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THE BRIEF
Summer 2008

FAA - ARTCC
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Your readership and feedback continue to drive this newsletter to success. This issue begins the semi-annual publication cycle specifically addressing warm and cold season weather hazards. Supplemental issues will be published as needed. Again, thank you for your continual feedback and support.

Super Bowl XLII Event: January 29 - February 4, 2008
ZAB CWSU "GoToMeeting" Project Review

Matthew Lorentson, Meteorologist in Charge, CWSU Albuquerque, NM

In anticipation of dramatically increased air traffic within ZAB airspace before, during, and after Super Bowl XLII, the ZAB ARTCC Traffic Management Unit (TMU) organized a Super Bowl (SB) Workgroup in cooperation with the FAA Air Traffic Control Systems Command Center (ATCSCC) during summer of 2007. ZAB CWSU, as an extension of the ZAB TMU, was included in this workgroup. A CWSU climatology presentation of *Early February Weather in the Phoenix Area* was received well at the first SB Workgroup meeting held on July 17, 2007. By October 2007, the CWSU was making an ongoing effort to have IEM Chat software implemented for use between FAA and NWS facilities, in hopes of providing an ongoing weather discussion forum during the SB week. GoToMeeting (GTM) was proposed as a substitute for IEM chat by NWS Southern Region Headquarters and quickly approved by FAA IT managers at the regional and national level.

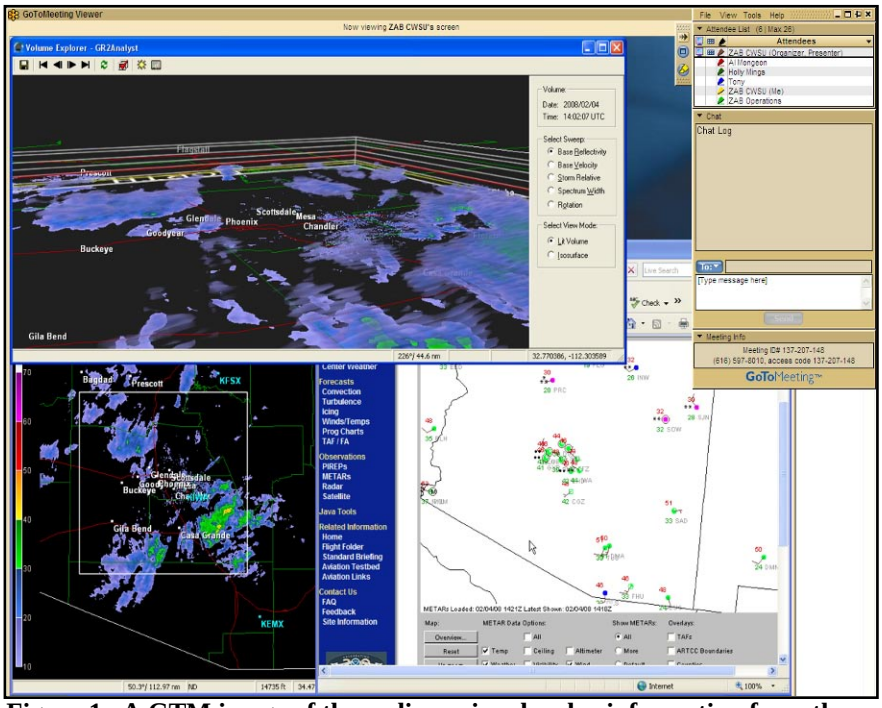


Figure 1. A GTM image of three-dimensional radar information from the morning of February 4th

Traffic in and out of ZAB air space increased considerably over the Super Bowl XLII weekend, particularly with regard to General Aviation activity. There was a 44% and 69% increase in General Aviation flights compared to the first Sunday and Monday of February 2007, respectively. Total IFR aircraft operations, including air carriers, increased 8% and 23% over

the correlating Sunday and Monday of last year. GTM was tested during normal work hours on February 1-2, then implemented operationally for 16 hours on Sunday February 3rd, from 9 AM – 1 AM, and then again for just over 10 hours on Monday, February 4th, from 4 AM – 2:15 PM. As a means of coordinating weather information between NWS offices, GTM proved very useful. As a means of briefing important, up-to-the-minute information to customers and partners, GTM showed considerable potential.

