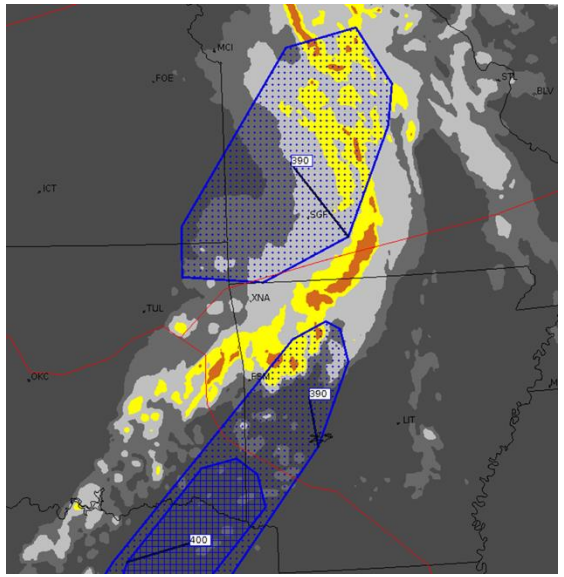
Part 121 Flight Dispatch Weather Planning

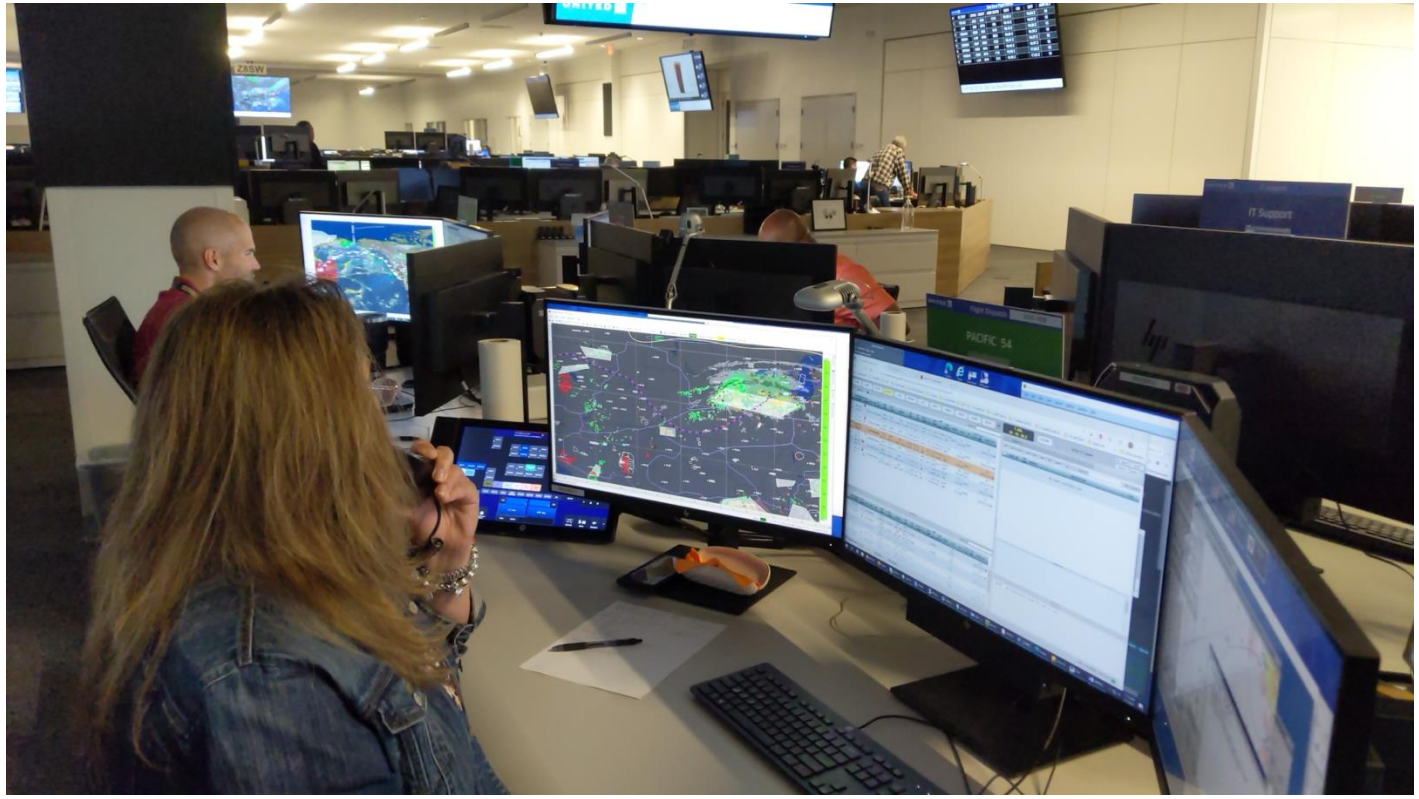
"CoSPA and Dispatch"

FPAW Fall 2024

AIRLINE DISPATCHERS FEDERATION



CoSPA & the Flight Planning Process



Top Dispatcher uses of CoSPA

1. What is the current weather picture now?
2. What will the weather picture be in the future?

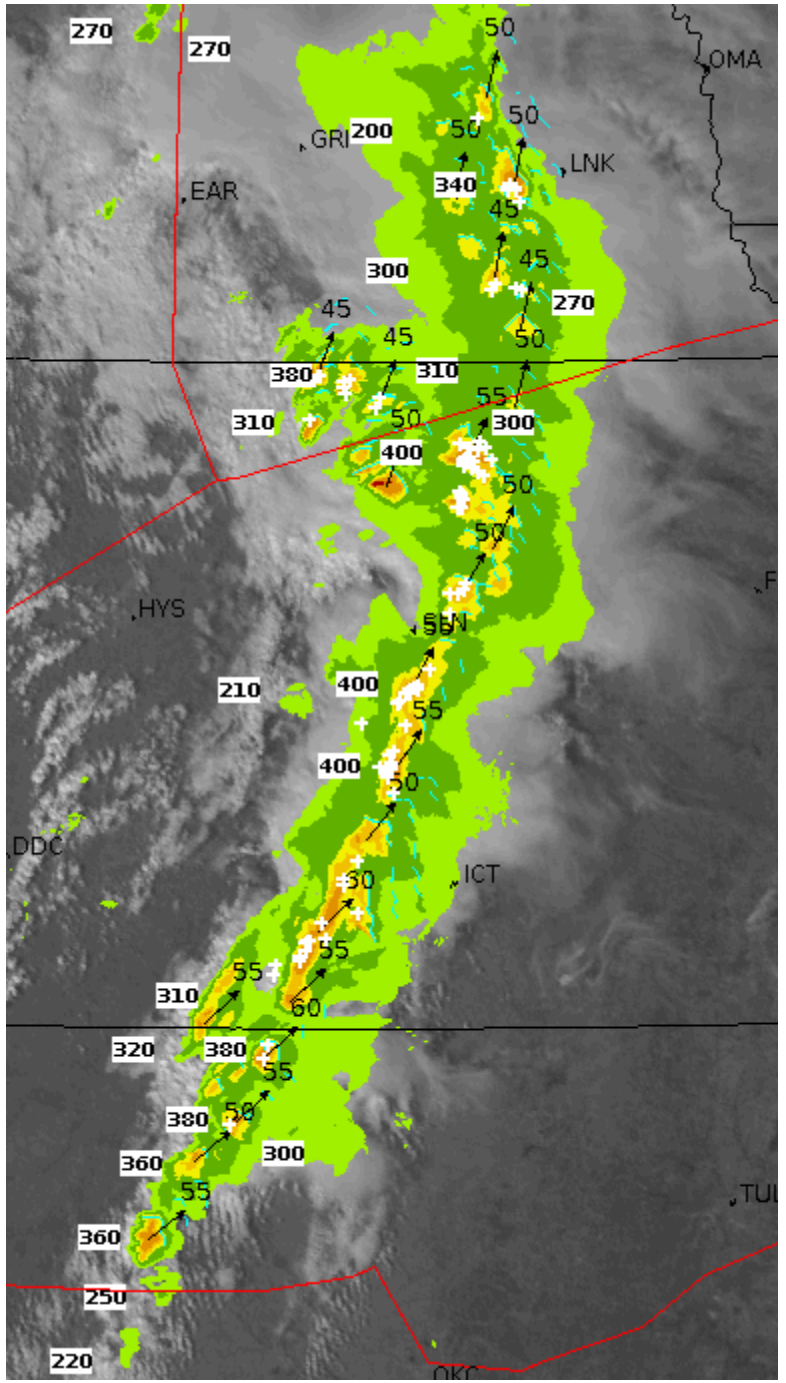
Ultimately, the goal of both of these is to make a determination of:

