CENTRAL REGION TECHNICAL ATTACHMENT 91-18

THE UTILITY OF THE TWEB ROUTE FORECASTS

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1. Introduction

The National Weather Service provides a variety of forecast products for the aviation industry. Three of the foundation products are the terminal forecasts (FT), the area forecast (FA), and the transcribed weather broadcast route forecast (TWEB). Every flight weather briefing contains information found in these products.

Together these three forecasts present an overall picture of flight weather.

Terminal forecast...provides a 24-hour forecast of weather within a radius of 5 nautical miles of the center of the runway complex.

Area forecast...highlights flight hazards expected over the entire country for the next 12 hours. They are designed as a broad-brush product describing turbulence, icing, weather and ceilings that effect flight safety.

TWEB Route forecast...provides a 15-hour forecast of weather and ceilings over designated flight routes across the nation.

Each forecast has a designed purpose and unique guidelines and restrictions to meet that particular need. Forecasters need to understand how each forecast addresses the flight environment.

Of all the forecasts available to the aviation industry, route forecasts are one of the most difficult to provide. It takes time and effort to assimilate data from multiple sources and formulate a concise and easily understood route forecast. Many routes have few observation sites and forces the forecaster to use experience, expertise, and judgement as a substitute for adequate data.

2. The Present Utility Of Route Forecasts

Each National Weather Service Forecast Office provides the Federal Aviation Administration with a 15-hour forecast of clouds and weather along specified routes. The FAA Flight Service Specialist combines the NWS TWEB route forecasts with other information to create a product called a

Transcribed Weather Broadcast (TWEB, not to be confused with the NWS TWEB route forecast) (Fig. 1). In many areas of the country all or part of this TWEB is broadcast to pilots. Pilots may also use a phone to access the route forecasts or ask an FSS briefer to provide the forecast.

Although most pilots never see TWEB route forecasts, the FAA has used it for years in pre-flight briefings. It is one of only two products that provides weather forecast information at non-airport sites.

The Transcribed Weather Broadcast routes (Fig. 2) provide an extensive nationwide network of flight paths 50 nautical miles wide. The area coverage of these routes is extensive. In Nebraska nearly the entire state is covered (Fig. 3). The local and vicinity TWEB route forecast has a radius of 50 nautical miles around a center point and is designed to incorporate a number of metropolitan airports.

The reorganization of the Flight Service Stations into larger automated centers has created new products and services. One new product, the Telephone Information Briefing System (TIBS), provides a route briefing over many of the more heavily used flight routes in the FSS area of responsibility. The FSS specialist relies on the area forecast and TWEB route forecasts from the National Weather Service to create these recordings.

Automated pilot briefing services, available through private companies with the cooperation of the FAA, have developed rapidly over the past few years. Some states are even subsidizing these self-briefing systems and encouraging installation at airports where they are readily available to pilots. These services are continually seeking better ways to present weather information to the pilots, and are looking at TWEB route forecasts as an additional product.

3. Route Weather and the Future

An article written by Norman Schuyler in the October 1989 issue of Private Pilot magazine stated, "In the FA, the forecast weather is for large segments of states, and it often is difficult for the briefer to ascertain just what the weather will be over a particular route. Pilots fly routes and not areas, and this was the principal reason that the TWEB was developed." He further states, "The route concept was instantly popular with pilots and weather briefers."

New technology will increase the demands for route weather forecasts. Automated observation systems at many airports provide weather information for a point only...no area weather determination nor remarks on aviation observations will exist. Aviation products that provide weather information away from the airport should become more vital. Pilots and Flight Service Specialists will not have all the alternate data sources as readily available as the NWS forecaster, and thus will rely more heavily on our forecasts.

4. Summary

Although TWEB route forecasts are not always used in their pure form, TWEB route forecasts are an indispensable and vital ingredient of the present pilot weather product stream. Constant evaluations of the utility of pilot weather briefing forecast products are necessary as new technology impacts the meteorological and aviation community. Random comments thus far from the aviation community indicate a continued requirement into the future for quality TWEB route forecasts.

