



Colorado Flood Detection using the Suomi NPP/VIIRS Sensor

A JPSS Proving Ground Project



JPSS Proving Ground

JPSS Proving Ground reaches out to users to improve decision support tools and other product and services from data collected from the JPSS Polar Orbiters including Suomi NPP

Projects include improving fire and smoke detection, flood mapping, weather forecasting, including severe events such as hurricanes, ocean and coastal ecosystems monitoring, drought monitoring, and ice detection for safe access and navigation to the Arctic and the Alaskan region.

JPSS Proving Ground is managed by Dr. Mitch Goldberg, the JPSS Program Scientist, and Mr. William Sjoberg.

The flooding mapping project is in association with George Mason University (GMU), led by Professor Donglian Sun and researcher Sanmei Li.



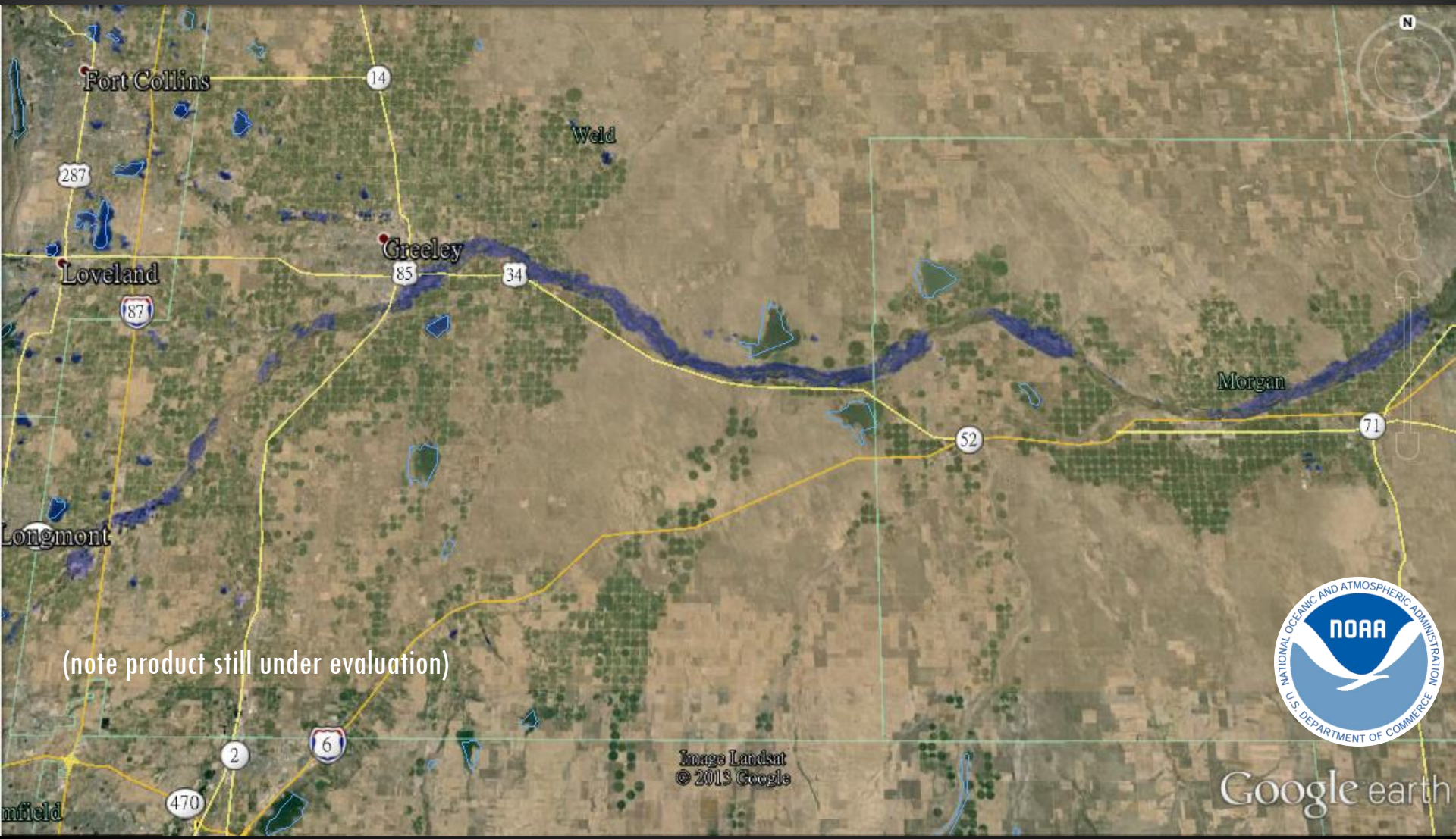
The GMU Flood Product

The GMU team has created VIIRS flood detection software with primary input from the VIIRS Imager Bands at 375-m resolution. With this software, flood distributions are generated using the differences in water fraction values between after and before the flooding in river areas. The team was able to downscale the VIIRS water fraction maps from 375-m to 30-m water maps using the Shuttle Radar Topography Mission (SRTM) 30-m Digital Elevation Model data.

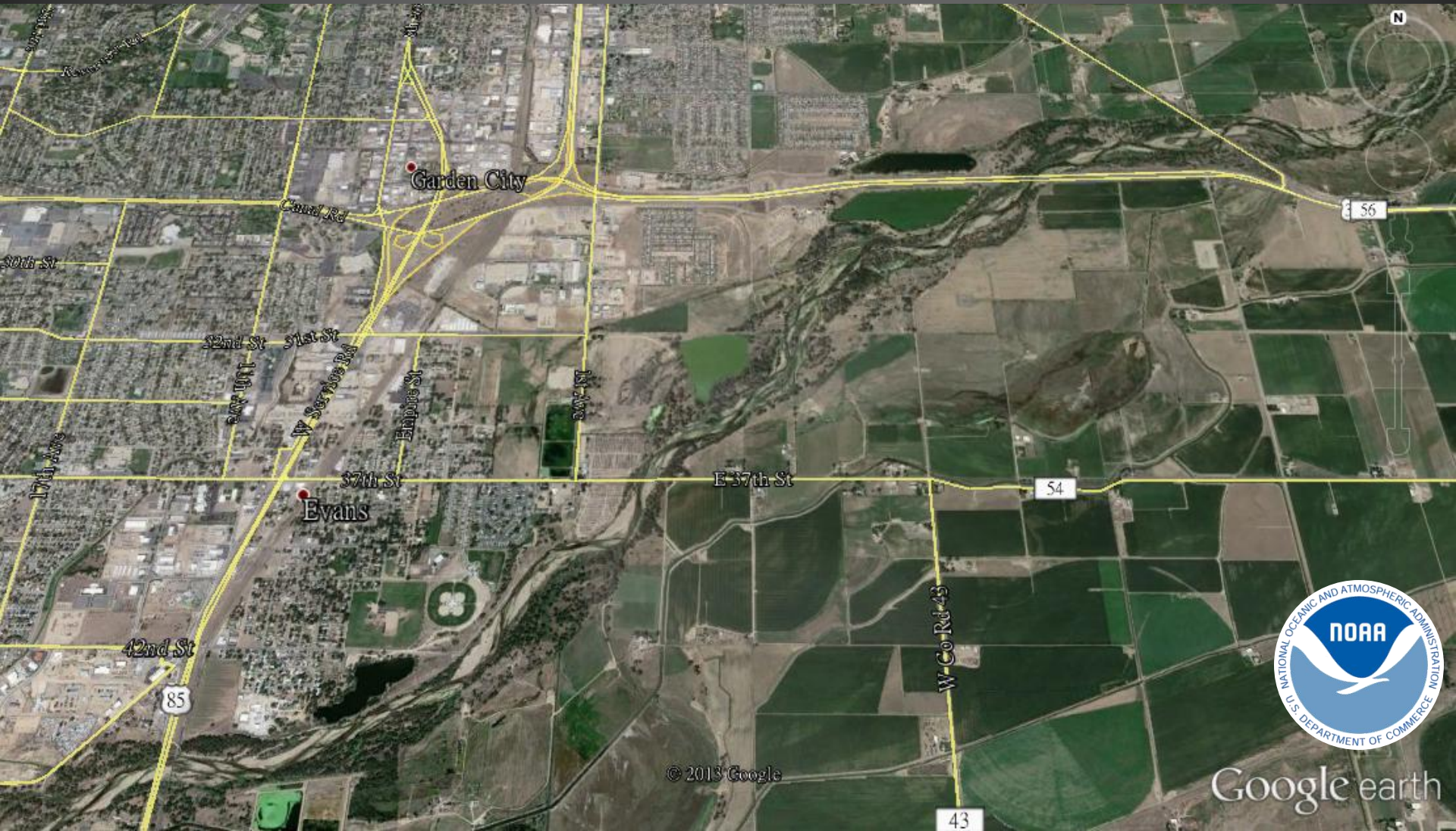
These maps were then overlaid on Google maps to see the streets, houses, town, etc., impacted by the flood waters. This experimental product provides a first order approximation of the areal extent of where the VIIRS sensor approximates the flood waters to be.

