

# Tactical Convective Hazard Product (TCHP) Product Description Document (PDD)

## Part I - Mission Connection

**Product Description** - The TCHP provides a graphical presentation of thunderstorm hazards to aviation operations. It depicts current hazardous thunderstorms and a one-hour forecast of hazardous thunderstorm locations. The TCHP updates automatically every 5 minutes. The product is created from radar and lightning data as well as human-generated Convective SIGMET in-flight advisories (SIGMETs updated hourly).

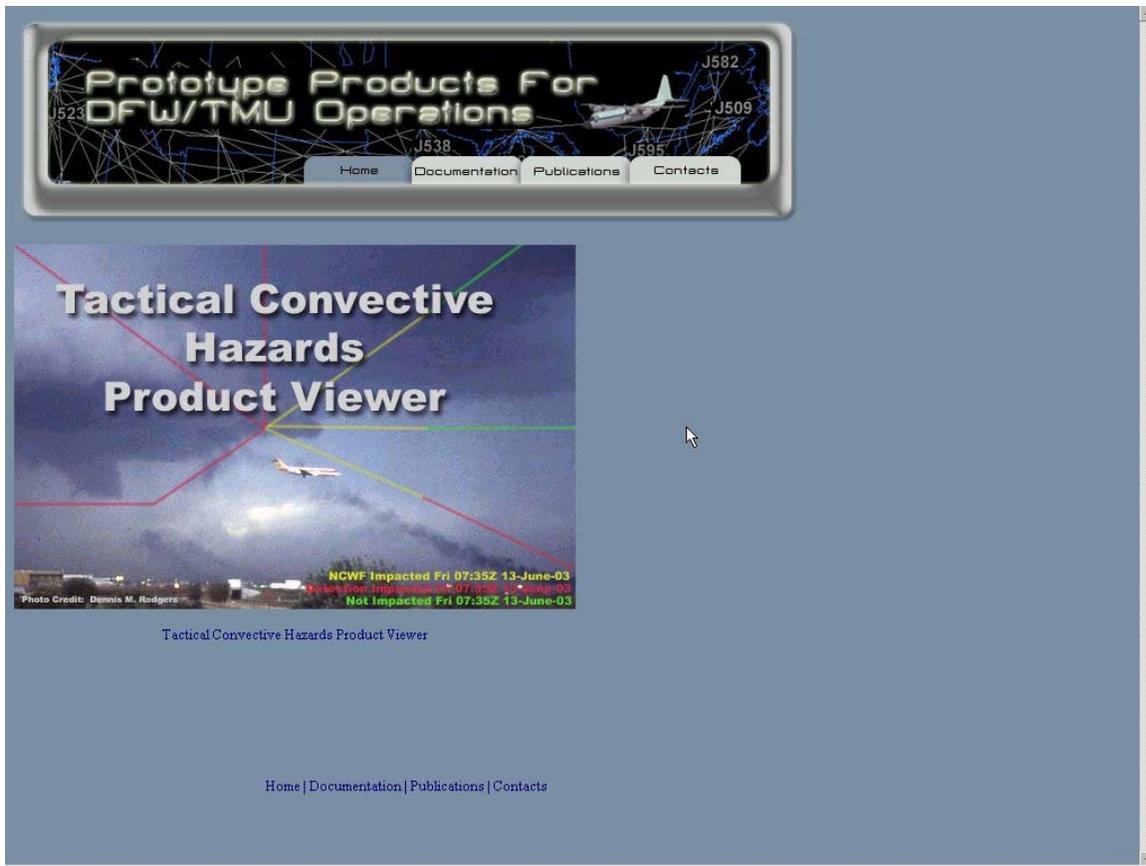
**Purpose** – The TCHP is designed to consolidate all tactical thunderstorm information into a single graphical product. The TCHP is designed to support the tactical decisions made by an Air Route Traffic Control Center (ARTCC) and specifically decisions by the ARTCC's Traffic Management Unit (TMU). The FAA outlined the need for a tactical decision aid in the following referenced documents:

*Decision-Based Weather Needs for the Air Route Traffic Control Center (ARTCC) TMU* (FAA, Air Traffic System Requirements ARS-100, November 1999, 21 pp). This report documents the results of an in-depth user needs analysis of weather information used in tactical air traffic decision making.

