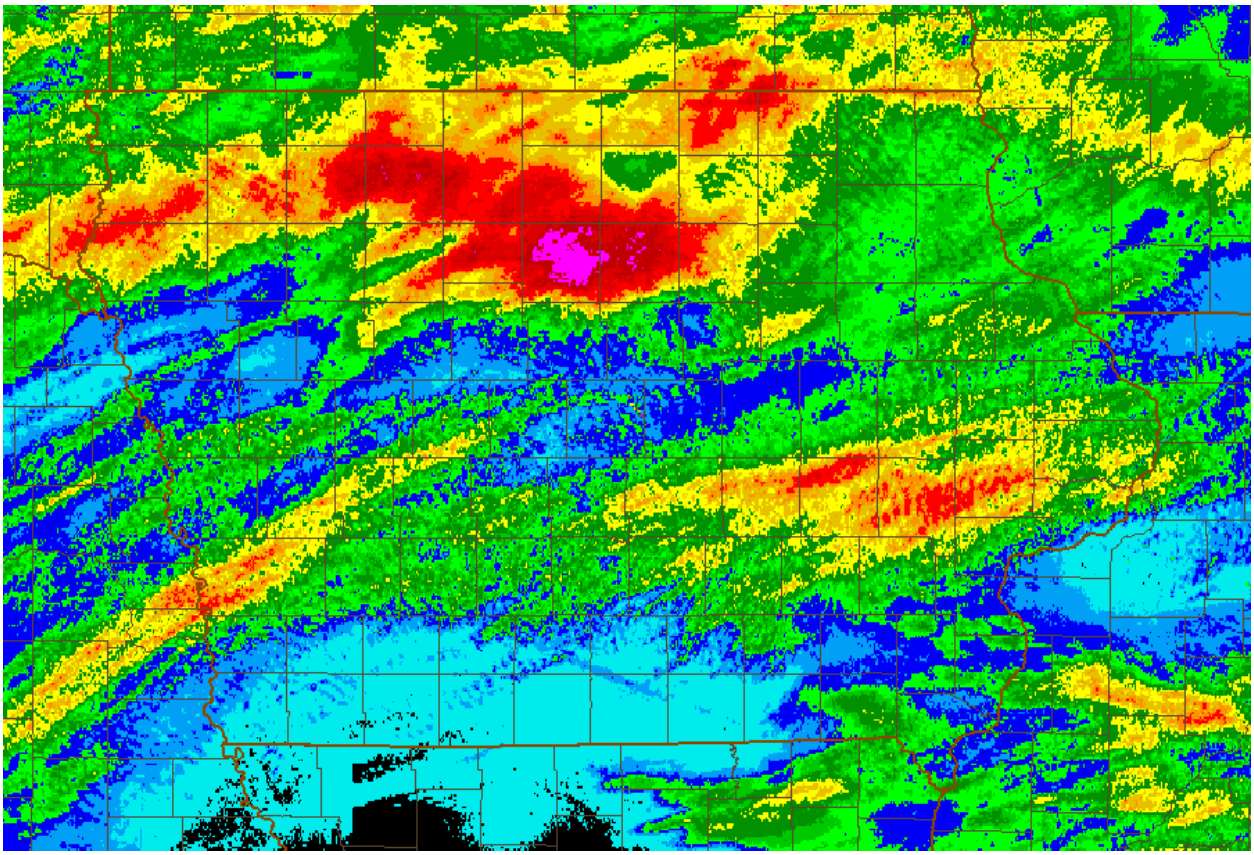
National Weather Service Storm Survey of Bremer County Wind Damage
June 23, 2010

Overview:

