

NCAR Weather Forum

AUVSI XPONENTIAL

COLLECTION AND USE OF UAS-SENSED INFORMATION



Brian Argrow
Ann & H.J. Smead Aerospace Engineering Sciences
University of Colorado Boulder



Grand Challenge

UNIVERSITY OF COLORADO **BOULDER**

INTEGRATED REMOTE AND IN SITU SENSING

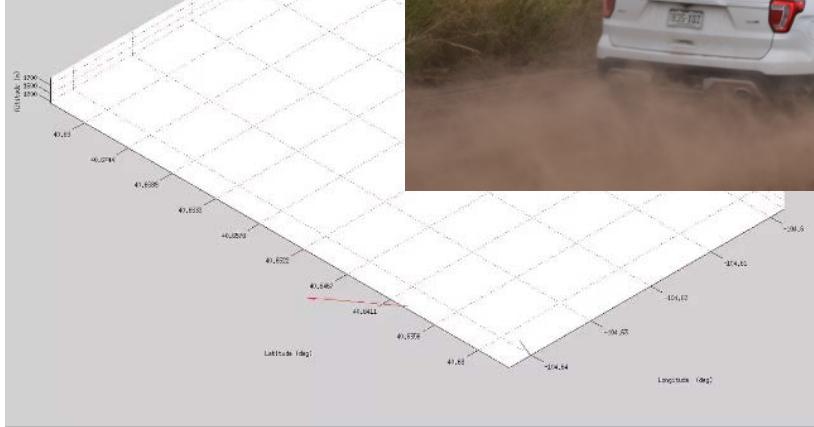
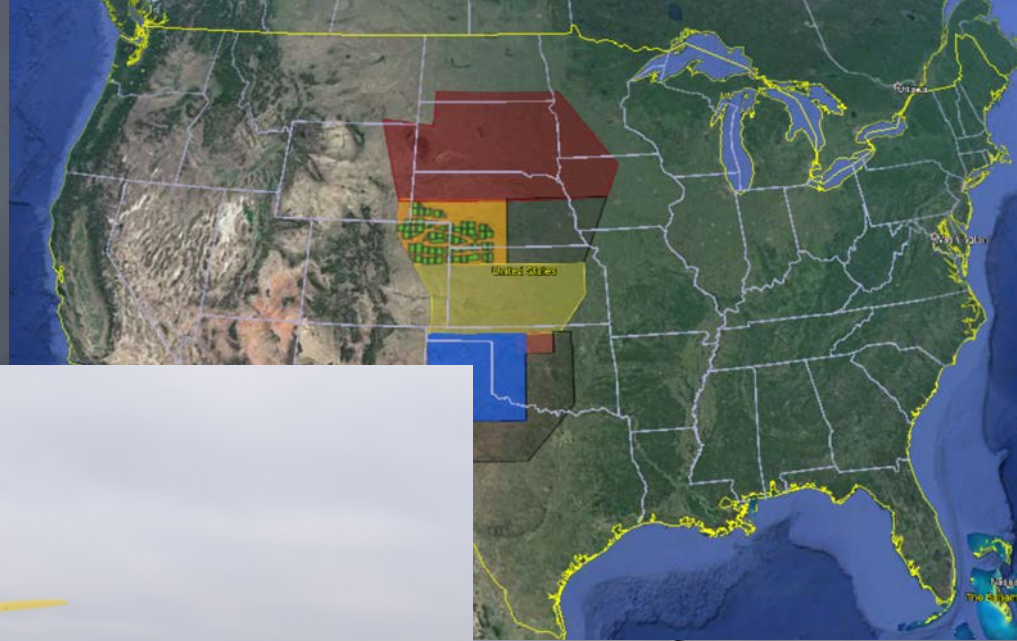
8 May 2017