*Weather Forecast Requirements in Support of the En Route Traffic Management Unit; Convection Products, Version 1.0* (FAA ARS-100, July 2002, 25 pp). This document sets forth requirements (Master, Supporting, and Interim) for tactical convective forecasts for FAA Traffic Managers. TCHP is an initial step towards addressing unmet or newly identified weather information requirements of the Traffic Management Unit.

**Audience** - The target audience for the TCHP is the TMU at an ARTCC. TMU decision makers manage the flow of en-route air traffic. They need the most reliable near real time forecast information to make critical decisions.

**Presentation Format** – The TCHP is available for viewing on a password-protected web site accessible via the Internet (Fig.1). This approach is cost effective and poses no impact to Fort Worth ARTCC operational systems. Links are available on the home page to documentation, publications, and a project contact list. In the center of the home page, a link invokes the Tactical Convective Hazards Product Viewer (Fig. 2). The TCHP Viewer initializes with a default display on the ARTCC scale, including State, ARTCC, and TRACON boundaries, VOR identifiers, and sets of selectors for CONUS, Houston Center, or TRACON displays, as well as a selection of data and map overlays, and a selector for an animated view.



**Figure 1. TMU Project home page.**

Components of TCHP may be displayed in any combination. The default display includes Hazard Detection, Tops & Movement, and NCWF 1-hr Fcst (Fig. 2). The three C-SIGMET products on the TCHP selector menu (Fig. 3) are graphics derived from the conventional text Convective SIGMET. The C-SIGMET Nowcast graphic is the area polygon, line, or point as issued in the text SIGMET. The C-SIGMET 1-h Forecast, unique to this project, is a graphic produced on the NCWF 5-min cycle, depicting the extrapolated position of the C-SIGMET polygon one hour from the current clock time, time-matched to the current NCWF 1-h forecast. In other words, the C-SIGMET 1-h Forecast positions are valid at one hour after issue time and updated every five minutes to be valid up to one hour 55 minutes after issue time. The latest C-SIGMET 1-h Forecast is valid at the same time as the latest NCWF 1-h forecast. The extrapolated position of the C-SIGMET 1-h Forecast is based on the thunderstorm area movement given in the operational Convective SIGMET text. The C-SIGMET Text graphic overlay contains the forecast portion of the original text message.

The Impacted Jet Route graphic (Fig. 3) is a proof-of-concept exercise involving a modest investment of developer time to produce a simple, "quick-look" graphic indicating thunderstorm-impacted jet routes. In this simplified presentation of the TCHP information, current and forecast impact to specific jet routes can be determined at a glance. A subset of high-use jet routes are depicted in one of three colors: Green jet route segments indicate no direct impact from NCWF Detection or Forecast thunderstorms; Red jet route segments indicate impact from NCWF Detection level 3 or greater touching the jet route segment; Yellow jet route segments indicate a NCWF

Forecast polygon touching the jet route. This experimental display was included with the TCHP for TM user comments.

