Weather Help - Aviation Hazards

Icing Maps

Icing Areas

Icing conditions are depicted using solid fill colors. Light icing is depicted in green, moderate icing is depicted in yellow, and severe icing is depicted in red. The type of icing is not depicted, only the intensity of expected icing conditions. Icing conditions are predicted using the WRF numerical model for U.S. areas, and the GFS numerical model for global areas. The icing forecast algorithm used is a blend of model super cooled liquid water with the NCAR/RAP and Stovepipe algorithms.

Freezing Levels

White dashed lines indicate the freezing level contours as determined from observations and numerical forecast model data. Contour intervals are labeled in hundreds of feet and drawn at 4000 foot intervals on most maps. Regional U.S. maps may have freezing level contours at 2000 foot intervals.
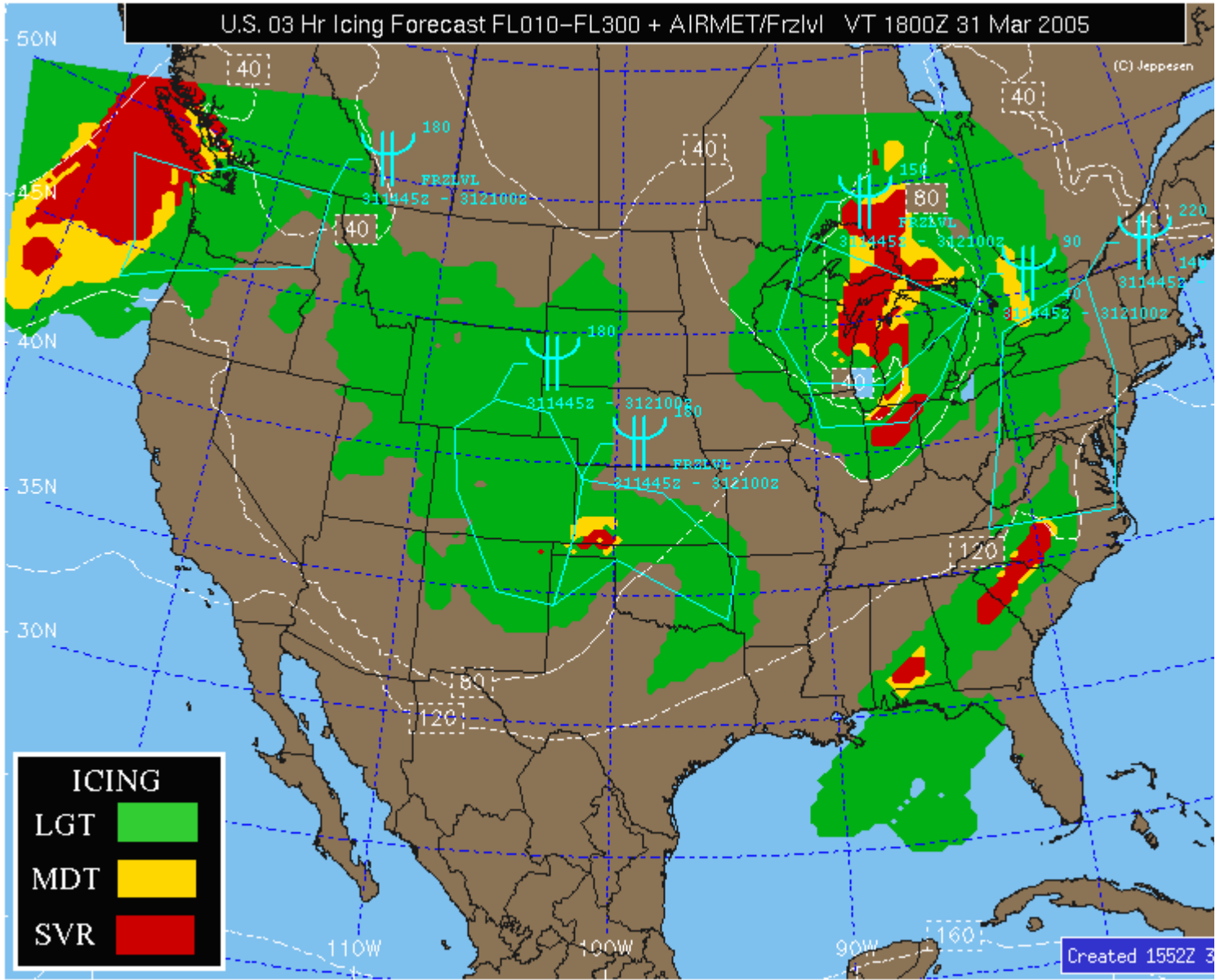
Icing Reports