Enhancements and Synergies

- ✓ Enhanced situational awareness: GTM's *multiple presenter capability* allows any GTM participant to control the graphical presentation and display information from their PC to the work group. This flexibility permitted a high-level of ongoing situational awareness between NWS offices and customers. Example: WFO PSR presented locally-run WRF model information to the GTM workgroup—important information that was essentially unavailable to forecasters at CWSU ZAB. Forecasters interacted respectfully, with full exposure to customer participants, permitting a robust exchange and coordinated forecast message on frontal timing and impacts.
- ✓ Ease-of-use, intuitive interface: users who had no training whatsoever on the GTM software were able to log in and participate with little or no difficulty.
- ✓ Accessibility and availability: easily permitted multi-level, multi-organizational communication from home (several instances on Sunday) or work—our GTM participants included:
    - o FAA Systems Command Center (Tony Tisdale)
    - o NWS Homeland Security Contact Al Mongeon
    - o PHX US Airways Operations Manager Bill Murphy
    - o PHX ATCT Manager Roger Mandeville
    - o ZAB ARTCC Traffic Management Officer Andy Rankin
    - o Various operational personnel from ZAB Traffic Management Unit, ZAB CWSU, and the Weather Forecast Offices in Phoenix and Albuquerque
- ✓ Stability: the GTM software proved reliable, with only one disconnection and involuntary session shutdown during the testing period (probably due to temporary server fluctuations). Participants were briefed before the event on possibilities of disconnection, and that sessions would be restarted just as they were initiated, via an e-mail notice containing pertinent web site information. An e-mail list of participants was assiduously maintained for this possibility.
- ✓ Real-time responsiveness: GTM allowed forecasters to provide complex, real-time information to key customers and partners at a moment's notice.
- ✓ Powerful functionality: the utility of graphical software such as PowerPoint or three dimensional GR2 Analyst radar information is maximized by GTM. Instead of "instructed coordination" of imagery via e-mail and teleconference, the presenter is able to display and manipulate images and proprietary graphics directly. This is crucial functionality during unfolding weather scenarios and time-sensitive situations, where customers need high-level communication. GTM presenters and participants alike have the ability to use pen, highlighter, and chat tools to coordinate their thoughts and impressions on the screen. The message chat can be used to formally describe thoughts—which are then recorded in a permanent chat log.

Convective Weather Exercises

Andy Archut, Supervisor, Traffic Management Coordinator, Albuquerque, NM

ZAB Traffic Management Unit (TMU) teamed up with the Center Weather Service Unit (CWSU) to create convective weather exercises. The Northwest and Southwest specialties both contain very complex sectors. The complexities alone provide a full day's work; now imagine working these sectors with rainshowers, thunderstorms, active military operating areas (MOAs), and aircraft requesting course deviations. Sector complexities and stress levels increase as weather blocks an arrival fix and PHX TRACON begins issuing coded departure routes (CDRs).

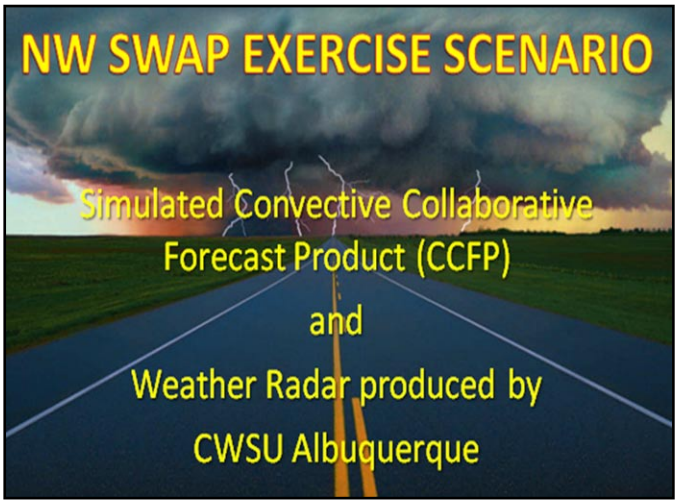


Figure 2. Cover for NW SWAP Exercise Scenario (NWS)

