

## Weather Help - NEXRAD Radar Maps

### Base Reflectivity

#### Base Reflectivity

16 levels depicted with colors from dark green (very light) to red (extreme) that indicate the intensity of precipitation. Legend associates colors with intensity.

#### Severe

Yellow box indicates a Severe Thunderstorm Watch area. A Red box indicates a Tornado Watch area. Watch areas represent areas where the conditions are favorable for the development of severe thunderstorms or tornadoes.

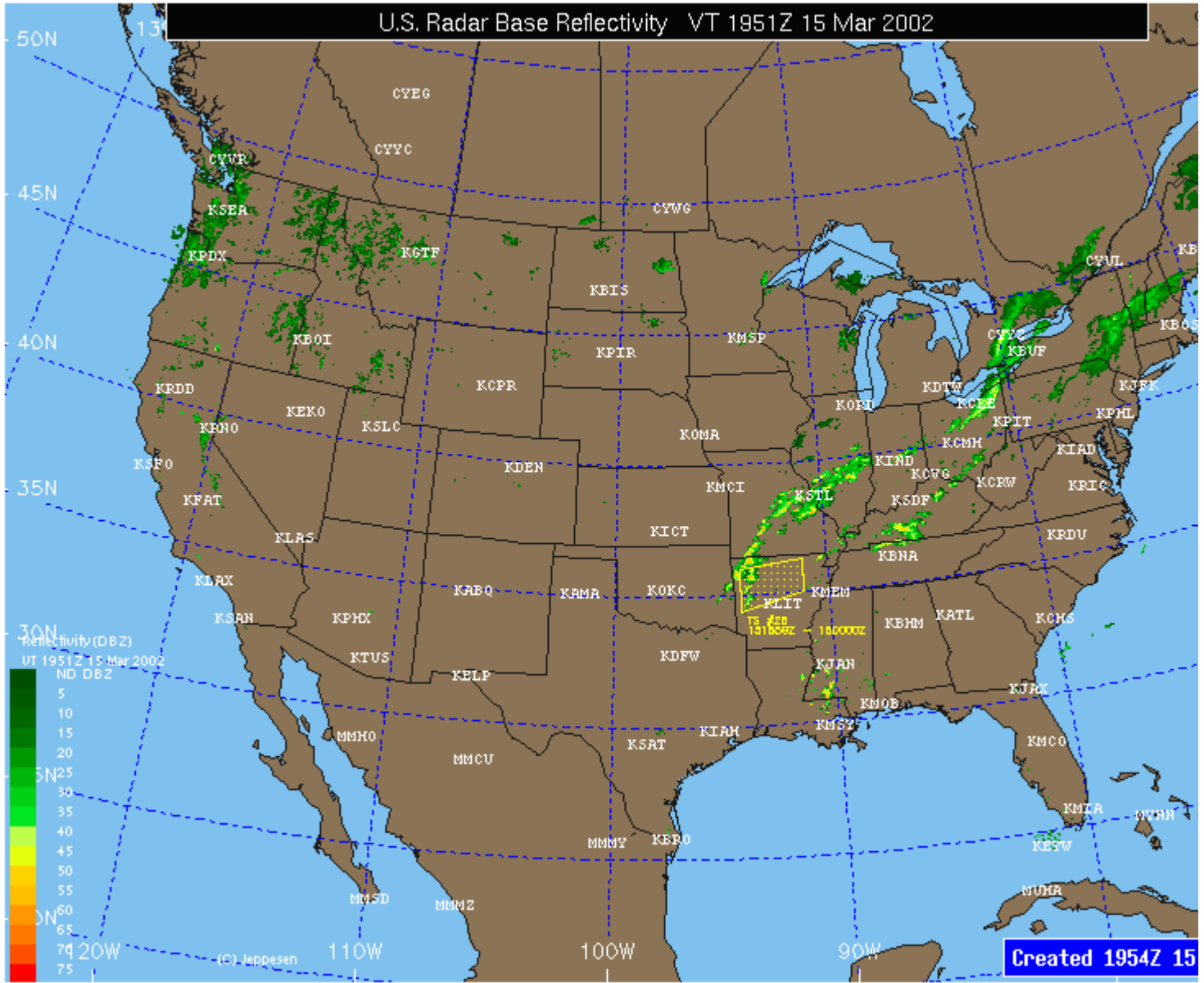
#### Thunderstorm/Tornado Watch Areas

#### Airport Locations

Selected airport locations are indicated on the background map using the 4 letter ICAO identifier in white.

