

METEOROLOGICAL SERVICES IN ALASKA

By F. W. REICHELDERFER

Chief, United States Weather Bureau

THE present picture of meteorological services in Alaska is the result of expansion under wartime demands and development to meet the requirements of expansion of civilian aviation. Prior to World War II, the Weather Bureau maintained first-order stations at Juneau, Anchorage, Fairbanks, and Nome. In addition, second-order stations (noncommissioned personnel) were operated at widely separated points, such as Barrow, St. Paul Island, Attu, Dutch Harbor, Kodiak, Ketchikan, and Cordova, with on-call airway reporting stations at numerous villages in the Territory served only occasionally by air transportation.

Wartime Expansion of Services

As a result of wartime requirements, a considerable increase in the number of civilian-operated stations took place and second-order Weather Bureau stations at strategic points were converted into first-order stations, with further expansion of second-order station activities at additional points. There are now 15 first-order Weather Bureau stations in the Territory of Alaska, from which full 24-hourly service is available and from which 6-hourly synoptic and pilot balloon observations emanate. Six stations carry on radiosonde observations and six make rawinsonde observations of upper air conditions.

To serve wartime demands, Army and Navy meteorological offices were established at all points of operation by those agencies. The evolution of developments by civilian and military agencies has necessitated the establishment and operation of meteorological offices at all major centres of activity and at many intermediate points along established air routes between major stations. Furthermore, the Weather Bureau has assumed meteorological functions at several points now designated as second-order stations.

Meteorological facilities are maintained mainly by the U.S. Weather Bureau on the Alaskan mainland, while those on the Aleutian Chain are operated generally by the armed forces. Cooperating agencies, such as the U.S. Coast Guard and the Civil Aeronautics Administration, participate in the meteorological reporting program under Weather Bureau supervision. Reports are rendered by the U.S. Coast Guard from 10 stations in South-eastern Alaska and from 28 Civil Aeronautics Administration stations throughout the Territory. The armed forces function at 9 locations in the Territory of Alaska, primarily at points in the Aleutian Islands. Figs. 1 and 2 illustrate the distribution of the various reporting stations and Figs. 3-7 list these stations and the type and frequency of services rendered.

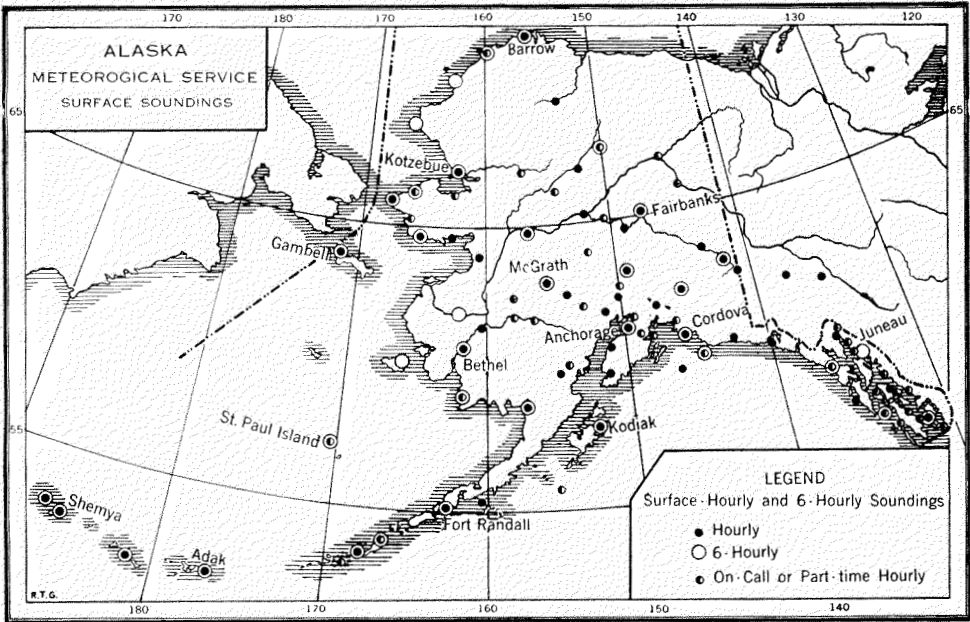


Fig. 1—Distribution of surface weather observations in Alaska.

