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Tabular values give 12-hour travel at the geostrophic wind speed, in terms of degrees of longitude measured at the given latitude Φ, as a function of the latitude Φ, and (a) the pressure gradient in mbs. per 5° latitude spacing centered at Φ, or (b) the geopotential gradient in 10's of gpft. per 5° latitude spacing centered at Φ. Gradients must be measured across an interval equal to 5° of latitude centered at Φ, and placed normal to the isobars or contours. For sea-level charts use upper tabular values with top argument (SOLID FACE). For constant-pressure charts use lower tabular values with the bottom argument (*italics*).

LATITUDE	PRESSURE GRADIENT (mbs. per 5° Lat. centered at Lat. Φ)											LATITUDE
Φ	1	3	5	10	15	20	25	30	35	40	45	50	Φ
85°	3.8	7.7	11	23	34	46	57	69	80	92	103	114	85°
	9.2	*16.3*	*23*	*49*	*69*	*89*	*108*	*124*	*137*	*147*	*153*	*156*	
80°	2.0	4.0	6.0	12	18	24	30	36	42	48	54	60	80°
	4.5	*8.9*	*13*	*26*	*37*	*47*	*56*	*64*	*71*	*77*	*81*	*83*	
75°	1.4	2.8	4.2	8.4	13	17	21	25	29	33	37	41	75°
	3.1	*5.7*	*8.1*	*16*	*23*	*29*	*34*	*39*	*43*	*47*	*49*	*51*	
70°	1.1	2.2	3.3	6.5	9.8	13	16	19	22	25	28	31	70°
	2.3	*4.4*	*6.3*	*12*	*17*	*22*	*25*	*29*	*32*	*35*	*37*	*38*	
65°	0.9	1.8	2.7	5.4	8.1	11	13	16	18	21	23	26	65°
	1.8	*3.5*	*5.1*	*10*	*14*	*17*	*20*	*23*	*26*	*28*	*30*	*31*	
60°	0.8	1.7	2.5	4.9	7.4	9.9	12	15	17	20	22	24	60°
	1.6	*3.2*	*4.7*	*9.3*	*13*	*16*	*19*	*21*	*24*	*26*	*27*	*28*	
55°	0.8	1.6	2.4	4.8	7.2	9.6	12	14	17	19	21	24	55°
	1.5	*3.0*	*4.5*	*8.9*	*13*	*16*	*18*	*21*	*23*	*25*	*26*	*27*	
50°	0.8	1.5	2.3	4.6	6.9	9.2	11	14	16	18	20	23	50°
	1.4	*2.9*	*4.3*	*8.5*	*12*	*15*	*18*	*20*	*22*	*24*	*25*	*26*	
45°	0.8	1.5	2.3	4.5	6.8	9.0	11	13	16	18	20	22	45°
	1.4	*2.8*	*4.2*	*8.3*	*12*	*15*	*17*	*20*	*22*	*23*	*25*	*26*	
40°	0.8	1.6	2.4	4.7	7.0	9.3	12	14	16	19	21	23	40°
	1.5	*2.9*	*4.4*	*8.7*	*13*	*16*	*19*	*21*	*23*	*25*	*26*	*27*	
35°	0.8	1.7	2.5	5.0	7.5	10	12	15	17	20	22	25	35°
	1.6	*3.2*	*4.8*	*9.5*	*14*	*18*	*21*	*24*	*26*	*28*	*30*	*31*	
30°	0.9	1.9	2.8	5.6	8.4	11	14	17	20	22	25	28	30°
	1.8	*3.6*	*5.4*	*10*	*16*	*20*	*24*	*27*	*29*	*32*	*34*	*35*	
25°	1.1	2.1	3.2	6.3	9.5	13	16	19	22	25	28	31	25°
	2.0	*4.0*	*6.1*	*12*	*18*	*23*	*27*	*31*	*34*	*36*	*38*	*39*	
20°	1.2	2.5	3.8	7.5	11	15	19	22	26	29	33	37	20°
	2.3	*4.5*	*6.8*	*13*	*19*	*25*	*30*	*34*	*38*	*41*	*43*	*44*	
15°	1.5	2.9	4.4	8.8	13	17	22	26	30	34	38	43	15°
	2.6	*5.2*	*7.7*	*15*	*22*	*28*	*34*	*39*	*43*	*47*	*49*	*50*	
10°	1.7	3.4	5.1	10	15	20	25	30	35	40	45	50	10°
	3.0	*6.0*	*8.9*	*17*	*25*	*32*	*39*	*45*	*49*	*54*	*57*	*58*	
5°	2.4	4.8	7.2	14	21	29	36	43	50	57	64	71	5°
	4.2	*8.3*	*12*	*24*	*36*	*46*	*55*	*63*	*70*	*77*	*81*	*83*	
0°	4.8	9.5	14	28	42	56	71	85	99	113	127	141	0°
	5.9	*11.8*	*17*	*34*	*51*	*68*	*85*	*102*	*119*	*136*	*153*	*170*	
	1°	3°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	

