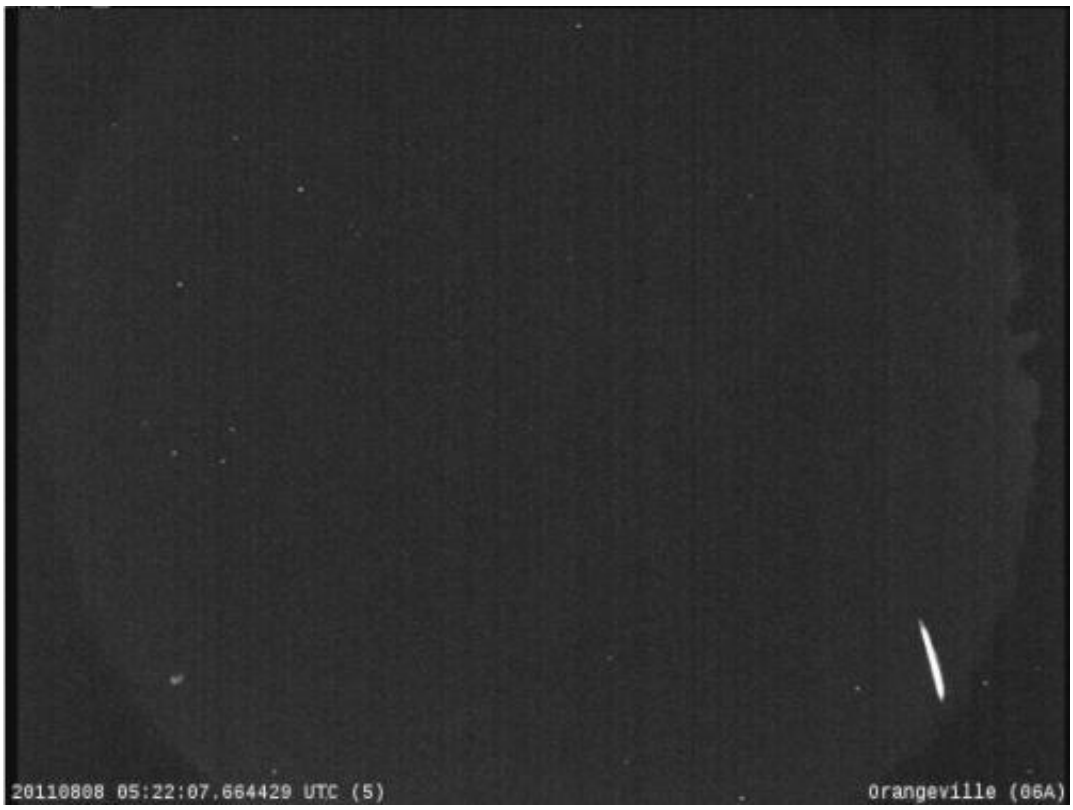
High confidence meteorite fall in Northeast Ohio

August 18 2011, By William J. Cooke



Composite of Lake Erie fireball meteor, as seen by the Orangeville, Ontario camera. Credit: University of Western Ontario

On August 8 at 1:22 Eastern Daylight Time, 4 all sky cameras belonging to the Southern Ontario Meteor Network detected a fireball entering the atmosphere 54 miles above Lake Erie (80.944 W, 41.945 N), moving SSE at 25 km/s (55,900 mph). Decelerating rapidly, the meteor was last

tracked north of Gustavus (80.667 W, 41.411 N), moving at approximately 10 km/s. Altitude at this point was 38 km (23.6 miles).

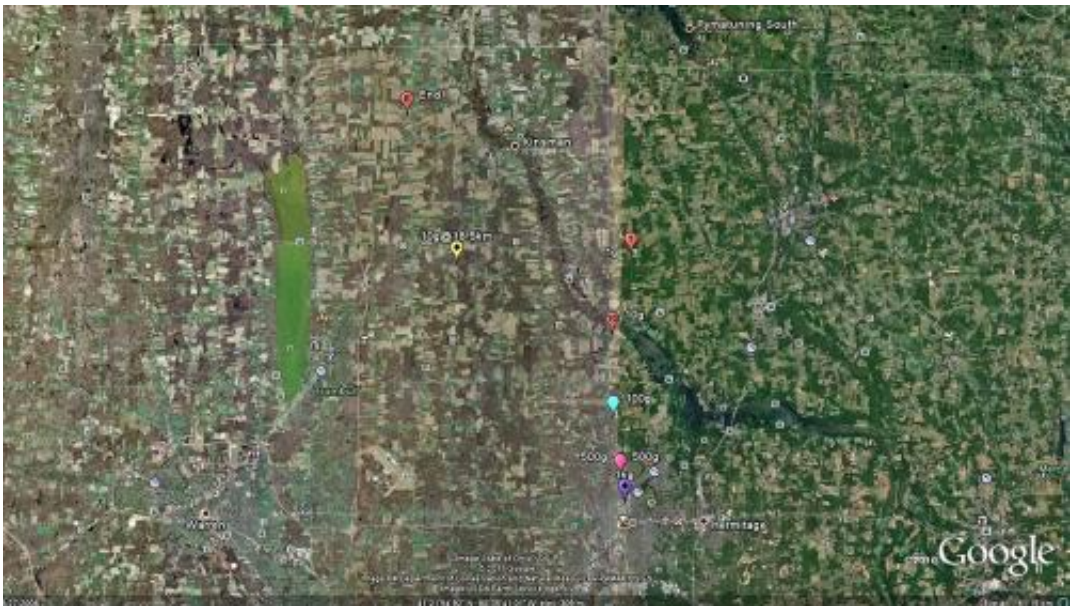
There is high confidence that this meteor produced meteorites, based on the following indicators:

• Deep atmospheric penetration (last tracked to 38 km altitude before it passed out of camera field of fiew. It certainly went deeper)
• Significant deceleration
• There was a doppler radar signature (KCLE) 2-3 minutes after the event, which indicates debris falling through the atmosphere

This brief video shows a view of the Aug 8 fireball meteor that entered the atmosphere 54 miles above Lake Erie and moved SSE at 25 km/s, or 55,900 mph. This view is from the all sky camera in Orangeville, Ontario.

Darkflight calculations yield results consistent with the dopper returns. Calculated impact locations as a function of mass are:

1 gram: 80.5027 W, 41.3824 N
10 grams: 80.5163 W, 41.3379 N
100 grams: 80.5158 W, 41.2910 N
1 kilogram: 80.5074 W, 41.2440 N



Darkflight impact locations of Lake Erie fireball meteor. Credit: Google

Brightness/infrasound measurements put the meteor mass in the 10 kilogram range. Fragments are anticipated to be less than 100 grams in mass.

Provided by JPL/NASA