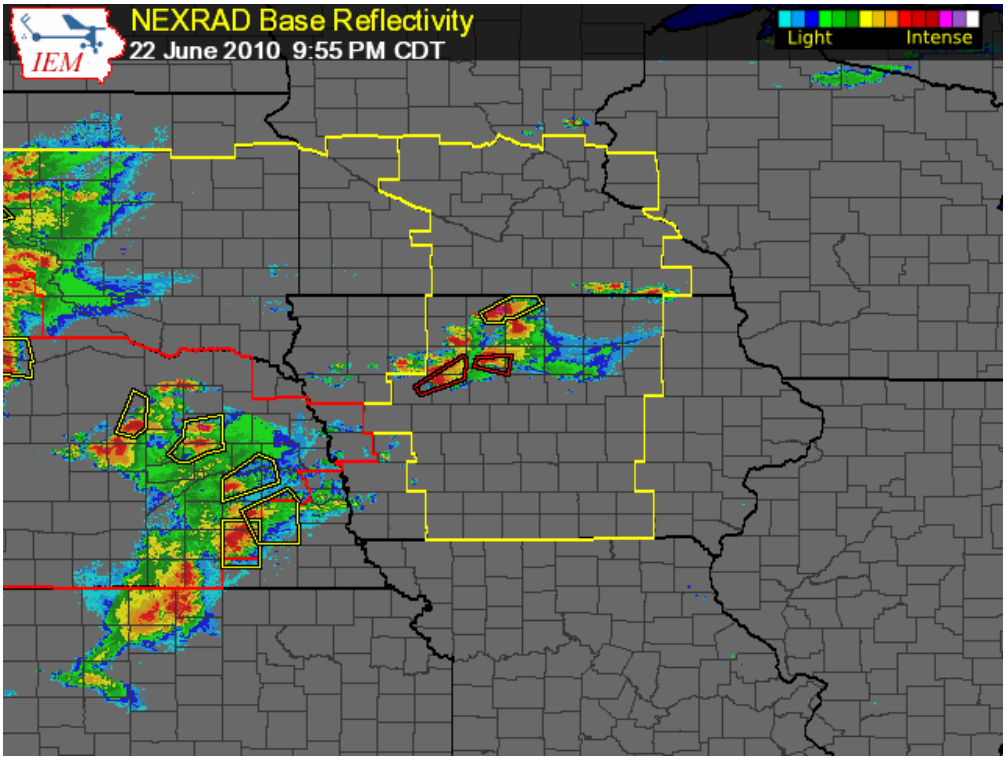
Severe weather was widespread across Iowa during the night of June 22, 2010. Thunderstorms developed over north central Iowa during the evening and then moved across northern Iowa during the overnight hours.

The thunderstorms produced several small tornadoes, several areas of wind damage and significant flash flooding in Wright and Franklin counties.

