

## **Collaborative Convective Forecast Product Product Description Document**

### **Part I - Mission Connection**

- a. Product Description - The Collaborative Convective Forecast Product (CCFP) is a graphical representation of expected convective occurrence at 2-, 4-, and 6-hours after issuance time. Convection for the purposes of the CCFP forecast is defined as a polygon of at least 3000 square miles that contains:

- A coverage of at least 25% with echoes of at least 40 dBZ composite reflectivity, and
- A coverage of at least 25% with echo tops of FL250, or greater, and
- A confidence of at least 25%.

All three of these threshold criteria combined are required for any area of convection of 3000 square miles or greater to be included in a CCFP forecast. This is defined as the minimum CCFP criteria. Any area of convection which is forecasted NOT to meet all three of these criteria will NOT be included in a CCFP forecast.

- b. Purpose - The purpose of the CCFP is to aid in the reduction of air traffic delays, reroutes, and cancellations influenced by significant convective events.

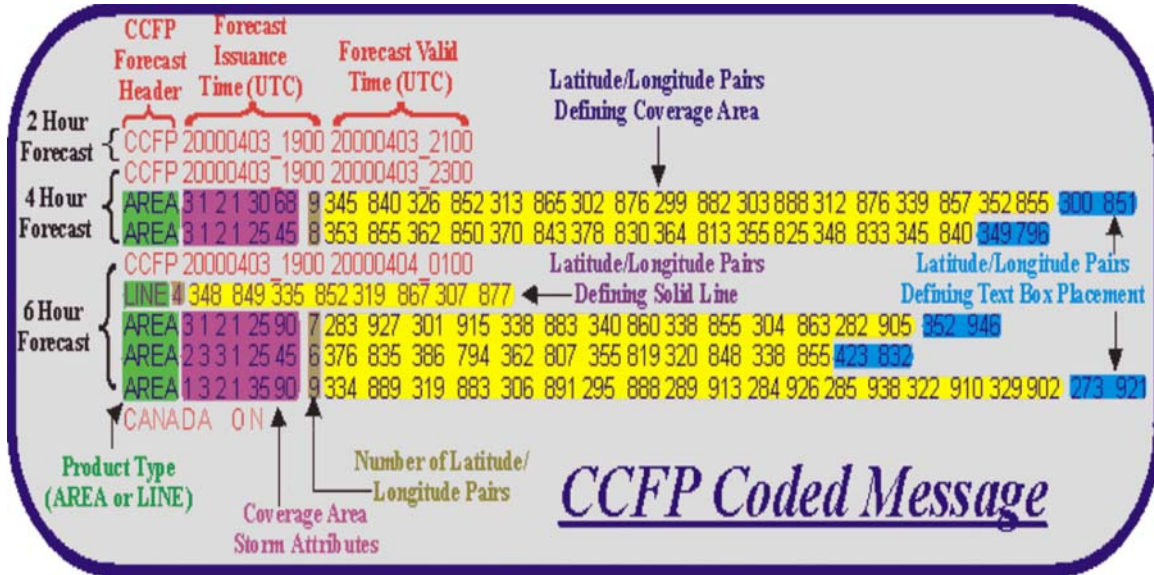
From a User's perspective the CCFP is designed to be used for strategic planning of air traffic flow management during the en route phase of flight. It is not intended to be used for traffic flow control in the airport terminal environment, nor for tactical traffic flow decisions.

From a Producer's perspective, the CCFP itself is designed to address two major purposes:

- An accurate representation of the convection of most significance for strategic decisions of air traffic flow management, and
- A common forecast baseline, as consistent as possible, shared among all meteorological organizations responsible for providing forecasts of convection to the air traffic managers within the FAA and/or within commercial aviation organizations.

- c. Audience - The primary users of CCFP are air traffic management which includes both FAA and industry elements. The CCFP is the primary convective weather forecast product for collaboratively developing a Strategic Plan of Operations (SPO). The SPO is finalized during the collaborative TELCONS hosted by the Strategic Planning Team and conducted approximately every 2 hours immediately after the issuance of the CCFP.

- d. Presentation Format - The CCFP is available via the National Weather Service Telecommunications Gateway circuit in an ASCII coded text format. An example of the CCFP ASCII coded text product is shown in the following graphic:



The format of the fields in the above graphic are described below.

