

INTRODUCTION

(Revised October 1946)

The series of Northern Hemisphere Historical Weather Maps from October 1945 to December 1948 has been produced by the Air Weather Service.

Each volume of the series contains a sea-level map and an upper-air constant-pressure surface (500-millibar) map for each day of the month and a tabulation of the synoptic reports available for each of the maps.

SEA-LEVEL MAPS

DATA

The sea-level maps in this series were prepared from data observed at or near 1230 GMT in order to utilize the maximum amount of synoptic data available and to maintain continuity with the 40-year series of Northern Hemisphere Weather Maps already completed. However, within the U.S.S.R. where 1230 GMT reports were not available, 1300 Mean Solar Time Reports were normally utilized for the area west of 100° E and 1900 Mean Solar Time reports were used for the area east of 100° E.

Data from every available source were utilized. The coded reports transmitted via radio and teletype constituted the basic source of data. For areas for which this source provided an inadequate density of data, other sources such as the Indian Daily Weather Reports, manuscript weather maps of the Air Weather Service Centrals, and various series of published weather maps, were utilized.

Where applicable, the International Plotting Code models were used. Station models for land, ship, and aircraft reports have been printed on each map, and a description of the symbols used in the models has been included in the preface to the tabulated reports. The barometric pressures of those stations transmitting station pressures or pressures reduced to a datum plane other than sea level have been plotted as received, without reduction to sea level.

ANALYSIS

In the analysis of the Northern Hemisphere sea-level synoptic maps, frontal systems with well established histories were retained until the data revealed that frontolysis had taken place. Every effort has been made to indicate all frontal systems characterized by a reasonable day-to-day continuity. Frontal systems of short duration could not be indicated because of the small scale of the maps. It was physically impracticable to indicate in detail on maps presented at 24-hour intervals the rapid transformations of pressure and frontal systems which may have taken place in the interval between maps.

Extensive use was made of the published analyses of the National Meteorological Services of other countries and the analyses for interme-

mediate synoptic hours as well as those for 1230 GMT prepared by the Air Weather Service Weather Centrals.

The analyses in tropical regions are necessarily incomplete. In areas of inadequate data the Intertropical Convergence Zone has been indicated in the mean position for that time of year.

Beginning with the March 1947 volume, time-space sections were constructed from hourly observations to aid in locating easterly waves and the Intertropical Convergence Zone and in maintaining continuity.

500-MILLIBAR MAPS

The maps of the 500-millibar surface have been included in this series for their value in portraying the upper-air patterns associated with the sea-level systems.

DATA

The 500-millibar maps in this series were prepared from data observed at or near 0300 GMT in order to utilize the maximum amount of synoptic data available.

Data for North America and Europe were considered to be adequate and for the Atlantic Ocean fairly adequate. Because in India normally only 1300 GMT radiosonde observations were available, data from these observations have been plotted. Because of the paucity of data over the oceans, Africa and Asia, the height of the 500-millibar surface at selected points was extrapolated from sea-level data considering the reported weather, clouds, upper-level temperature, and the circulation pattern.

ANALYSIS

The major circulation systems and those minor perturbations which could be identified on successive maps have been indicated in the analysis. Particularly in areas of sparse data considerable reliance was placed on the continuity of the contour and isotherm patterns in space and time.

The initial trough line west of 0° on the first day of each month was identified by the letter "A" at the bottom of the line. Proceeding westward, trough lines were labelled with successive letters. Trough lines on the first day of each month were identified with those on the last day of the preceding month by a letter at the top of each line. When a new trough developed from one already established, the prime symbol ("'") was used with the identifying letter of the original trough. Surface and upper-air analyses have been closely coordinated in order to insure that the final analysis would be the best possible in view of the limited data and would be completely consistent with the surface analysis.

KEY TO CHART SYMBOLS Sea-Level Map

	COLD FRONT
	WARM FRONT
	OCCLUDED FRONT
	STATIONARY FRONT
	COLD FRONTOGENESIS
	WARM FRONTOGENESIS
	STATIONARY FRONTOGENESIS
	COLD FRONTOLYSIS
	WARM FRONTOLYSIS
	OCCLUDED FRONTOLYSIS
	STATIONARY FRONTOLYSIS
	COLD FRONT ALOFT
	WARM FRONT ALOFT
	OCCLUDED FRONT ALOFT
	INTERTROPICAL CONVERGENCE ZONE
	EASTERLY WAVE, POLAR TROUGH, AND UNDIFFERENTIATED TROUGHS
	SHEAR LINE
	SOCIAL LINE
500-Millibar Map	
	CURRENT TROUGH
	TROUGH POSITION 24 HOURS AGO
	TROUGH POSITION 48 HOURS AGO