1. Whether or not we need to change the flight plan route at all.
2. If we must alter the route, to assist in determining the best route that both avoids hazardous weather (thunderstorms), and also keeps the operation as close to on-time as possible.

Current Weather Picture

The top things I like about the CoSPA/CIWS current weather imagery:

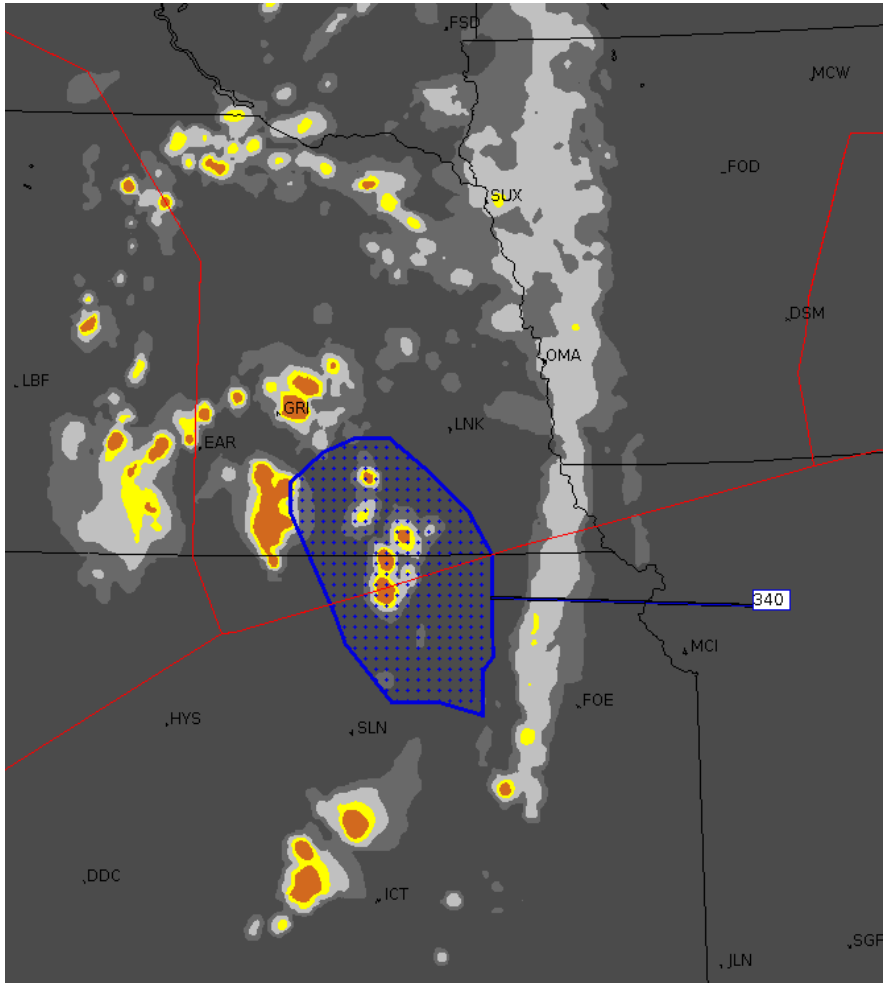
1. Includes radar imagery.
2. Includes satellite imagery.
3. Includes lightning data.
4. Includes storm motion.
5. Includes echo top information.
6. Automatically switches from visible to IR imagery, based on time of day.
7. Can overlay aviation-related items (airports, airways, waypoints, VOR's, etc.).



Forecast Weather Picture

The top things I like about the CoSPA forecast weather imagery:

1. Excellent resolution.
2. Can animate if desired.
3. Includes TCF overlay.
4. Good number of “levels” indicating severity.
5. Toggle from CIWS (2-hour) to CoSPA (8-hour) – depending on timing of my flight.
6. Can overlay aviation-related items (airports, airways, waypoints, VOR’s, etc.).



Flight Planning

Dispatch Route Planning

Every airline does things slightly differently, but in general will follow a process similar to the one below:

1. Computer flight planning system calculates various possible routes.
2. Computer sorts the routes based on airline preferences (usually least time, least fuel burn, etc.) based on winds that day.
3. Dispatcher must determine which route to use based on hazardous weather enroute; or create their own route.

This last step is where CoSPA plays a huge role!

Dispatch Route Planning

Dispatcher Options:

1. “Good to go” - no concerns.

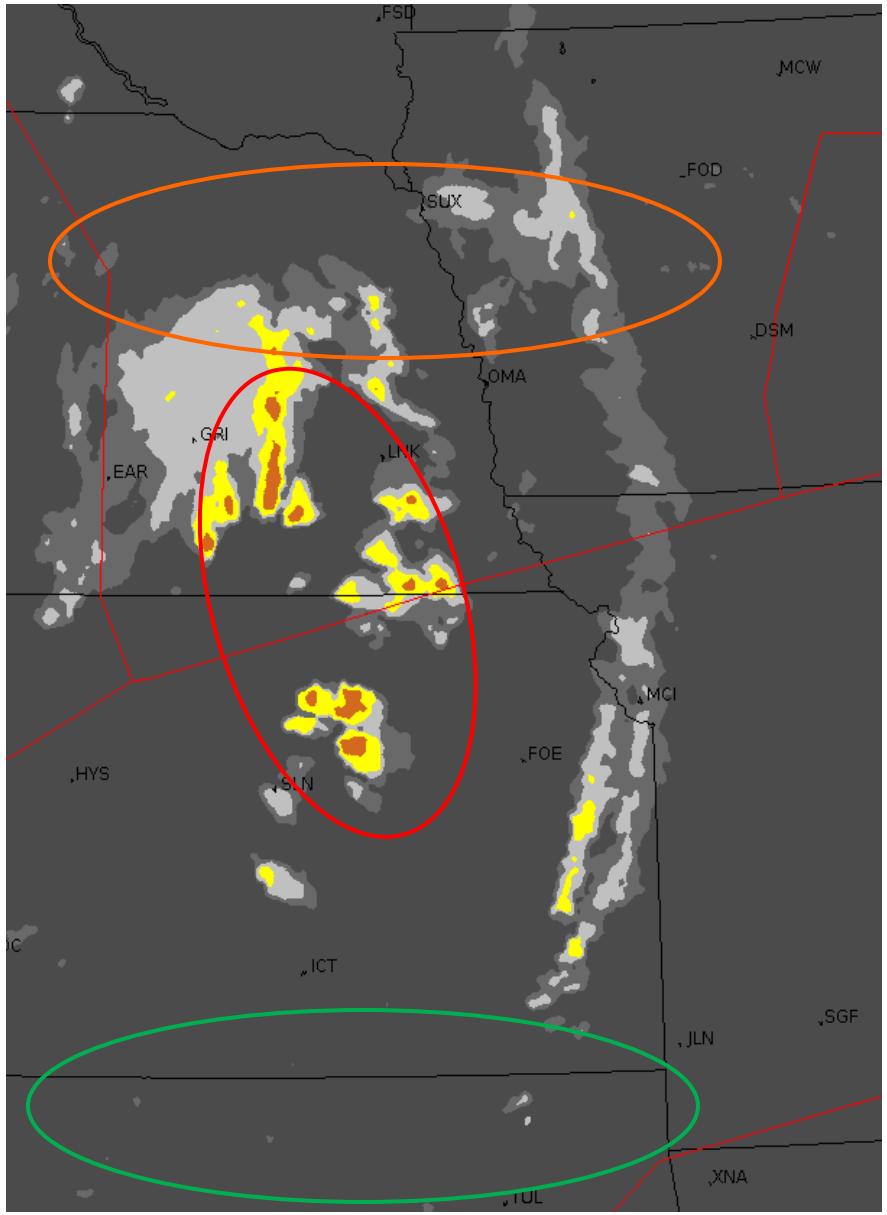
   (Nothing showing up)