NEXRAD radar base reflectivity measures the intensity of radar echo returns from precipitation particles. The larger and more dense the particle, the greater the return value. Reflectivity is generally associated with precipitation rate, such that the greater the reflectivity, the heavier the precipitation rate. It is also generally assumed that higher reflectivity values (above 40 DBZ) are associated with convective precipitation. Lightning and hail are more likely to be present with higher reflectivity values. Base reflectivity represents the lowest volume scan angle from the radar. The Jeppesen Base Reflectivity maps are national or regional mosaics, which combine the information from individual radar sites.

Maps are available every 6 minutes and contain the most recent NEXRAD mosaic. The actual valid time of the data may be a few minutes earlier than the creation time.



**Echo Tops**

16 levels depicted with colors from gray (surface) to purple (70,000 ft) that indicate the altitude in hundreds of feet of the maximum precipitation returns. Legend associates colors with altitude of tops.

**Echo Tops**

**Severe Thunderstorm/Tornado Watch Area**

Yellow box indicates a Severe Thunderstorm Watch area. A Red box indicates a Tornado Watch area. Watch areas represent areas where the conditions are favorable for the development of severe thunderstorms or tornadoes.

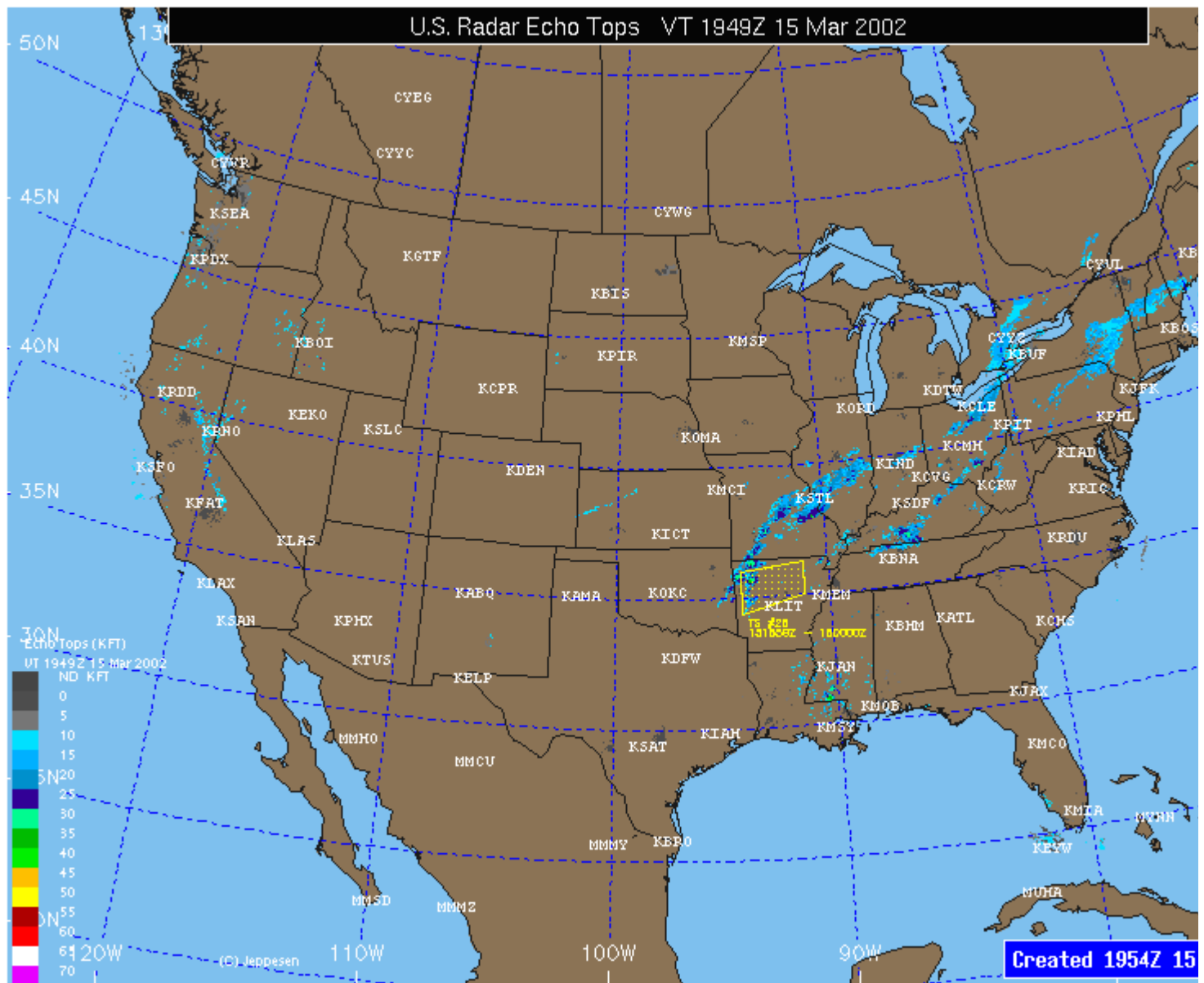
**Airport Locations**

Selected airport locations are indicated on the background map using the 4 letter ICAO identifier in white.