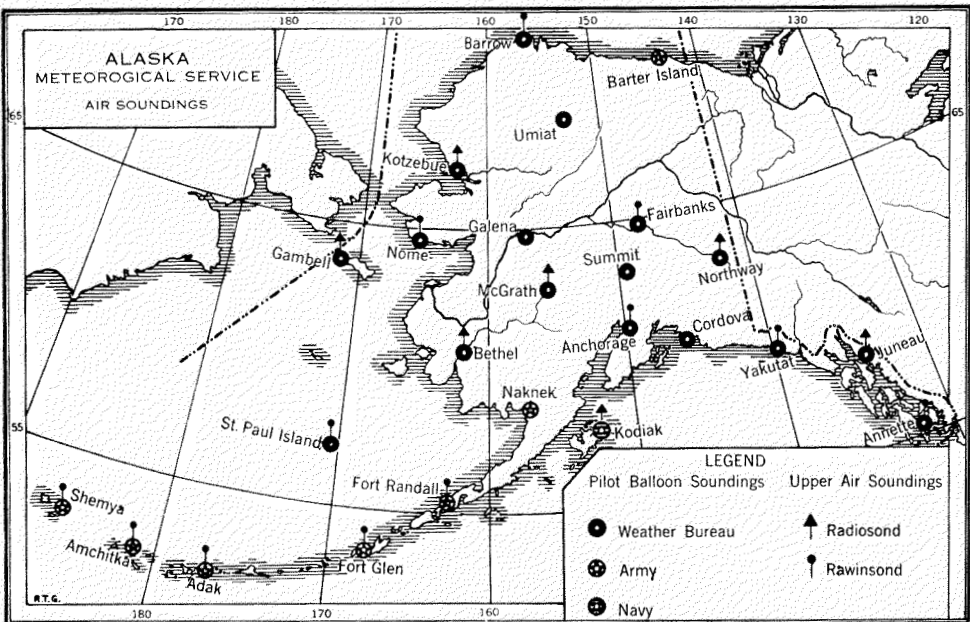


Fig. 2—Distribution of upper air observations in Alaska.

Radio Communication

All stations are served by radio communications and weather sequence collections and relays are accomplished by that medium. In addition, landline teletype circuits connect Anchorage, Fairbanks, and points along the Alaska Highway route with landline relay teletype points in the continental United States. Radioteletype circuits link several points in the Seward Peninsula and Norton Sound area with Anchorage to the southeast. Weather collections along the Aleutian Chain are by point-to-point radio facility into radio-teletype relay centres and thence to Anchorage. The Anchorage Civil Aeronautics Administration Communications Centre in turn maintains both radio point-to-point and radioteletype communication with the CAA Centre at Everett, Washington, for collection of material from the United States and relay of Alaskan reports. Similar communications link Anchorage with Honolulu for exchange of material with the Far East. Dissemination of meteorological material is accomplished to all stations on radio or radio-teletype circuits in Alaska and the Aleutians. In general, the major points of collection or distribution coincide with the location of forecast offices maintained by the U.S. Weather Bureau, the Army, and the Navy.

Forecast Centres

Of the 15 Weather Bureau Offices, three are major forecast centres, located at Anchorage, Juneau, and Fairbanks. Limited local forecasting is a part of the program of the Nome station also.

The Juneau Forecast Centre serves Southeastern Alaska from Dixon Entrance on the south to Whitehorse on the north and Yakutat on the northwest, issuing 6-hourly airway route and airway terminal forecasts and twice daily marine and general weather forecasts. Marine and general weather forecasts are broadcast over commercial radio stations for public consumption. Storm warnings are issued as required and broadcast for general public use.

The Anchorage Forecast Centre serves the north Gulf of Alaska, the Alaska Peninsula, the Aleutian Island, Bristol Bay, Kuskokwim Valley area, Cook Inlet, and Prince William Sound areas with 6-hourly airway route and terminal forecasts and twice daily marine and general weather forecasts. The marine and general weather forecasts are broadcast over commercial radio stations for general public consumption. Storm warnings are issued as required and broadcast for public information. Fire weather forecasts are issued seasonally.