In preparation for the summer thunderstorm season ZAB TMU asked the CWSU to create weather products that would match the exercise timeline. Simulated Convective Collaborative Forecast Product (CCFP) outlooks and Weather Radar imagery were created providing a "real-time" look and feel for all exercise participants.

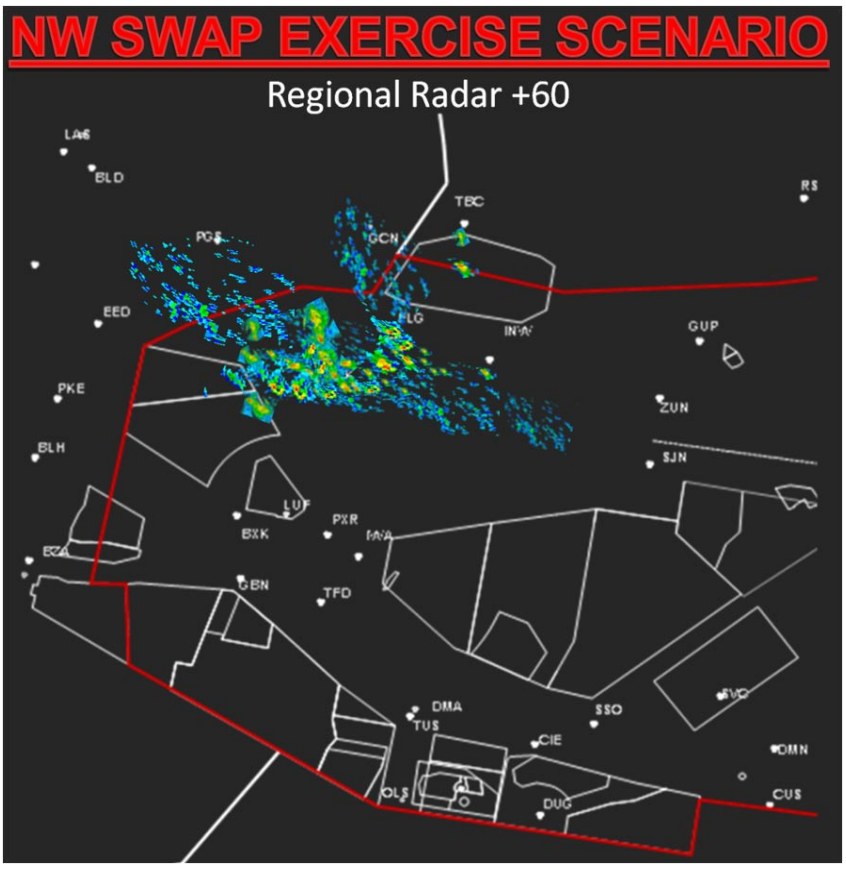


Figure 3. Simulated Regional Radar Image (NWS)

The exercises were created to mentally prepare all associated parties for PHX arrival and departure swaps, and to simulate real-time scenarios while enhancing the facility's responsiveness. Internal and external coordination was included to familiarize personnel with military and partner Air Traffic Facility timelines.

Plans to execute the exercises prior to this year's monsoon season were impeded by other factors throughout the National Airspace System (NAS). The exercises will be utilized in the spring of 2009 to prepare personnel for next year's monsoon period.