NEXRAD Echo Tops depicts the height, in hundreds of feet, of the highest echo returns. The color palette used to define the height is displayed in the lower left corner. Different colors are used at 5,000-foot intervals from the surface up to 70,000 feet. Echo Tops represent the tops of the actual precipitation, not cloud tops. Sometimes cloud tops can be higher than echo tops, but do not contain precipitation. The Jeppesen Echo Top maps are national or regional mosaics, which combine the information from individual

radar sites.

Maps are created every 6 minutes and contain the most recent NEXRAD mosaic. The actual valid time of the data may be a few minutes earlier than the creation time.



## 1 Hour Precipitation

### 1 Hour Precipitation Accumulation

16 levels of precipitation accumulation are depicted using colors from light gray (0.1 inches) to white (10.0 inches). Legend associates colors with 1 hour precipitation accumulation.

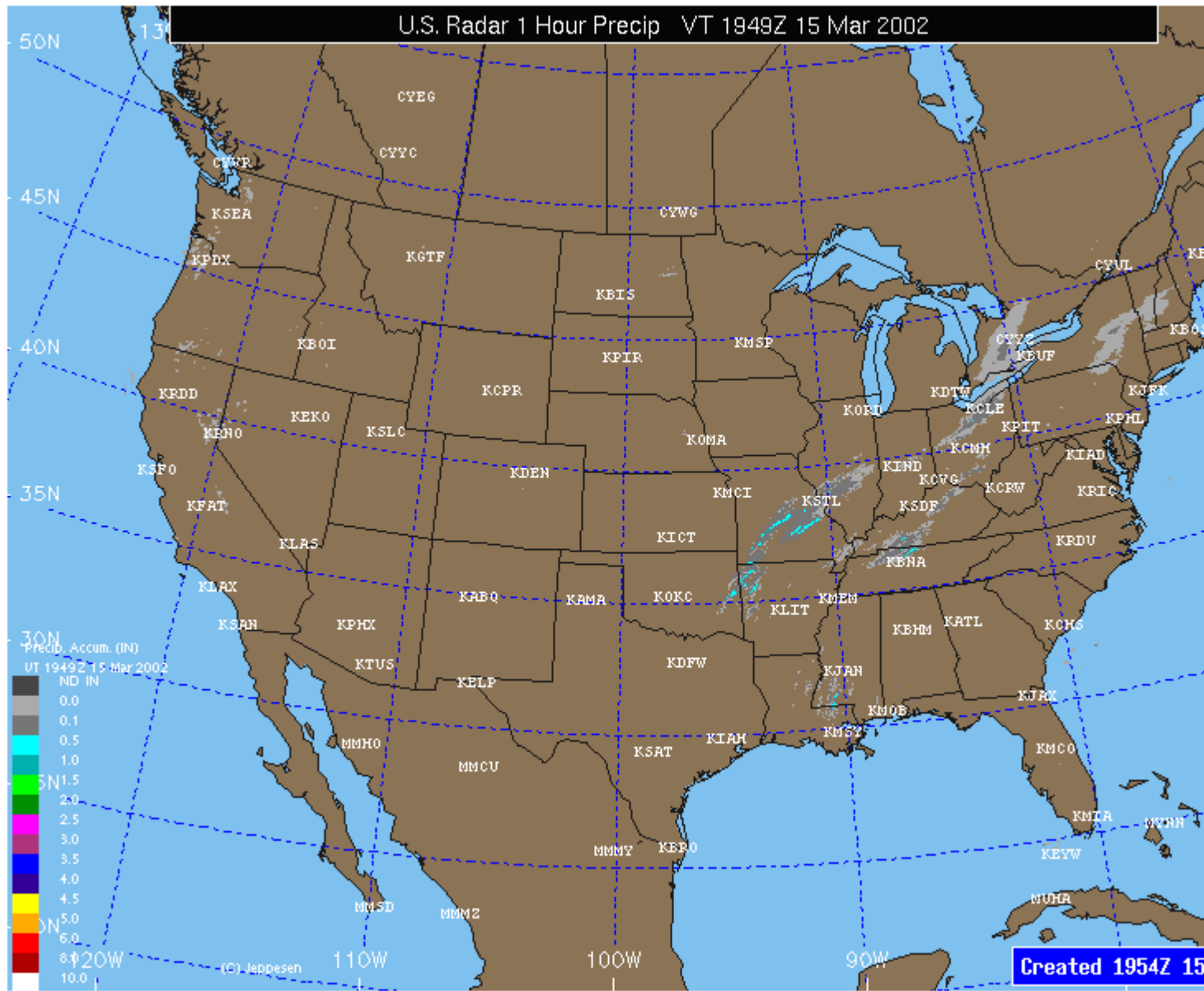
### Airport Locations

Selected airport locations are indicated on the background map using the 4 letter ICAO identifier in white.