2. Route through area with caution and apply mitigations

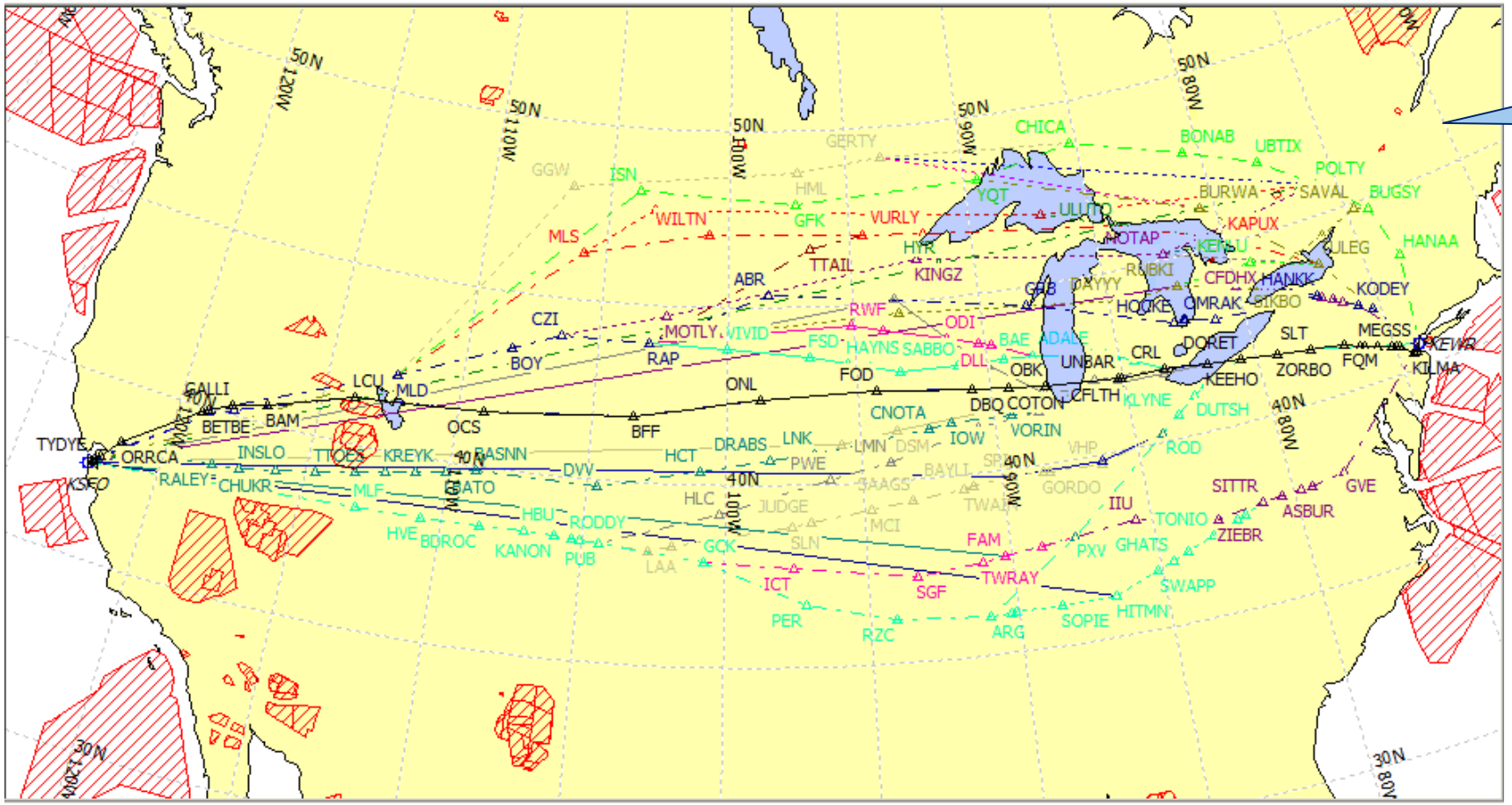
   (such as adding extra fuel for potential deviations)

3. Avoid the area.

   (Adds time/fuel, may lead to airspace saturation)



Options



Many, many route options are possible!

The computer flight planning system is quite good at picking optimal route based on upper-level winds.

However, most systems do not incorporate any convective information.

Analyzing the Options

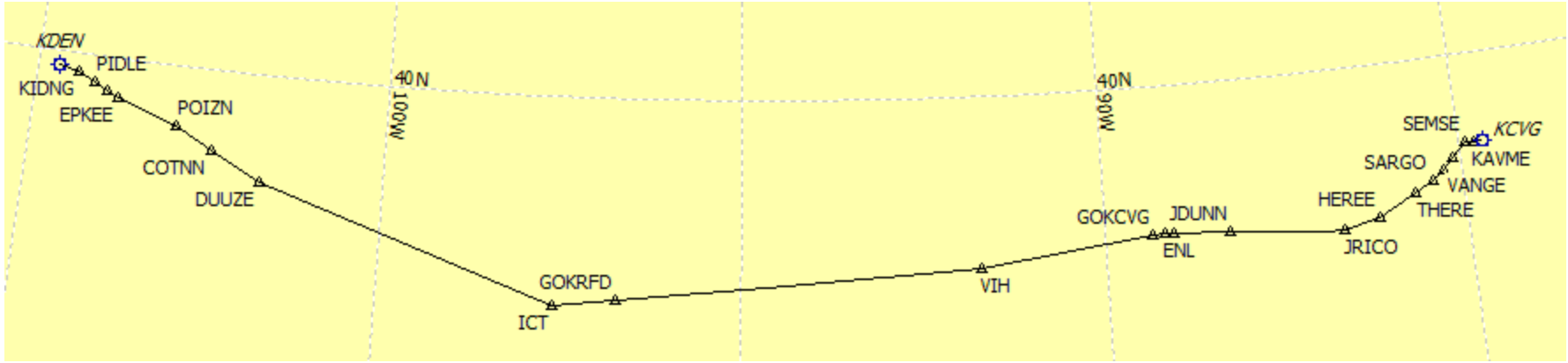
Various route options comparing distance, fuel, and time.