GEOPOTENTIAL GRADIENT (10's of gpft. per 5° lat. centered at lat. Φ)

EXAMPLE (a) Given: pressure gradient = 30 mbs./5° lat. centered at 35° S. lat.
Find: 12-hour displacement in 25° of longitude at 30° S. latitude.
(b) Given: geopotential pressure gradient = 700 gpft./5° lat. centered at 35° lat.
Find: 12-hour displacement (D°) of longitude at 30° latitude.

INSTRUCTIONS FOR USING SCALES 12 HOUR TRAVEL AND GEOSTROPHIC WIND

1. From map find sea level pressure difference, Δp, in mb. (or height difference, Δh in 10's of gpft. for C.P. surface) across a distance equal to 5° of latitude centered at latitude Φ, and measured normal to isobars (or contours).

TO DETERMINE D (DEGREES LONGITUDE):

2. (a) On scale A (A' for C.P. surface), determine "p", the distance scaled off from Φ to the graduation bearing the value of Δp ($or \Delta h$) found in step 1.
   (b) Scale off a vector of length "d" upward from index (1); read D at end of vector.

TO DETERMINE S (SPEED):

3. (a) On scale B (B' for C.P. surface), determine "q", the distance scaled off from Φ to the graduation bearing the value of Δp ($or \Delta h$) found in step 1.
   (b) Scale off a vector of length "d" upward from index (1); read S at end of vector.

SEA LEVEL
Δ p (MILLIBARS per 5 Lat.) and 12-hr travel (D) in degrees Longitude at Latitude Φ
SCALE A — Latitude Φ — SCALE B — Speed (S) in knots

CONSTANT-PRESSURE SURFACE
Δ h (10's of gpft. per 5° Lat.) and 12-hr travel (D) in degrees Longitude at Latitude Φ
SCALE A' — Latitude Φ — SCALE B' — Speed (S) in knots

SOUTH POLAR AREA

METEOROLOGICAL PLOTTING CHART

POLAR STEREOGRAPHIC PROJECTION
True scale at latitude 60°
(1:20,000,000)
Radius of Projecting Sphere: 31.891 cms.
CONTOUR INTERVAL 1000 FEET—APPROX.

LATITUDE
NAUTICAL MILES
0 25 50 100 200 300 400 500

STATION..... DATE..... TIME.....
ANALYST..... PLOTTER.....