NEXRAD 1-Hour Precipitation represents the cumulative inferred precipitation that has been measured over the past hour. Precipitation amounts are inferred, as they are not actually measured by the NEXRAD radar, but the reflectivity values are associated with precipitation rates, and thus cumulative precipitation is inferred. The precipitation is "measured" by determining the reflectivity values and duration for which they

existed over an area. The color palette in the lower left corner associates different colors to the cumulative precipitation received over the last hour. The Jeppesen 1 Hour precipitation maps are national or regional mosaics, which combine the information from individual radar sites

Maps are created every 6 minutes and contain the most recent NEXRAD mosaic. The actual valid time of the data may be a few minutes earlier than the creation time.



**Radar Composite**

**Precipitation Intensity**

6 levels depicted with colors from dark green (very light) to red (extreme) that indicate precipitation. Legend associates colors with intensity.

**Echo Tops & Cell Movement**

3 digit underlined numbers represent the altitude of the precipitation at the dot connected to the base of the number. Altitude is labeled in hundreds of feet. Arrows indicate the direction of movement for individual cells. Speed of movement is indicated in knots at the tip of the arrow.

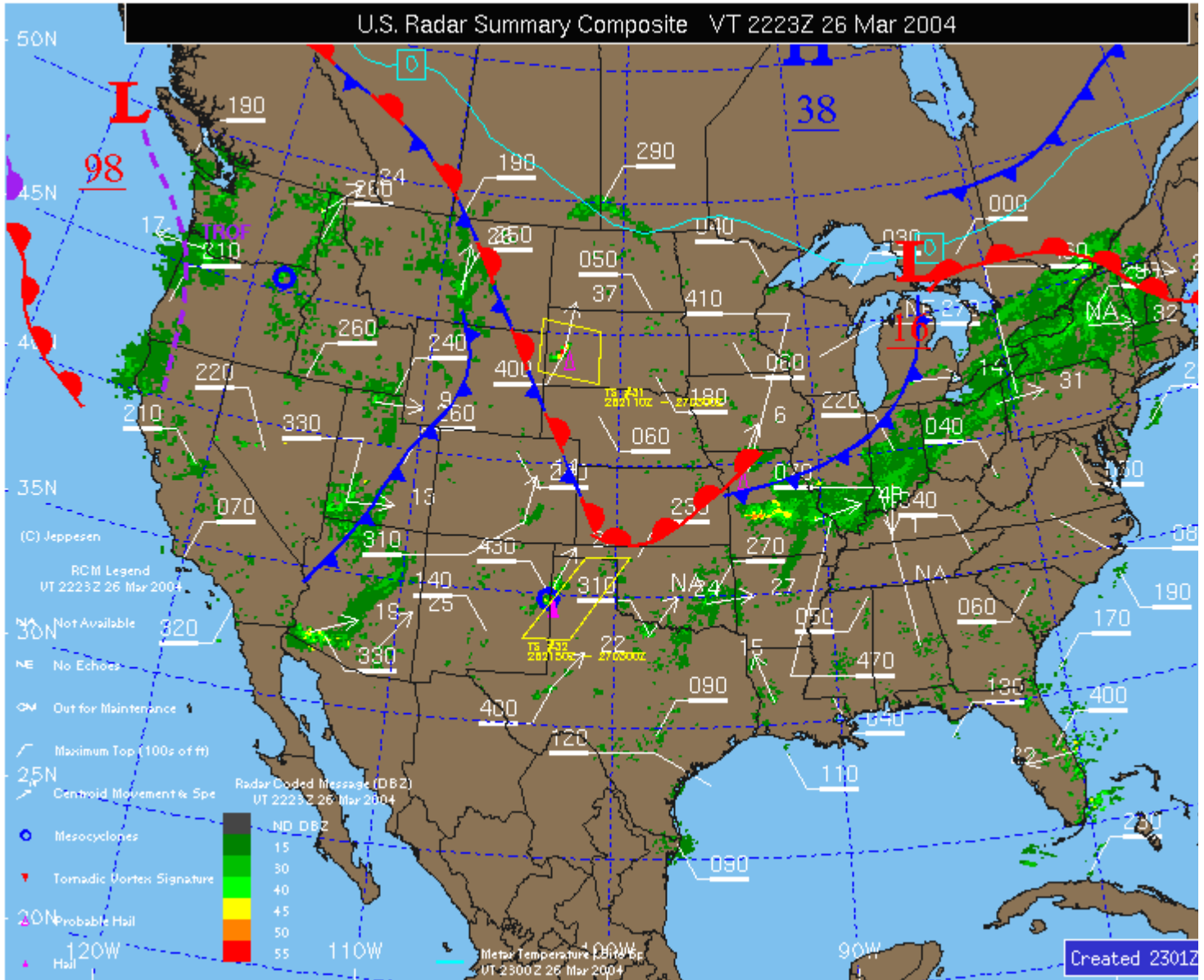
**Severe**

A yellow box indicates a Severe Thunderstorm Watch area. A red box indicates a

