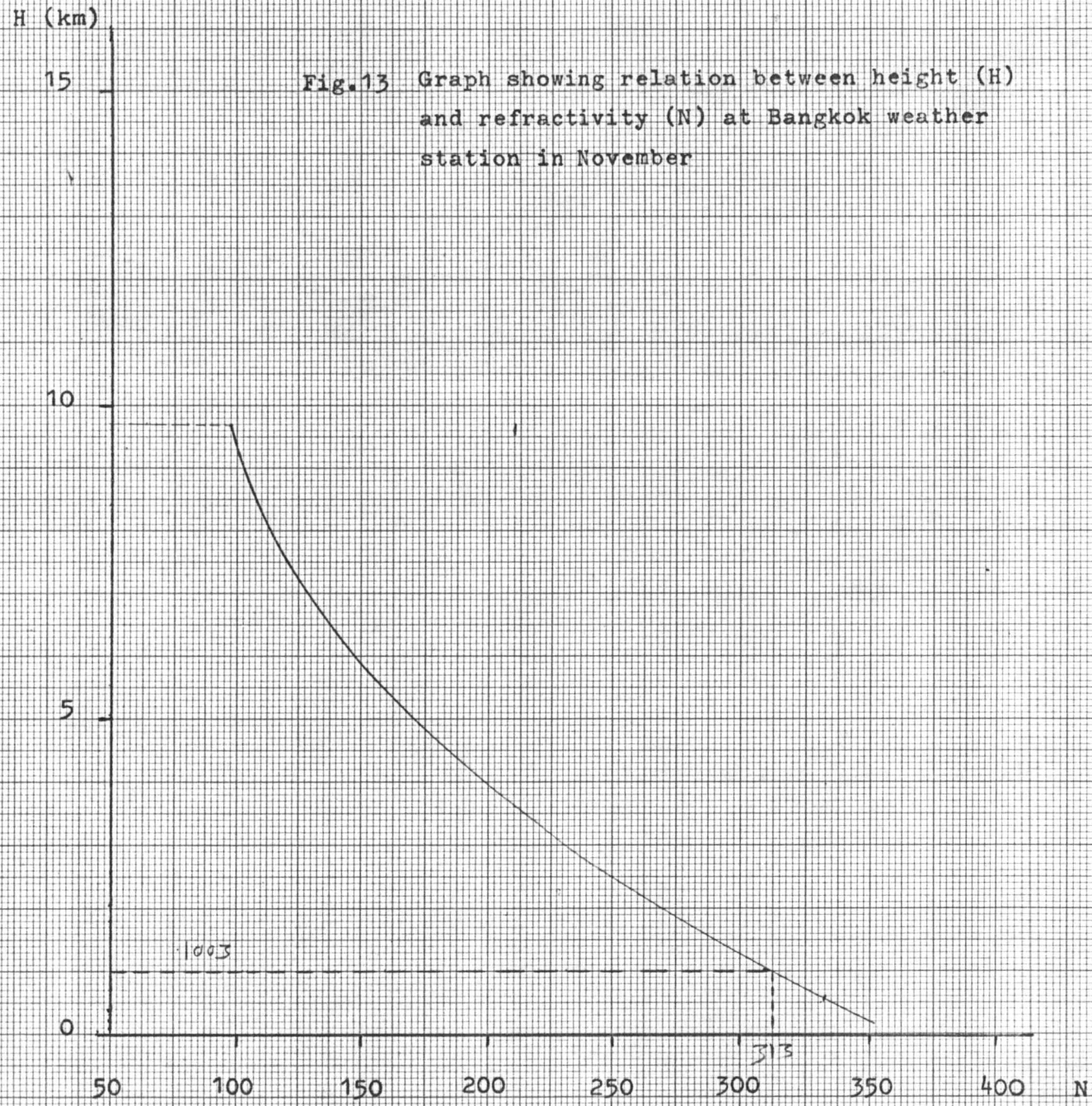

Fig.13 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in November

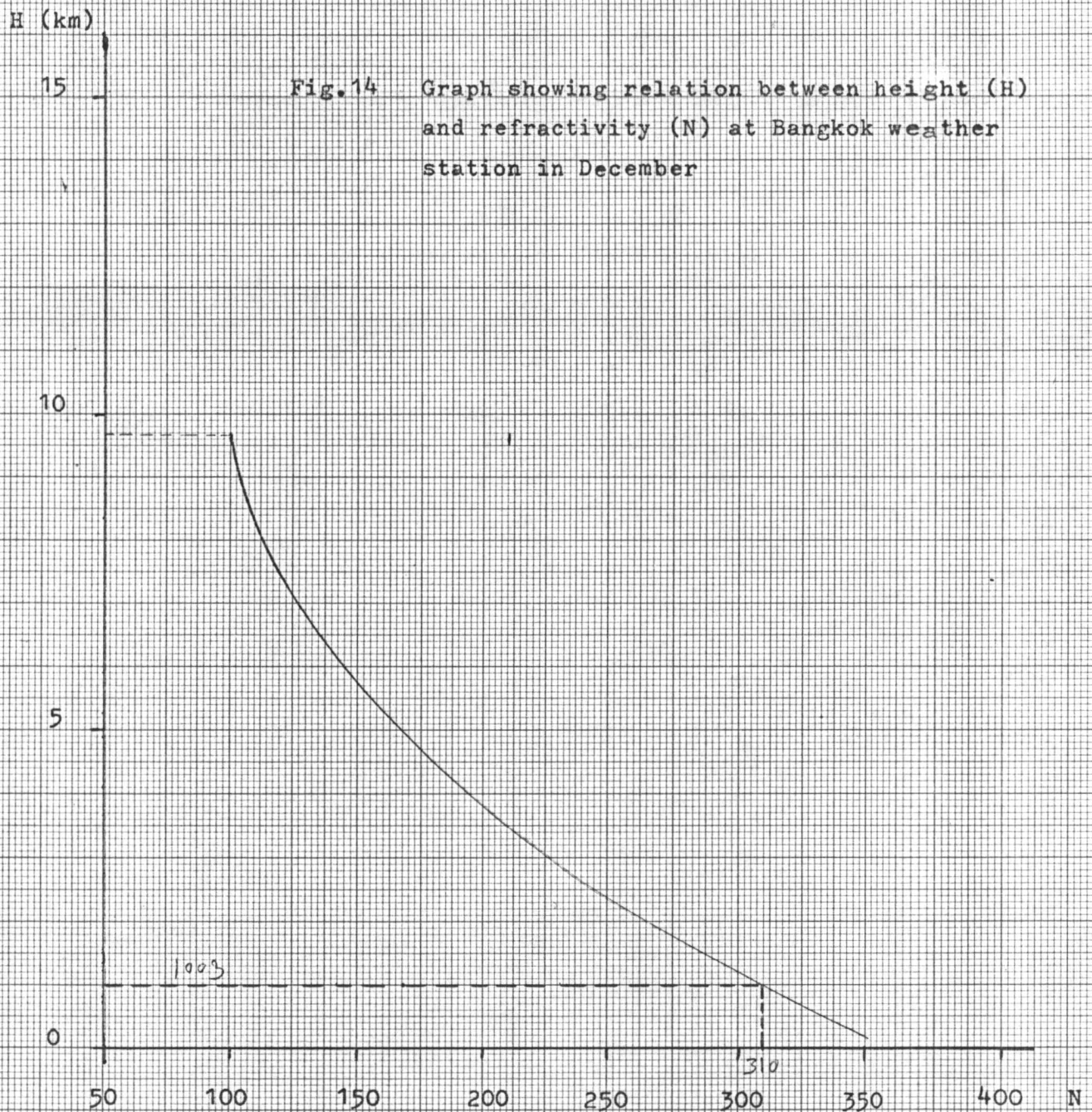

Fig.14 Graph showing relation between height (H) and refractivity (N) at Bangkok weather station in December

