



CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT (CAASD)

Risk Management for TFM through Incremental Decision Making

NBAA 61ST Annual Meeting & Convention
Friends and Partners of Aviation Weather

October 9TH 2008

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Event-Driven Products

Outlook, Watch, Warning, Advisory (Source: NWS)

- The Storm Prediction Center (a national guidance center of the National Weather Service) issues watches for areas likely to produce tornadoes and severe thunderstorms (**Severe thunderstorms are defined as having either tornadoes, wind gusts of at least 58 mph, or hail at least 3/4 inch in diameter.**)
- The National Weather Service has developed a multi-tier concept for forecasting or alerting the public to all types of hazardous weather. These are:
 - **Outlook** - A severe weather outlook is issued addressing potentially hazardous weather. The outlook will include information about potential severe thunderstorms. ***It is intended*** to provide information to those who need considerable lead time (e.g., SCC, ARTCC's, AOC's) to prepare for the event.
 - **Watch** - A watch is used when the risk of hazardous weather has increased significantly, but its occurrence, location or timing is still uncertain. ***It is intended*** to provide enough lead time so those who need to set their plans in motion can do so. (e.g., SCC and AOC's) A watch means that hazardous weather is possible, but not imminent. **(NAS Stakeholders should have already developed their respective plans of action for delay mitigation today)**
 - **Warning** - A warning is issued when a hazardous weather is occurring, imminent or likely. A warning means weather conditions pose a threat to life or property. People in the path of the storm need to take protective action.
 - **Advisory** - **(Not to be confused with ATCSCC TFM Advisories)** An advisory is issued when hazardous weather is occurring, imminent or likely. Advisories are for less serious conditions than warnings, that cause significant inconvenience and if caution is not exercised, could lead to situations that may threaten life or property. (Source: NWS)

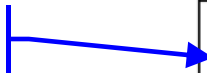


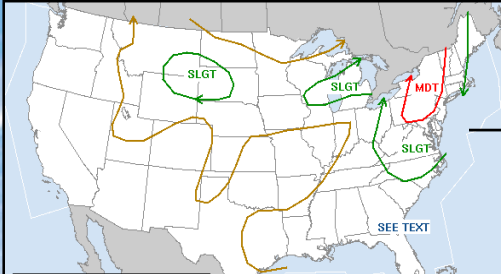
TFM Weather Management Matrix: Issuing the NAS Critical Event Statement (ATCSCC Advisory)

Example of Event-Driven Scenario and Incremental Decision Making

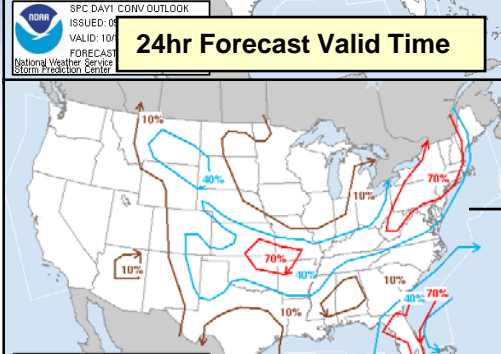
Statement	Lead Time	Certainty of Event	Outcome
<p>Outlook: Overnight review of weather forecast data to determine if TFM scenario modeling will be necessary for strategic management</p>	<p>At least 10-12hrs in advance. Wx data updates at approximately 06z. This is a key time period to start establishing a TFM strategy for the coming day</p>	<p>High probability of convective impact based on overnight review of weather forecast. Reference data such as Jet Stream, Surface Analysis/Progs, SPC Day 1 Convective Outlook</p>	<p><u>TFM Programs possible:</u> Provides for ATCSCC Traffic Management intentions to filter through ARTCC's and customers so all stakeholders can plan and deploy accordingly</p>
<p>Watch: Early morning SPT issues TFM Watch/Advisory to customers for probability of programs today (Wx/Impact Translation)</p>	<p>At least 8 hrs prior if weather forecast continues to favor a convective outbreak based on Outlook statement</p>	<p>Risk of convective weather continues to be evident or has increased in likelihood based on probabilistic forecast data</p>	<p>Customers are notified on Planning Telcon to prepare for SWAP. AFP's and other TMIs are highly probable today. Plan of action is shared but not executed (no traffic moved).</p>
<p>Significant: TFM programs GS, GDP, AFP's are implemented. Traffic has option to reroute at this point</p>	<p>At least 6 hrs prior based on CCFP 6hr forecast indicating convective weather within the same areas indicated by the "Watch" and "Outlook"</p>	<p>Forecast continues to show evidence of convective and/or imminent weather with a high probability of occurrence</p>	<p>Requires immediate action by customers to protect respective schedules. Implementation of programs by ATCSCC</p>
<p>Warning: Incorporate this into TFM impacts and or solution set. (Tactical Planning begins)</p>	<p>At least 4hrs or less to show increasing confidence and or coverage.</p>	<p>Convective weather event has begun to occur with a high probability of intensification</p>	<p>Requires action to protect against large scale delays and handling of arrival and departure flows</p>

Critical Decision Point for Daily Strategic Planning

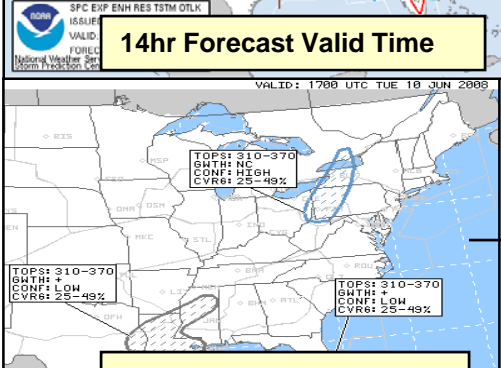




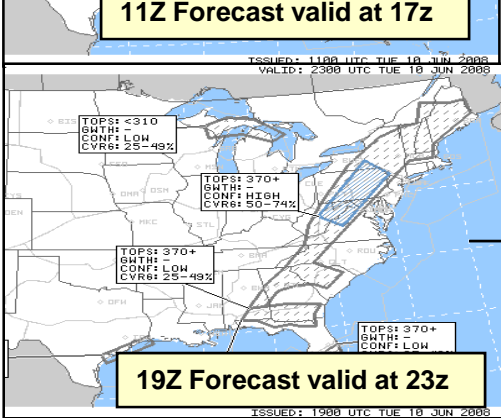
“Outlook” issued by SCC as a (NAS Critical Event Statement) based on a convective weather potential issued 12 or more hours in advance.