<b>Thunderstorm/Tornado Watch Areas</b>	Tornado Watch area. Watch box area depicts areas that are favorable for the formation of severe thunderstorms and tornadoes.
<b>Surface Fronts</b>	Cold fronts are dark blue, warm fronts are red, occluded fronts are purple and stationary fronts are alternating red/blue. Surface Troughs are dashed purple lines.
<b>High &amp; Low Pressure Centers</b>	Blue H represents the center of high pressure, and red L represents the center of low pressure.
<b>Surface Freezing Line</b>	Light Blue solid line depicts the surface 0 degree Celsius isotherm. (surface freezing level). Hail - Suspected hail locations are depicted by a purple triangle.
<b>Radar Signature Symbols</b>	Tornado - Suspected tornado locations are depicted by a red inverted triangle. Mesocyclone - Suspected mesocyclone (rotating thunderstorm) locations are depicted by a blue circle.

The Jeppesen Radar Composite map combines reflectivity values and echo tops as reported by the NEXRAD Radar Coded Messages (RCM). These reports are issued twice per hour at 20 and 50 minutes past the hour. Resolution of radar echoes is approximately 10km.

Maps are created every 30 minutes at the top and bottom of the hour.



## Winter Radar Mosaic

16 levels for three distinct precipitation types, rain; mixed precipitation and snow are depicted using 3 distinct color palettes. Legend associated colors with precipitation intensity.

## Severe Thunderstorm/Tornado Watch Areas

Yellow box indicates a Severe Thunderstorm Watch area. A Red box indicates a Tornado Watch area. Watch areas represent areas where the conditions are favorable for the development of severe thunderstorms or tornadoes.