Weather Radar Gaps

Gregory S. Harris, Meteorologist, and Matthew Lorentson, Meteorologist in Charge, CWSU Albuquerque, NM

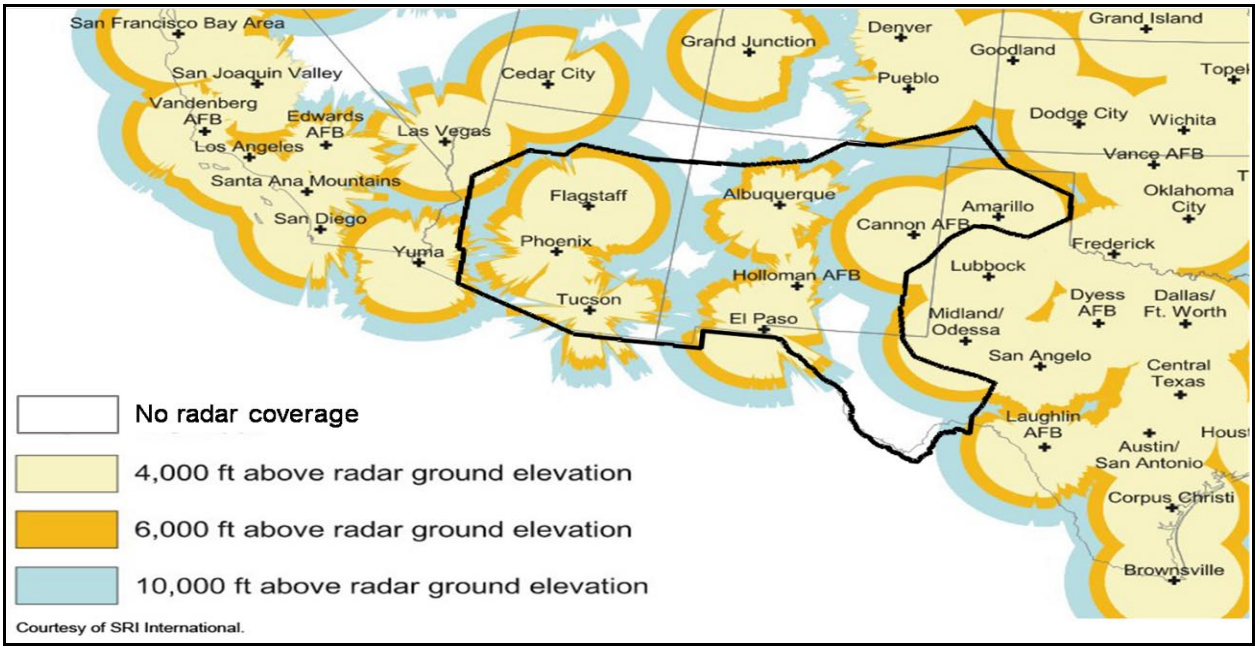


Figure 4. NWS Weather Radar Coverage Map for the Southwest US. Courtesy SRI International

During thunderstorm season it is important to know where the National Weather Service (NWS) Weather Radar has significant gaps in coverage, i.e. no weather radar echoes available on the Display System Replacement (DSR) for your sector. High terrain blocks the accurate depiction of thunderstorms in ZAB airspace. In some cases the lack of a weather radar antenna is to blame. Gaps in radar coverage necessitate greater reliance on pilot reports of convective activity. The areas of degraded coverage are shown above in **Figure 4**. Knowing these vulnerabilities is important. Ensuring PIREPs related to convection are received and distributed greatly enhances safety.

