VERIFIED

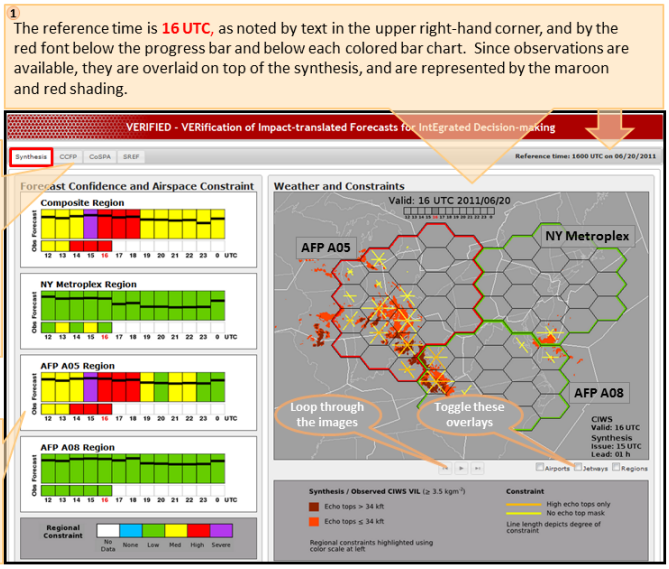
VERification of Impact-translated Forecasts for IntEgrated Decision-making

NOAA / ESRL Forecast Impact and Quality Assessment Section

— http://esrl.noaa.gov/fiqas/tech/impact/verified/ —

The web-based VERIFIED application computes and displays real-time information on potential air traffic constraint resulting from convective weather over the northeastern United States. Regional constraint is computed by aggregating individual values from sector-sized hexagons. Forecast confidence is provided in statistical bar charts.

Forecast synthesis screen with regional airspace constraint



① The reference time is indicated in the upper right-hand corner of the application, also by the red font at the top of the map and beneath each bar chart. If the chosen map is from an earlier valid time, then CIWS observations are available and are overlaid along with Flow Constraint Index (FCI) glyphs from the observations.

② The default view is this forecast synthesis screen, the consolidation of all forecasts into a unified view of constraint. When new results for the current date are available, the screen automatically displays updated information.

③ Bar charts on the left present regional airspace constraint along with forecast confidence over time. The constraint color scale is located in the bottom left-hand corner of each screen. Forecast confidence is represented by dark horizontal lines within the charts. Constraint categories are the result of aggregating weighted hexagons using traffic flow considerations for each region.

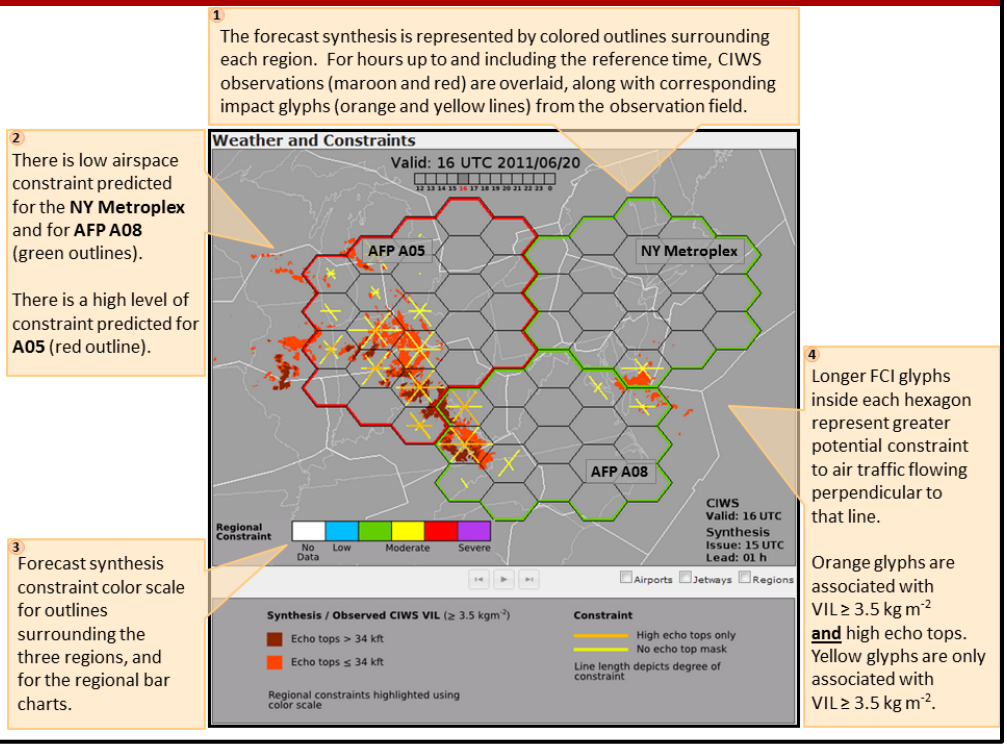
Regional flow constraint: aggregation of FCI values and formation of the synthesized forecast

① For each forecast product, the regional airspace constraint is computed by aggregating individual values of the Flow Constraint Index (FCI). Regional constraint from each forecast product is then statistically combined to create the consolidated synthesis.

② Regional forecast synthesis results are easily identified by viewing the colored outlines.

③ The constraint color scale applies to regional outlines and to individual bar chart results.

④ Localized flow constraint computed from the CIWS observation field is depicted by glyphs within each hexagon.