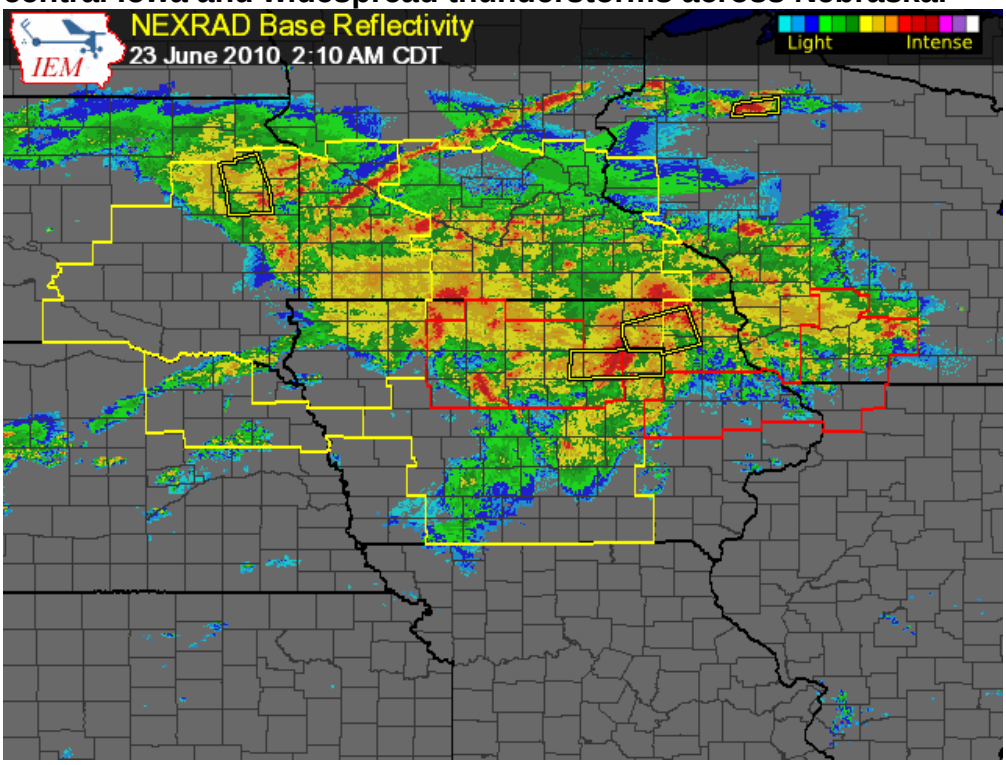


This Image shows the 24 hour rainfall ending at 7 A.M. on June 23, 2010. Note the intense rainfall over north central Iowa which caused significant flash flooding.

Thunderstorms developed across north central Iowa during the evening. By 10:00 P.M., two supercell thunderstorms were producing short lived tornadoes and straight line wind damage. The thunderstorms over north central Iowa continued through the night and by 215 A.M. they had developed into a severe mesoscale convective system. A severe thunderstorm was producing wind damage in Bremer County along with a brief tornado.



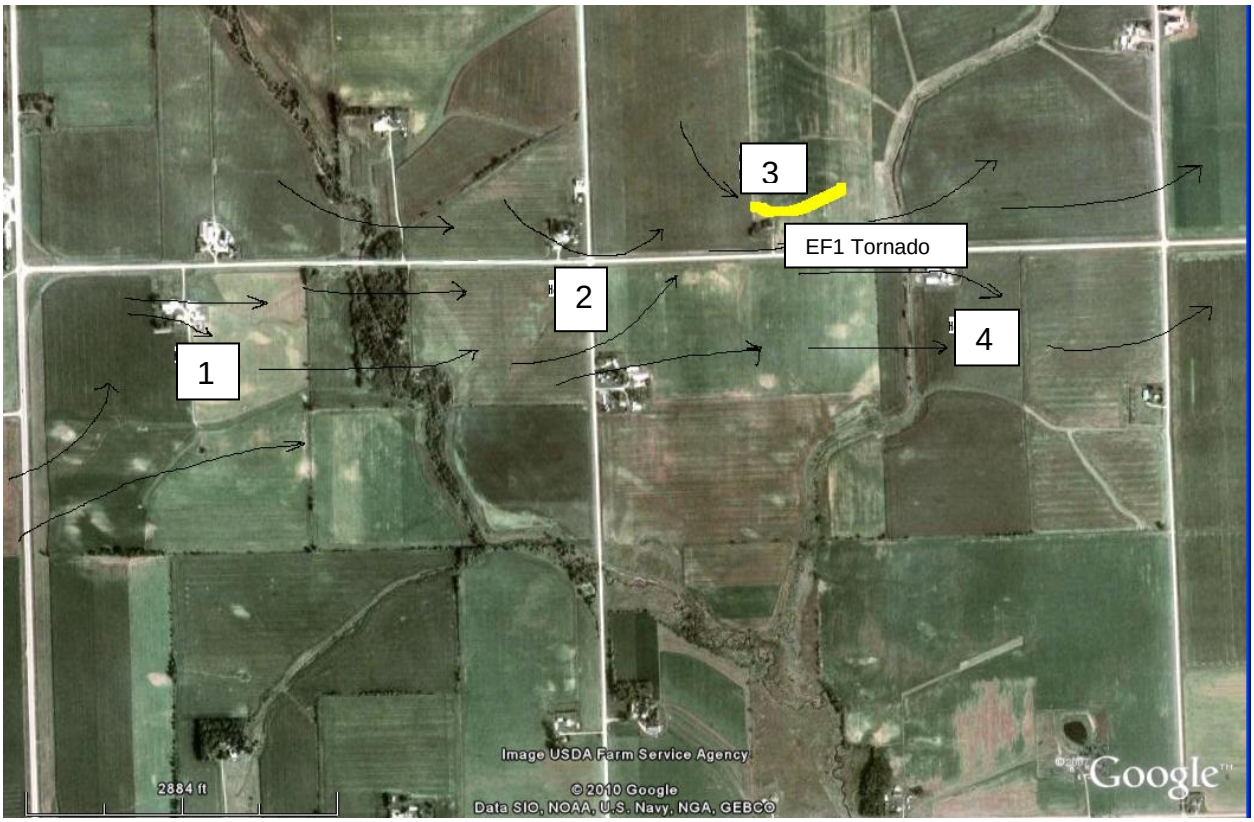
9:55 P.M., June 22, 2010 radar mosaic showing two tornado warnings over north central Iowa and widespread thunderstorms across Nebraska.