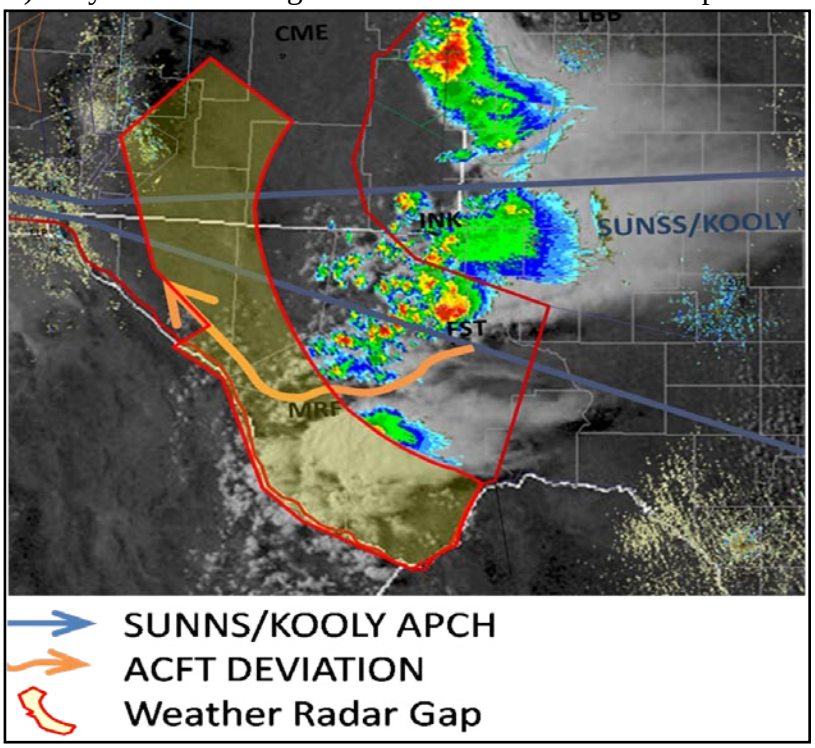
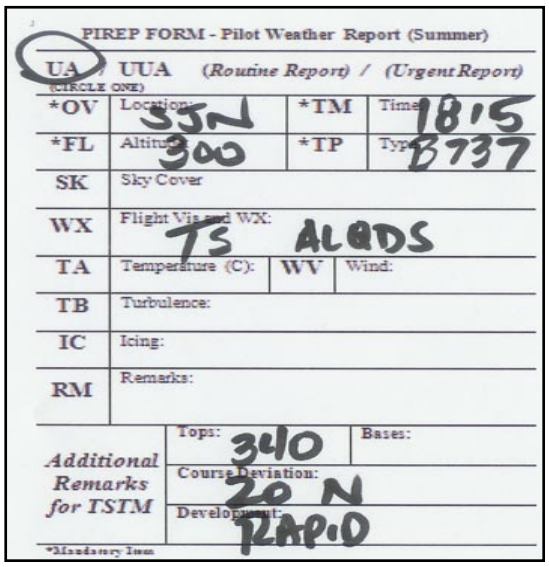


Figure 5. Example aircraft deviation with weather radar, visual satellite and radar gap indicated. NWS

Figure 5, shows scattered thunderstorms over Southwest Texas (SW TX) at 23UTC on the 25th of May, 2008. The yellow highlight indicates a weather radar void and the orange line traces the aircraft's deviation to avoid the thunderstorms. Notice the clouds are well developed north and south of

MRF as the aircraft picks its way through the storms. Such cloud development would suggest there are active thunderstorms in the weather radar void. Lightning and weather satellite data are available but are not as timely as the PIREP; so as aircraft move into an area with no weather radar coverage, receipt and distribution of PIREPs is paramount.

A new PIREP form was created to increase availability of thunderstorm information across the airspace, enhance safety of flight, and aid the efficient flow of aircraft during the summer thunderstorm season. Reports from our pilots are crucial to ensure enroute safety. New data blocks were created for the entry of thunderstorm **Tops** and **Bases**, **Course Deviation** and **Development**, items that are very useful for other enroute pilots, Traffic Management Unit, Center Weather Service Unit, and other NAS partners. The following is an example for a PIREP with thunderstorm/convective activity:


PIREP FORM - Pilot Weather Report (Summer)

UA / UUA (Routine Report) / (Urgent Report)
(CIRCLE ONE)

*OV	Location: SJN	*TM	Time: 1815
*FL	Altitude: 300	*TP	Type: B737
SK	Sky Cover		
WX	Flight Vis and WX: TS ALQDS		
TA	Temperature (C):	WV	Wind:
TB	Turbulence:		
IC	Icing:		
RM	Remarks:		

Additional Remarks for TSTM

Tops: 340 Bases:

Course Deviation: 20 N

Development: RAPID

*Mandatory Item

Figure 6. Example PIREP

PIREP CODE:

UA OV SJN/TM 1815/FL300/TP B737/WX TS ALQDS/RM TS TOPS FL340..DEV 20 MI N OF CRS..RAPID DVLPMT

The following information will assist in determining the classification of PIREPs:

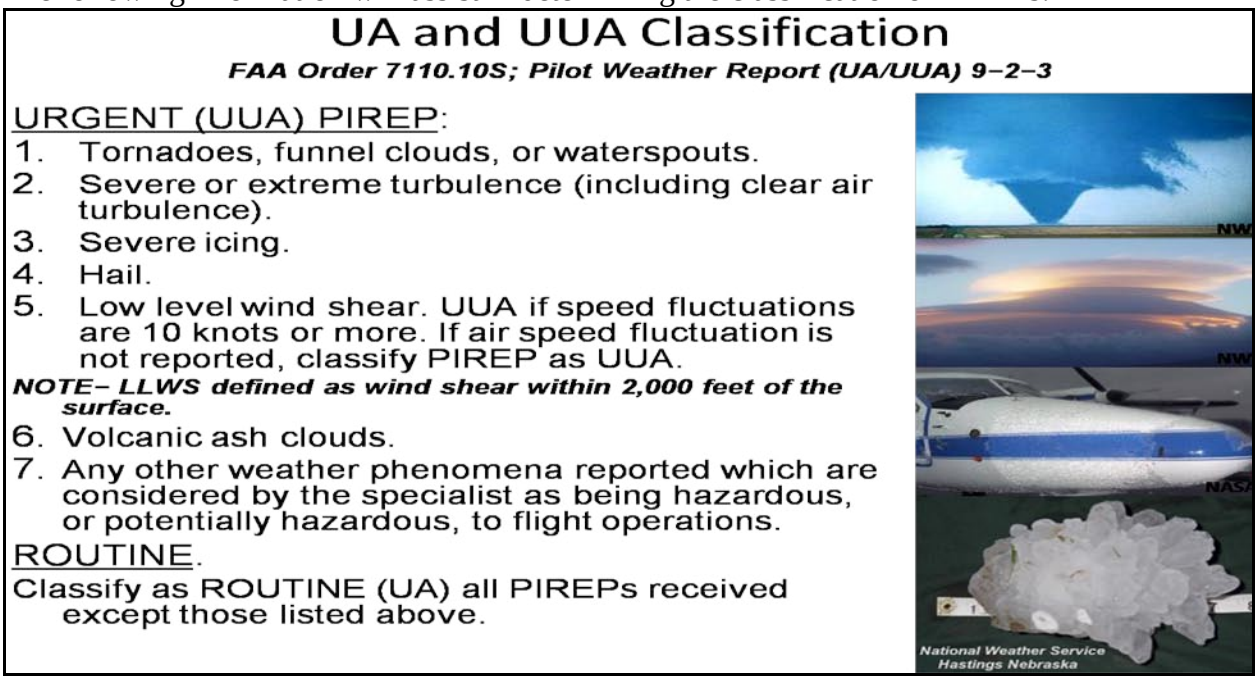


Figure 7. PIREP Classification

Convective Collaborative Forecast Product (CCFP)

Courtesy of the Aviation Weather Center

CCFP is a *strategic* forecast of convection to guide traffic managers in their system-wide approach to managing traffic. The CCFP consists of 3 elements: collaboration, forecasts and applications. The CCFP forecast suite is a set of 3 forecast maps with lead times of 2, 4 and 6 hours, updated every 2 hours. Release times, based on Eastern Local Time (ELT), are from 0300 ELT to 2300 ELT, whether on Standard Time or DST.

TRAINING: Two briefings, *"Industry Users"* and *"Government Users"* are available from the ATCSCC's Training Branch or from the AWC's web site at: http://aviationweather.gov/products/ccfp/info/that contain a technical description of the CCFP and its interpretation.

