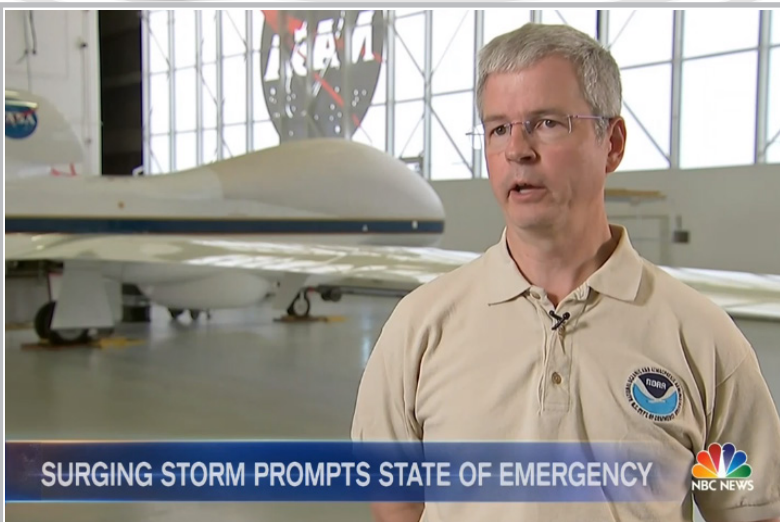




September 2016

Read full stories at [www.Boulder.NOAA.gov](http://www.Boulder.NOAA.gov)



**SURGING STORM PROMPTS STATE OF EMERGENCY**



## PSD's Gary Wick featured in NBC Nightly News segment on hurricane forecasts

As Hurricane Hermine picked up strength off the Florida coast August 31, PSD's Gary Wick told NBC Nightly News that the NOAA/NASA Global Hawk can fly higher and stay out longer than manned aircraft to send forecasters more vital data about the development of high-impact storms like hurricanes.

### NEWS YOU CAN USE


- PSD's experimental sea ice forecasting products updated for 2016 fall freeze-up.
- SWPC's Facebook post about the end-of-August minor geomagnetic storm generated a lot of public interest.

### IN OUR COMMUNITY

- CIRES/CSD's Chelsea Thompson wrote about NASA's ATOM mission, in the field blog *Around the World in 26 Days*.
- CSD's Jeff Peischl authored "Measuring the Methane Leaks to the Air from Three Large Natural Gas Production Regions" for the kid-reviewed *Frontiers for Young Minds*.
- GMD Director Jim Butler presented his keynote *Churning of atmospheric pollutants by the ocean – What we've learned from 30 years of halocarbon measurements* at the Air-Sea Gas Flux; Progress and Future Prospects workshop in Brest, France.

### TRENDING

This ESRL Facebook post reached 121k and had almost 500 shares.

 **NOAA Earth System Research Laboratory**  
Published by Hootsuite [?] · August 30 at 11:22am · 🌐

What's in a weather prediction model? #MATH! Lots and lots of math.

*Mass conservation:*

$$\frac{\partial}{\partial t} \left( \frac{\partial p}{\partial s} \right) + \nabla_s \cdot \left( \mathbf{v} \frac{\partial p}{\partial s} \right) + \frac{\partial}{\partial s} \left( s \frac{\partial p}{\partial s} \right) = 0 \quad (1)$$

*Thermal energy conservation:*

$$\frac{\partial}{\partial t} \left( \theta \frac{\partial p}{\partial s} \right) + \nabla_s \cdot \left( \mathbf{v} \frac{\partial p}{\partial s} \theta \right) + \frac{\partial}{\partial s} \left( s \frac{\partial p}{\partial s} \theta \right) = \dot{\theta} \frac{\partial p}{\partial s} \quad (2)$$

*Momentum conservation:*

$$\frac{\partial \mathbf{v}}{\partial t} + (\zeta + f) \mathbf{k} \times \mathbf{v} + \left( s \frac{\partial p}{\partial s} \right) \frac{\partial \mathbf{v}}{\partial p} + \nabla_s \left( M + \frac{\mathbf{v}^2}{2} \right) - \Pi \nabla_s \theta = \mathbf{F} \quad (3)$$

*Hydrostatic Equation:*

$$\frac{\partial M}{\partial \theta} = \Pi. \quad (4)$$

\*The Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado Boulder and the Cooperative Institute for Research in the Atmosphere (CIERA) at Colorado State University are part of NOAA's research community.

PSD's Gary Wick was featured in this NBC Nightly News segment on August 31: Millions on Alert as Storm Gains Steam in The Tropics.