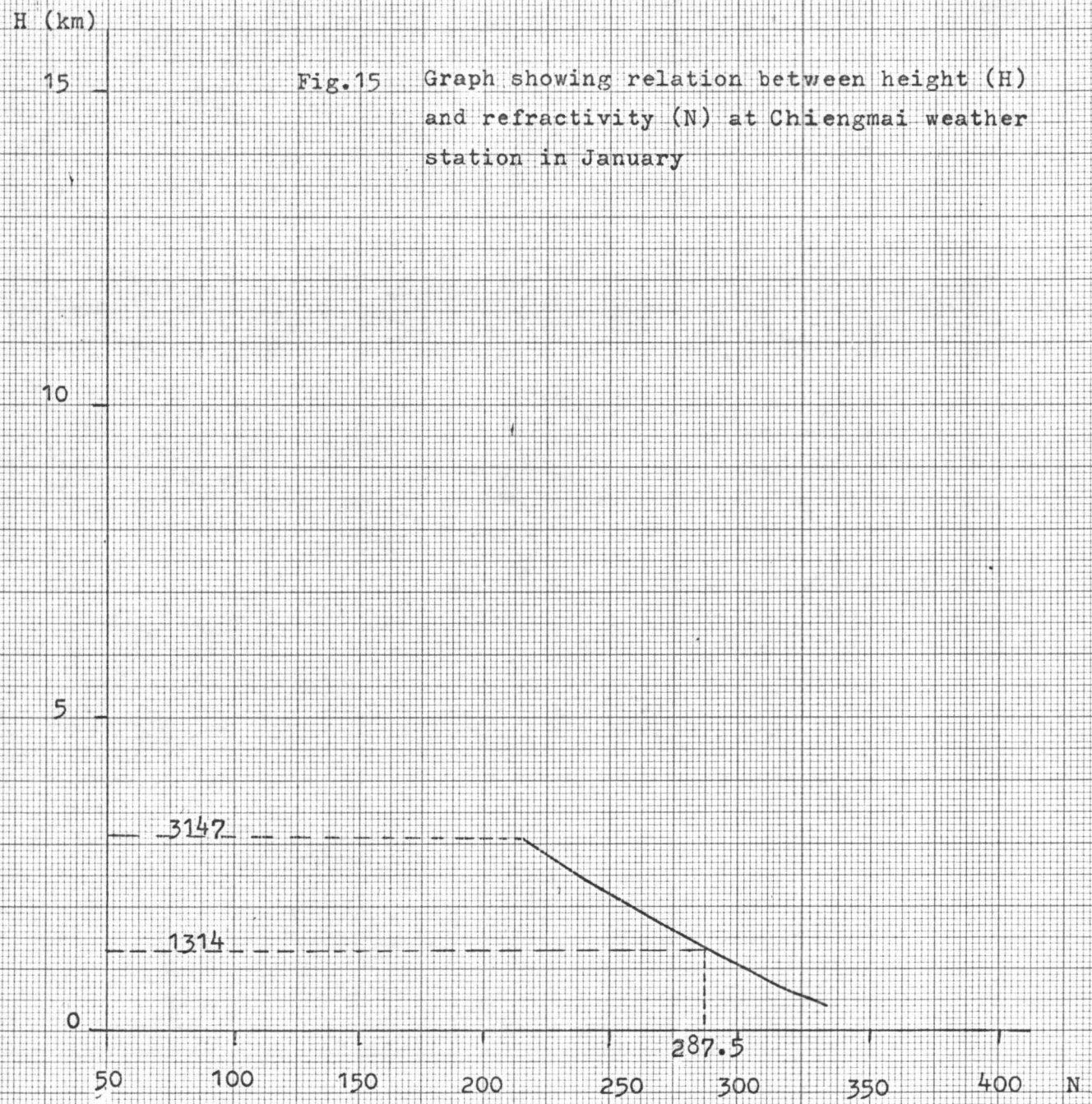

Fig.15 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in January

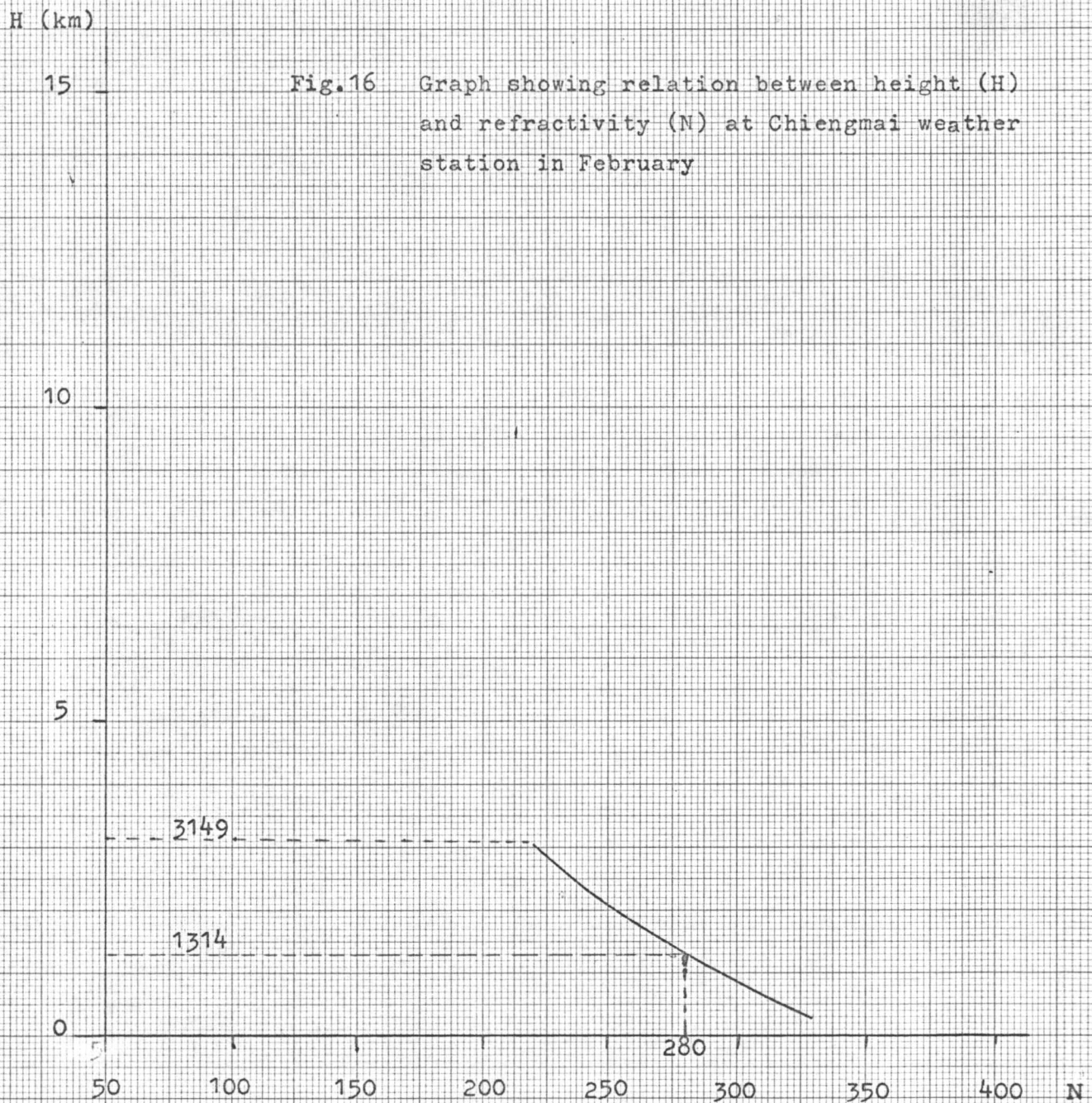

Fig.16 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in February

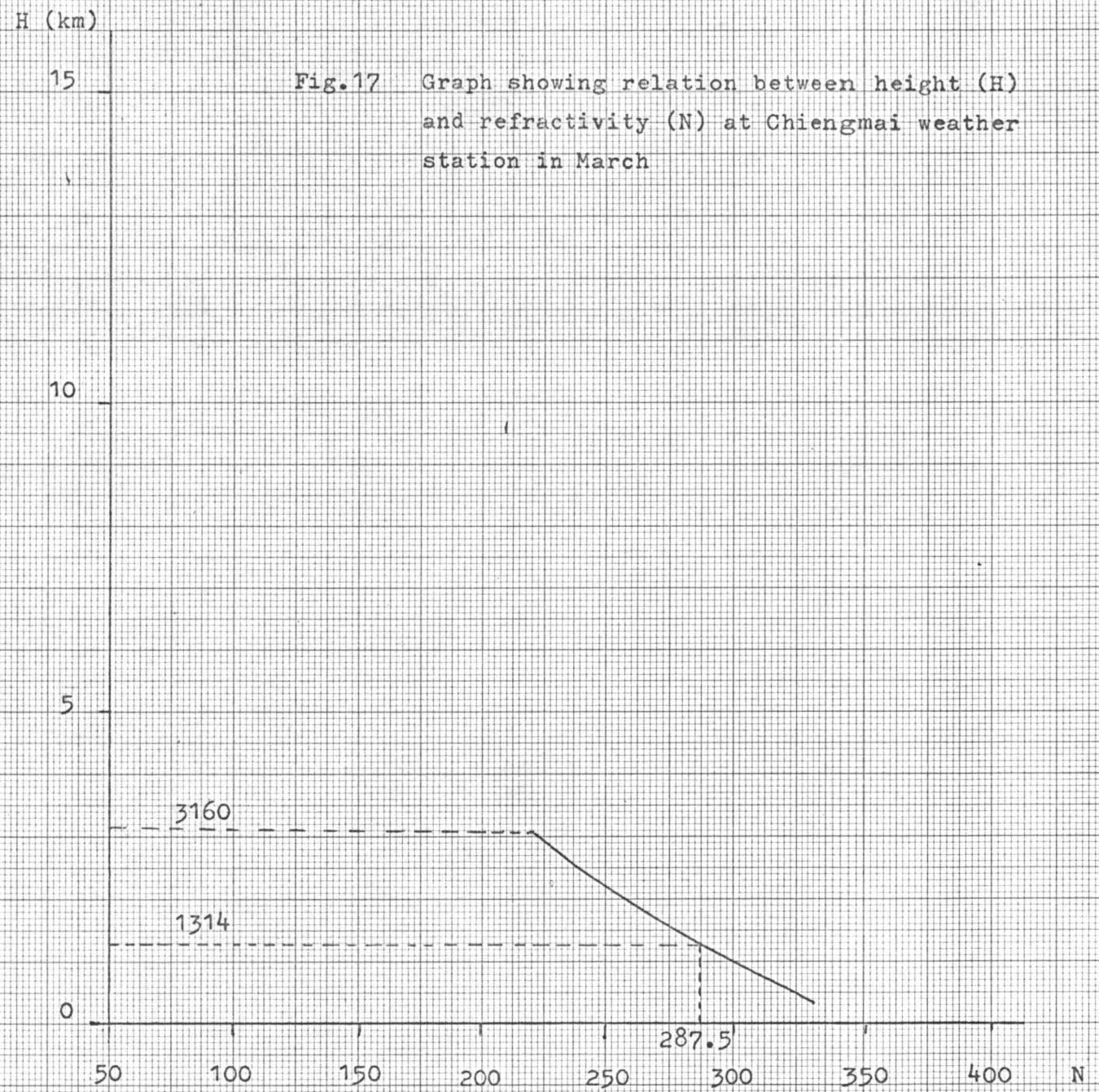

Fig.17 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in March

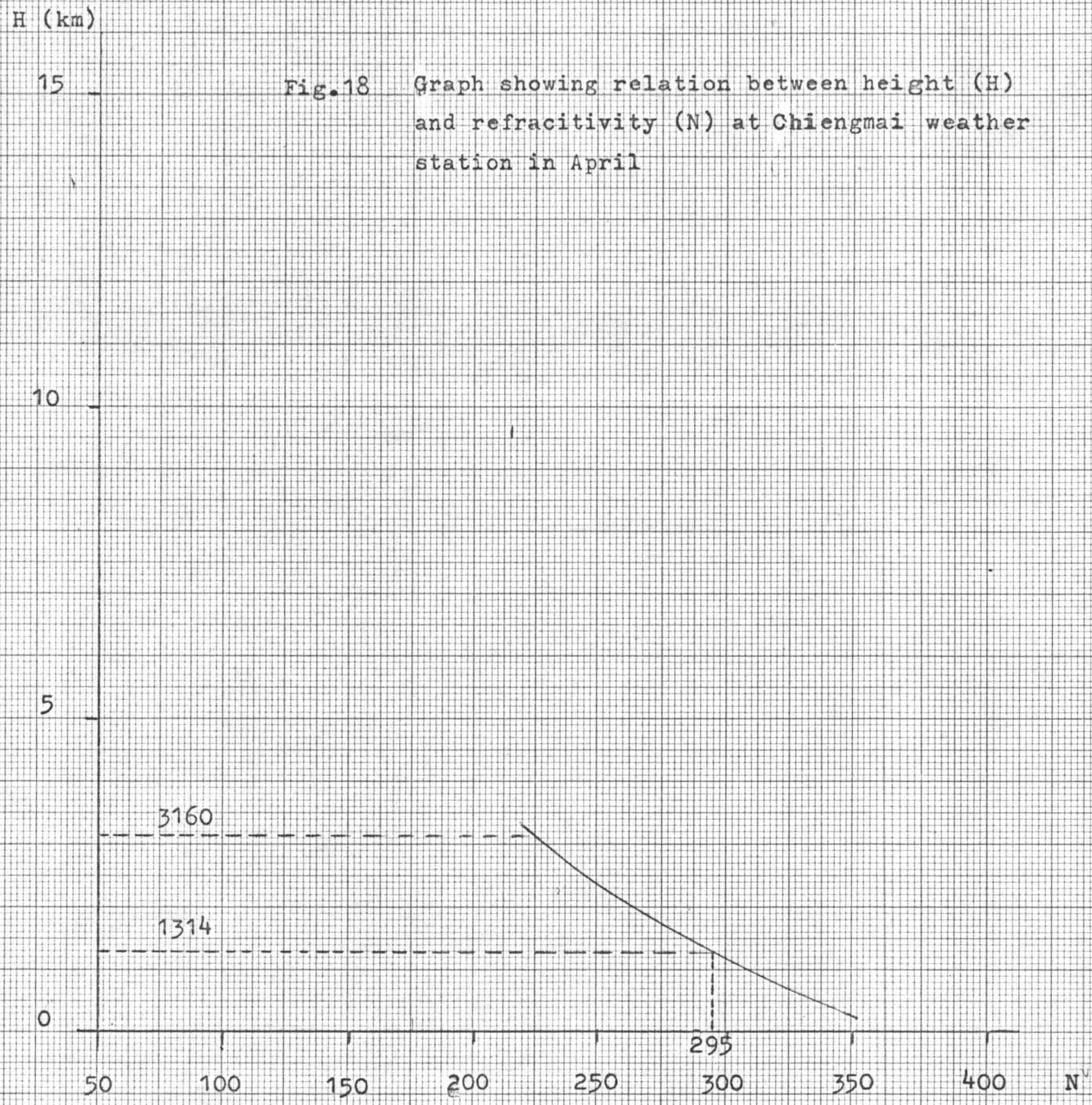

Fig.18 Graph showing relation between height (H) and refracitivity (N) at Chiengmai weather station in April