To	Rt	Dist	AFL	TripF	Time
KEWR	102	2283	397	44741	4.37
KEWR	201	2283	397	44741	4.37
KEWR	101	2290	398	45563	4.42
KEWR	103	2326	397	45614	4.43
KEWR	106	2350	391	46365	4.47
KEWR	104	2393	398	46967	4.50
KEWR	105	2384	398	47260	4.50
KEWR	107	2453	390	50142	4.53

Computer flight planning system has sorted the routes based on both time and amount of fuel burned on that route.

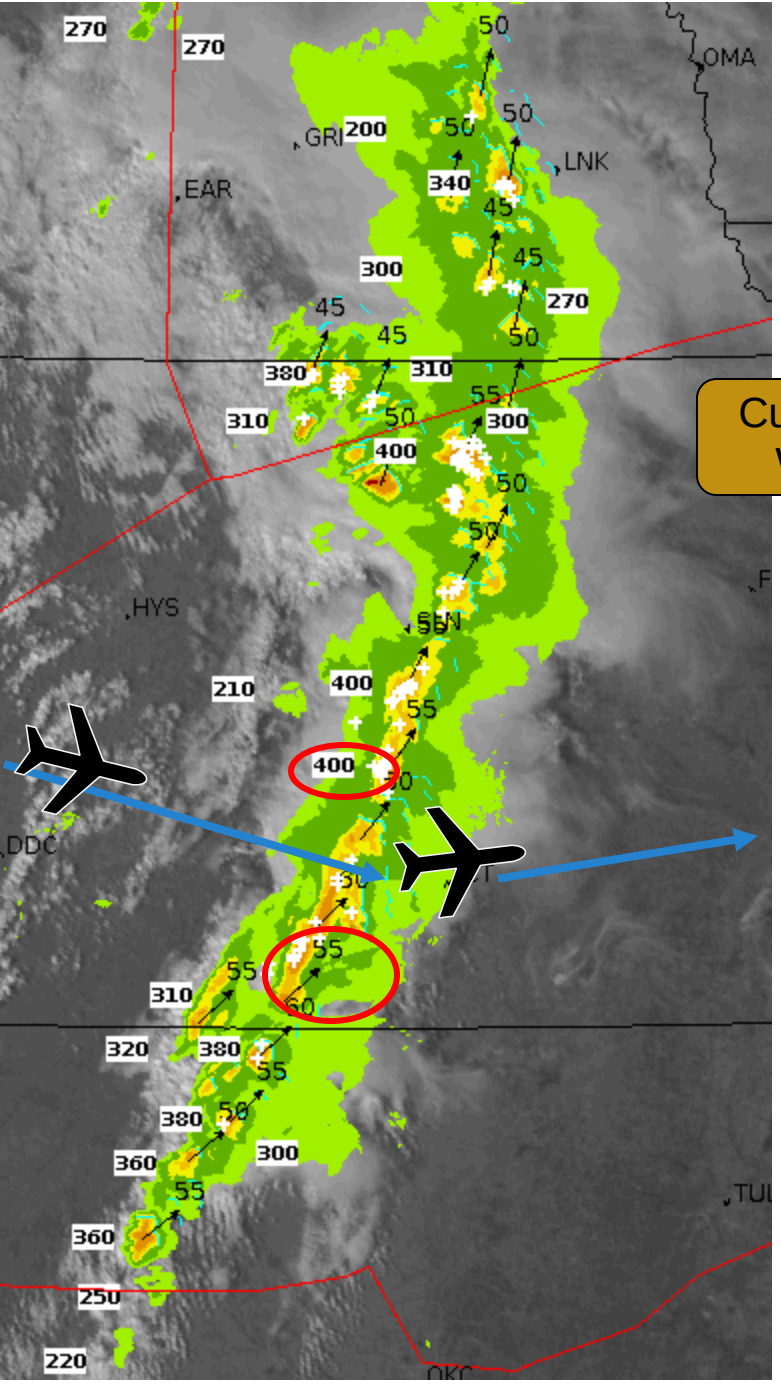
Time for the Dispatcher to earn their paycheck!

Do we need to change route for convection?

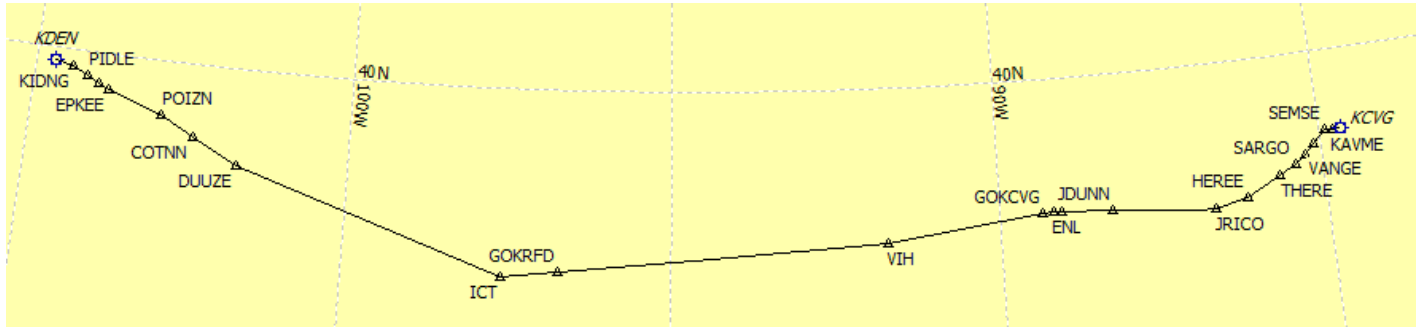


Example:

Flight Planning system prefers a route over ICT based on upper-level winds today.
But what about thunderstorms?



Current WX



Current Weather

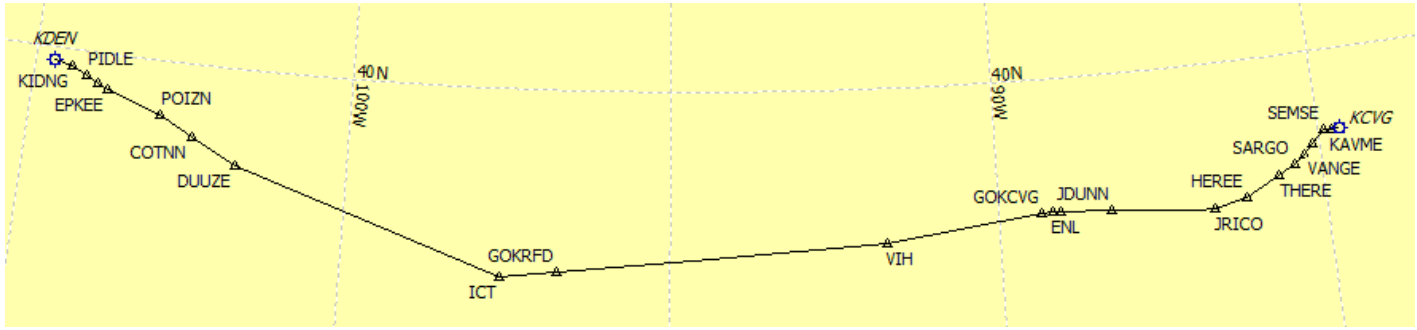
- Puts us right into an area of thunderstorms.