The product can only be derived in clear sky conditions. So regions with flooding under cloudy conditions cannot be detected. This was the case for the Boulder and Longmont regions on September 17, 2013

Extent of Colorado Floods on Sep. 17, 2013 observed by Suomi NPP/VIIRS (note product still under evaluation)



Before flooding near Evans and Garden City



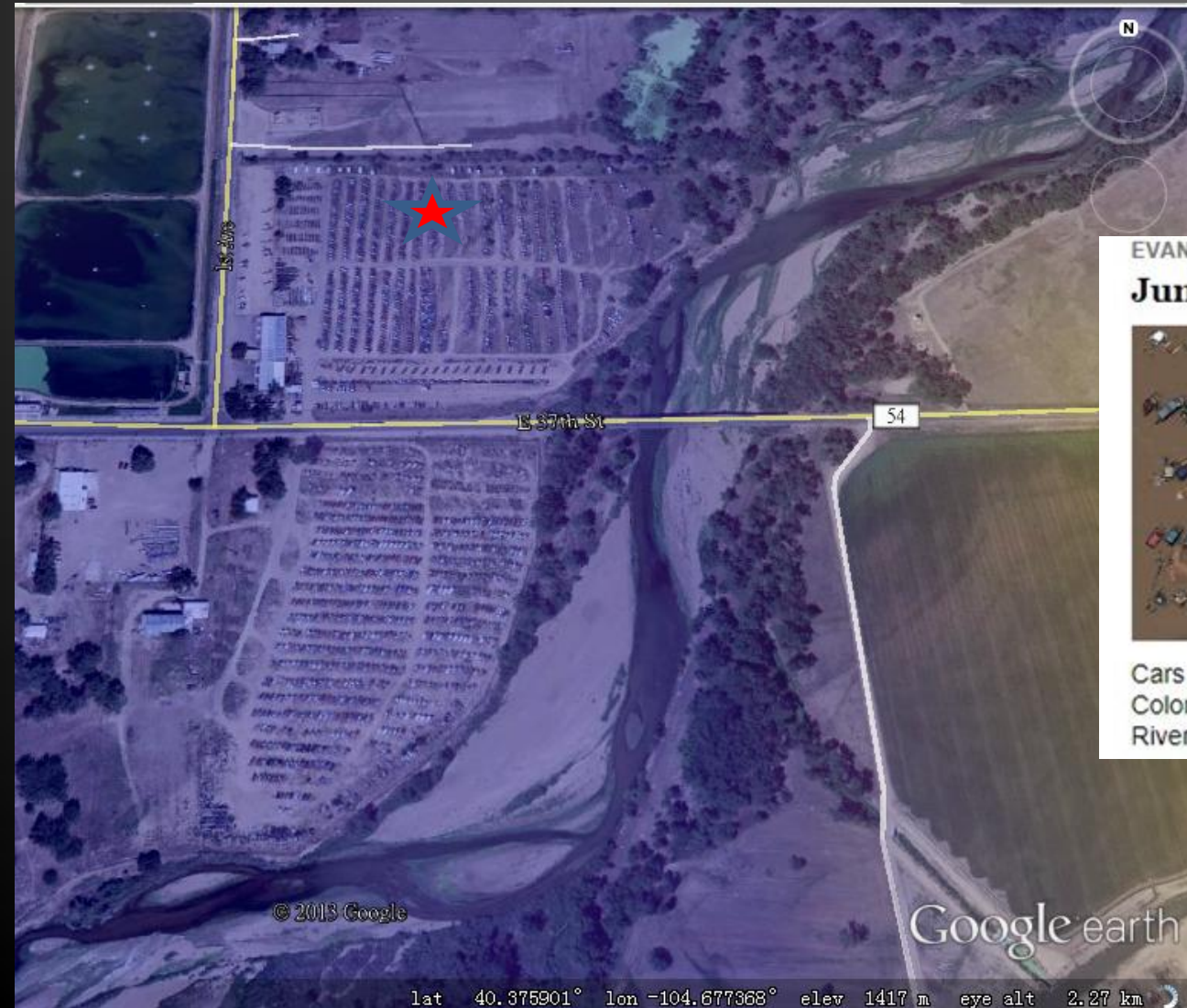
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Google earth