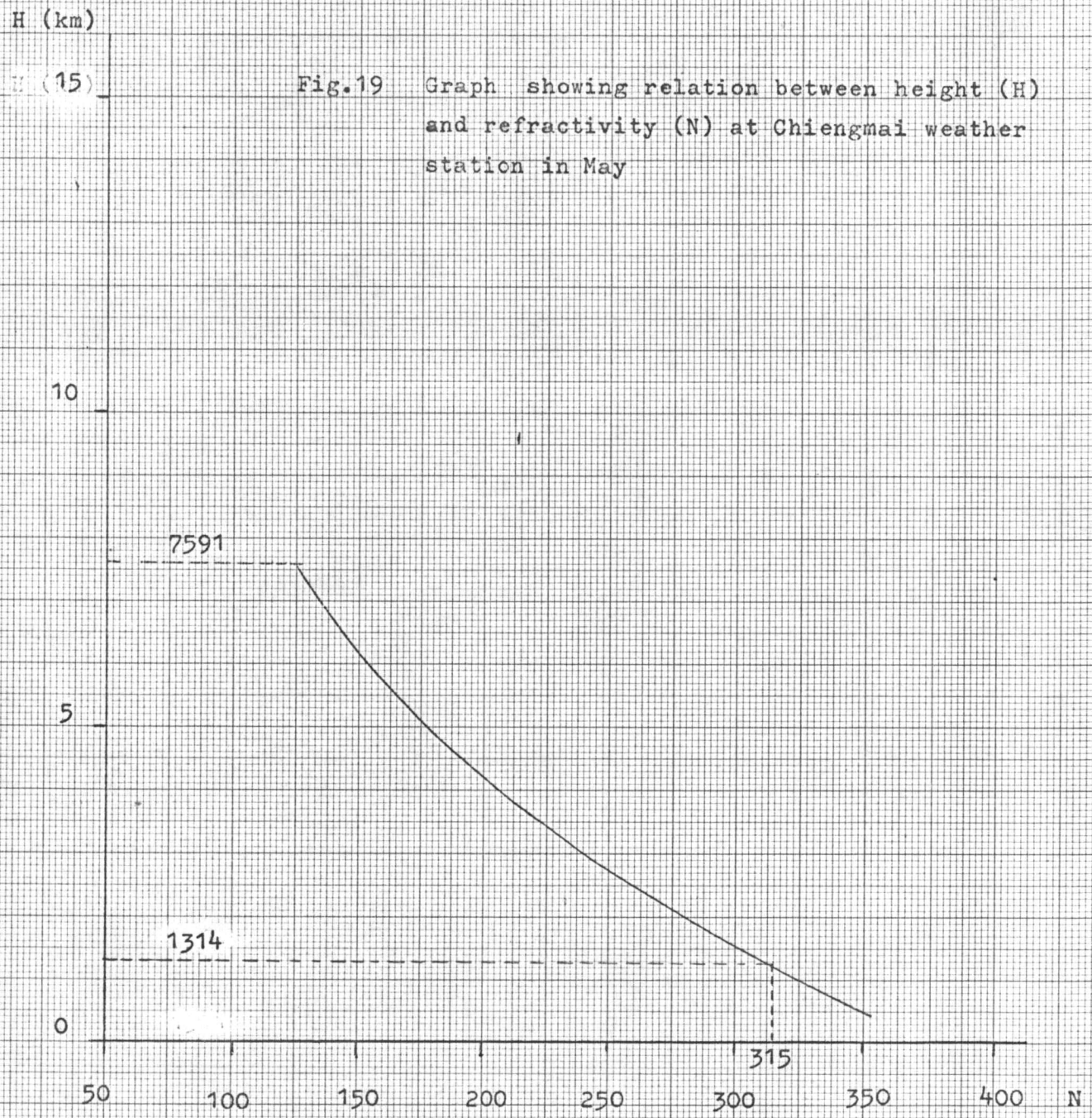

Fig.19 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in May

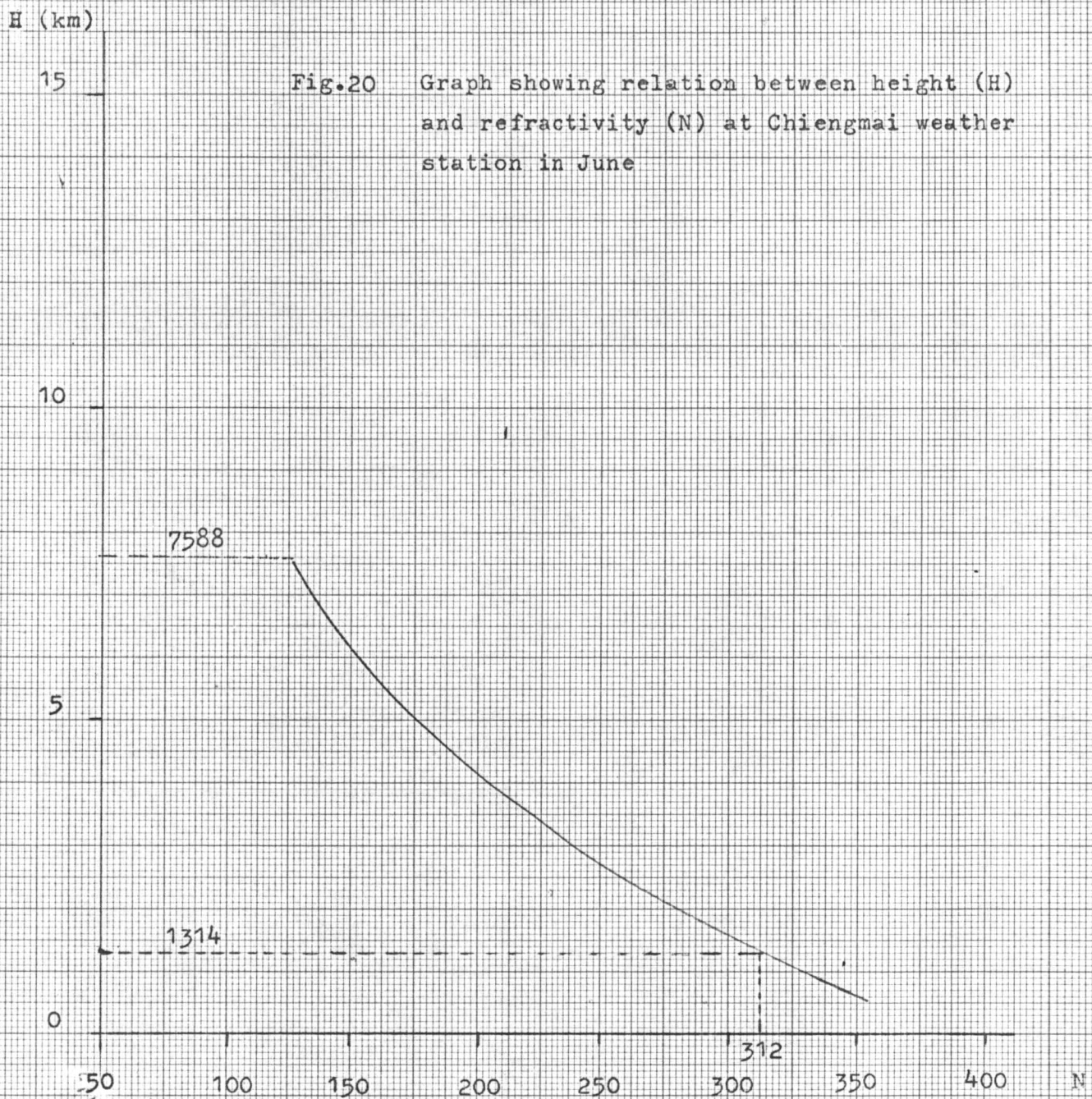

Fig.20 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in June

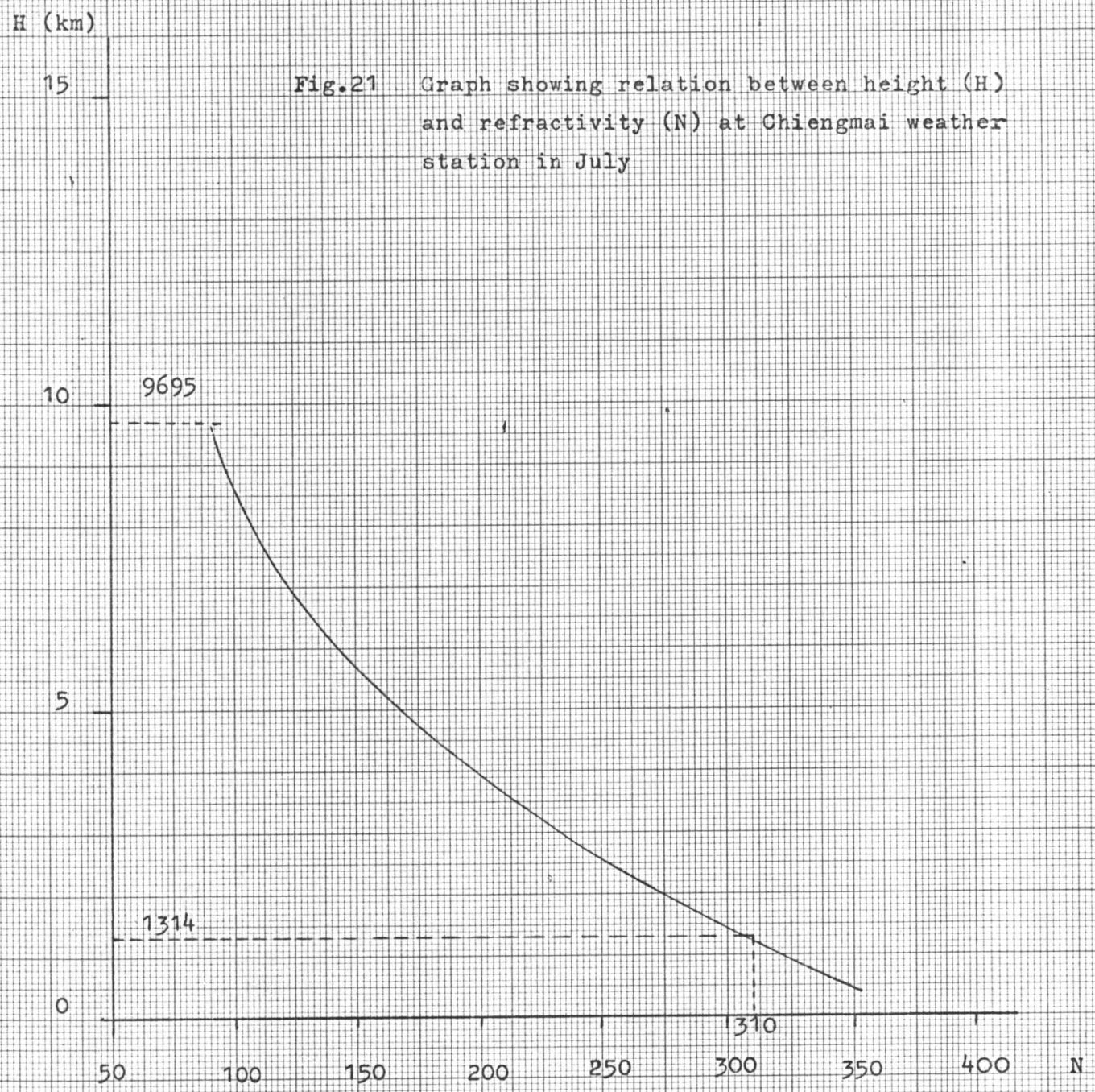

Fig.21 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in July

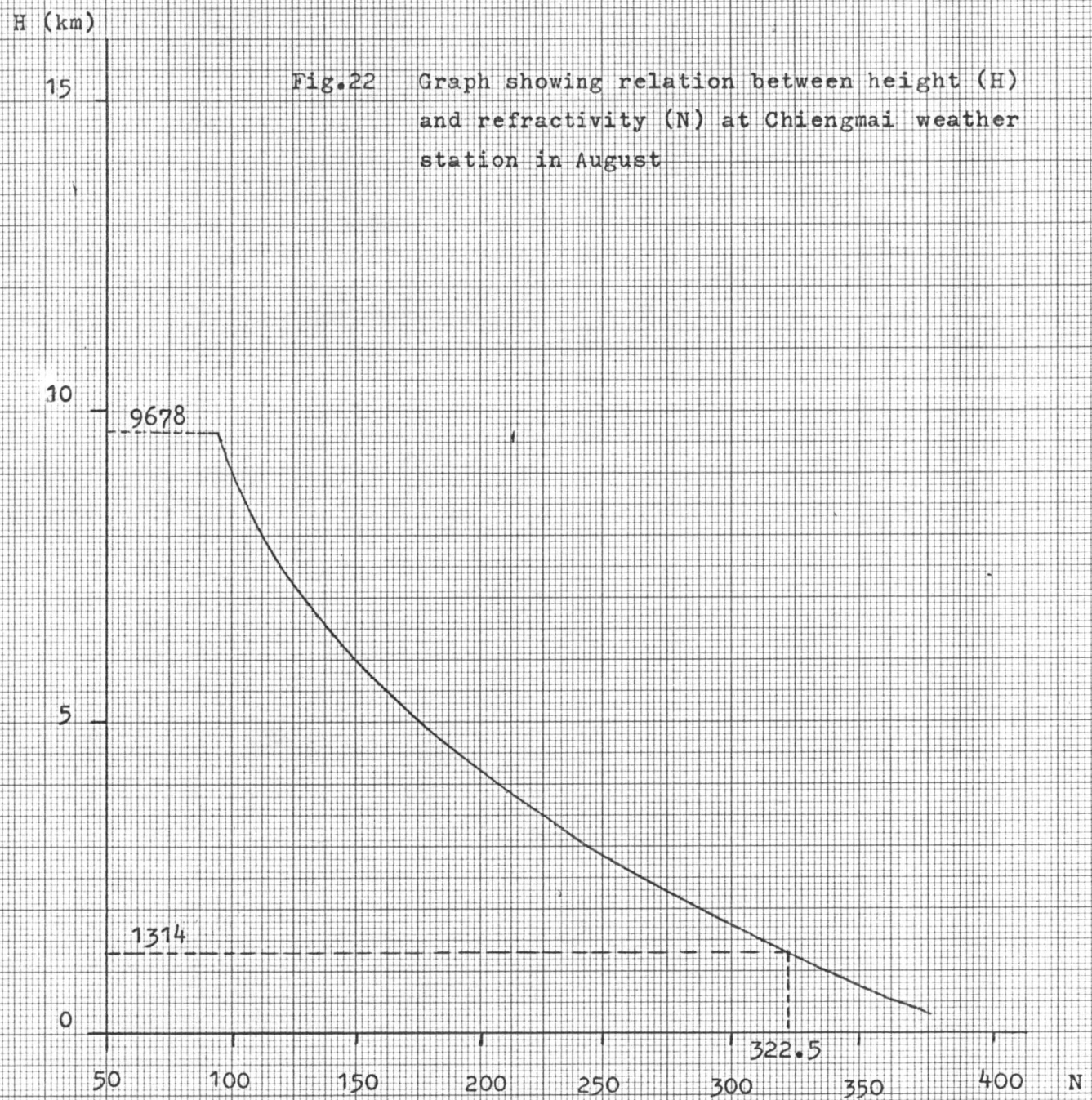

Fig.22 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in August

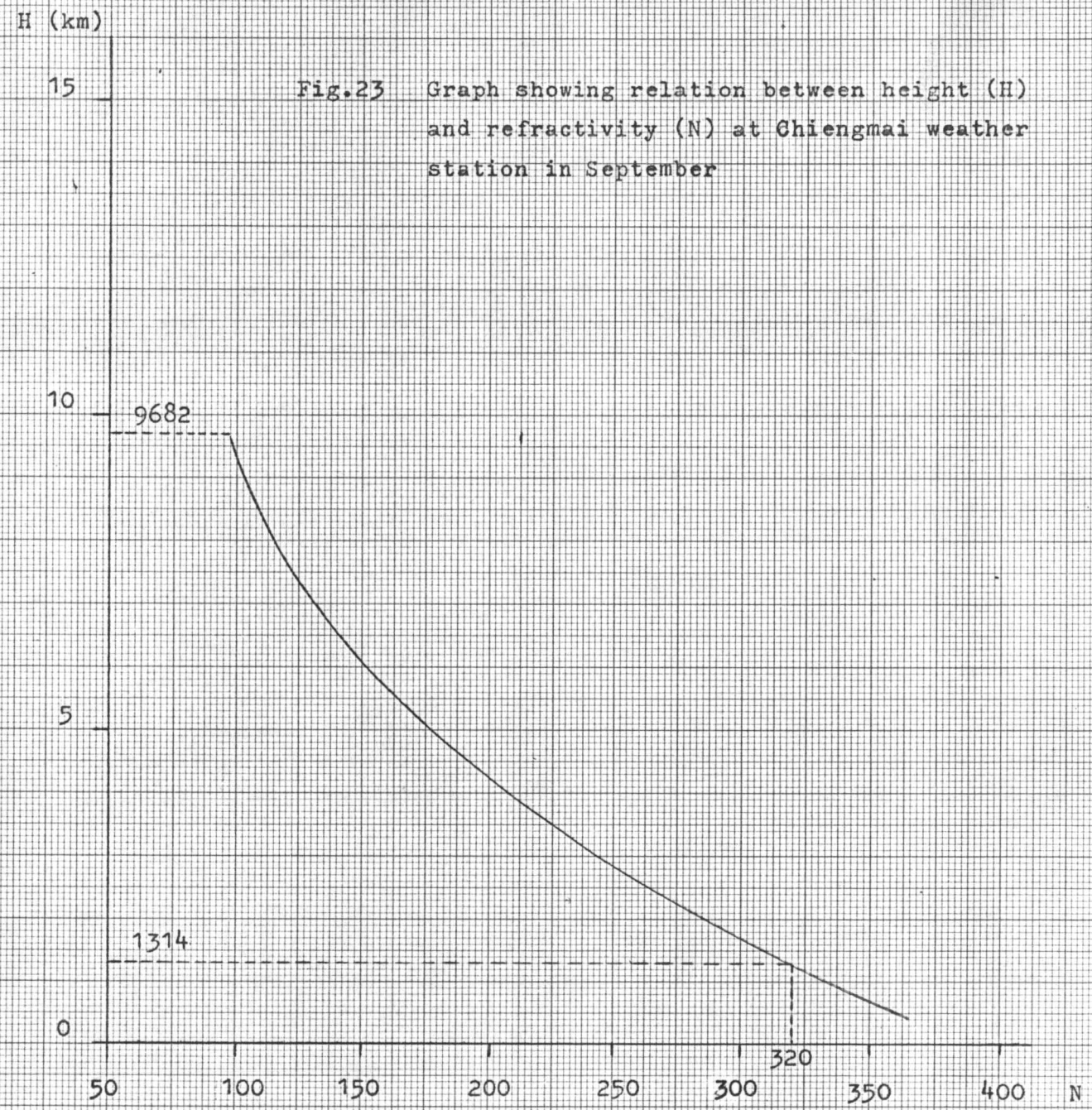