IRISS

INTEGRATED REMOTE & IN SITU SENSING



Nomadic Operations



CU Highlights 2000-Today



RECUV created, 2003



SensorFlock, 2004
Datahawk



CoCoNUE, 2009
NexSTAR



NSF-KHI, 2011
Jicamarca, Peru
Datahawk



MIZOPEX 2013
Datahawk



METMAP, 2014
4 UAS at once



NREL NWTC, 2014
Datahawk and Skywalker

2000

2005

2010

2015

CUAS formed, 2012



CAMEX-4, 2001
Aerosonde



AUGNet, 2004
Ares



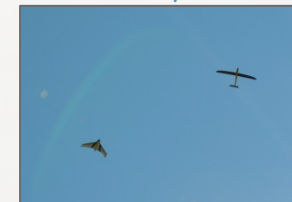
NOAA UAV Demo
Project, 2005
Altair



VORTEX2, 2010
Tempest



Antarctica, 2012
SUMO



COA for multiple
aircraft, 2013
Skywalker and Tempest



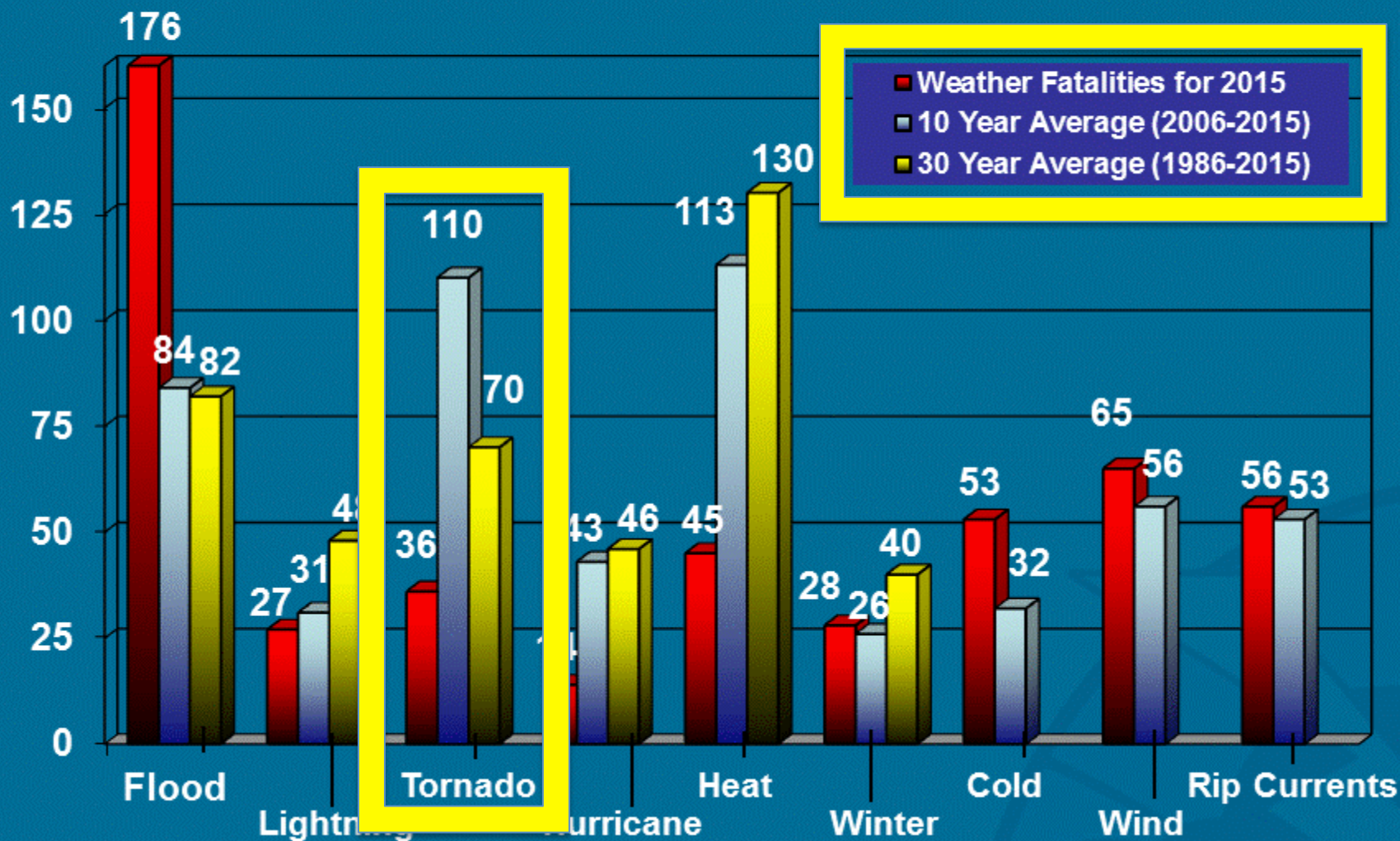
ERASMUS, 2015
Datahawk 2.0



EPIC 2016
TTwistor