COLLABORATION, FORECASTS & APPLICATION

Collaboration: each CCFP is produced by the Aviation Weather Center after collaboration with Meteorological Service of Canada, Center Weather Service Units and meteorological offices of airlines and service providers.

Forecast: once the final product is produced, each CCFP is posted on the TSD, CCSD and AWC's web site at: http://aviationweather.gov/products/ccfp/

Application: Planning TELCONs use the CCFP as the primary convective forecast product for strategic planning. This application by the users results in an operations plan.

VERIFICATION: The accuracy, precision and consistency of every forecast are verified by the NOAA Forecast Systems Laboratory, Forecast Verification Branch. Daily, monthly and seasonal verification statistics and a description of the methodology used can be found at the Forecast System Labs (FSL) web site at: http://www-ad.fsl.noaa.gov/fvb/rtvs/conv/

FORECAST CRITERIA

Forecast Region: the Continental U.S. from March 1st through late October and portions of southern Ontario and southern Quebec, Canada from April through Sept.

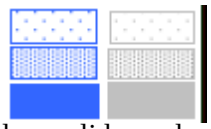
Minimum Threshold for CCFP (*convection*):

- At least 3000 square miles, and
- 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 at least 25,000 feet MSL, and

All three threshold criteria are required for an area of convection to be included in a CCFP forecast polygon.

CONVECTION DESCRIPTORS

Coverage: identified within each area of convection, in one of four classes:



- Sparse 25 – 49% (sparse fill)
- Medium 50 – 74% (medium fill)
- Solid 75 – 100% (solid fill)
- *Lines* of coverage shall be displayed as solid purple lines, either alone or within a polygon. The length of a line shall be at least 100 nm, the width at least 20nm on either side and the coverage at least 75%.

Tops: within each area of convection, the maximum 25% of *Echo Tops* with at least 18.5 dbz, identified in one of three classes:

- 25,000-31,000 ft MSL
- 31,000-37,000 ft MSL
- Above 37,000 ft MSL

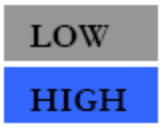
Growth Rate: given for each area or line of convection in one of four classes:

- (-) Negative Growth
- (NC) No Change
- (+) Moderate Positive Growth
- (++) Fast Positive Growth

Movement: label indicates:

- Speed of movement (in kts) of the entire area
- Direction of movement of the entire area

Confidence: the forecaster's subjective estimate that conditions defined by the minimum CCFP criteria will occur in the forecast polygon at the specified time and place. It will be identified in one of two classes:



- 25 – 49% (border & fill gray)
- 50 – 100% (border & fill slate blue)

This Quick Reference card can be downloaded from the following website:
http://aviationweather.gov/products/ccfp/info/

Reroute Decision Making

Thomas Hall, Meteorologist, CWSU Albuquerque, NM

ZAB Traffic Management Unit (TMU) is responsible for a managed, efficient flow of air traffic. Disruptions and variability in traffic volume do occur and are attributed to:

- Special/Sports events
- Weather
- Fire fighting efforts
- Aircraft emergencies
- and/or VIP movements

Regardless of the situation, TMU uses the following tools to manage efficient flow:

1. Adjacent Center Metering (ACM) is used between ZAB and Las Vegas, NV and between ZLA and PHX. It uses a time-slot sequencing program that provides both the system and user the most efficient flow into these two major hubs.
2. Center-TRACON Automation System (CTAS) is used by ZAB to schedule a steady flow of traffic delivery into the PHX TRACON.
3. Reroute
    a. National Playbooks are Air Traffic Control System Command Center (ATCSCC) strategies developed for regional and national reroute plans. This is a collaborative process negotiated between ATCSCC, ARTCCs and the users. Playbooks are used to avoid enroute weather hazards such as icing of a moderate degree or greater, turbulence, and widespread areas of convective activity.
    b. Local reroutes are collaborative measures coordinated between the TMU and affected ZAB areas. They are also used to mitigate hazards.
4. Internal
    a. Ground Stops (GS) are commonly used as an internal measure especially if the area managers and TMU are confident weather mitigation delays can be handled “in-house” and not affect adjacent centers.
    b. Enroute Spacing Programs (ESP) are coordinated with affected facilities and requires a call for departure time from TMU.
    c. Tactical Mitigation is another collaborative effort to manage ZAB airspace overflow volume.