Fig.23 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in September

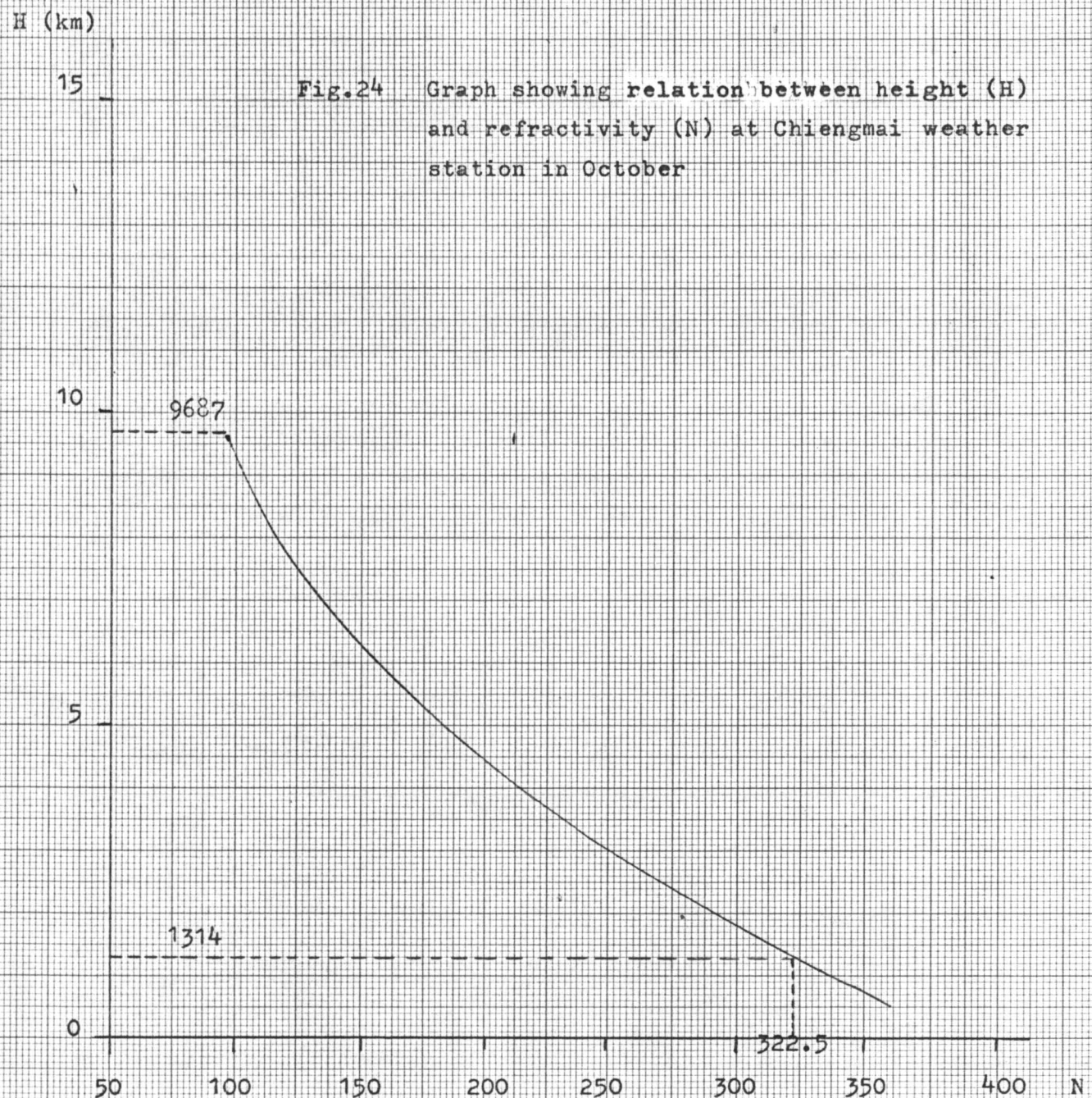

Fig.24 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in October

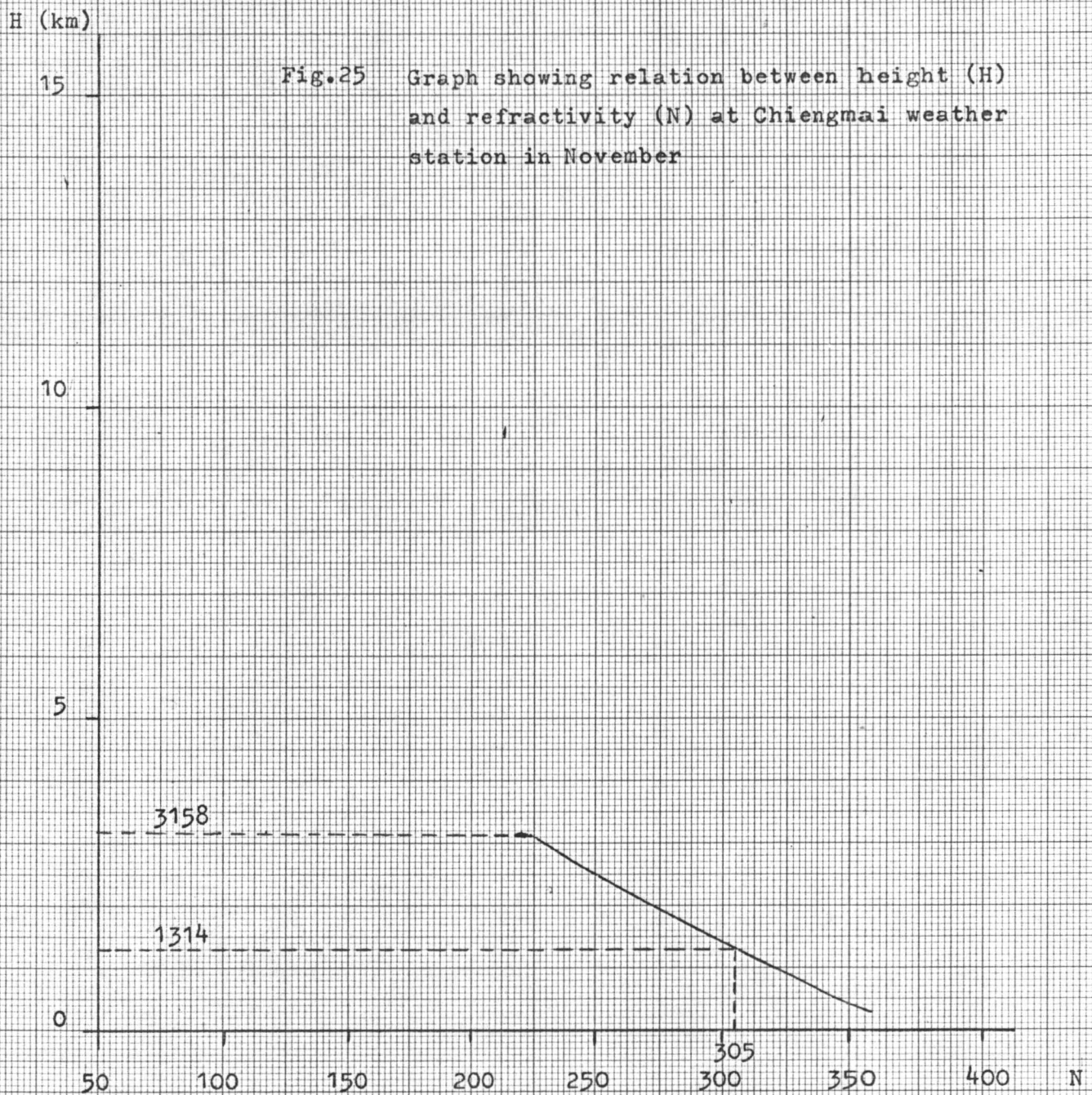

Fig.25 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in November

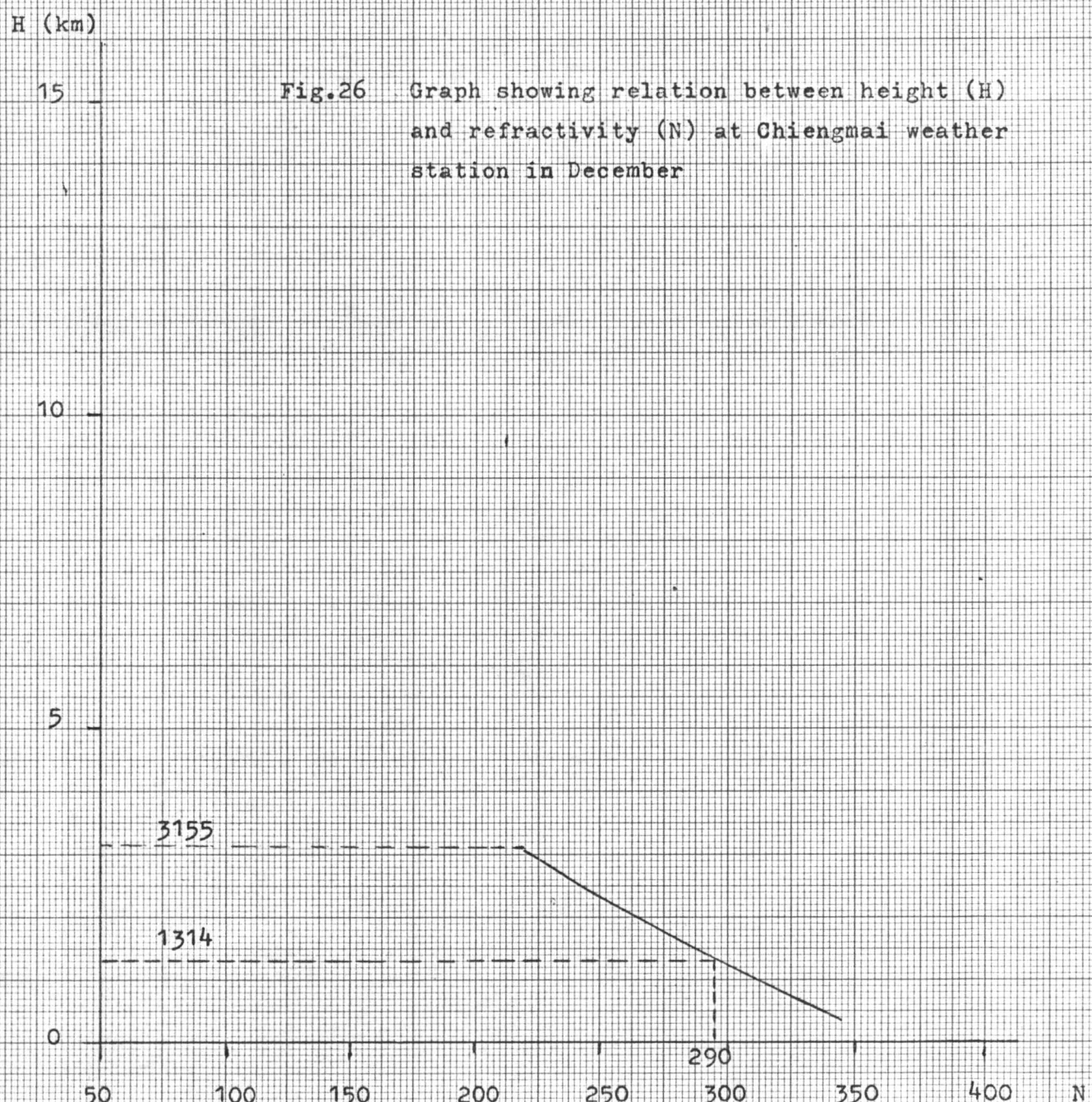

Fig.26 Graph showing relation between height (H) and refractivity (N) at Chiengmai weather station in December