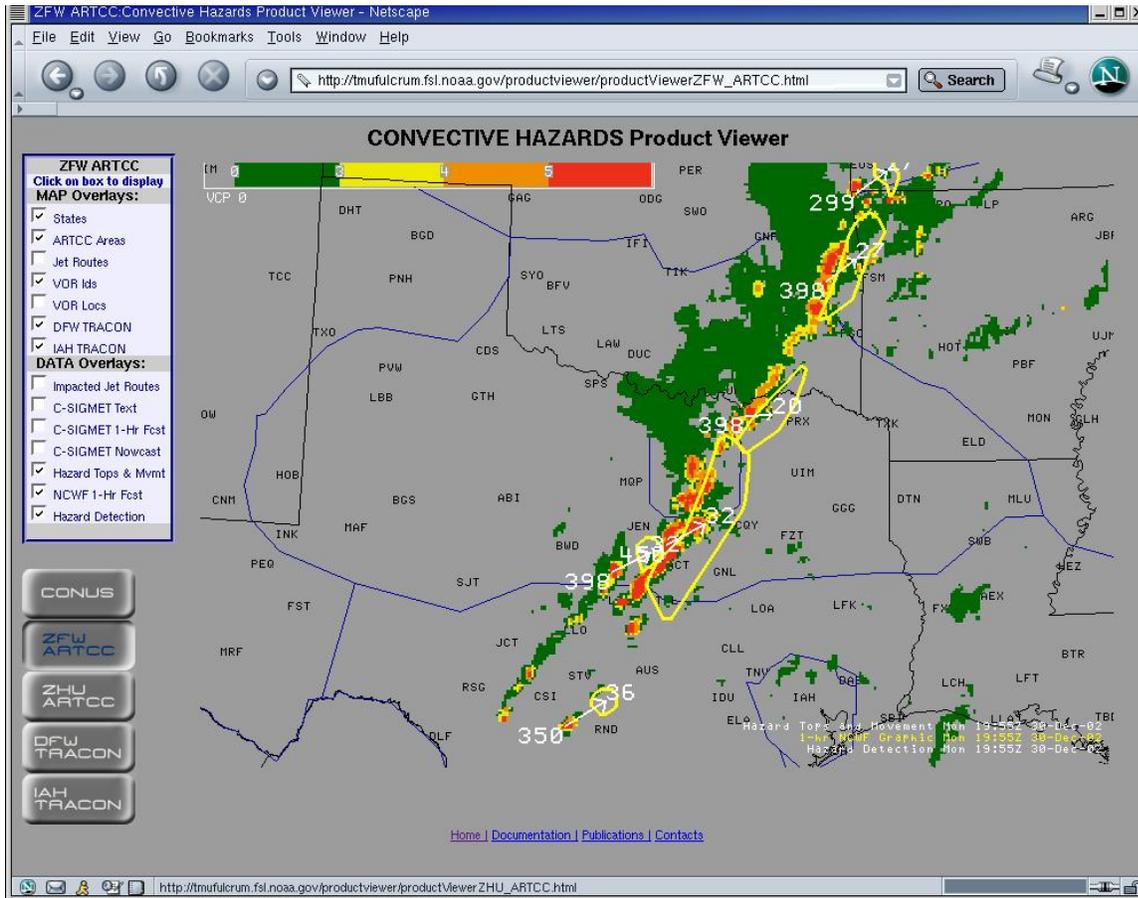


Figure 2. TCHP Viewer, default display condition.