On U.S. maps and areas where PIREP reports are received, PIREPs containing icing are depicted in light blue. For U.S. maps, only the icing severity symbol is depicted at the report locations. For Regional U.S. maps, other information from the PIREP may be included, such as: Flight Level in hundreds of feet, aircraft type and time of report in UTC, outside air temperature in degrees Celsius, and the intensity and type of icing reported. An icing symbol represents the intensity of icing. The diamond shape indicates the position of the aircraft when the report was issued.

AIRMETS

On U.S. maps and areas where AIRMETs are issued for, icing AIRMETS are graphically depicted as solid light blue lines. The intensity of the expected icing is depicted using icing symbols. The altitude range of the icing is labeled to the right of the icing symbol, with the upper altitude to the upper right, and the lower altitude to the lower right. Altitudes are labeled in hundreds of feet. FRZLVL is used to indicate that the actual freezing level is the lower altitude limit of icing. The start and expiration time of the AIRMET is depicted below the icing symbol, with the two digit day of month followed by the 4 digit hour and minute in UTC. Icing AIRMETS (name ZULU) are issued for areas expected to experience moderate icing conditions (outside convective activity).

U.S. Maps are available for forecast periods: 00, 03, 06, 12, 18 and 24 hours. The 00 (analysis) map is updated every hour and is available at the top of the hour, approximately 60 minutes past the analysis time. The 03 and 06 hour maps are updated every 3 hours (based on model data from 00, 03, 06, 09, 12, 15, 18 and 21 UTC) and are available approximately 60 minutes past the model run time. The 12, 18 and 24 hour maps are updated every 6 hours (based on model data from 00, 06, 12, and 18) and are available approximately 5-6 hours past the model run time.

International maps are available for forecast periods: 12, 18 and 24 hours. Maps are updated every 6 hours (based on data model data from 00, 06, 12 and 18 UTC) and are available approximately 5-8 hours past the model run time.

U.S. 03 Hr Icing Forecast FL010–FL300 + AIRMET/Frzlvl   VT 1800Z 31 Mar 2005

ICING
LGT
MDT
SVR

Turbulence Maps

Turbulence Areas

Turbulence conditions are depicted using solid fill colors. Light turbulence is depicted in green, moderate turbulence is depicted in yellow, moderate to severe turbulence in red, and severe turbulence is depicted in purple. Turbulence areas are predicted using the WRF numerical model for U.S. areas, and the GFS numerical model for global areas. The turbulence prediction algorithm is based on the kinematic approach of Ellrod-Knapp-2.

Wind Speed

Wind speed contours (isotachs) are drawn at 20 knot intervals, starting at 70 kts on maps with a 5000 foot vertical layer. The wind speed is derived from numerical model output at an altitude within the layer of the map. On composite layer maps, the maximum wind speed can occur at any altitude, but is generally found at higher altitudes near the jetstream.