Weather Fatalities

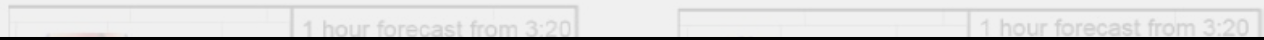


Warn-on-Forecast



NOAA's Warn-on-Forecast research project aims to create computer-model projections that accurately predict storm-scale phenomena such as tornadoes, large hail, and extreme localized rainfall. If Warn-on-Forecast is successful, forecasters will be provided with reliable guidance for issuing tornado, severe thunderstorm, and flash flood warnings up to an hour before they strike.

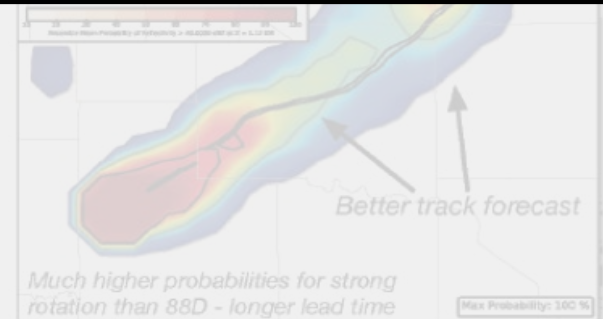
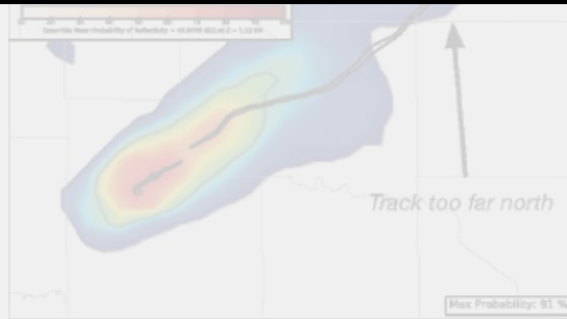
El Reno, OK



BRAD RIVERS

CHALLENGE: Increase tornado warning time, accuracy by measuring in situ conditions that signal tornadogenesis