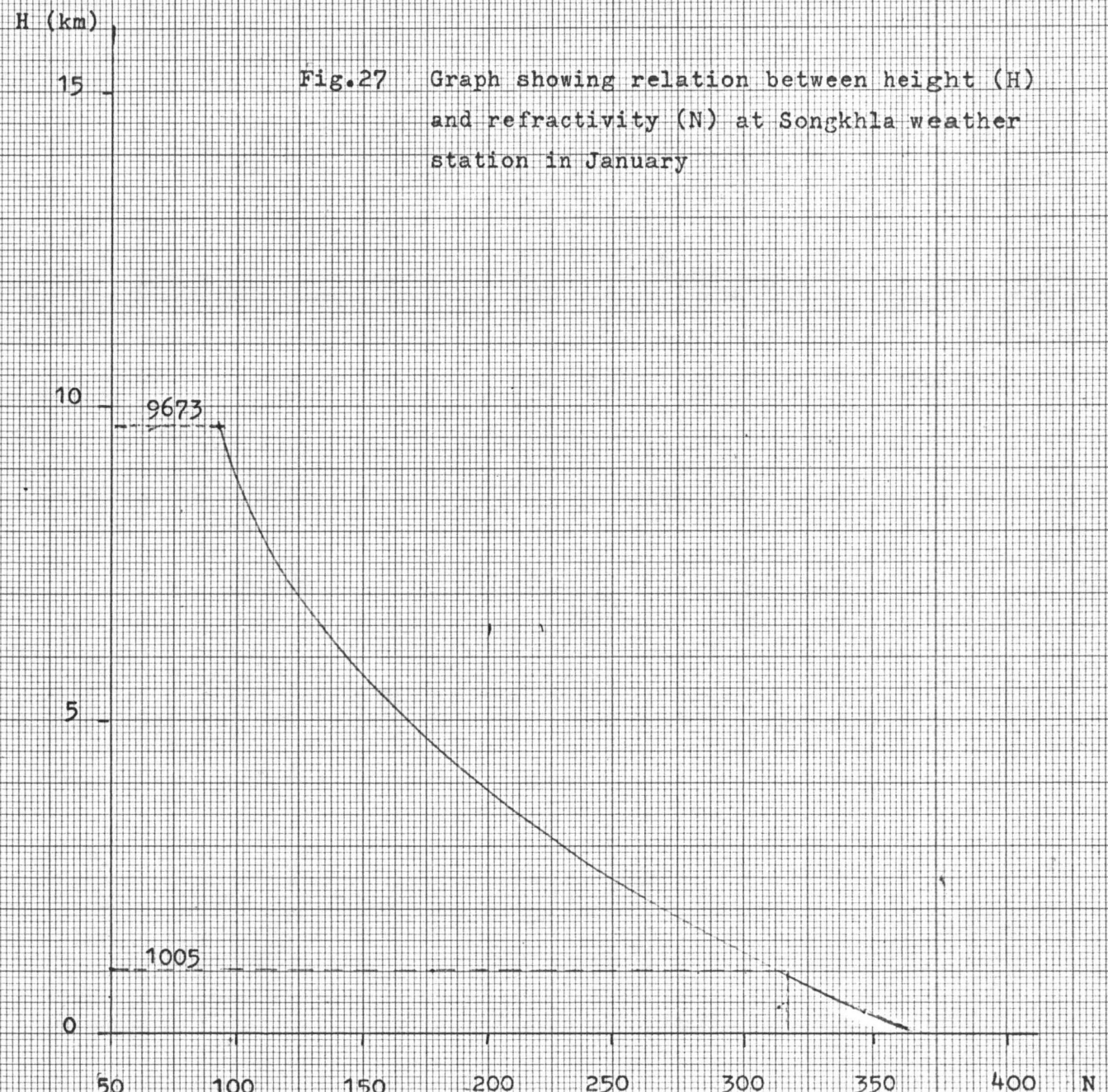

Fig.27 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in January

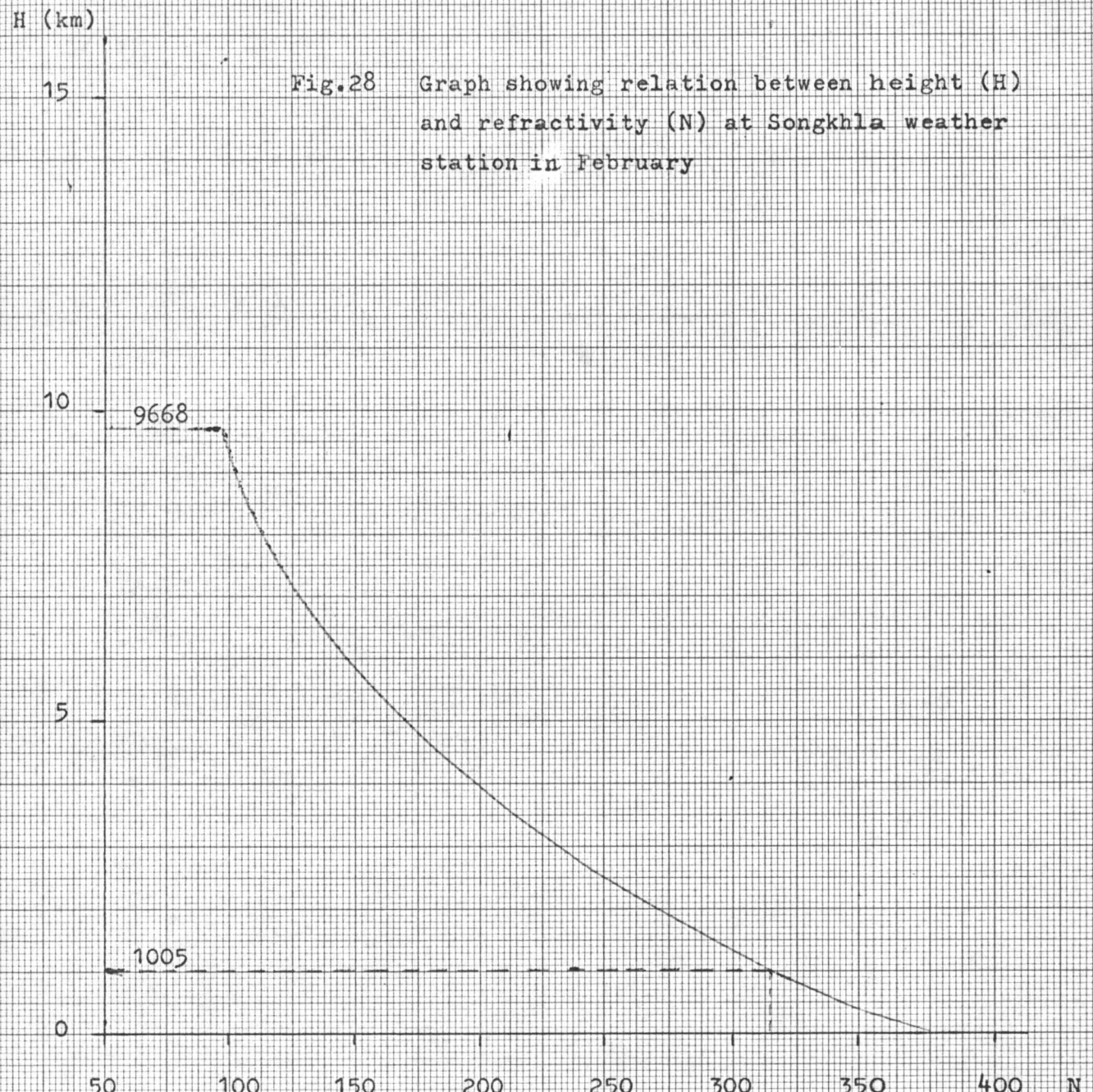

Fig.28 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in February

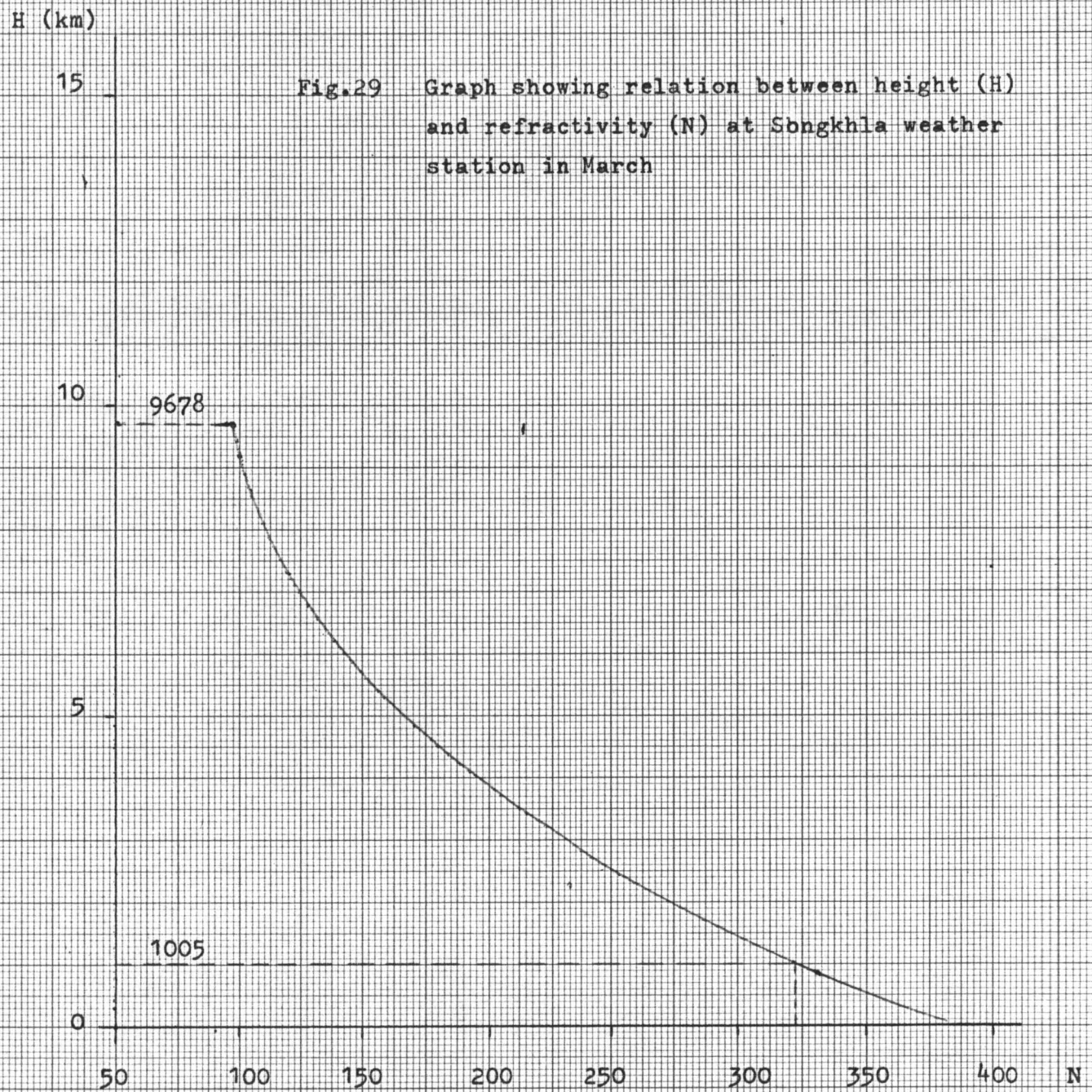

Fig.29 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in March

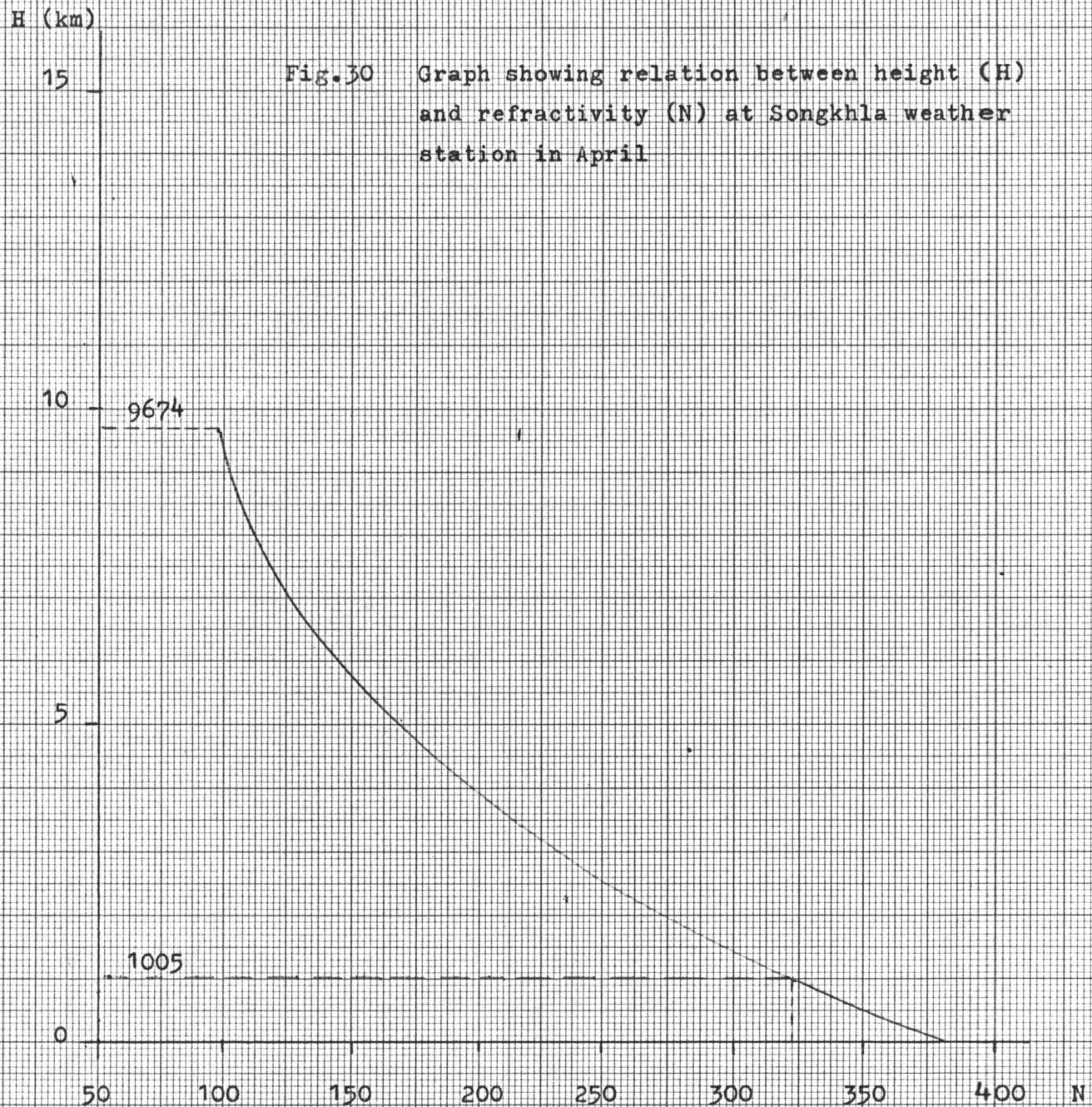