TMU dynamically manages safe, efficient air traffic flow while striving to mitigate area, regional and national disruptions. Other activities include collaboration with ATC organizations through the NAS, continual monitoring of Pilot Reports and coordination with the Center Weather Service Unit (CWSU). CWSU staff maintains a situational weather awareness of ZAB, adjacent centers and often second tier ARTCCs when widespread weather hazards degrade national routes.

Southwest Aviation Weather Safety (SAWS) Workshop II October 23-24, 2008 - Phoenix, AZ

http://www.wrh.noaa.gov/psr/aviation/SAWS2_Workshop/Announcement.php

In collaboration with the National Weather Service Forecast Office (NWSFO) and Air Route Traffic Control Center Weather Service Unit (ARTCC CWSU) in Albuquerque, the Phoenix NWSFO will host the second Southwest Aviation Weather Safety Workshop (SAWS) at the Salt River Project in Phoenix on October 23-24, 2008. Any person involved with aviation in the Southwest U.S., including pilots, air traffic controllers, and meteorologists, is welcome to attend the workshop and further their knowledge of weather hazards and safety. Workshop attendance will be limited to approximately 100 audience members each day; priority will be given to first responders and key individuals within the Southwest aviation and meteorology community. Our hope is that these individuals can then, in turn, take the information gathered at this workshop and share it with many others in their local area. For information on the first SAWS Workshop, please see: http://www.srh.noaa.gov/abq/saws/saws.php.

Background - The 2-day workshop is designed to promote aviation weather safety and productivity through improved weather awareness and forecasting services.

- **October 23rd, Aviator/Controller Day:** Roughly seven 20-minute presentations will be given to inform and educate pilots and controllers on in-depth information about winter weather phenomenon such as turbulence, mountain waves, and icing hazards. Other topics will cover statistical relationships between weather and accidents and the future of aviation weather support to the NAS. Attendance on this day will satisfy FAAST WINGs accreditation.
- **October 23rd, Dinner:** Following the day one presentations, workshop attendees will be encouraged to join NWS participants for an informal social dinner at a local dining establishment. This evening gathering is intended to encourage further interaction between aviators, controllers, and forecasters.
- **October 24th, Forecaster Day:** Roughly seven 20-minute presentations will be given to help forecasters understand and better meet the needs of aviators. Participants will learn about cutting-edge forecasting resources and best practices in aviation meteorology. Forecasters are encouraged to attend both days of the workshop in order to gain a better understanding of customer needs and service.

Lodging and Expenses – The workshop itself will once again be held at the Salt River Project (SRP) Administration Building, where NWSFO Phoenix resides. The workshop will have a catered lunch, and snacks and beverages will be available throughout the day at the co-located SRP cafeteria and vending area. Guest lodging, at the government per diem rate of $102 per night, has been arranged with the Radisson Hotel Phoenix Airport North, located just two miles west of the SRP building. The evening social gathering location is within walking distance of the Radisson. We will hold a block of approximately 40 rooms for two nights. The workshop is free-of-charge; however, there will be a fee for catered lunch, approximately $25 to cover food and beverage for both days. Official registration forms will include a choice of one or two day attendance.

In Closing - At this time, presentation schedules are almost full for both days of the workshop. However, poster presentation proposals are welcome and will be given full consideration, as will back-up presentation proposals. Please reply with a brief description of your topic as soon as possible, along with any questions or comments, to Matt Lorentson and the Phoenix Aviation Program Leader Leslie Wanek. We look forward to hearing from you and possibly scheduling your presentation. The 2007 SAWS Workshop was a wonderfully constructive and enjoyable event, where many important relationships were forged or strengthened. We are very excited to once again have this opportunity to meet with our valued aviation customers, partners, and friends.