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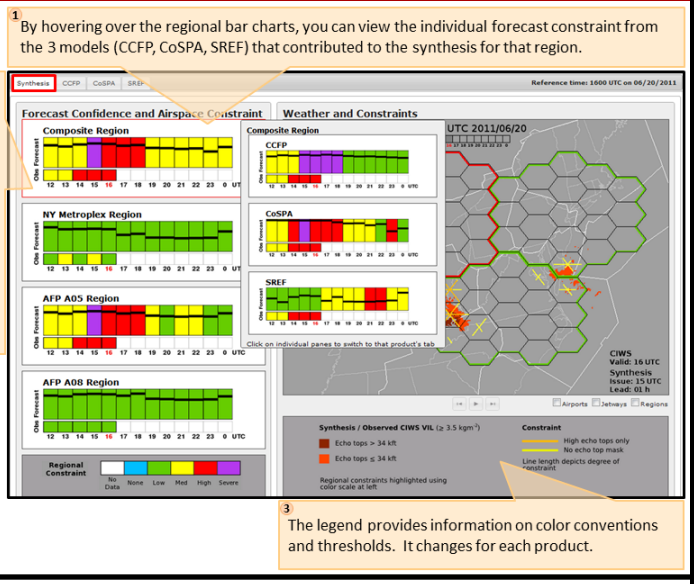
Forecast synthesis: contribution from individual forecasts

- ***By hovering over the regional bar charts, constraint from individual forecast products can be viewed (CCFP, CoSPA, SREF).***
- ***Equivalent information is accessed by selecting the appropriate product tab along the top of the application.***

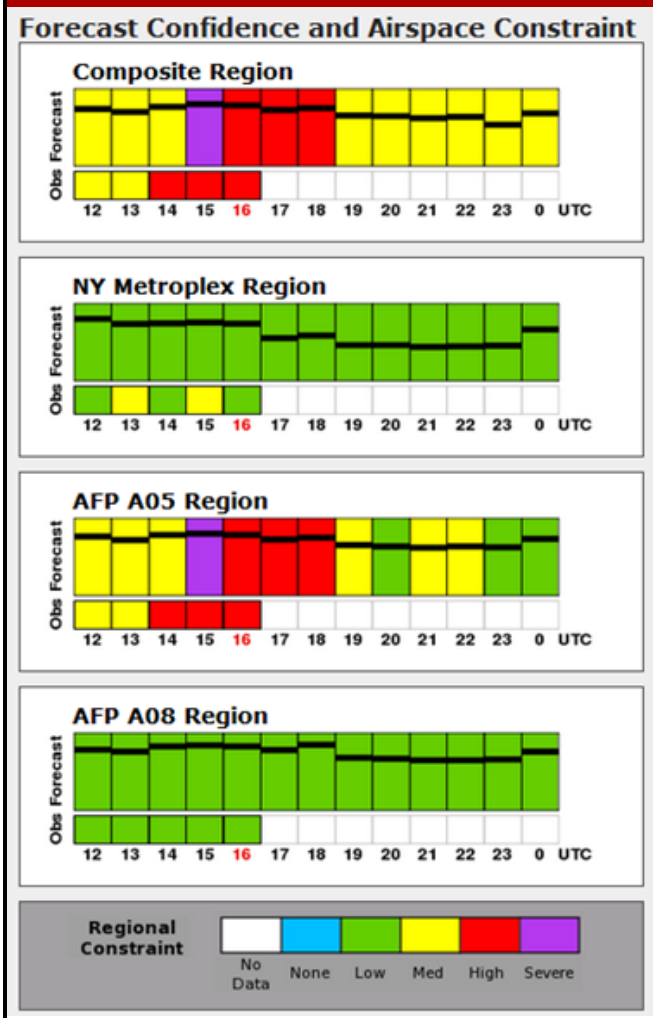
① From the main forecast synthesis screen, you can hover over the regional bar charts on the left to view the contribution to the synthesis from the 3 models (CCFP, CoSPA, SREF) for the selected region.

② The time axis is the same for all bar charts. In this example, the reference time is **16 UTC**, hours 12-15 are from the past, hour **16** is "NOW", and hours 17 – 00 UTC show forecast constraint for the future.

③ Note the legend below each map describing color conventions and thresholds for each product.



Forecast constraint and confidence by region & valid time



Start-up screen from the VERIFIED application showing forecast synthesis bar charts with constraint and confidence indicated.

The left-hand portion of the forecast synthesis screen presents a series of regional bar charts that provide the following information:

- Colored boxes along the top row of each figure represent forecast airspace constraint for a given region. Embedded within each of these boxes is a dark horizontal line that provides an indication of the level of confidence in the forecast (range = 0 to 1).
- Colored boxes along the bottom row represent observed airspace constraint from CIWS data up to and including the reference time. For these past cases, the corresponding constraint along the top row is from the shortest lead-time forecast that was valid at the indicated hour.
- Confidence is based on long-term historical performance of the forecast products, and is then modified by:
  - constraint category stratification
  - recent forecast performance data
  - intra-model consistency
  - prolonged forecast latency penalty
- Note the reference hour in red (**16 UTC**). The previous 4 hours for this period are 12 – 15 UTC, and the 8 forecast hours are 17 – 00 UTC.
- The constraint color scale is located at the bottom of the figure. It applies to these bar charts and to the outlines drawn around sub-regions on the synthesis map.