- Fatalities: 9

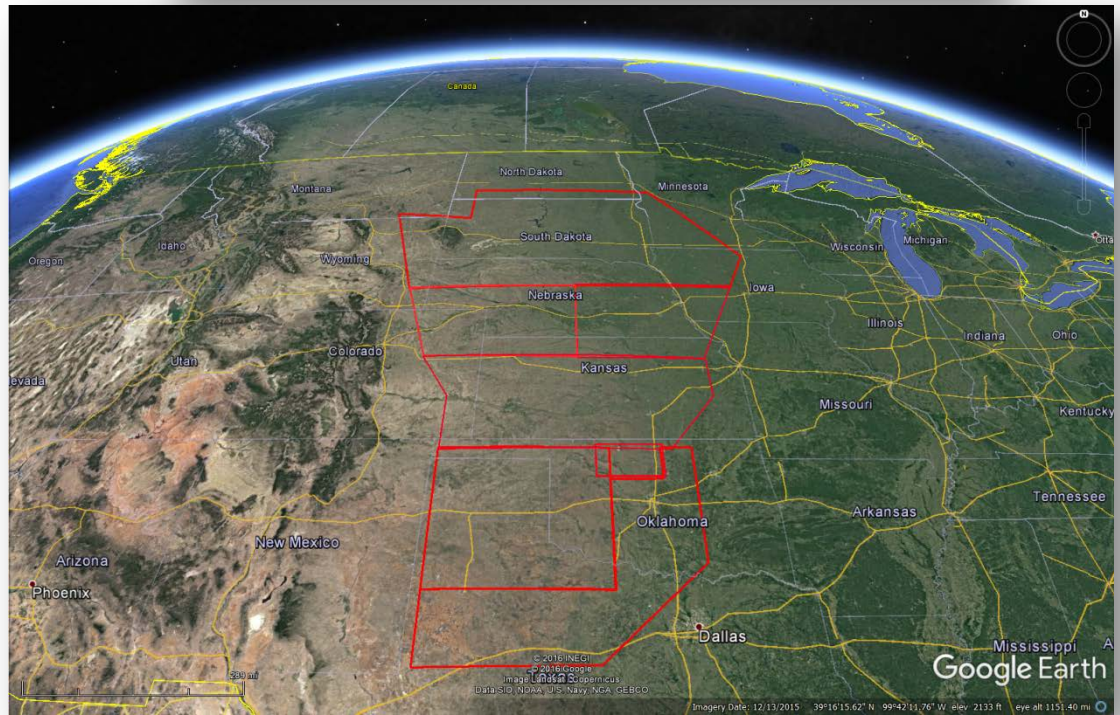
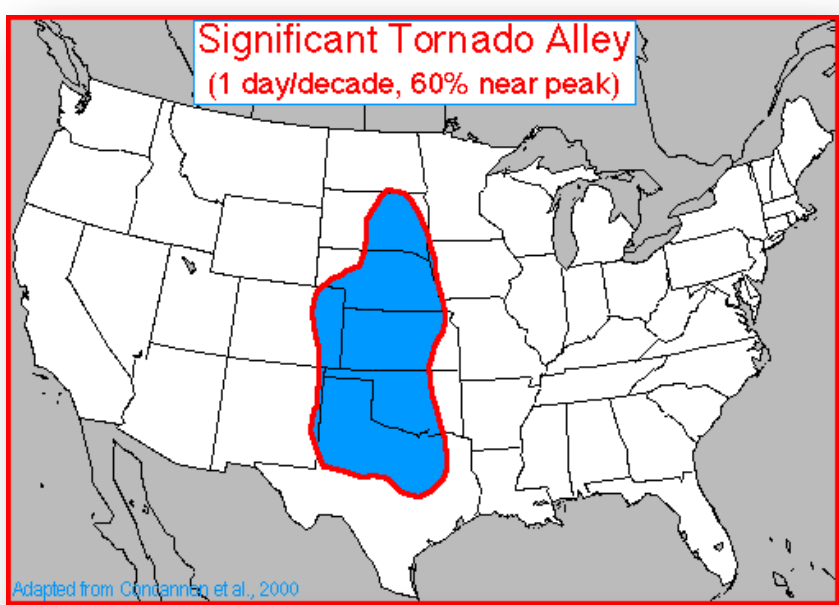


Left: One hour chances for strong low-level rotation (tornado threat) in a thunderstorm using WSR-88D 5-minute data in a combination ("ensemble") of forecast models. Right: One hour chances for strong low-level rotation using MPAR 1-minute data in an ensemble of forecast models. The inset plots show moderate rain predicted by the ensemble. Image credit: NOAA NSSL.