Turbulence Reports

On U.S. maps and for areas where PIREPs are received, PIREPs containing turbulence are depicted in light blue. On U.S. maps only the turbulence intensity indicator is
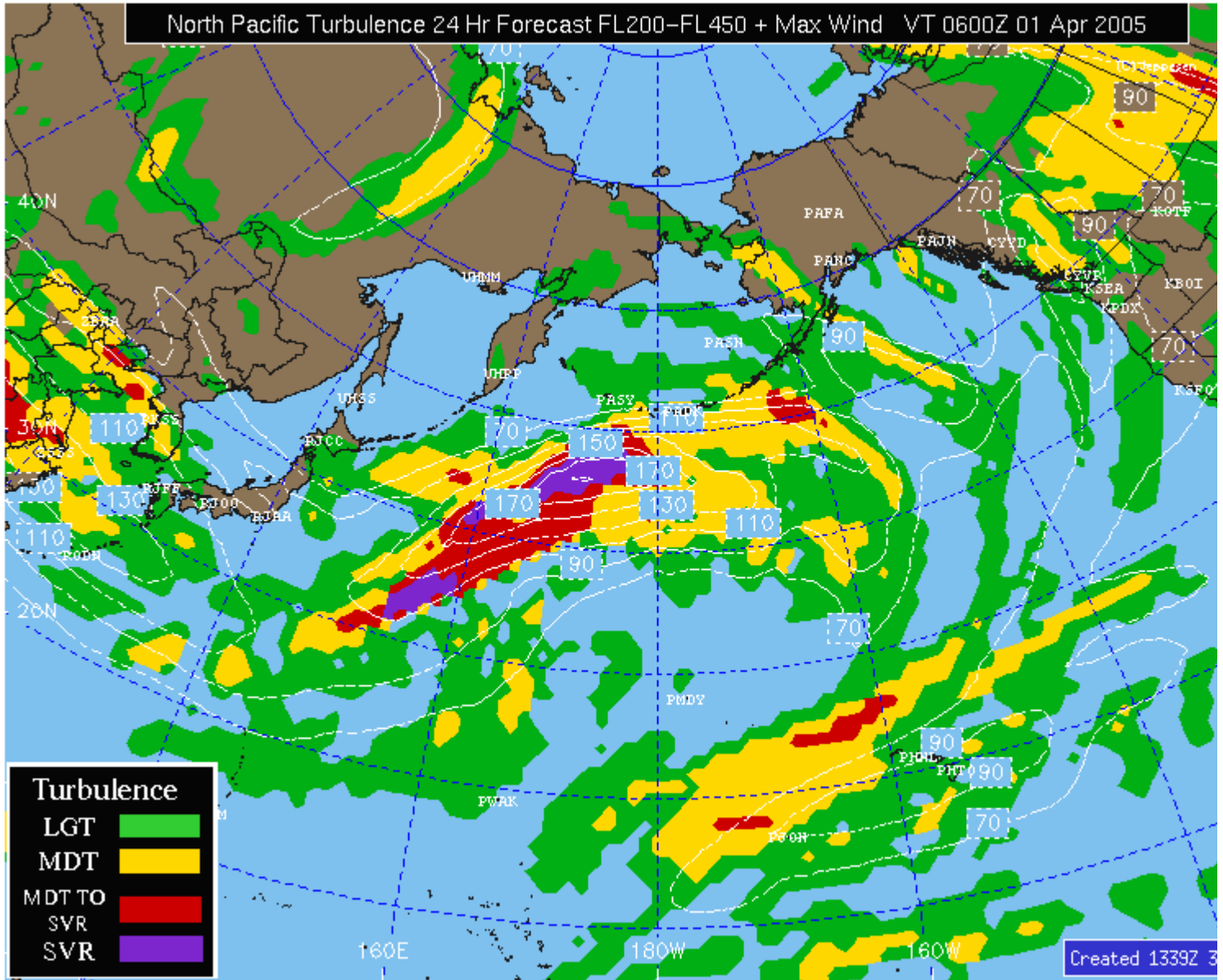
displayed. On Regional U.S. maps, additional information may be included, such as: Flight Level in hundreds of feet, aircraft type and time of report in UTC, and the intensity of turbulence reported. A turbulence symbol also represents the intensity of turbulence. The diamond shape indicates the position of the aircraft when the report was issued.

AIRMETS

Turbulence AIRMETS are graphically depicted as solid light blue lines. The intensity of the expected turbulence is depicted using turbulence symbols. The altitude range of the turbulence is labeled to the right of the turbulence symbol, with the upper altitude to the upper right, and the lower altitude to the lower right. If the lower altitude is not present, it is understood that the ground represents the lower limit. Altitudes are labeled in hundreds of feet. The start and expiration time of the AIRMET is depicted below the turbulence symbol, with the two digit day of month followed by the 4 digit hour and minute in UTC. Turbulence AIRMETS (named TANGO) are issued for areas expected to experience moderate turbulence (outside of convective activity).