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TWEB RTE 103 JAX-ATL

SYNOPSIS...MODERATE COLD FRONT APPROACHING NORTH GEORGIA WITH WIDESPREAD
AREAS OF RAIN AND STRONG GUSTY SURFACE WINDS.

FLIGHT PRECAUTIONS...FREQUENT MODERATE TURBULENCE BELOW 12 THSD FT AND
POSSIBLE LOW LEVEL WIND SHEAR IN STRONG SURFACE WINDS FOLLOWING FRONT.

ROUTE FORECAST...SCATTERED TO BROKEN CU AT 2 TO 3 THSD FT WITH
VISIBILITIES BETTER THAN 7 MILES. NORTHERN HALF OF ROUTE BECOMING OVERCA
AT 1 TO 2 THSD FT AND VISIBILITIES 2 TO 4 MILES IN RAIN AND FOG AFTER
18Z. SURFACE WINDS NORTHERN HALF OF RTE SOUTH TO SOUTHWEST 15 TO 30 KTS
WITH LOCALLY STRONGER GUSTS. CLOUD LAYERS THRU 18 THSD FT.

THE OUTLOOK IS FOR THE FRONT TO CONTINUE SOUTHEAST AT 20 KTS AND
MOVE THRU JACKSONVILLE BY TUES MORNING.

WINDS ALOFT...3 THSD  210/22+04
              6 THSD  220/28-01
              9 THSD  240/36-07
             12 THSD  240/52-14

RADAR REPORTS...ATL RADAR REPORTING SCATTERED THUNDERSHOWERS WITH TOPS
TO 32 THSD FT 320 DEG 32 MILES AND 360 DEG 38 MILES FROM RADAR SITE.
CELLS MOVG SE 15 KTS.

SURFACE OBSERVATIONS AT 1600Z UNLESS OTHERWISE STATED...

  JAX E30 BKN 8  67/59/2113/992
  AMG 15 SCT M26 OVC 7  62/57/2114G27/990
  SSI 16 SCT M28 BKN 10 69/62/2412/990
  MCN 12 SCT M19 OVC 7RW- 59/56/2219G28/987
  AHN E14 BKN 29 OVC 5HK 60/55/2316/985
  ATL 10 SCT M16 OVC 3RW- 57/55/2218G30/983

PILOT REPORTS...10N MCN BE55 REPORTS TOPS 13 THSD FT WITH LIGHT ICGIC
    ABV 8 THSD. OCNL MDT TURBC.
              18 SE FTY DA20 REPORTS LAYERS THRU 16 THSD FT. LGT TO
    MDT TURBC ON CLIMB TO 27 THSD.

NOTAMS...SSI VOR OTS TIL 071800
         MCN ILS VOR OTS
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Fig. 1 (Reproduced by permission from PRIVATE PILOT)