Fig.30 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in April

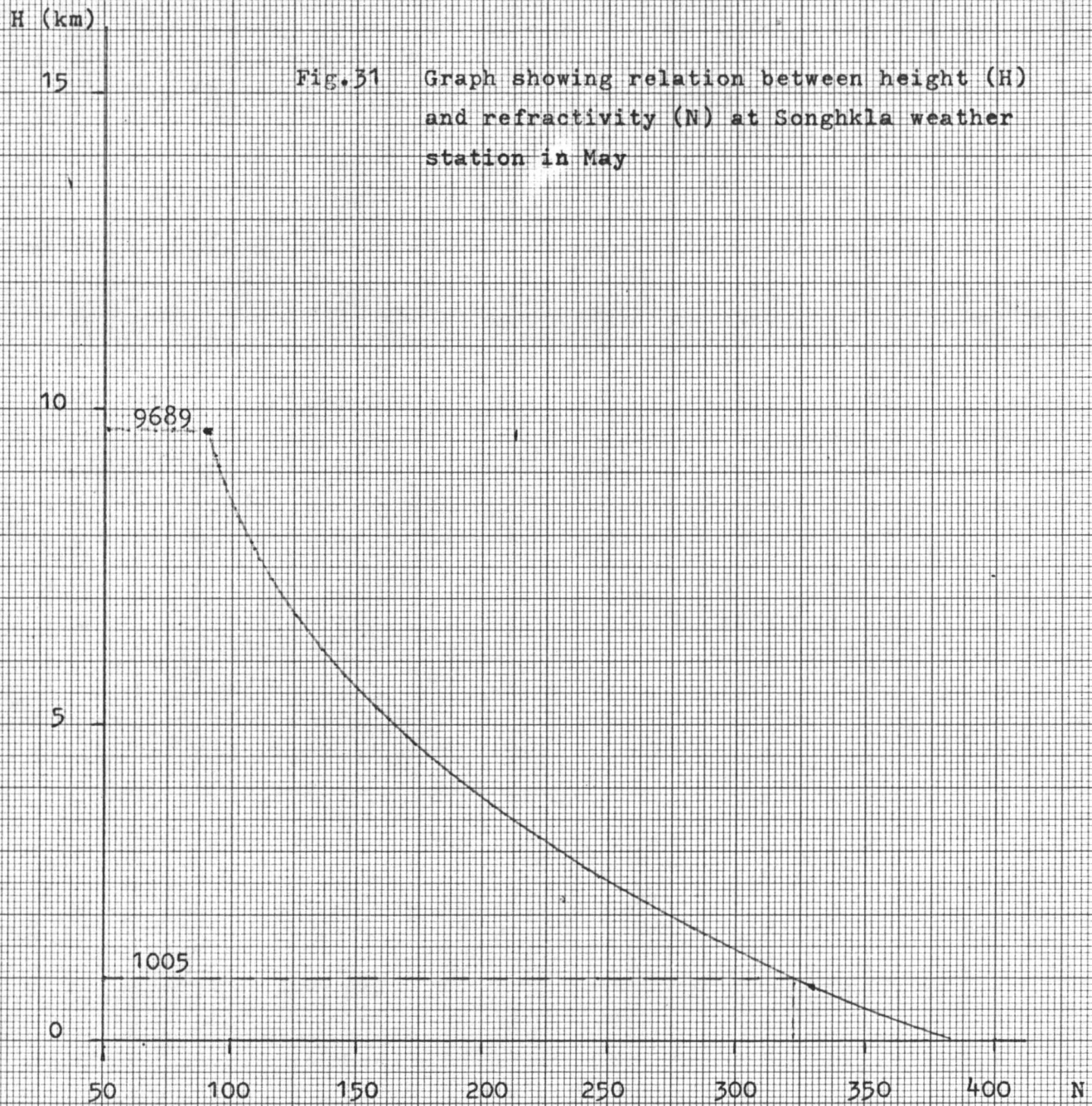

Fig.31 Graph showing relation between height (H) and refractivity (N) at Songhkla weather station in May

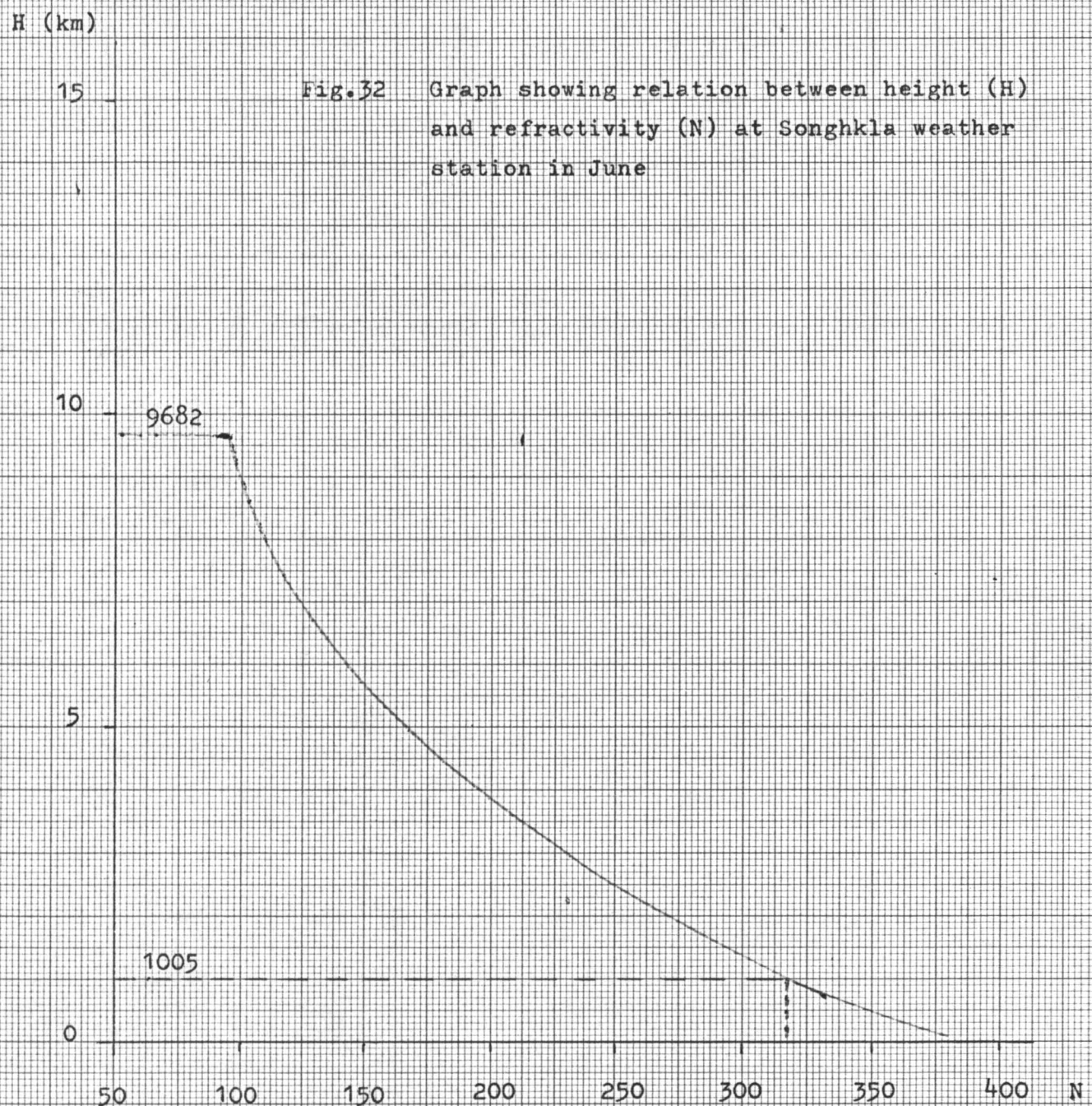

Fig.32 Graph showing relation between height (H) and refractivity (N) at Songhkla weather station in June