The Fairbanks Forecast Centre serves the interior of Alaska, the north and northwest coasts of Alaska, the Seward Peninsula, Norton Sound and Kotzebue Sound areas with 6-hourly airway route and terminal forecasts

FIG. 3—FIRST ORDER WEATHER BUREAU STATIONS

STATION	LAT.	LONG.	DESIGNATOR	OBSERVATIONAL PROGRAM						
				HOURLY	ADDITIVE DATA		SYNOPTICS	PIBALS	RADIOSONDE	RAWINSONDE
					6-Hourly	3-Hourly	6-Hourly			
Anchorage (Merrill).....	60° 13' N	149° 50'W	HQ	24	4	4	4	2	..	2
Barrow.....	70 18'	156 47'	WY	24	..	4	4	2	..	2
Bethel.....	60 47'	161 41'	UB	24	..	4	4	4	2	..
Cordova.....	60 29'	145 30'	KA	24	4	4	4	4	..	..
Fairbanks (Weeks).....	64 50'	147 43'	FX	24	4	4	4	2	..	2
Galena.....	64 43'	156 54'	GQ	24	4	4	4	4	..	..
Gambell.....	60 47'	161 41'	WK	24	..	4	4	4	2	..
Juneau.....	58 22'	134 35'	JE	24	4	4	4	4	2	..
Ketchikan (Annette).....	55 02'	131 35'	UKG	24	4	4	4	2	..	2
Kotzebue.....	66 52'	162 38'	KP	24	4	4	4	4	2	..
McGrath.....	62 58'	155 37'	WH	24	..	..	4	4	2	..
Nome.....	64 30'	165 24'	YO	24	4	4	4	2	..	2
Northway.....	62 58'	141 58'	PM	24	4	4	4	4	2	..
St. Paul Island.....	57 09'	170 13'	PI	..	..	..	4	2	..	2
Wales.....	65 37'	168 03'	WN	24	4	4	4	2	..	..

FIG. 4—SECOND ORDER WEATHER BUREAU STATIONS

STATION	LAT.	LONG.	DESIGNATOR	OBSERVATIONAL PROGRAM						
				HOURLY	ADDITIVE DATA		SYNOPTICS	PIBALS	RADIOSONDE	RAWINSONDE
					6-Hourly	3-Hourly	6-Hourly			
Angoon.....	57° 30'N	134° 35'W	HKN	10	None		..	None	None	None
Candle.....	65 56'	161 55'	HEX	12	"		..	"	"	"
Circle.....	65 48'	144 04'	HAO	4	"		..	"	"	"
Craig.....	55 29'	133 09'	HAE	9	"		..	"	"	"
Crooked Creek.....	61 52'	158 15'	HAZ	5	"		..	"	"	"
Curry.....	62 37'	150 02'	HEC	10	"		..	"	"	"
Flat.....	62 29'	158 05'	HFL	12	"		..	"	"	"
Hughes.....	66 04'	154 15'	HHU	12	"		..	"	"	"
Manley Hot Springs.....	65 00'	150 39'	UMS	12	"		..	"	"	"
Mountain Village.....	62 07'	163 45'	HMZ	0	"		4	"	"	"
Nunivak.....	60 12'	166 08'	UNN	0	"		4	"	"	"
Palmer.....	61 36'	149 07'	HDT	3	"		..	"	"	"
Platinum.....	59 01'	161 47'	UPL	10	"		4	"	"	"
Point Hope.....	68 20'	166 48'	HDQ	..	"		4	"	"	"
Point Lay.....	69 49'	162 55'	HPY	..	"		4	"	"	"
Portage.....	60 50'	148 59'	HAP	12	"		..	"	"	"
Puntilla.....	62 09'	152 50'	HDY	14	"		..	"	"	"
Seward.....	60 07'	149 27'	HSW	12	"		..	"	"	"
Shishmaref.....	66 14'	166 07'	HFV	5	"		3	"	"	"
Skagway.....	59 27'	135 19'	USG	10	"		..	"	"	"
Stony River.....	61 46'	156 38'	HDE	7	"		4	"	"	"
Tanalian Point.....	60 13'	154 22'	HGT	10	"		..	"	"	"
Teller.....	65 16'	166 21'	HAT	5	"		..	"	"	"
Tenakee.....	57 47'	135 12'	HET	6	"		..	"	"	"
Valdez.....	61 07'	146 16'	HDZ	9	"		..	"	"	"
Wainwright.....	70 38'	159 50'	HWX	3	"		4	"	"	"
Wiseman.....	67 26'	150 13'	HFZ	13	"		2	"	"	"
Wrangell.....	56 28'	132 23'	HLL	9	"		..	"	"	"