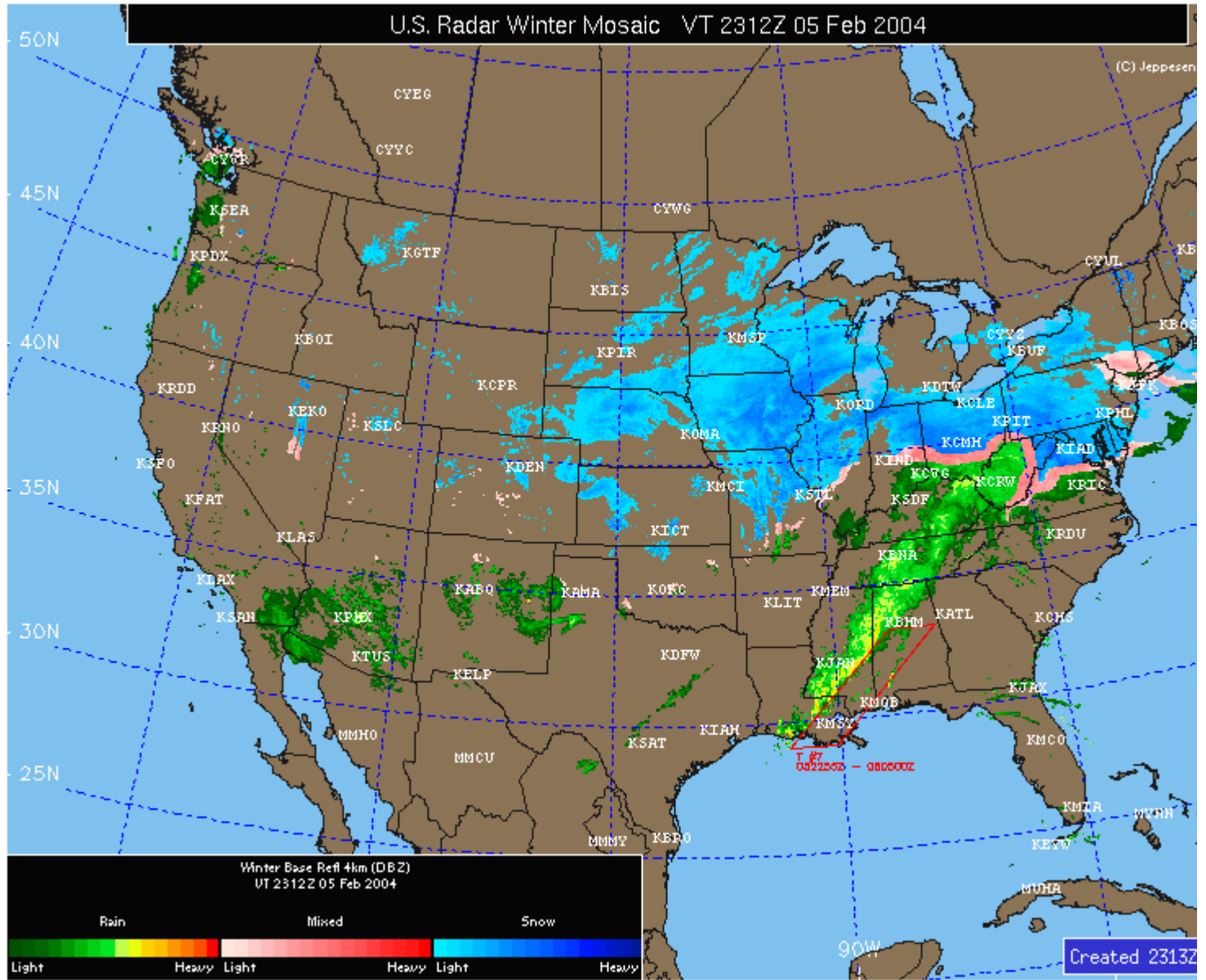
## Airport Locations

Selected airport locations are indicated on the background map using the 4 letter ICAO identifier in white.

NEXRAD Winter Radar Mosaic depicts base reflectivity in unique color schemes so that users can easily differentiate between rain, mixed precipitation and snow during winter months. A complex computer algorithm uses NEXRAD base reflectivity and identifies areas where snow, freezing rain and mixed precipitation are falling. Using distinct colors, users can identify various precipitation regimes. Rain is depicted using 16 colors ranging from dark green (light rain) to yellow (moderate rain) to dark red (heavy

rain). Mixed precipitation or freezing rain is depicted using 16 colors ranging from light pink (light) to pink (moderate) to red (heavy). Snow is depicted using 16 colors ranging from light blue (light snow) to blue (moderate snow) to dark blue (heavy snow). The Jeppesen Winter Radar Mosaic maps are created for the entire U.S. as well as the six regional U.S. areas.

Maps are created every 6 minutes and contain the most recent NEXRAD information.



**Single Site Radar Map**

**Single Site Base Reflectivity**

16 levels of precipitation depicted. Legend associates colors with precipitation intensity.

**Airport Locations**

Selected airport locations are indicated on the background map with a green airport symbol with the corresponding 4 letter ICAO identifier in white. State and county borders are also depicted with dark solid lines. Magenta range rings extend from the NEXRAD site 25 nm at intervals out to the maximum range of 125 nm. The resolution of the Base Reflectivity data is 1 km.