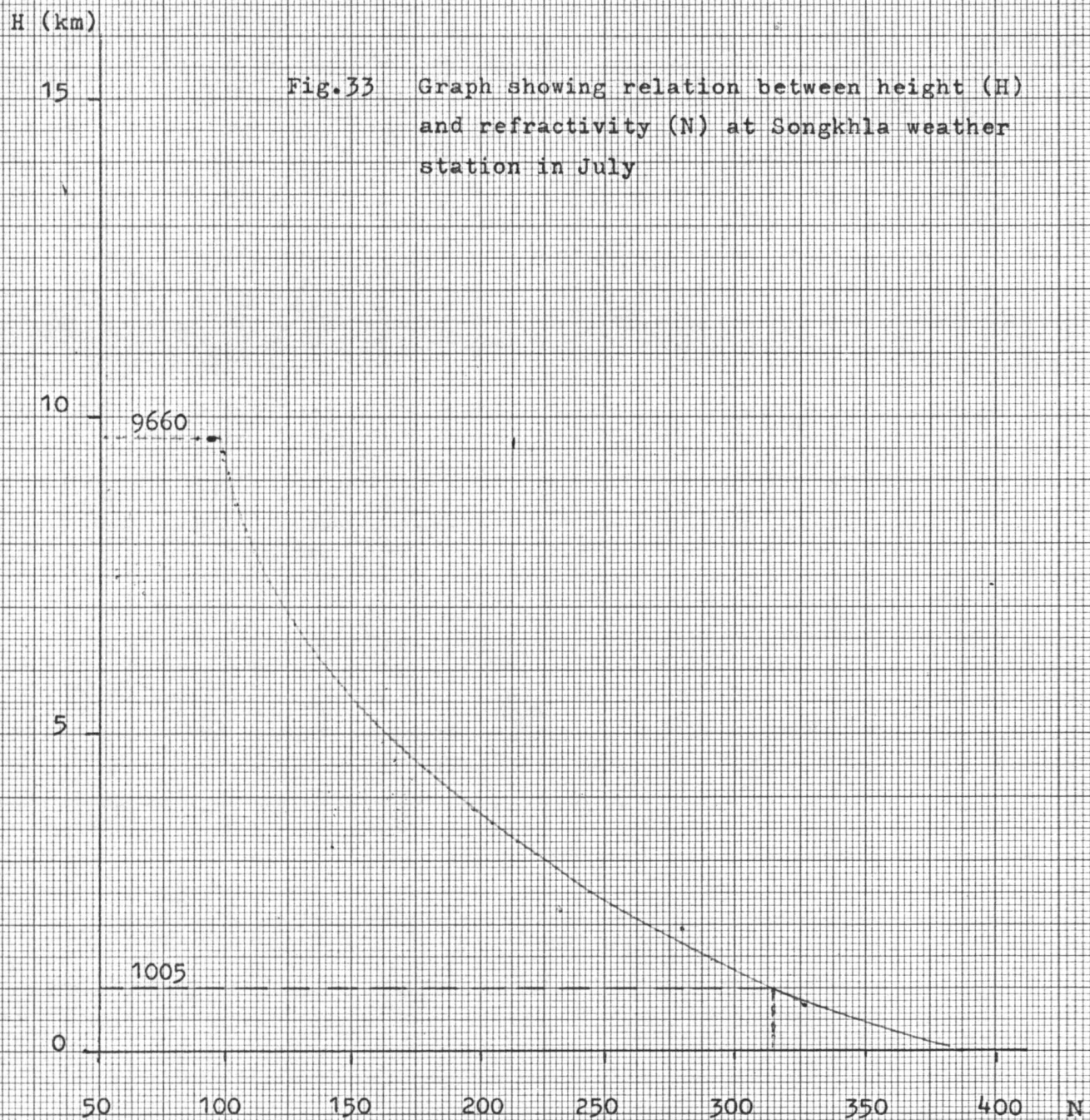

Fig.33 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in July

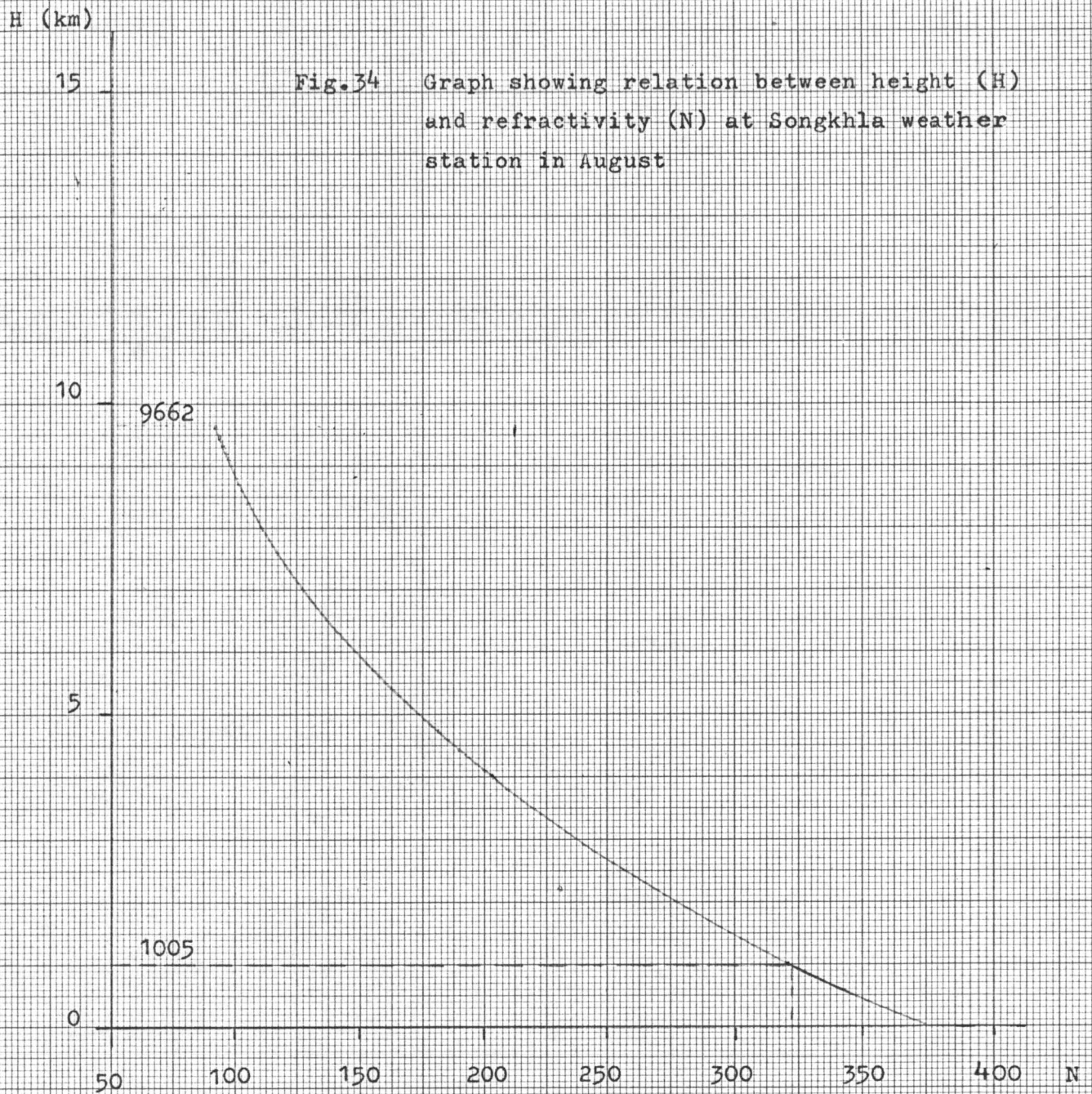

Fig.34 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in August

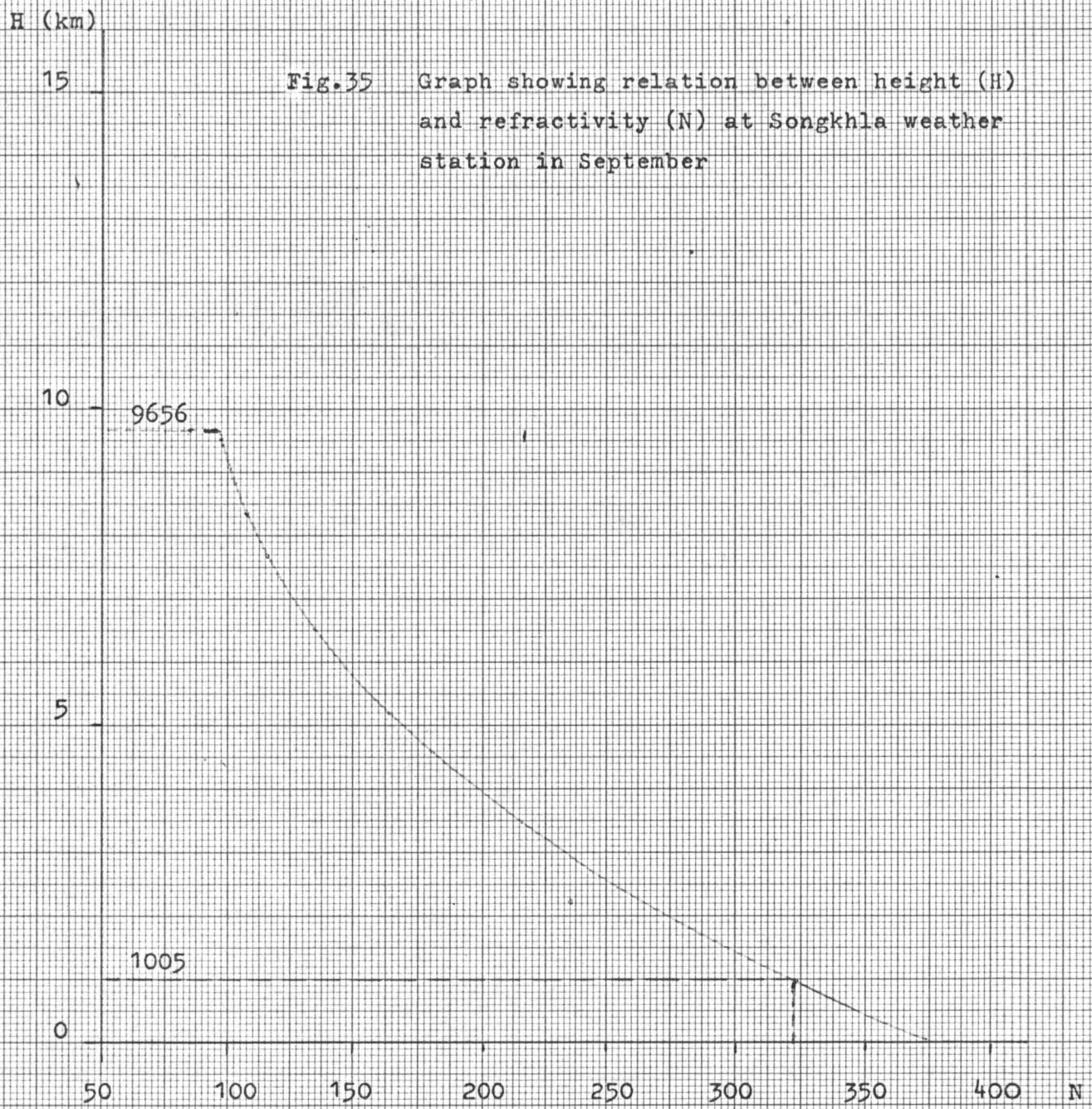

Fig.35 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in September

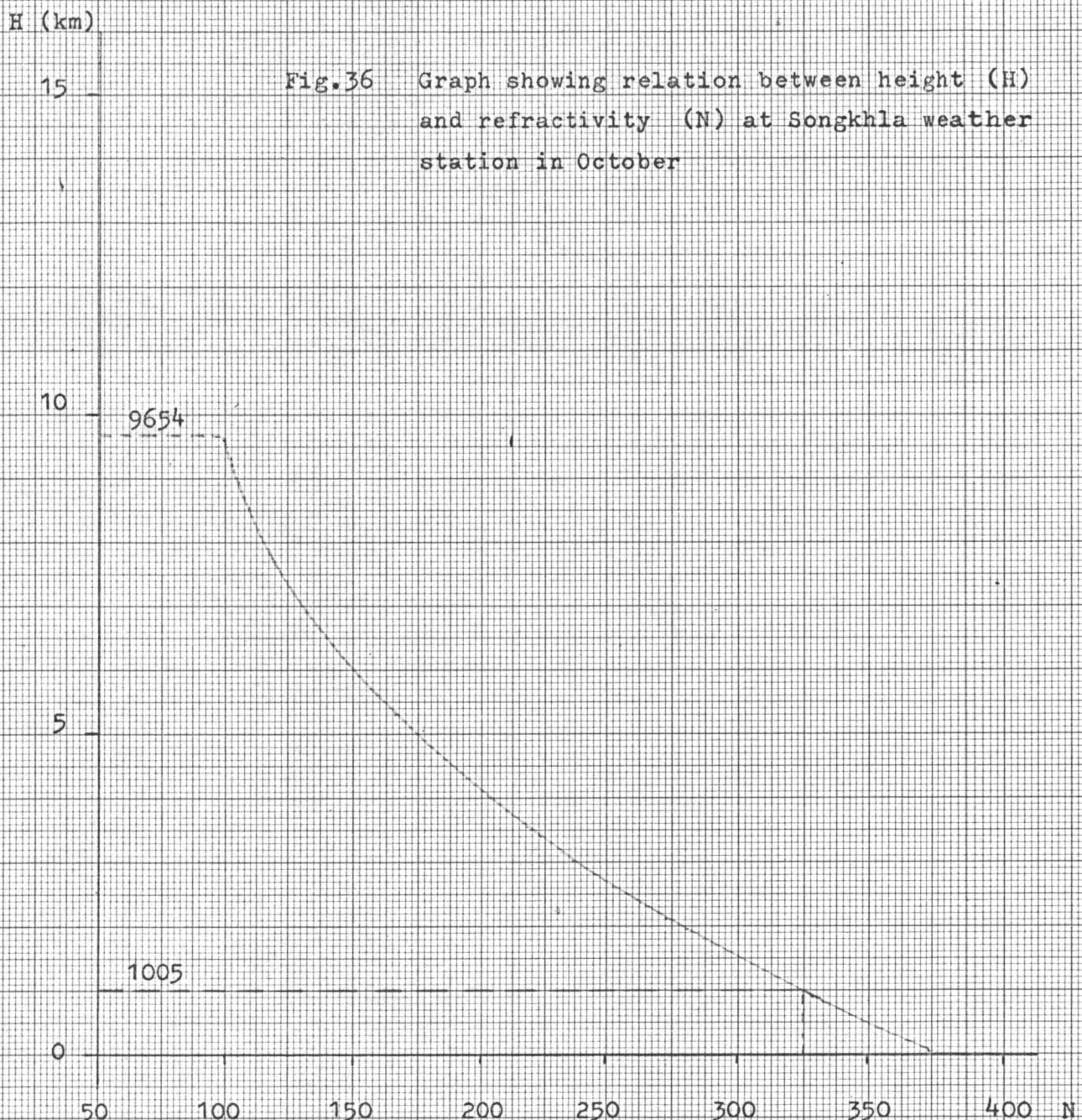

Fig.36 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in October

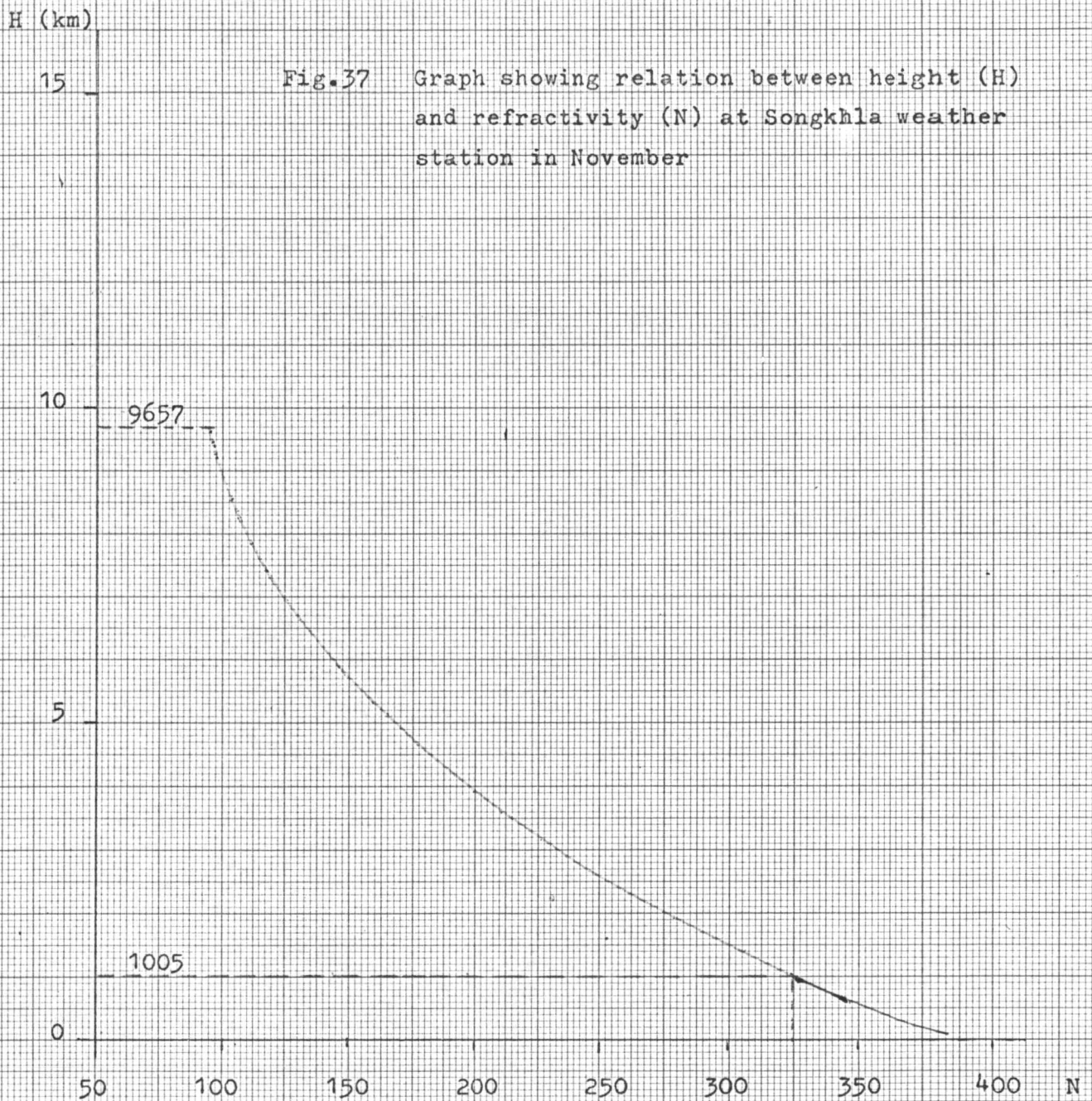