PACIFIC OCEAN
ATLANTIC OCEAN
INDIAN OCEAN
SOUTH AMERICA
AUSTRALIA
ANTARCTICA
NEW ZEALAND
TASMANIA
CORAL SEA
TASMAN SEA
ARAFURA SEA
DRAKE PASSAGE
ARGENTINA
CHILE
BOLIVIA
PARAGUAY
URUGUAY
BRAZIL
SOUTH AFRICA
MOZAMBIQUE
ANGOLA
BELGIAN CONGO
SOUTHERN RHODESIA
NORTHERN RHODESIA
BECHUANALAND
SWAZILAND
BASUTOLAND
MADAGASCAR
Isla de Pascua
Isla de Juan Fernández
Tristan da Cunha
Gough I.
Prince Edward Is.
Ile Crozet
Ile Kerguelen
McDonald Is.
St. Paul I.
Amsterdam I.
Mauritius
Réunion
Tromelin I.
Rodriguez I.
Diego Garcia
Cocos Is.
Christmas I.
Ashmore Reef
Scott I.
Heard I.
Macquarie I.
Auckland Is.
Campbell I.
Antipodes Is.
Bounty Is.
Chatham Is.
Kermadec Is.
Norfolk I.
Lord Howe I.
Three Kings Is.
Hokianga
Whangaroa
Mangonui
Whangarei
Kaipara
Manukau
Waitemata
Auckland
Hauraki Gulf
Coromandel
Mercury Is.
Tauranga
Bay of Plenty
Poverty Bay
Hawke Bay
Cook Str.
Wellington
Foveaux Str.
Stewart I.
Banks Pen.
Chatham I.
Pitt I.
Solander I.
Three Kings
Kermadec
Raoul I.
Macauley I.
Curtis I.
Sunday I.
Nukuhiva
Tahuata
Hivaoa
Fatuhiva
Tuamotu Archipelago
Tahiti
Moorea
Raiatea
Huahine
Bora Bora
Maupiti
Manuae
Tupai
Mopelia
Bellingshausen Sea
Amundsen Sea
Ross Sea
Ross Ice Shelf
Ross Island
Cape Crozier
Cape Adare
Cape Colbeck
Cape Dart
Wrigley Gulf
Sulzberger Bay
Little America
Scott Glacier
Beardmore Glacier
Balleny Islands
Admiralty Range
Victoria Land
Britannia Range
Cape Freshfield
Nimnia Glacier Tongue
Mertz Glacier Tongue
Piner Bay
Dana Bay
Cape Goodenough
Shackleton Ice Shelf
Amery Ice Shelf
Prydz Bay
Mac.Kenzie Bay
Mawson Coast
Cape Close
Enderby Land
Queen Maud Land
Princess Ragnhild Coast
Prince Olav Coast
Prince Harald Coast
Lützow-Holm Bay
Riiser-Larsen Peninsula
Weddell Sea
Coats Land
Duke Ernst Bay
Lassiter Ice Shelf
Edith Ronne Land
Marie Byrd Land
Thurston Island
Peter I Island
Cape Norvegia
Soll Bay
Filchner Ice Shelf
Ronne Ice Shelf
Weddell Island
Graham Land
Palmer Archipelago
Danger I.
Elephant I.
South Orkneys
South Georgia
South Sandwich Is.
Bouvet I.
Gough I.
Tristan da Cunha
Prince Edward Is.
Ile Crozet
Ile Kerguelen
Heard I.
Macquarie I.
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Ross Island
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Cape Colbeck
Cape Dart
Wrigley Gulf
Sulzberger Bay
Little America
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Beardmore Glacier
Balleny Islands
Admiralty Range
Victoria Land
Britannia Range
Cape Freshfield
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Mertz Glacier Tongue
Piner Bay
Dana Bay
Cape Goodenough
Shackleton Ice Shelf
Amery Ice Shelf
Prydz Bay
Mac.Kenzie Bay
Mawson Coast
Cape Close
Enderby Land
Queen Maud Land
Princess Ragnhild Coast
Prince Olav Coast
Prince Harald Coast
Lützow-Holm Bay
Riiser-Larsen Peninsula
Weddell Sea
Coats Land
Duke Ernst Bay
Lassiter Ice Shelf
Edith Ronne Land
Marie Byrd Land
Thurston Island
Peter I Island
Cape Norvegia
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NAVY—HYDRO, WASH., D.C.
MAR. 1958

Meteorological Plotting Chart
SOUTH POLAR AREA — SCALE 1:20,000,000

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