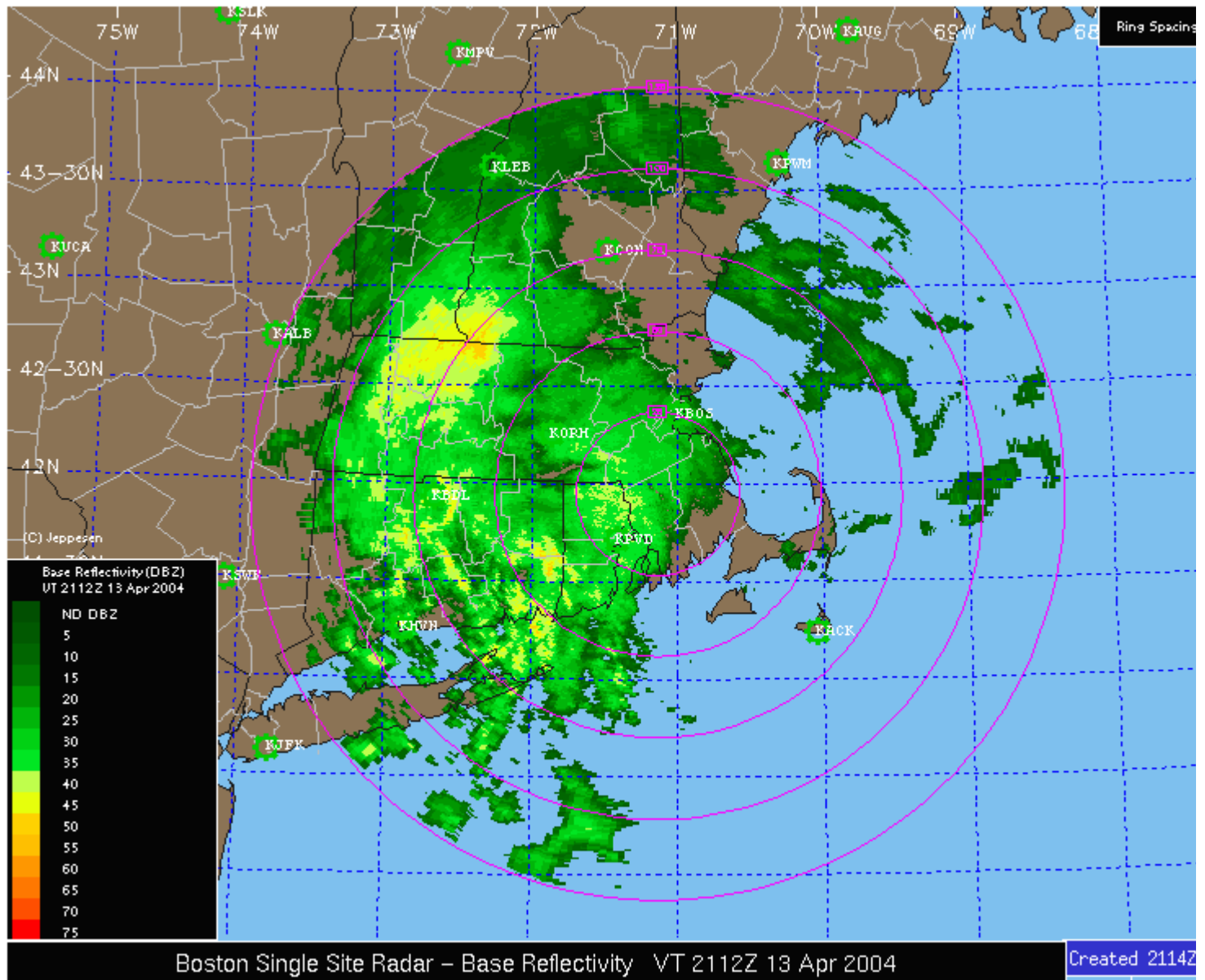
Single Site radar maps depict the actual base reflectivity from the individual NEXRAD radar sites. There are 156 radar sites operated by the NWS, FAA and DoD in the contiguous U.S., Alaska, Hawaii, Guam, and Puerto Rico. The sites are operated by radar operators, and can be operated in two distinct modes; Precipitation Mode and looking at the legend on the map. Precipitation Mode legend is from 0 to 75 dBZ, and Clear Air Mode legend is from -29 to 29 dBZ.

### Precipitation Mode

When precipitation is nearby or expected soon, the radar generally operates in Precipitation mode.

In this mode, the returns are generally in green with higher intensity precipitation in yellow, orange and red. The scale on the legend will run from 0 dBZ to 75 dBZ.

Maps are created every 6 minutes in Precipitation mode.