Fig.37 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in November

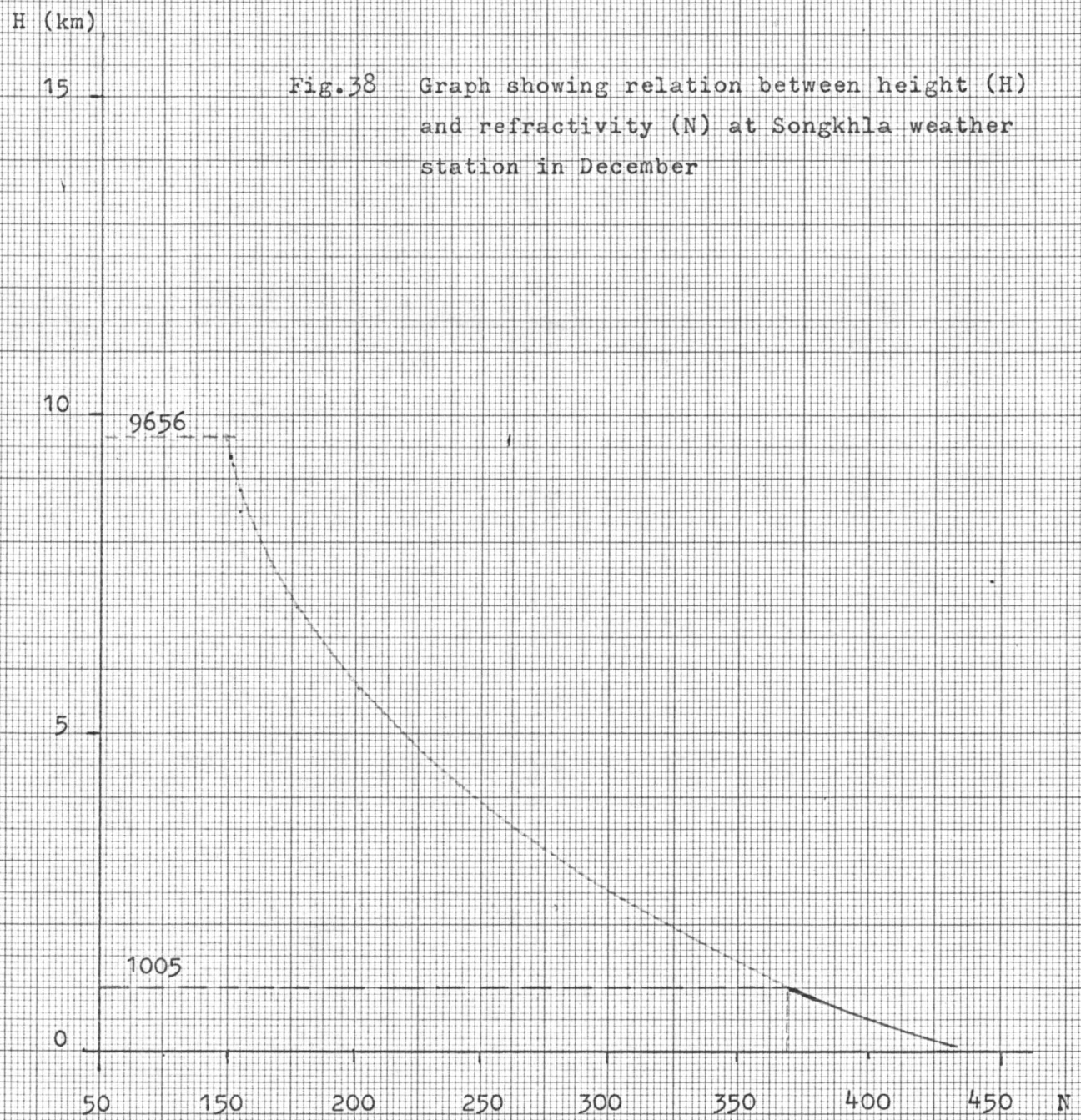

Fig.38 Graph showing relation between height (H) and refractivity (N) at Songkhla weather station in December

Surface Refractivity, N_s

Month	Chiengmai	Bangkok	Songkhla
January	340	360	376
February	333	369	376
March	336	378	380
April	348	328	382
May	368	387	382
June	373	384	381
July	374	383	377
August	377	374	376
September	380	386	378
October	374	385	383
November	360	376	382
December	343	268	379