U.S. Maps are available for forecast periods: 00, 03, 06, 12, 18 and 24 hours. The 00 (analysis) map is updated every hour and is available at the top of the hour, approximately 60 minutes past the analysis time. The 03 and 06 hour maps are updated every 3 hours (based on model data from 00, 03, 06, 09, 12, 15, 18 and 21 UTC) and are available approximately 60 minutes past the model run time. The 12, 18 and 24 hour maps are updated every 6 hours (based on model data from 00, 06, 12, and 18) and are available approximately 5-6 hours past the model run time.

International maps are available for forecast periods: 12, 18 and 24 hours. Maps are updated every 6 hours (based on data model data from 00, 06, 12 and 18 UTC) and are available approximately 5-8 hours past the model run time.

North Pacific Turbulence 24 Hr Forecast FL200-FL450 + Max Wind   VT 0600Z 01 Apr 2005

Turbulence
LGT
MDT
MDT TO SVR
SVR

Created 1339Z 3

IFR AIRMETS

AIRMETS

IFR and Mountain Obscuration AIRMETS are graphically depicted as solid yellow lines. The type of AIRMET is labeled as either IFR or MTOS (Mountain Obscuration). The start and expiration time of the AIRMET is depicted below the AIRMET label, with the two digit day of month followed by the 4 digit hour and minute in UTC. IFR & Mountain Obscuration AIRMETS (named SIERRA) are issued for areas where IFR or mountain obscuration conditions are expected over 50% of the defined area.

Maps are updated every hour and are available between 30 and 45 past each hour.
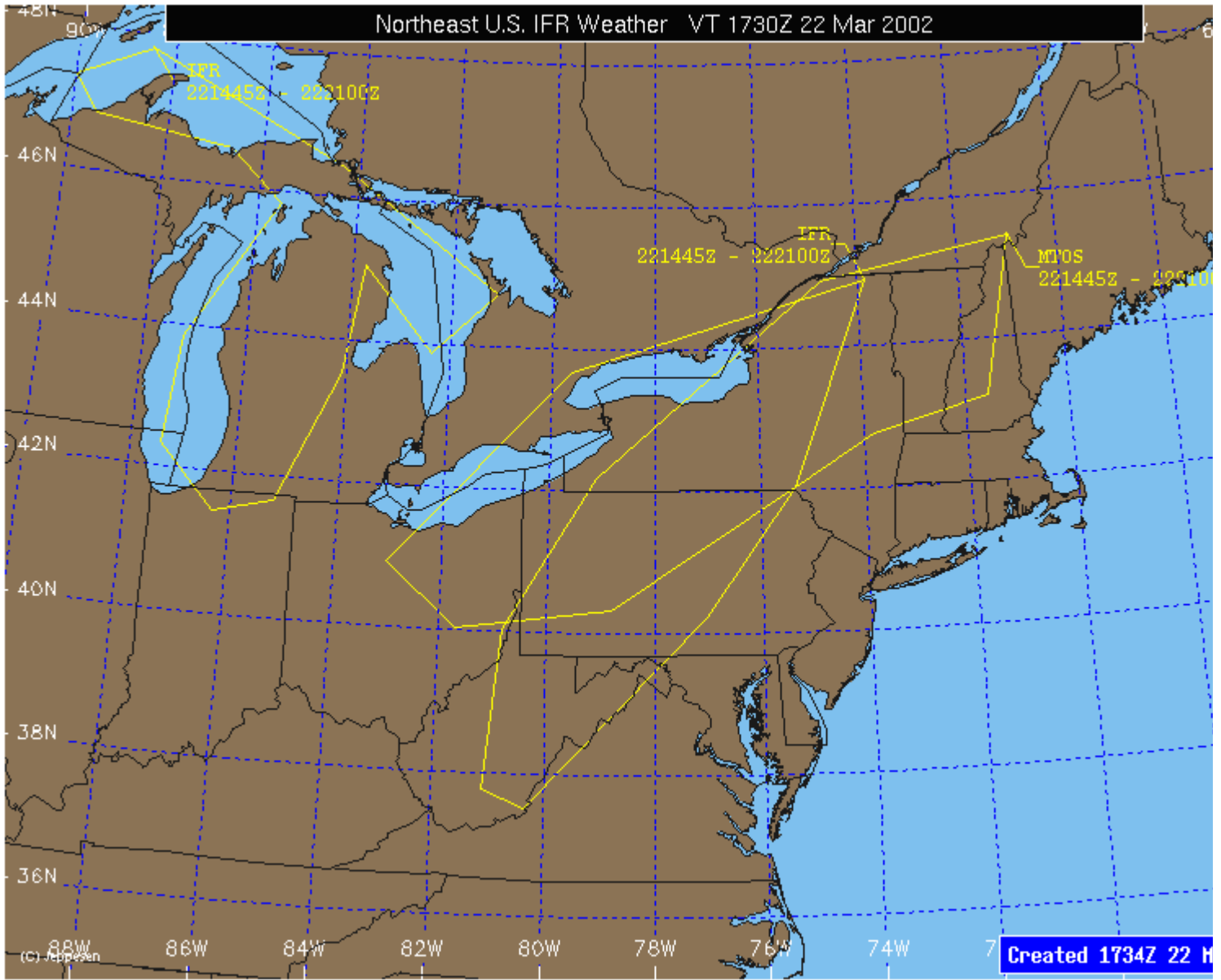
## SIGMETS and Convective SIGMETS