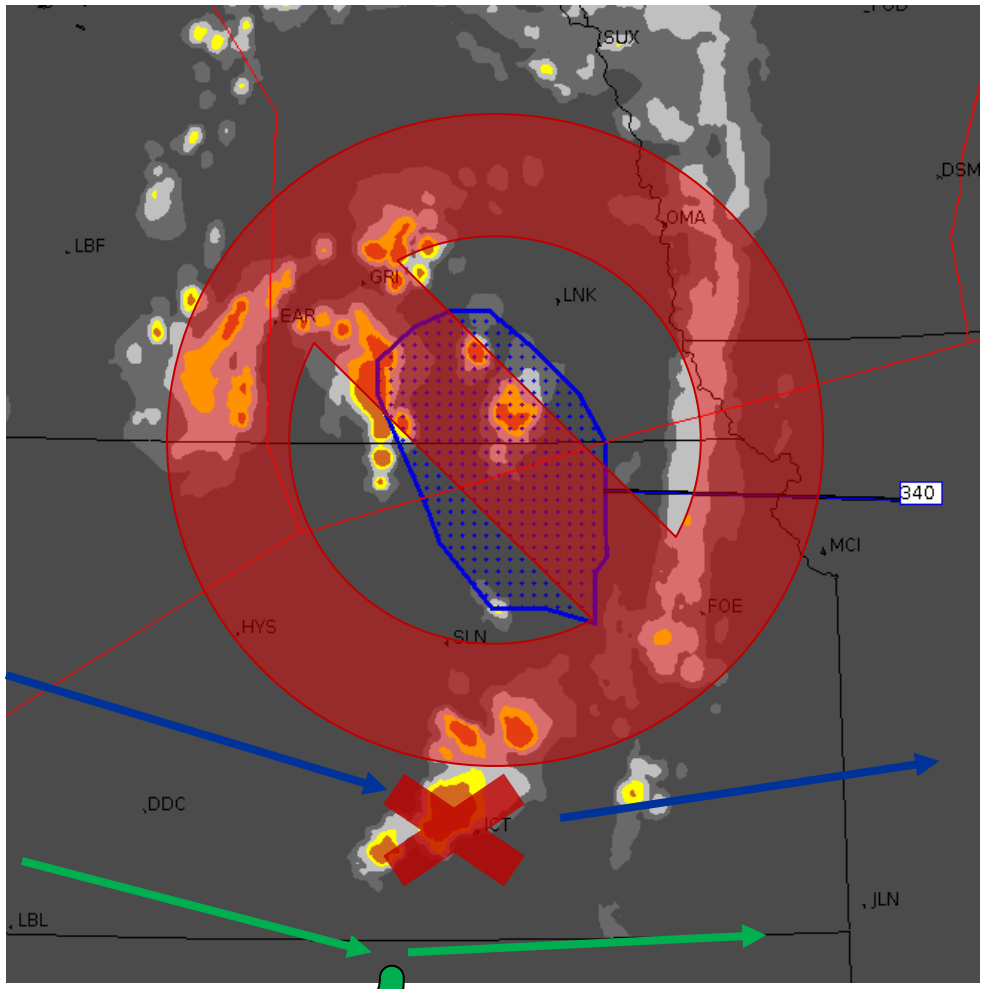
<u>As a dispatcher, I'm noticing:</u>

- Echo tops are at FL400
  - Won't be able to climb above the weather.
- Radar returns indicate at least moderate precipitation.
  - Not a good idea to attempt to penetrate storms.
- Several lightning strikes in the area.
  - Indicates active convective threat to avoid.
- WX is moving to the NNE at about 55 knots
  - Gives an idea of where the weather might be moving.

Also need to consider that my flight does not take off from DEN for another 3 hours from now, and won't be in the vicinity of ICT until 4 hours from now.

Forecast WX





Forecast Weather

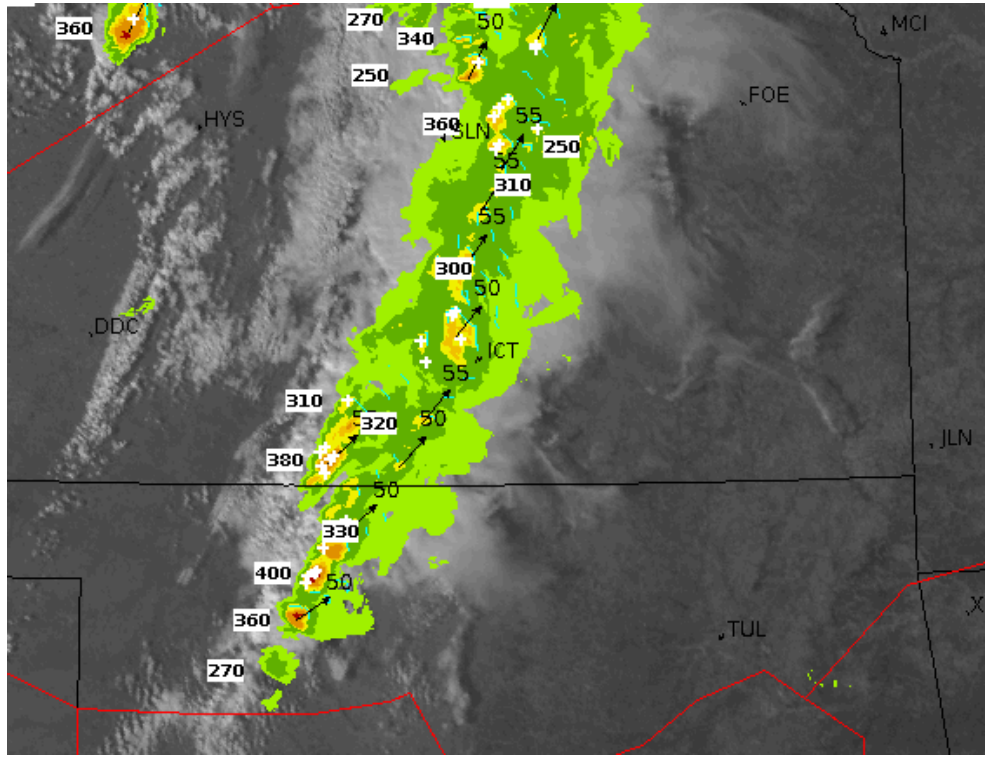
- Evaluate CoSPA at current time +4 hours, since that is when we'll be in the area.

<u>As a dispatcher, I'm noticing:</u>

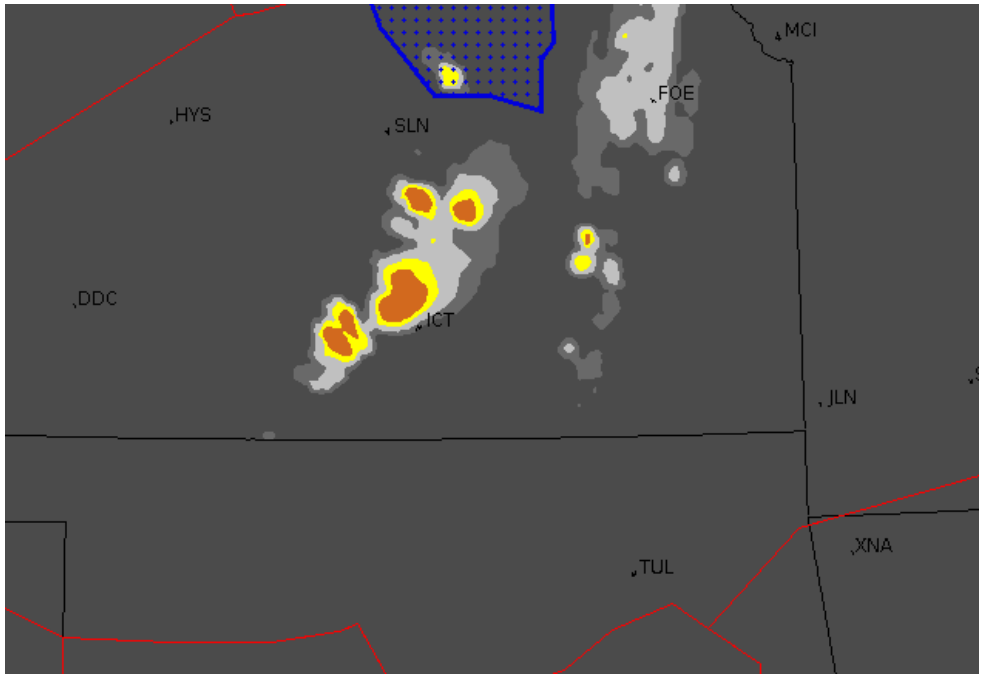
- Large area of level 5+ intensity near ICT
  - ➢ Do not want to try to penetrate level 5 intensity.
- TCF does not depict an area near ICT, but instead further north.
  - ➢ Perhaps weather worse in TCF area, not near ICT?
- Nothing forecasted across far southern KS / northern OK
  - ➢ Gives an idea of a clear area of weather.