Tornado Probabilities 13 Apr

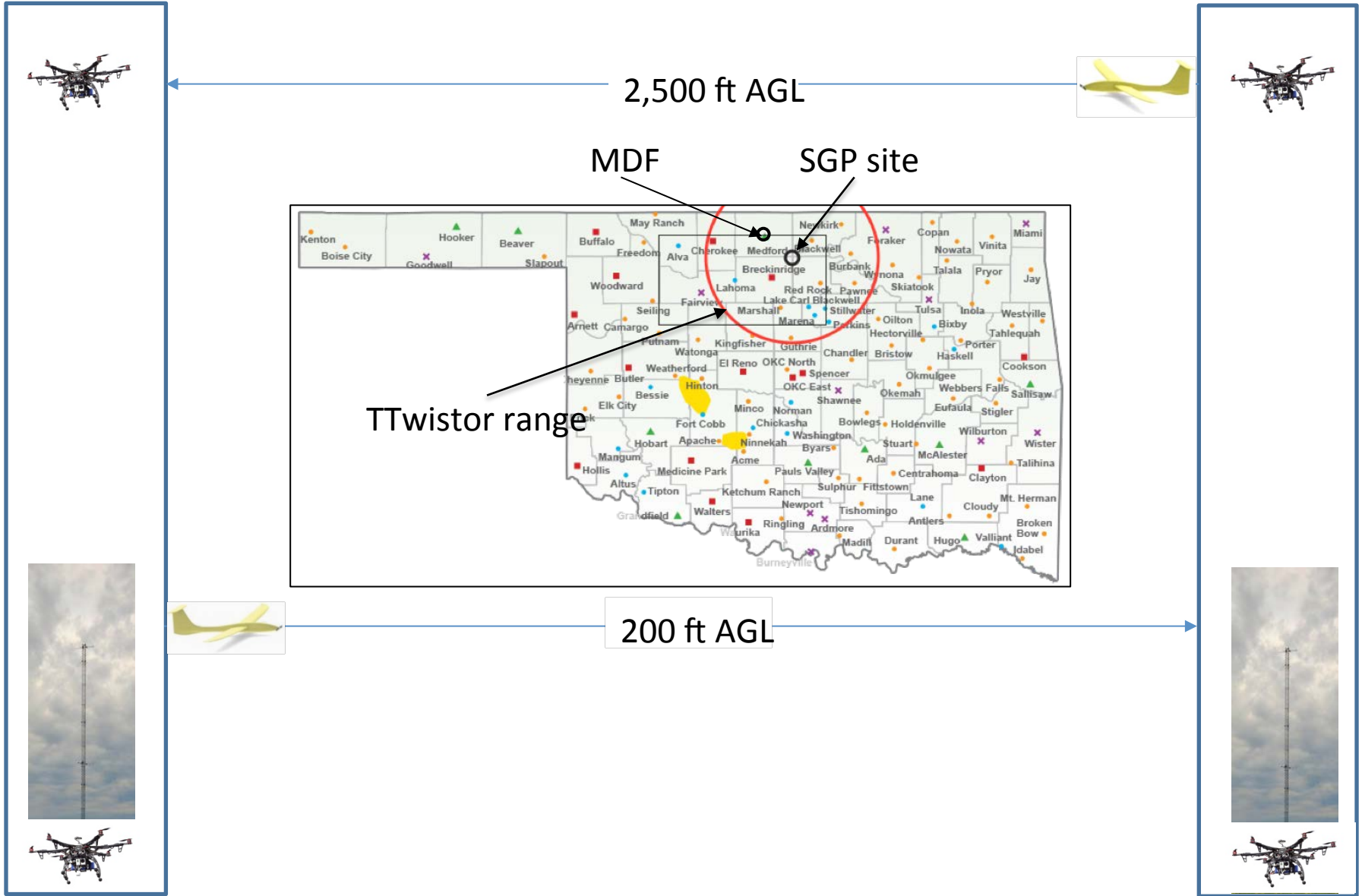
La tormenta factor de riesgo