FIG. 5—SECOND ORDER WEATHER BUREAU STATIONS (CAA)

STATION	LAT.	LONG.	DESIGNATOR	OBSERVATIONAL PROGRAM						
				HOURLY	ADDITIVE DATA		SYNOPTICS	PIBALS	RADIOSONDE	RAWINSONDE
					6-Hourly	3-Hourly	6-Hourly			
Aniak.....	61° 40'N	159° 42'W	NZ	24	4	4	None	None	None	None
Beetles.....	66 54	151 50	KE	24	4	4	"	"	"	"
Big Delta.....	64 00	145 44	JQ	24	4	4	"	"	"	"
Farewell.....	62 32	154 03	LU	24	4	4	"	"	"	"
Fort Yukon.....	66 35	145 18	FD	14	4	3	"	"	"	"
Gulkana.....	62 09	145 28	XV	24	4	4	"	"	"	"
Gustavus.....	58 25	135 42	NE	24	4	4	"	"	"	"
Haines.....	59 13	135 26	VN	24	4	4	"	"	"	"
Homer.....	59 38	151 31	RM	24	4	4	"	"	"	"
Iliamna.....	59 44	154 57	JP	24	4	4	"	"	"	"
Kenai.....	60 33	151 16	JS	24	4	4	"	"	"	"
Lake Minchumina.....	63 53	152 17	IQ	24	4	4	"	"	"	"
Middleton Island.....	59 28	146 19	IJ	24	4	4	"	"	"	"
Moses Point.....	64 43	162 05	HG	24	4	4	"	"	"	"
Nenana.....	64 33	149 06	NG	24	4	4	"	"	"	"
North Dutch Islands.....	60 46	147 49	DO	11	4	1	"	"	"	"
Petersburg.....	56 49	132 57	UJ	24	4	4	"	"	"	"
Port Heiden.....	56 57	158 39	ZG	16	3	2	"	"	"	"
Sheep Mountain.....	61 48	147 41	SG	24	4	4	"	"	"	"
Sitka.....	57 03	135 21	SK	24	4	4	"	"	"	"
Shungnak.....	66 54	157 02	NL	14	4	3	"	"	"	"
Skwentna.....	61 57	151 13	RJ	24	4	4	"	"	"	"
Summit.....	63 20	149 09	JD	24	4	4	"	"	"	"
Talkeetna.....	62 19	150 06	AO	24	4	4	"	"	"	"
Tanacross.....	63 23	143 19	TW	24	4	4	"	"	"	"
Tenana.....	65 10	152 06	KZ	24	4	4	"	"	"	"
Unalakleet.....	63 54	160 47	UW	24	4	4	"	"	"	"
Yakataga.....	60 02	142 28	ZZ	24	4	4	"	"	"	"

FIG. 6—SECOND ORDER WEATHER BUREAU STATIONS (USCG)