SIGMETS

All current SIGMETS are graphically depicted with solid YELLOW lines. The SIGMET name is depicted with a line pointing to the area. The start and expiration time of the SIGMET is depicted below the name, with the two digit day of month followed by the 4 digit hour and minute in UTC. SIGMETS are issued for severe or extreme non-convective turbulence or icing conditions.

Convective SIGMETS

All current Convective SIGMETS are graphically depicted with solid RED lines. The Convective SIGMET name is depicted with a line pointing to the area or line. The start and expiration time of the Convective SIGMET is depicted below the name, with the two digit day of month followed by the 4 digit hour and minute in UTC. Convective SIGMETS are issued for any of the following conditions: severe thunderstorms, embedded thunderstorms, lines of thunderstorms, areas that contain VIP level 4 echoes over 40% of an area at least 3,000 square miles.

Maps are updated every hour and contain the most recent information. Maps are available between 20 and

30 minutes past each hour.
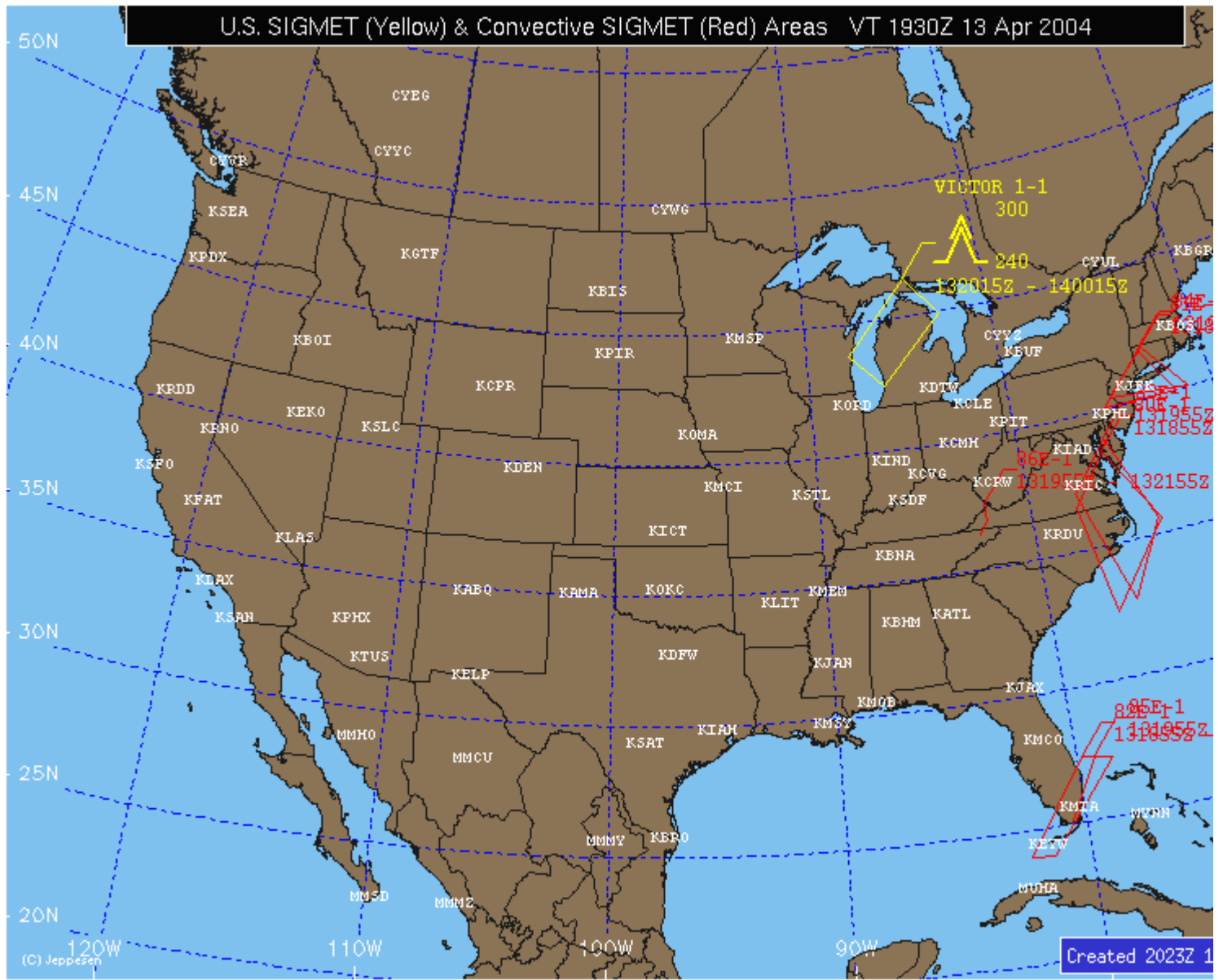
Lifted Index

Lifted Index

Map displays contours of the Lifted Index, at 4 unit intervals. The Lifted Index (LI) is a measure of the stability of the atmosphere. It is simply the difference between the observed 500 mb temperature and the temperature that a parcel of air would have if it were lifted from the boundary layer to the 500 mb level. If the LI is positive, the atmosphere is stable. If the LI is negative, the atmosphere is unstable. In terms of thunderstorms, the chance for thunderstorms increases as the LI decreases. For practical purposes, this is a general relationship between LI and thunderstorm development:

| LI Value	Thunderstorm Probability
> 4	None
1 to 4	Slight Chance of Thunderstorms
-2 to 0	Thunderstorms Possible, slight risk of Severe Thunderstorms

| -3 to –5 | Thunderstorms Likely, moderate risk of Severe Thunderstorms |
| < -5 | Strong risk of Severe Thunderstorms |