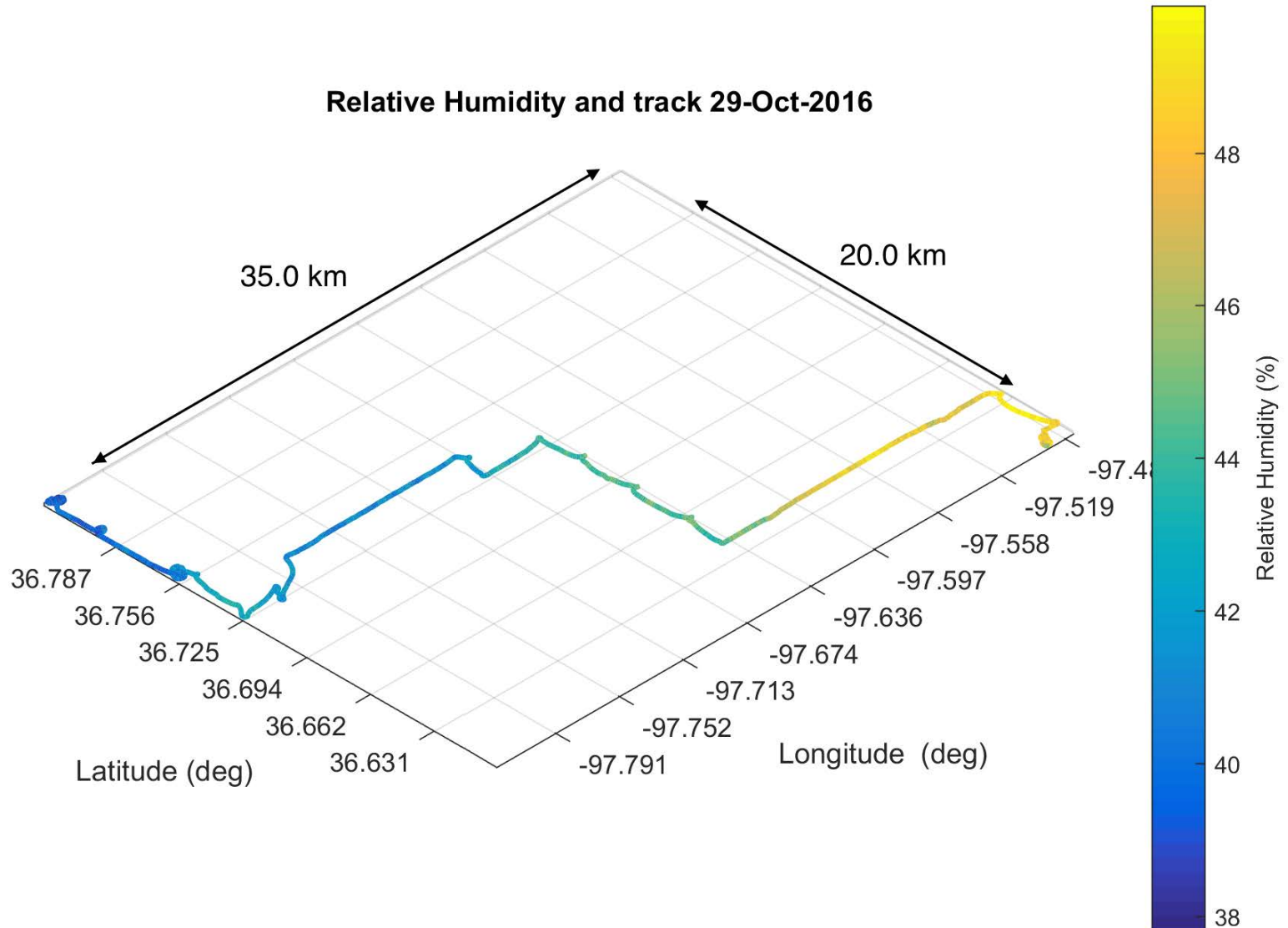
EPIC

Environmental Profiling and Initiation of Convection



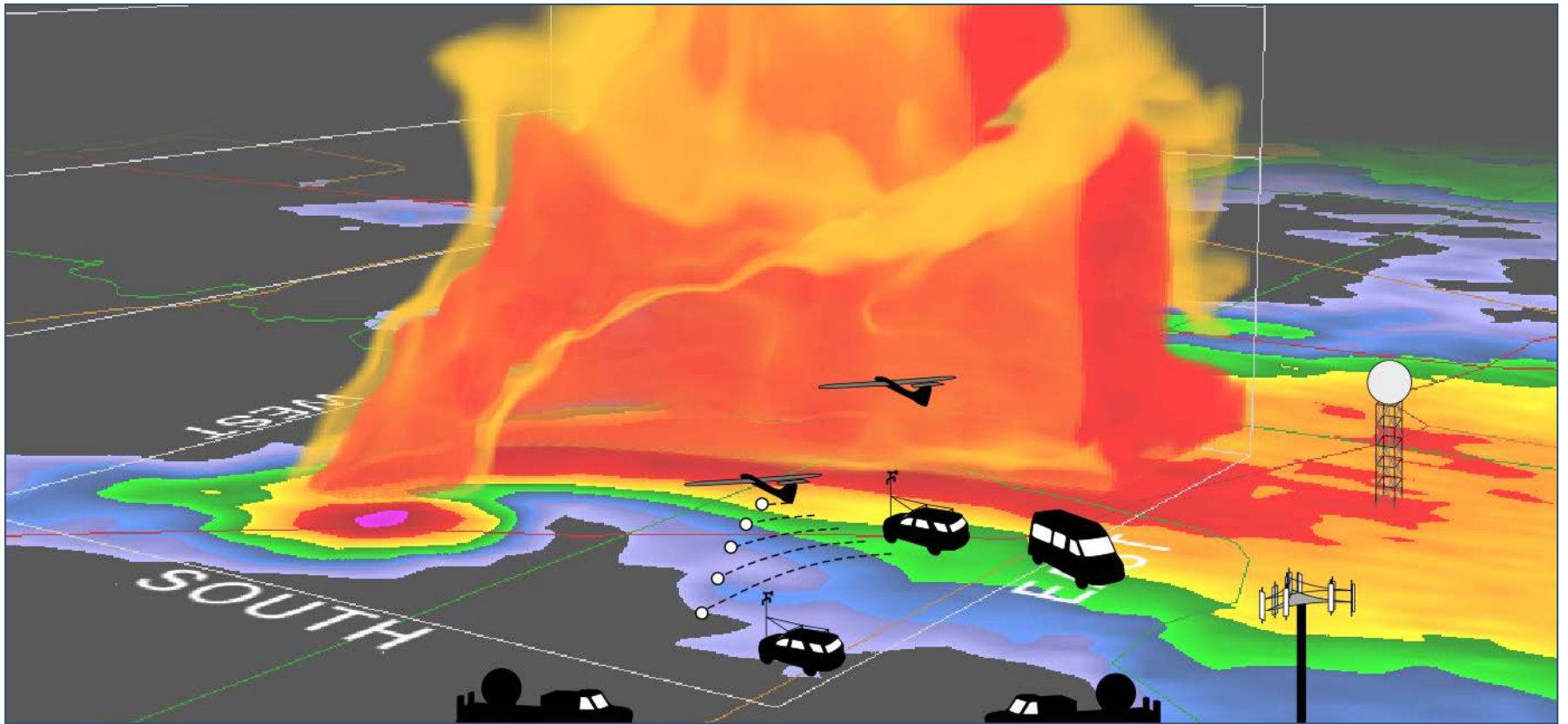
EPIC

Environmental Profiling and Initiation of Convection



Project STORM

Spring 2018





Thank You!