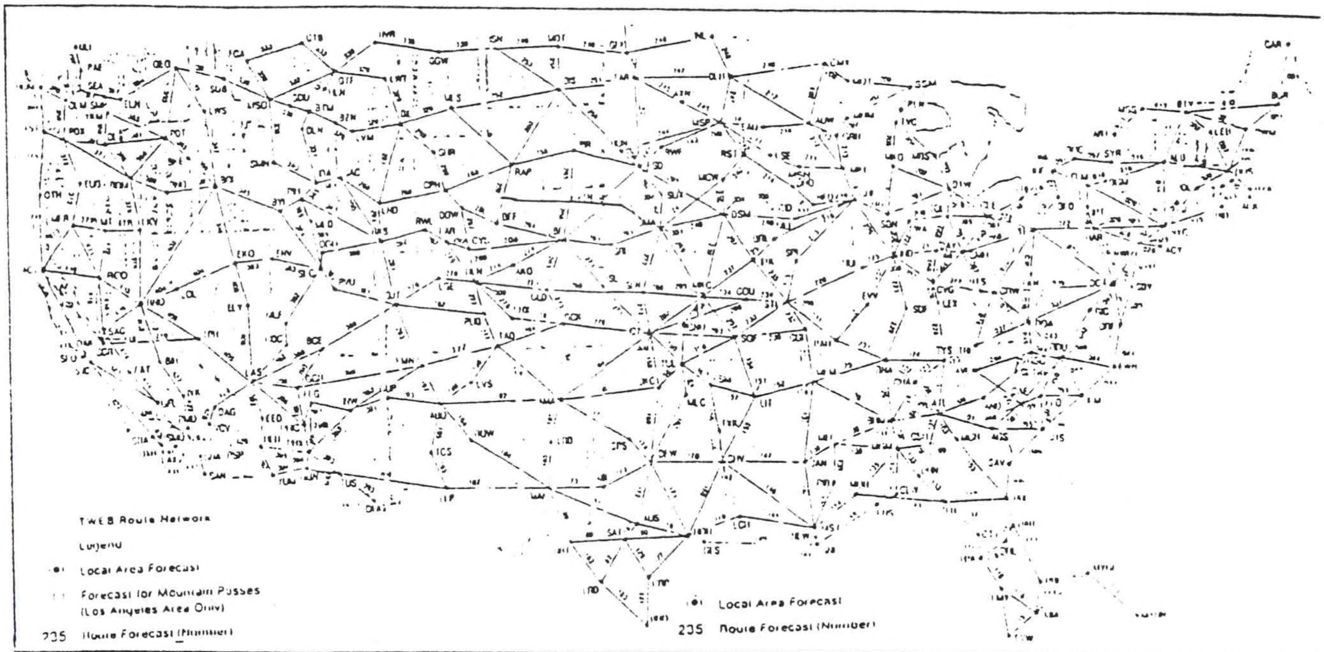
TWEB Route Network
Legend
Local Area Forecast
Forecast for Mountain Passes
(Los Angeles Area Only)
235 Route Forecast (Number)
Local Area Forecast
235 Route Forecast (Number)

Fig. 2

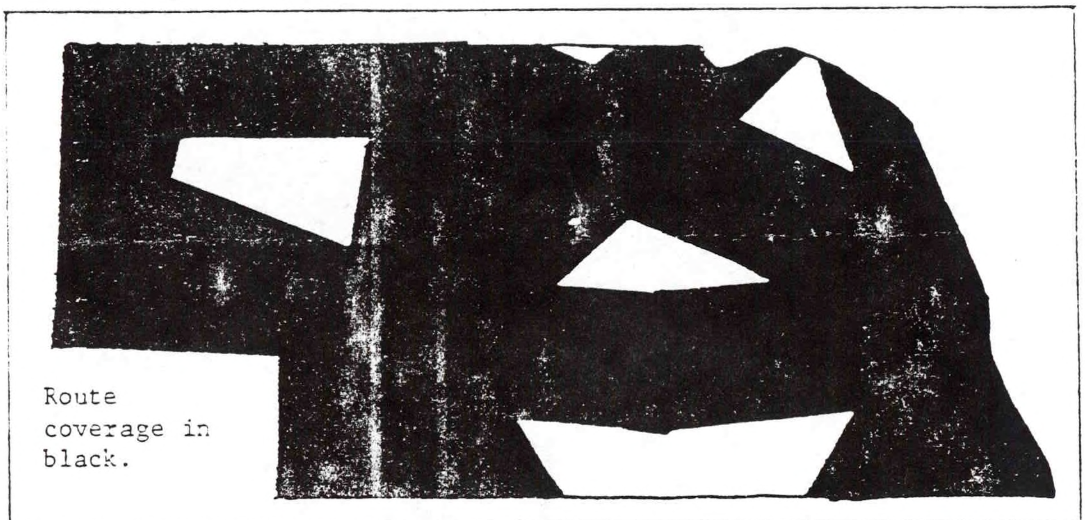
Route
coverage in
black.

Fig. 3