Given the weather near ICT both current and forecast, I will elect to NOT go with the computer-recommended route, and will create my own route that avoids the weather.

Current



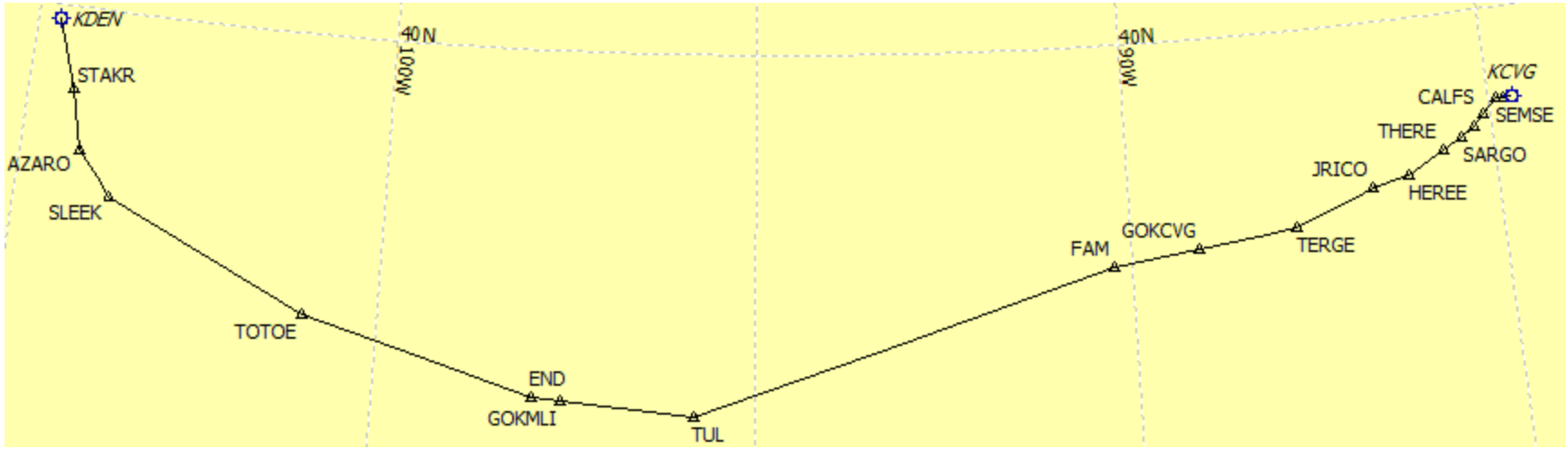
Future

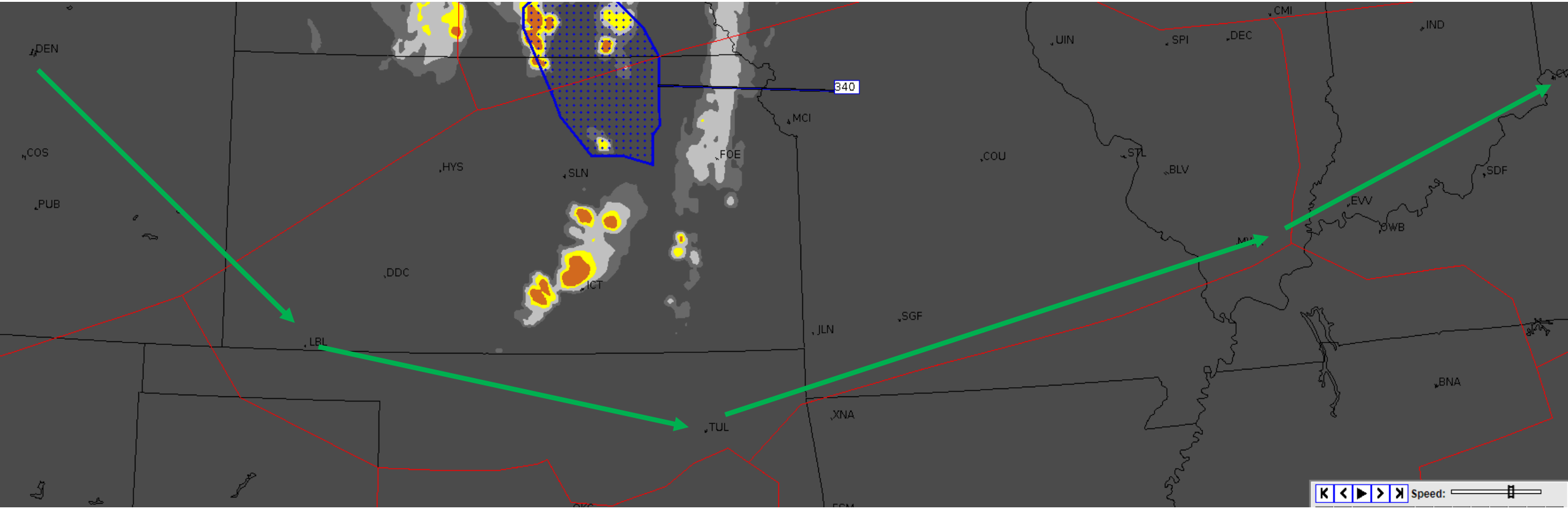


Even though currently there are large storms across northern OK, based on CoSPA indicating a lack of weather there in 4 hours (plus the current storm motion off to the northeast), I feel confident in my planning the route through that area.