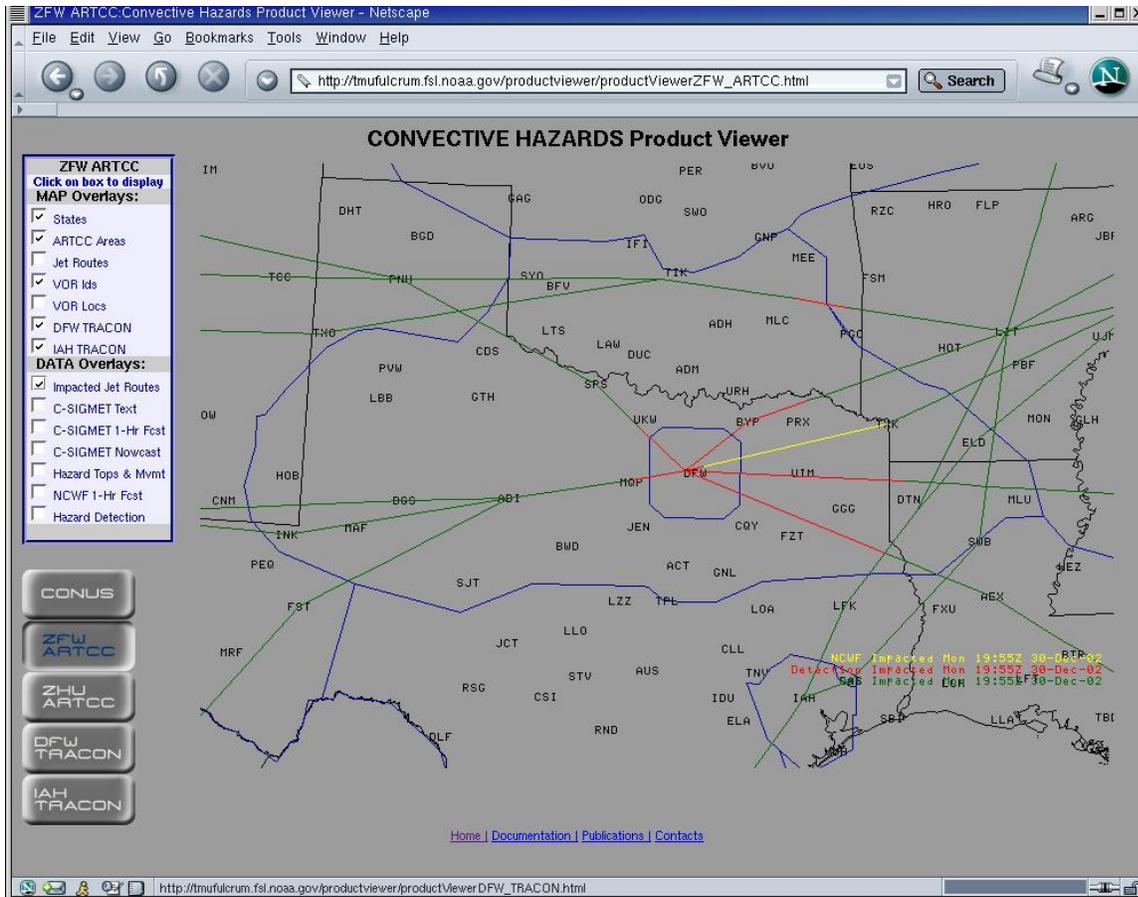


Figure 3. Impacted Jet Route display.

**Feedback Method** – Feedback is gathered from interviews with Fort Worth ARTCC TMU personnel. Feedback suggestions have been incorporated into periodic improvements to the TCHP. Your TCHP feedback is also important. Comments may be addressed to:

Center Weather Service Unit  
 Attn: Tom Amis  
 Air Route Traffic Control Center  
 13800 FAA Road  
 Fort Worth, TX 76155

Email comments to: [Thomas.Amis@noaa.gov](mailto:Thomas.Amis@noaa.gov)

## **Part II - Technical Description**

**a. Format & Science Basis** - The TCHP is composed of observed and forecast information displayed in HTML format via a password protected web site. Software engineering requirements involve decoding and creating AWIPS-depictable graphics for the following TCHP components:

NCWF Detection Field  
NCWF 1-hr Forecast  
Hazard Tops and Movement  
C-SIGMET Nowcast  
C-SIGMET 1-hr Forecast  
C-SIGMET Text  
Impacted Jet Route Display

**b. Product Availability** - The TCHP refreshes every 5 minutes and is available at a password protected web site.

**c. Additional Information** - The report: *Assessing the Utility of an Automated 0-1h Tactical Convective Hazard Product to FAA Air Traffic Managers* is available upon request to:

National Weather Service, Southern Region Headquarters  
Attn: Paul Witsaman, Regional Aviation Meteorologist  
Room 10A03  
819 Taylor Street  
Fort Worth, TX 76102

You may email your request to: [Paul.Witsaman@noaa.gov](mailto:Paul.Witsaman@noaa.gov)