### General Format

#### **CCFP ISSUED VALID**

**AREA COVERAGE CONF GROWTH TOPS SPEED DIRECTION VERT#  
 LAT[1] LON[1] .... LAT[VERT#] LON[VERT#] LATT LONT  
 LINE VERT# LAT[1] LON[1] .... LAT[VERT#] LON[VERT#]  
 CANADA\_FLAG**

### Forecast Header Format

<b>CCFP</b>	CCFP Forecast Header (UTC)	4 Characters
<b>ISSUED</b>	Forecast Issuance Time (UTC)	CCYYMMDD_hhmm
<b>VALID</b>	Forecast Valid Time (UTC)	CCYYMMDD_hhmm

### Coverage Area Format

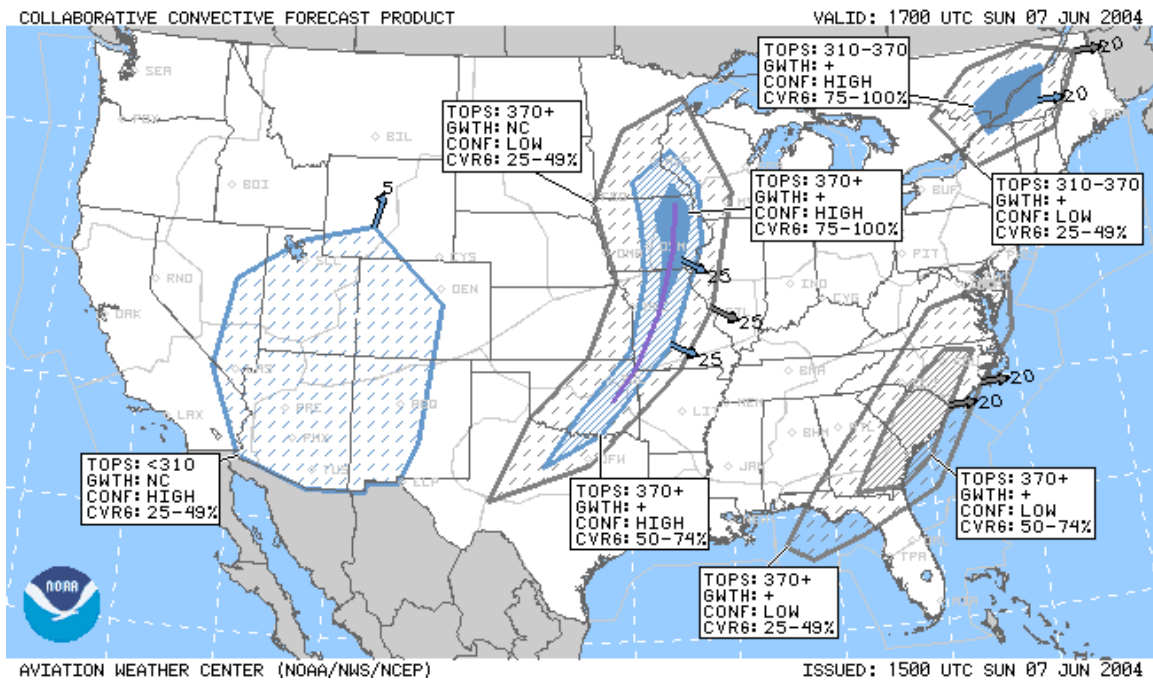
<b>AREA</b>	AREA Type Header	4 Characters
<b>COVERAGE</b>	Convective Coverage Code	
	High = 1	75-100%
	Medium = 2	50-74%
	Low = 3	25-49%

<b>CONF</b>	Confidence		
	High	= 1	50-100%
	Low	= 3	25-49%
<b>GROWTH</b>	Convective Growth Code		
	++	= 1	Fast Positive
	+	= 2	Positive
	NC	= 3	No Change
	-	= 4	Negative
<b>TOPS</b>	Storm Height Code		
	High	= 1	> 37,000 Feet
	Medium	= 2	31,000 - 37000 Feet
	Low	= 3	25,000 - 31,000 Feet
<b>SPEED</b>	Speed		Knots
<b>DIRECTION</b>	Direction Towards		Degrees
<b>VERT#</b>	Number of LAT / LON Pairs	Integer	
<b>LAT[x] LON[x]</b>	Vertical Latitude and Longitude Coverage Polygon		
	Latitude = LAT * 10.0 degrees		
	Longitude = LON * -1 * 10.0 degrees		
<b>LATT LONT</b>	Longitude and Latitude of Left Center of Box		
	Latitude = LATT * 10.0 degrees		
	Longitude = LONT * -1 * 10.0 degrees		
	<u>Solid Line Format</u>		
<b>LINE</b>	Line Type Header		Integer
<b>VERT#</b>	Number of Lat / Lon Pairs		Integer
<b>LAT[x] LON[x]</b>	Vertex Latitude and Longitude of Solid Line Of Convection		
	Latitude = LAT * 10.0 degrees		
	Longitude = LON * -1 * 10.0 degrees		

**CANADA\_FLAG \* CANADA OFF  
CANADA ON**

\* Indicates Canada's participation in production of the CCFP product.