New Route

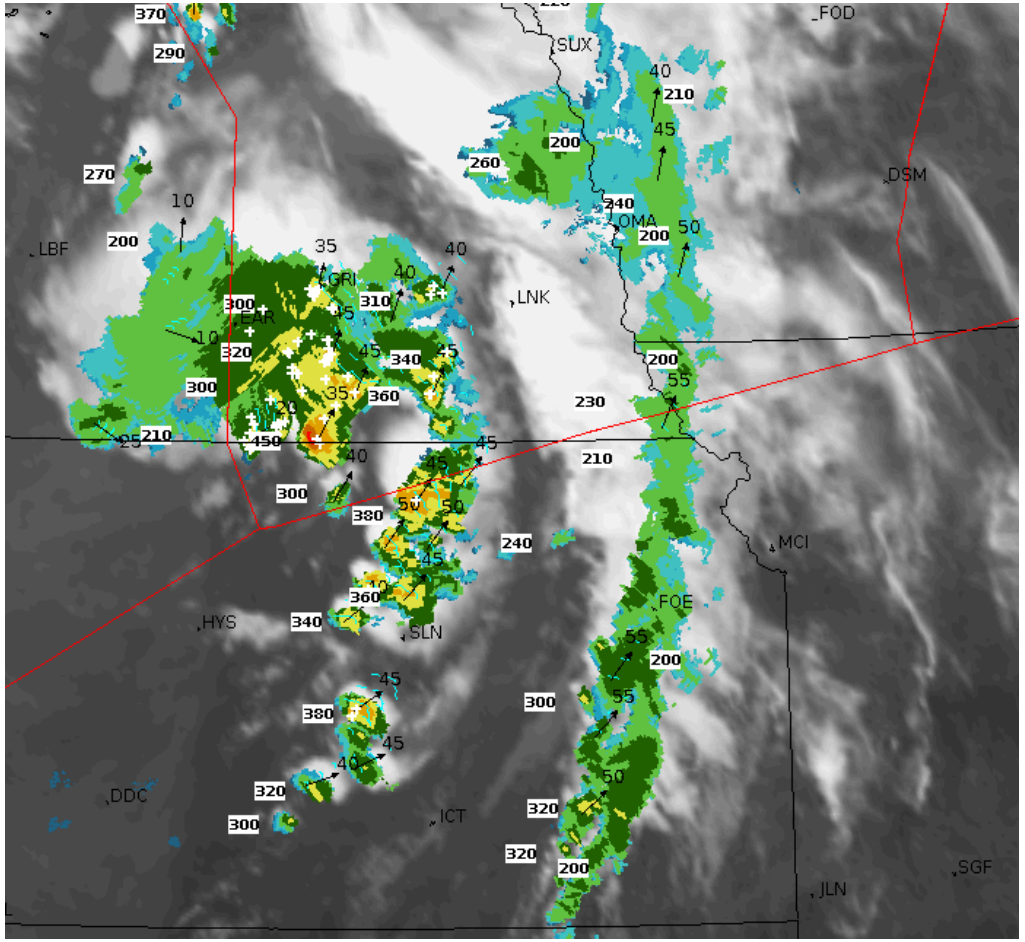
This new route is 7 minutes slower, and burns 2,000 more pounds of fuel, but it keeps us clear of the hazardous convective weather.



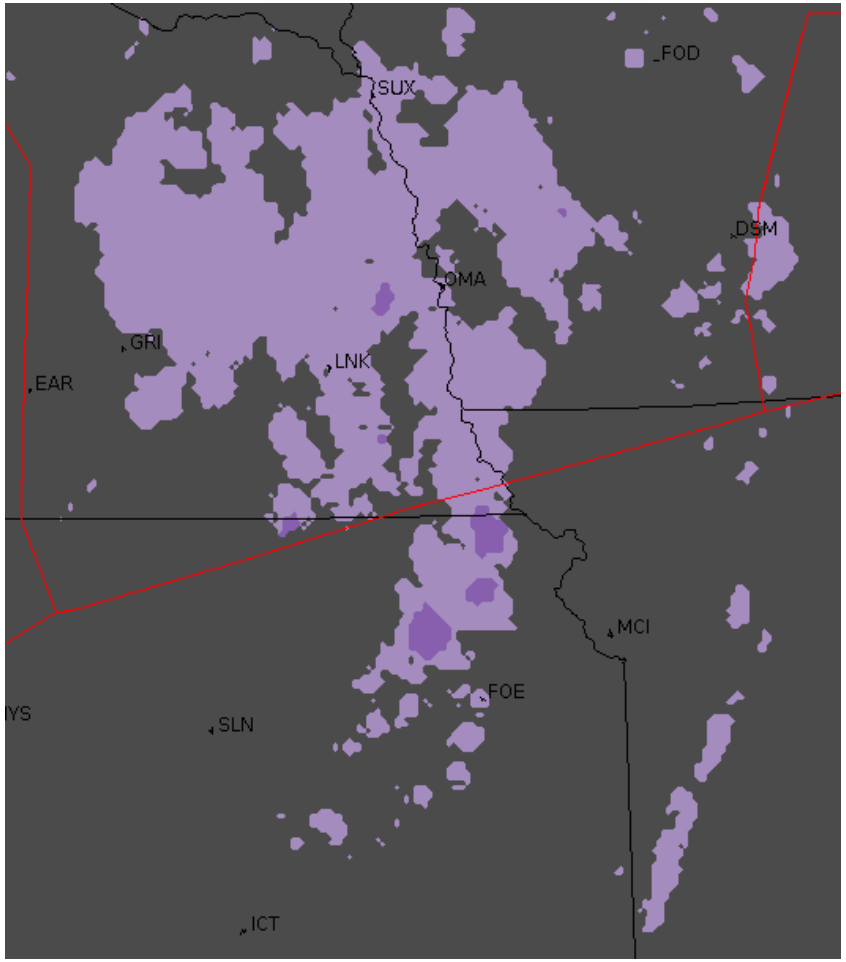


Echo Tops

Current Echo Tops



Forecast Echo Tops



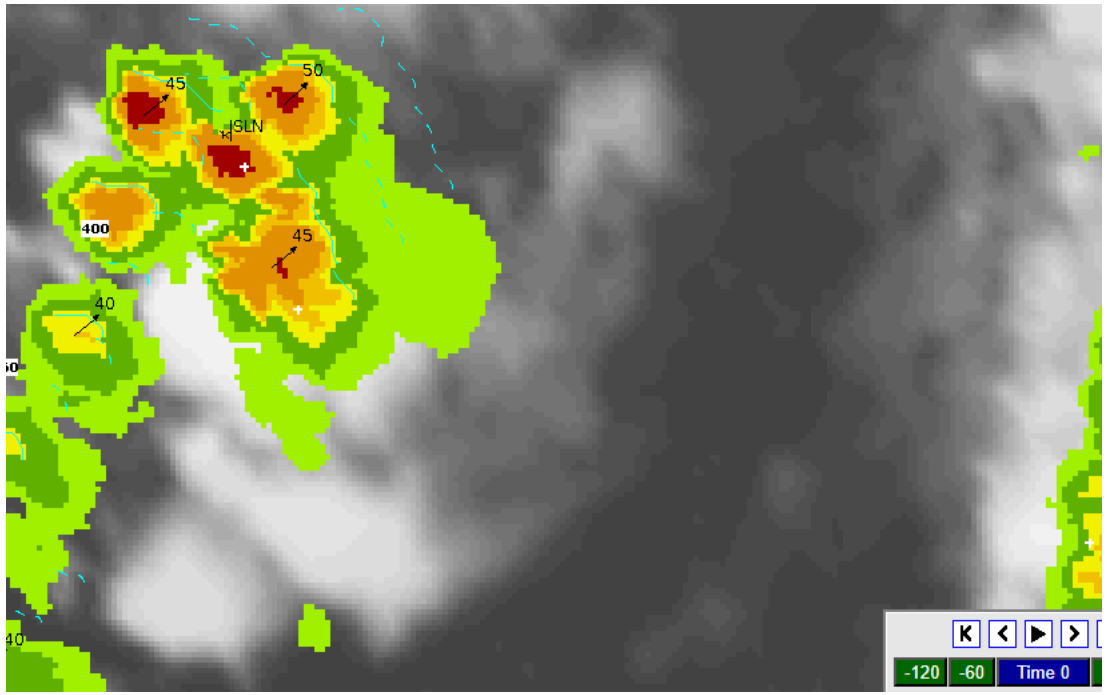
- **Some dispatchers highly utilize the echo tops feature as well.**
- **Great way to determine if we are able to operate above the weather or not.**