STATION	LAT.	LONG.	DESIGNATOR	OBSERVATIONAL PROGRAM						
				HOURLY	ADDITIVE DATA		SYNOPTICS	PIBALS	RADIOSONDE	RAWINSONDE
					6-Hourly	3-Hourly	6-Hourly			
Cape Decision.....	56° 00'N	134° 08'W	HCD	4	None		4	None	None	None
Cape Hinchinbrook.....	60 14	146 39	HAQ	4	"		..	"	"	"
Cape Spencer.....	58 12	136 38	HRB	4	"		4	"	"	"
Cape St. Elias.....	59 48	144 36	HEA	4	"		4	"	"	"
Eldred Rock.....	58 58	135 13	HEL	4	"		..	"	"	"
Five Finger Light.....	57 16	133 37	HFP	4	"		..	"	"	"
Guard Island.....	55 27	131 53	HGI	4	"		..	"	"	"
Lincoln Rock.....	56 04	132 42	HLR	4	"		..	"	"	"
Point Retreat.....	58 25	134 57	GVD	4	"		..	"	"	"
Tree Point.....	54 48	130 56	HFT	4	"		..	"	"	"

FIG. 7—ARMED FORCES WEATHER STATIONS

STATION	LAT.	LONG.	DESIGNATOR	OBSERVATIONAL PROGRAM						
				HOURLY	ADDITIVE DATA		SYNOPTICS	PIBALS	RADIOSONDE	RAWINSONDE
					6-Hourly	3-Hourly	6-Hourly			
Adak (Army-Navy).....	51° 53'N	176° 38'W	NCI	24	4	4	4	2	..	2
Amchitka (Army).....	51 24	179 16 E	CH	24	4	4	4	2	..	2
Attu (Navy).....	52 53	172 31 E	GCW	24	4	4	4	4	..	..
Fort Glenn (Army).....	53 23	167 54 W	RS	24	4	4	4	2	..	2
Fort Randall (Army).....	55 12	162 43 W	DI	24	4	4	4	2	..	2
Kodiak (Navy).....	57 45	152 31 W	NHB	24	4	4	4	4	2	..
Naknek (Army).....	58 41	156 40 W	KD	24	4	4	4	4	..	..
Shemya (Army).....	52 43	174 06 E	PF	24	4	4	4	2	..	2
Yakutat (Army).....	59 31	139 40 W	UVY	24	4	4	4	2	..	2

and twice daily marine and general weather forecasts. General weather forecasts are broadcast for public use over commercial radio facilities. Marine forecasts issued for the Seward Peninsula section are disseminated in that area. Storm warnings are issued as required and broadcast for public information. Fire weather forecasts are issued seasonally.

The Nome station functions in part as a minor forecast centre serving aviation activities and general public service requirements in the Seward Peninsula section.

Facilities at Airports

Under prewar conditions, meteorological reporting activities were seriously hampered by inadequate communication facilities, but under wartime demands these shortcomings were eliminated along the main lines of transportation where airports of sufficient size for multimotored aircraft were constructed.

Major airports from which originate meteorological data are located along the coastal route bordering the Gulf of Alaska. Surface meteorological observations are available at such stations 24 hours a day, pilot balloon soundings 2 or 4 times daily, and, at widely separated points, radiosonde or rawinsonde upper air soundings twice daily. Similar developments occurred along the routes from Anchorage to Fairbanks to Barrow, from Nome to Fairbanks to Northway and Whitehorse, and from Bethel to McGrath to Fairbanks.

In the early days of the war, first order Weather Bureau stations were established at Barrow, Kotzebue, Gambell, Bethel, McGrath, Northway, Summit, and Ketchikan. Programs consisting of surface airway weather observations, synoptic (6-hourly) reports, pilot balloon and radiosonde observations at those named stations were developed to their present level of operations, bringing the distribution of meteorological reporting stations to a level consistent with service demands.

BIBLIOGRAPHY AND ROSTER PROJECT

The Arctic Institute is compiling a comprehensive bibliography of arctic literature, set up as a three year project involving a staff of six workers under the direction of Marie Tremaine, formerly Associate Head of the Reference Section of the Toronto Public Library. Present headquarters of the project are at the Library of Congress, Washington, D.C.

The Institute is also engaged in preparing a roster of arctic specialists. This project is under the direction of Dudley Smith with headquarters at the Carnegie Institute, Washington, D.C. The cost of the two projects is being borne by the U.S. Office of Naval Research, U.S. Army and the Canadian government.