Maps are updated 4 times per day and are valid at 0000, 0600, 1200 and 1800 UTC. Maps are available 1 ½ hours past the valid time. Maps are created for the analysis, 12 and 24 hour forecast period each time they are generated. The LI maps are computed from radiosonde and numerical model data.
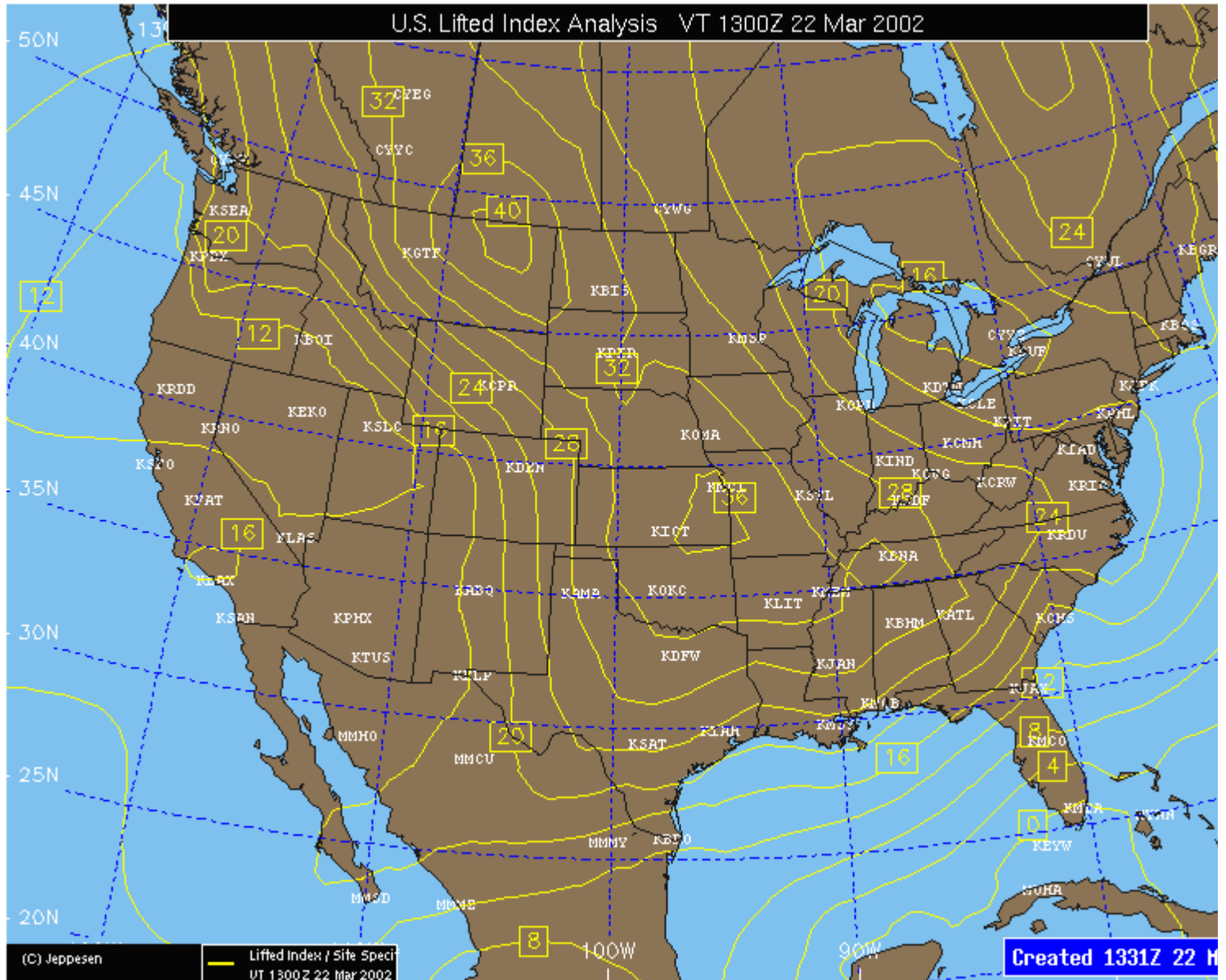
Hurricane/Typhoon Tracks

Hurricane/Typhoon Track
Map graphically depicts the current and forecast positions of all active tropical systems. Storms are color coded for easy recognition:
Tropical Depression (White) – Wind speed less than 35 knots.
Tropical Storm (Yellow) – Wind speed between 35 knots and 64 knots.
Hurricane/Typhoon/Tropical Cyclone (Red) – Wind speed greater then or equal to 65 knots.

Depicted for each system is the name of the storm at the current position. Also depicted is the day of the month and time of the current position or forecast, underneath the day and time is the central pressure of

the storm in mb, and below that is the wind speed in knots. Each track contains the current position and then 12, 24, 36, 48 and 72 hour forecast positions and data.