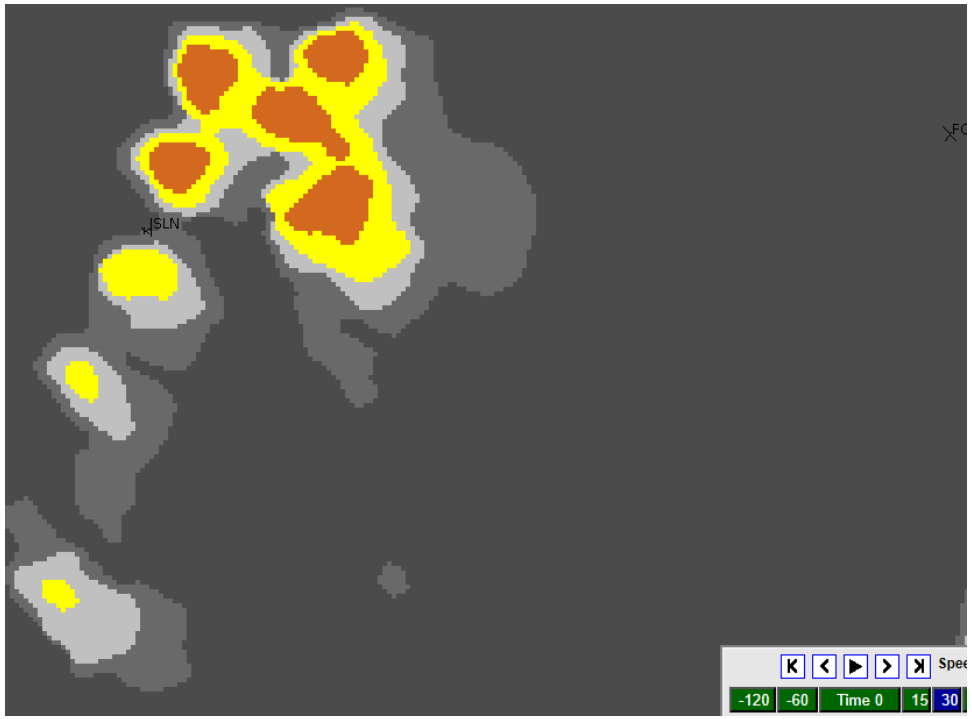
Terminal Impact

- Dispatchers will also use CoSPA/CIWS to attempt to determine when an airport will be affected by thunderstorm activity, and also to anticipate when the thunderstorm will move away from the airport.
- This is useful when telling pilots how long they can expect to hold for before the airport is in the clear again.
- Sometimes we will make the decision to divert based on storm movement (or lack there of) as depicted by CoSPA/CIWS.

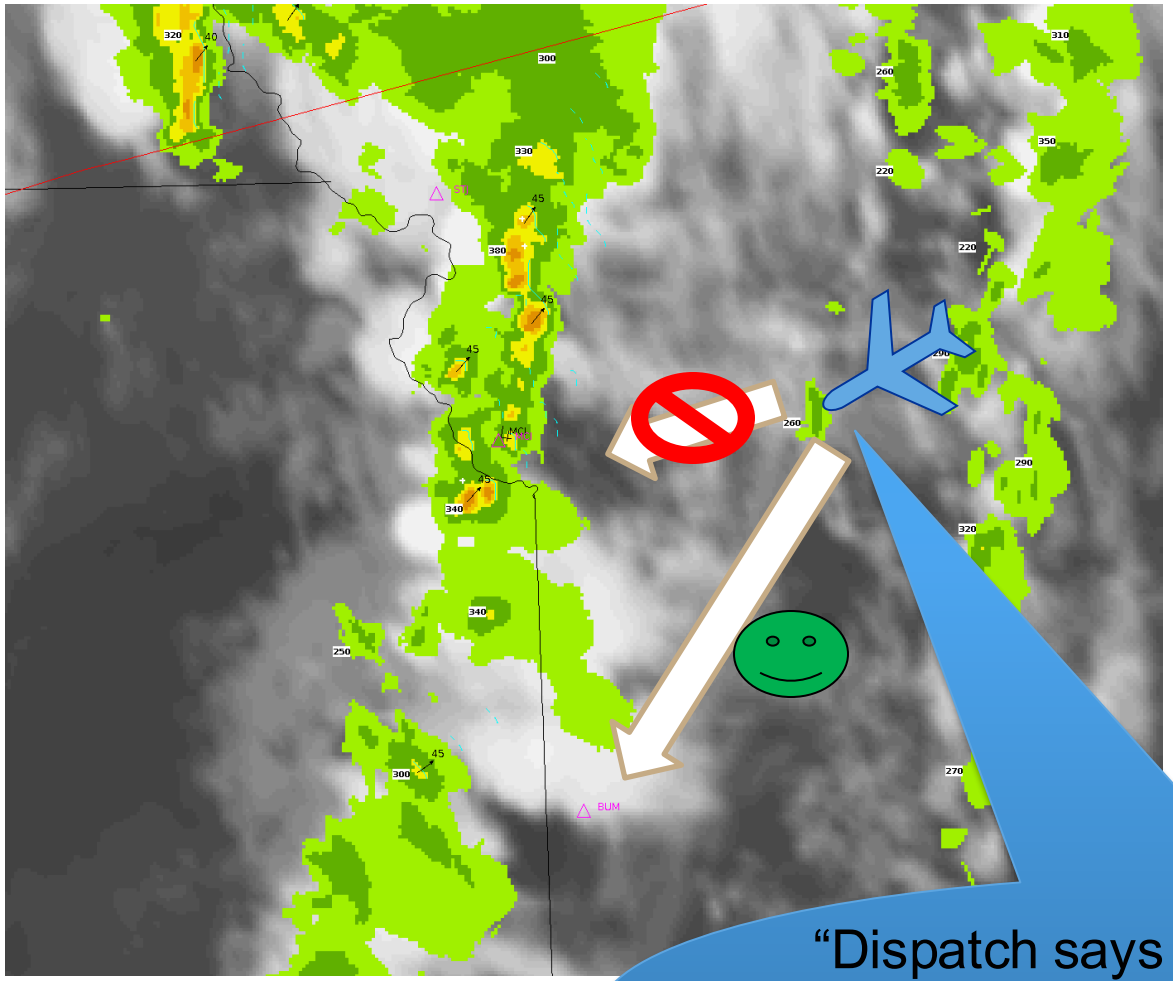
Terminal Impact

- For example, Salina, KS (SLN) is being impacted by storms and not accepting arrivals.
- CoSPA/CIWS shows the cells moving out of the airport in the 30-minute forecast.
- Therefore, we may tell our pilots that they can expect to safely land in about 30 minutes.
- If we don't have enough fuel to hold for that long, then we may elect to divert the flight.





Flight Following



Updating our Crews

- One function of Dispatch is to keep flight crews informed about hazardous enroute weather.
- CoSPA/CIWS is a great tool to stay aware of current conditions and hazards.
- Supplements SIGMETs and other products.
- Enhances our situational awareness by displaying satellite/radar, echo tops, lightning, etc.
- Once we see development, we can suggest our flights to alter course.

"Dispatch says there is a big storm near MCI – they recommend going direct to BUM instead."

What Works vs. What Needs Improvement

What is done well:

- High-Resolution Solution (that rhymes!)
- Able to show current and forecast in easy-to-read format
- Aviation overlays are great!
- TCF overlay is great!

What needs improvement:

- It’s still a forecast and subject to errors as are all forecast models – more accuracy is better
- Even higher resolution would be great (maybe 0.5-hour increments beyond 2 hours)
- Ability to overlay a route would be wonderful

Summary

- CoSPA is a widely used tool in Flight Dispatch.
- It is used on a tactical basis to determine flight routes, and also terminal impact times.
- It is a wonderful tool that incorporates both real-time observational data and high-resolution forecast data that allows us to make important decisions.
- As with all weather tools, the more accuracy we can get in the future, the better the decisions that we make will be.
- It is key to be able to make deterministic decisions based upon probabilistic information.

Any Questions?

Thank you for your time