### Clear Air Mode

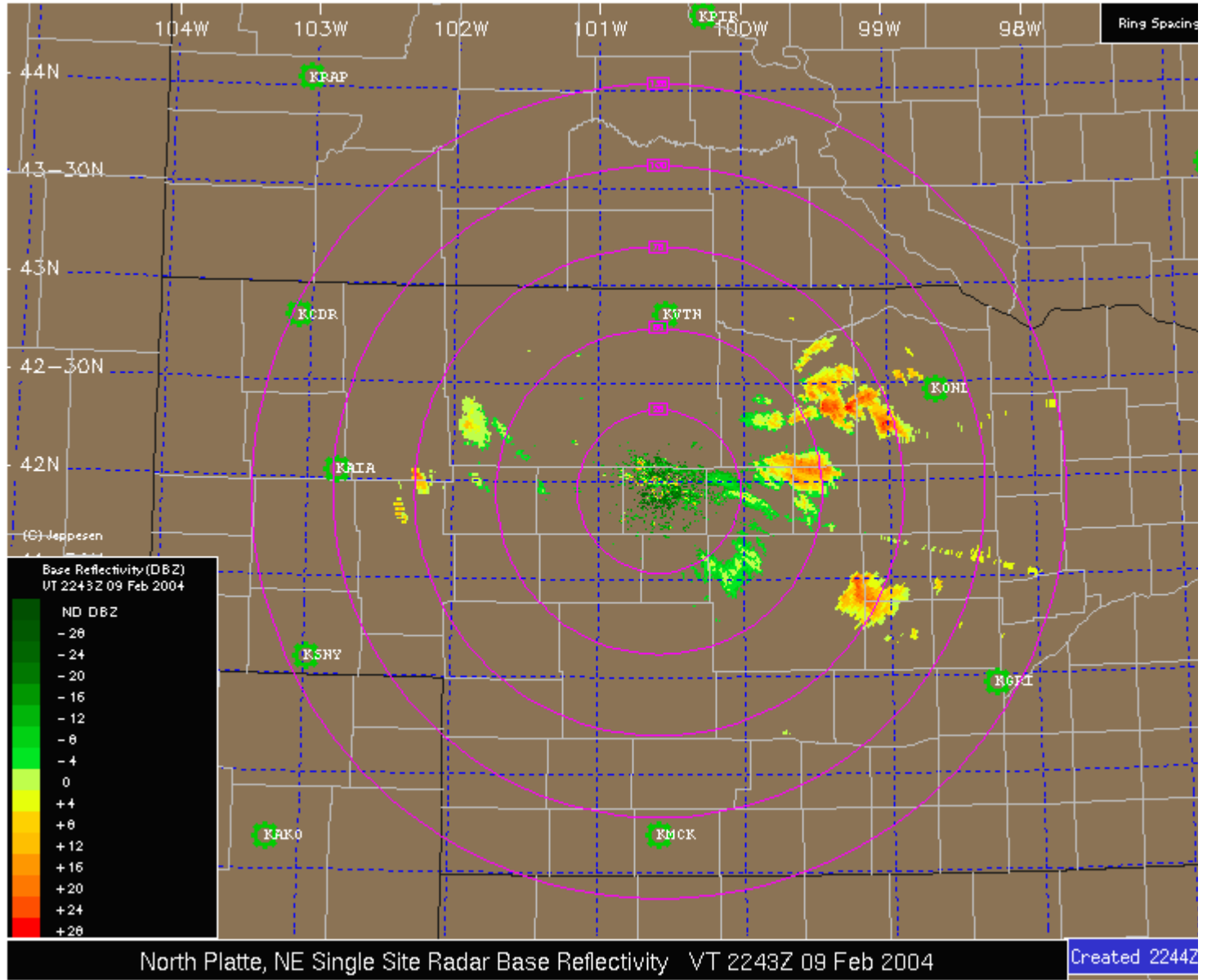
When there is no precipitation nearby, the radar will generally operate in Clear Air



mode.

In this mode, that sensitivity of the radar is increased so that the radar will return energy from dust and insects, as well as detect inversions in the atmosphere. Returns in Clear Air mode are generally yellow, orange, and red. The scale on the legend in Clear Air mode will run from -29 dBz to 29 dBz.

Maps are created every 10 minutes in Clear Air mode.



### NEXRAD Forecast

#### Base Reflectivity

16 levels depicted with colors from dark green (very light) to red (extreme) that indicate the intensity of precipitation. Legend associates colors with intensity. For Winter Radar Mosaic product 3 color ranges are used to depict rain (green to red), freezing rain or mixed precipitation (pink to red), and snow (light to dark blue).

#### Airport Locations

Selected airport locations are indicated on the background map using the 4 letter ICAO identifier in white.

The NEXRAD Forecast product is a new and innovative map provided exclusively by Jeppesen in conjunction with technology provided by Weather Decision Technologies of Norman, Oklahoma. This product is a forecast of NEXRAD Base Reflectivity, and is based upon the MAPLE (McGill Algorithm of Precipitation by LaGrangian Extrapolation) algorithm developed at McGill University by researchers Germann and Zawadski. MAPLE uses the past 90 minutes of NEXRAD activity in conjunction with the WRF numerical model guidance to predict where future NEXRAD precipitation will be, and determine whether it will be rain, freezing rain or mixed rain/snow, or snow and the intensity of the precipitation. MAPLE will only predict future precipitation based on current activity, meaning it will not develop new precipitation in the future, but it will continue trends of decay and growth detected in past and present precipitation.

Jeppesen provides the NEXRAD forecast at 15 minutes increments from the current to 4 hours in the future in an animated loop. A new set of 16 maps extending 4 hours in the future is generated every 15 minutes, so that new precipitation detected in the past 15 minutes will be forecast in the future.

Forecast maps are available every 15 minutes and contain the most recent NEXRAD forecast. The NEXRAD forecast maps appear different from the current NEXRAD maps, and the ocean color is black in the forecast versus blue in the current maps. This is done so that when looping past into future maps, you will know which maps are forecast maps. A large blue label is also inserted on all NEXRAD forecast maps to further insure you are aware this is a forecast product. The valid time of the forecast map is displayed in the map header at the top of the map as well as the forecast period.

As with any forecast product, the accuracy may vary. These products are intended to provide a realistic view of where precipitation activity will be located in the future, but should only be used for planning purposes, not tactical avoidance.

United States Base Reflectivity +4:00 Hr Forecast VT 0300Z 02 Oct 2004