Maps are updated 4 times per day (0000, 0600, 1200 and 1800 for international areas, 0400, 1000, 1600 and 2200 for Atlantic, Caribbean and Eastern Pacific storms handled by the U.S. National Hurricane Center. Maps are available approximate 30 minutes past the update times.
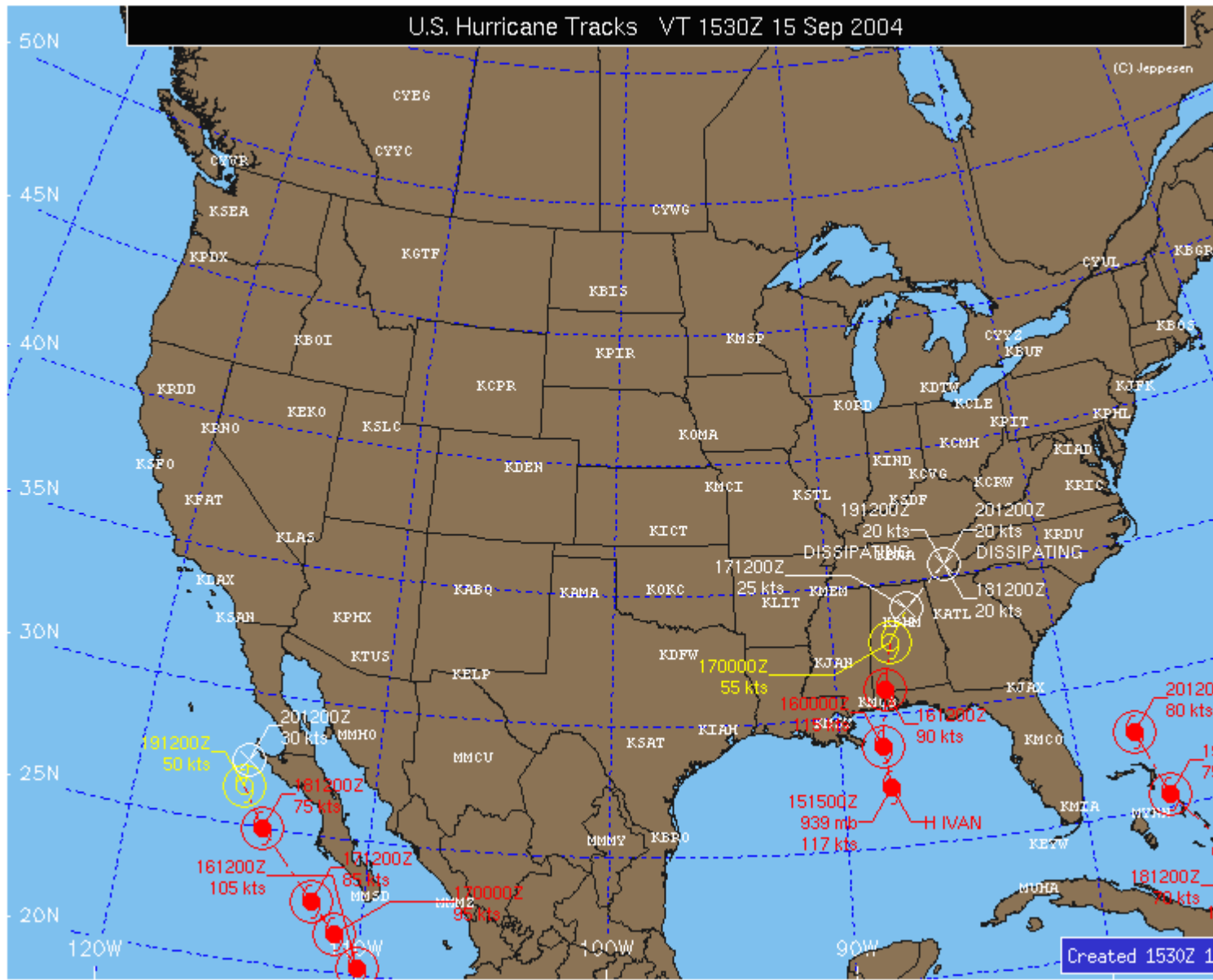
Lightning

Lightning

Lightning strikes for the past 10 minute period are depicted as yellow lightning bolts. Lightning strikes include all cloud to ground strikes as well as all strikes that occur within and between clouds. Lightning data is provided by the U.S. Precision Lightning Network (USPLN) using a network of detection sensors across North America. The sensors are able to detect lightning strikes over 1000 miles or more away from the sensor, using ionospheric skip techniques, so that lightning is depicted over oceanic areas as well as land.

Airport Locations   Selected airport locations are depicted using the 4 letter ICAO identifier at the location.

Maps are available every 10 minutes and include all lightning detected during that 10 minute period.