Compare with ground truth in Evans



EVANS, CO

Junk Yard

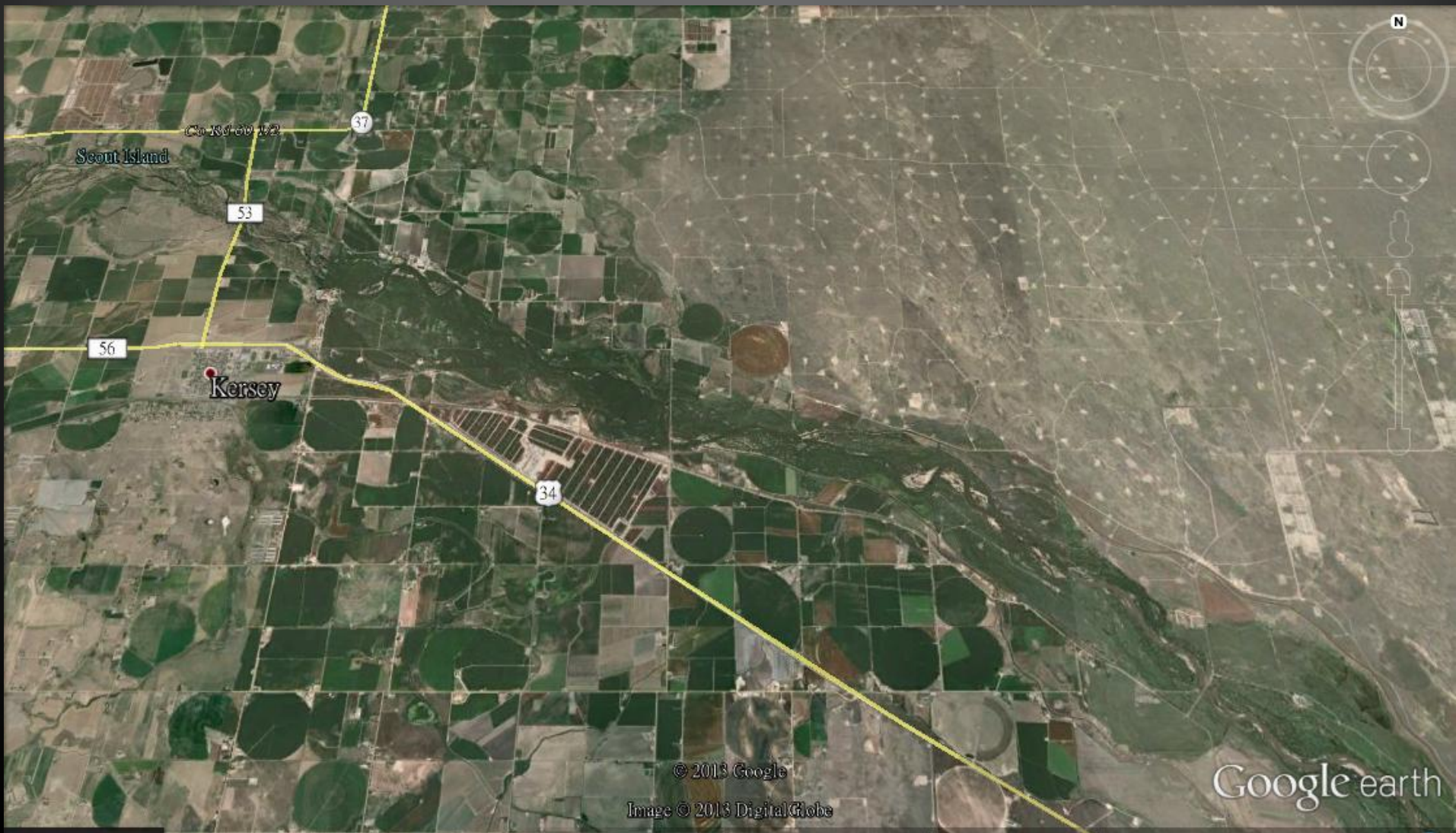


Cars in a junk yard on 37th street in Evans Colorado Flooded BY THE South Platte River.

lat 40.375901° lon -104.677368° elev 1417 m eye alt 2.27 km



Before flooding near Scout Island





Flood near Scout Island



(note product still under evaluation)

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