The CCFP is also made available on the Aviation Weather Center (AWC) web site as an image.



- e. Feedback Method - Feedback is built into the development process for this product. A 30-minute interactive chat room session is conducted prior to the issuance of each forecast that allows both public and private sector meteorological expertise, and the Meteorological Service of Canada (MSC), to contribute to the final forecast. In addition, the Statement of User Needs for CCFP specifies several methods of feedback as part of the overall CCFP effort.

Technical and policy questions, and comments concerning the CCFP may be addressed to:

Aviation Weather Center  
Attn: Fred Johnson  
7220 N.W. 101 Terrace  
Kansas City, Missouri 64153-2371  
Fred.Johnson@noaa.gov

## Part II - Technical Description

- a. Format & Science Basis – The Collaborative Convective Forecast Product contains forecasts of either areas or lines of convection. Areas are defined in terms of areal coverage, echo tops, growth rates, forecaster confidence, and area movement. Meteorologists at the AWC and MSC) combine mesoscale and synoptic scale analysis and model forecasts with personal experience to produce the CCFP.

Within each area of convection, coverage will be identified in one of three classes:

- Low            25 – 49%
- Medium       50 – 74%
- High           75 – 100%
  
- Lines of coverage are defined as
  - o The length of the line is 100 nm long, or greater;
  - o The width of the line is 20nm on either side;
  - o The coverage is 75%, or greater.

Within each area of convection, height of maximum echo tops (the height of 18 dBZ reflectivity) encompassing coverage greater than 25% will be identified in one of three ranges:

- FL250-FL310
- FL310-FL370
- above FL370

The appropriate range is defined when greater than 25% coverage of echo tops in the listed range is anticipated.

Within each area of convection, growth rates will be identified in one of four classes:

- Negative Growth
- No Change
- Moderate Positive Growth
- Fast Positive Growth

Within each area of convection, the speed of movement in knots and direction of movement of the entire area will be specified

For each area of convection, a subjective statement of confidence is required. This parameter is the forecaster's confidence that convective weather, as defined by the minimum CCFP criteria, will occur in the forecast polygon at the specified time and place. The confidence value will be specified as

- Low 25 – 49%
- High 50 – 100%

NOTE regarding confidence: the subjective opinion of the forecaster is stated in probabilistic terms (%) and is only addressed to the question of the existence of the forecast polygon that meets the minimum CCFP criteria --- regardless of any other properties of the forecast convection; i.e., for any configuration (lines and areas); for any growth rates; for any coverage; and for any category of growth/decay rate, speed/direction, or tops. The confidence is NOT a probability of occurrence.

- b. Product Availability - The AWC issues the CCFP eleven times a day, every two hours, from 08Z through 04Z during standard time, and from 07Z through 03Z during daylight time. No amendments are issued. Customers can receive a depiction of this product via the Internet at:  
[http://aviationweather.gov/products/ccfp/.](http://aviationweather.gov/products/ccfp/)

The CCFP is encoded as an ASCII coded text message and made available over the NOAAPort / Satellite Broadcast Network and on the National Weather Service Telecommunication Gateway (NWSTG) FTP sever at  
<ftp://tgftp.nws.noaa.gov/SL.us008001/DC.avsp/DS.cfpfa>.

Additional information on NWS aviation product dissemination is available at:  
<http://weather.gov/om/disemsys.shtml>

The WMO Headers and PIL Identification numbers for the CCFP ASCII Coded message are:

WMO Headings	PIL Id
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FAUS27 KKCI	CFP01
FAUS28 KKCI	CFP02
FAUS29 KKCI	CFP03

- c. Additional Information - The requirement for the Collaborative Convective Forecast Product is contained in National Weather Service Instruction 10-810, which is available via the Internet at <http://www.nws.noaa.gov/directives/010/pd01008010a.pdf>

Additional guidance on CCFP is available from the **Statement of User Needs, Collaborative Convective Forecast Product**. A copy of this document can be obtained from the AWC.