“Watch” Statement issued based on increasing risk of convective weather. TFM program modeling should occur between the Outlook and Watch so modeling results are known at the time of the Watch release.

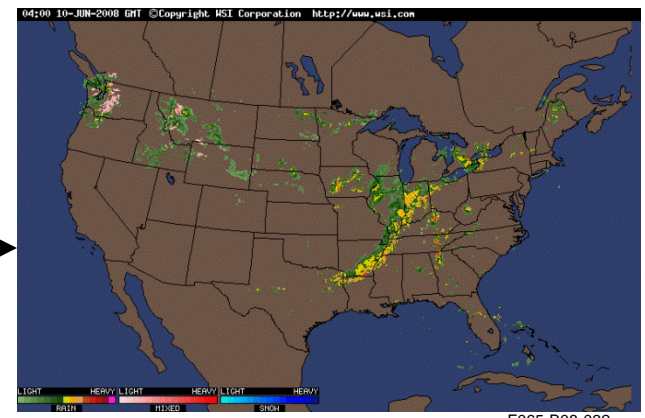


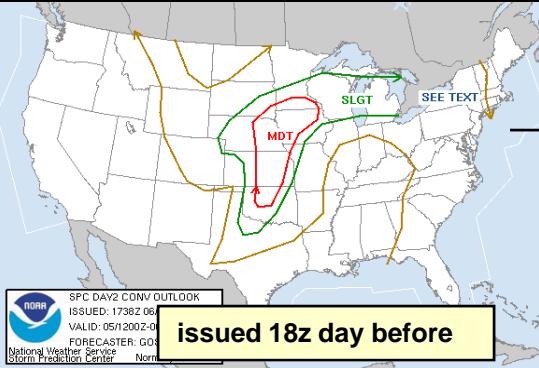
Based on 6hr CCFP **“Significant”** Impact Statement released so implementation of TFM programs and alternate routing can begin



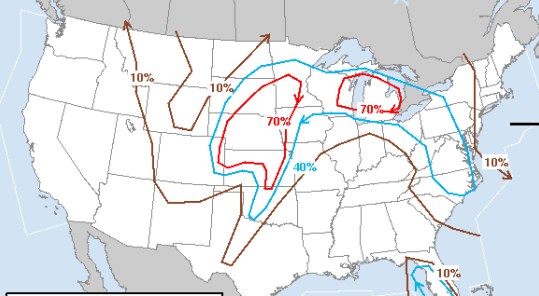
“Warning” Statement should be issued for tactical planning to commence as airways become constrained. Anticipate arrival and departure flows with tactical tools to mitigate large scale delays

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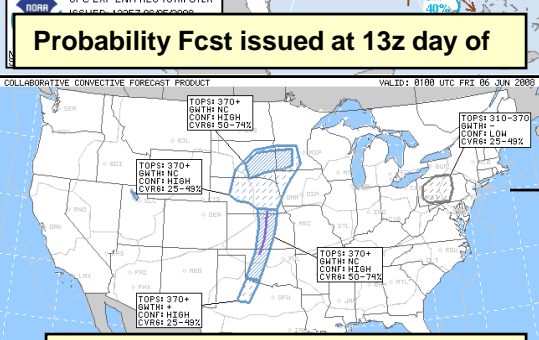




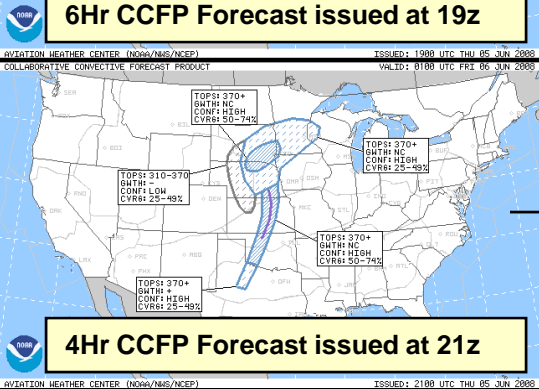
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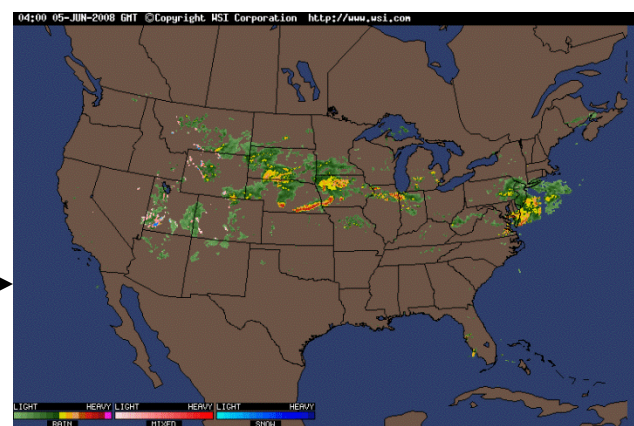


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