2:10 A.M., June 23, 2010 radar mosaic showing a large mesocale convective system over Iowa. A severe thunderstorm produced wind damage and a brief tornado over Bremer County west of Tripoli shortly after this image.

Survey Results:

The damage survey was conducted by Jeff Johnson, Warning Coordination Meteorologist with the National Weather Service in Des Moines, IA with the assistance of Kip Ladage, Bremer County Emergency Management. The intent of the survey was to document the damage, estimate the wind speeds and determine if the damage was from straight-line thunderstorm winds or tornadoes.



This Google Map image shows the area of significant damage in Bremer County west of Tripoli. The black arrows show the straight-line wind flow which were based on the orientation of the debris and how the corn was bent. The yellow line is the path length of a brief Enhanced Fujita (EF) scale tornado.

Most of the data suggested that the wind damage was caused by severe straight-line winds which blew generally from the west southwest.

Point 1:

Point one was a farm with a home and several barns and outbuildings. Two barns were destroyed and there was significant damage to another outbuilding, several large trees and the home. Wind speed estimates based on the damage ranged from 75 mph to 95 mph at this farm.

Barn damage to barns and outbuildings at Point 1 which was caused by straight-line winds of between 85 and 90 mph

Point 2:
The severe straight-line winds continued east from Point 1 to Point 2. Several trees were topped along the creek between Points 1 and 2. Power poles were bent southeast of Point 2. Point 2 was a farm with a home and several barns and outbuildings. A large barn and a corncrib were destroyed and the home suffered significant damage. Wind speeds were estimated at 90 to 100 mph which destroyed the barn.

Destroyed barn at Point 2. Picture is courtesy of Kip Ladage.

Point 3:

Point 3 was an abandoned farm on the north side of the Highway 93. An old barn and grain bin were destroyed. There was strong evidence of convergence just north of the barn location. Sections of the barn were north and northwest of its location suggesting a southeast wind component. In addition, there was evidence of convergence in the corn and a short tornado track was noted in the corn field northeast of this location for a few hundred yards. The brief EF1 tornado occurred with wind speeds of 90 to 100 mph.

Debris pointing northwest from Point 3

Corn field where a brief EF1 tornado occurred

Point 4:

Point 4 was east of Point three by about a quarter mile. There was evidence of severe straight-line winds with wind speeds of around 85 mph.

Scattered wind damage continued northeast across the remainder of Bremer county to around Sumner. The damage was mainly tree damage consistent with wind speeds from 60 to 75 mph.

Wind speeds increased 2 miles east of Sumner where another farm was hit. A steel-framed building was severely damaged along with other outbuildings and the home. Wind speeds up to 95 mph were estimated at this location.