### SPOTLIGHT

#### Accounting for Denver's Ozone: CSD study quantifies effect of oil and gas emissions

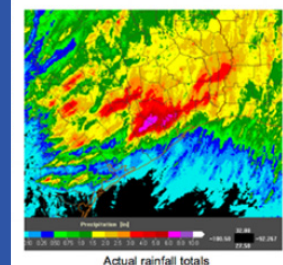
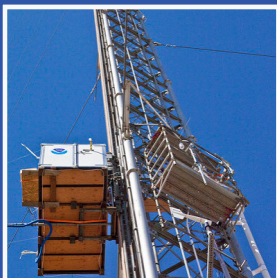
Erin McDuffie and Steven Brown's new study quantifies oil and gas emissions on Colorado's northern Front Range, confirming energy development contributes to the region's chronic ozone pollution.

#### NOAA implements significant upgrade to storm-scale hourly weather forecast models

GSD helped develop upgrades to hourly storm-scale weather prediction models, the Rapid Refresh and High Resolution Rapid Refresh, now operating at NOAA's National Centers for Environmental Prediction (NCEP).

#### Tribal Nations: Not just another public interest group!

The unique and complex relationship between Native American Tribes and the federal government was the focus of a Cultural Diversity Series seminar that drew more than 400 participants on August 25.



[commsboulder@noaa.gov](mailto:commsboulder@noaa.gov)

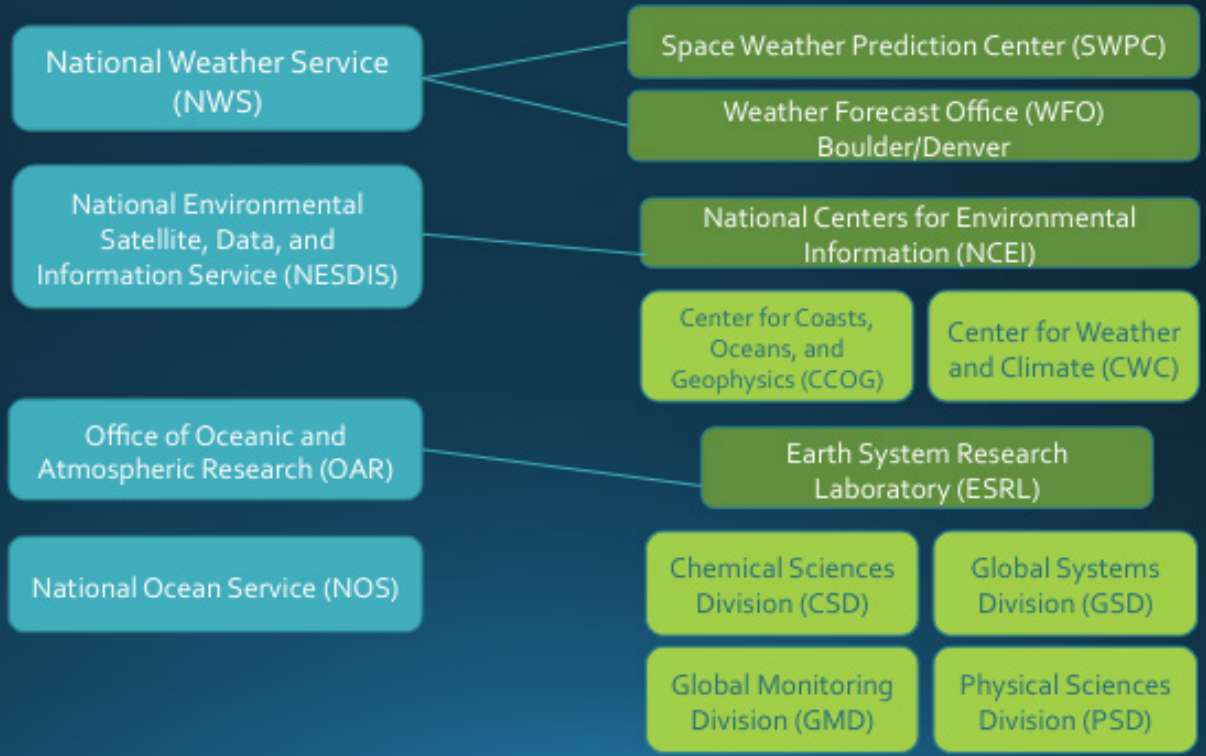
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# NOAA Boulder



**BLDC:** Boulder Labs Diversity Council

**BOCC:** Boulder Outreach and Coordinating Council

**CCOG:** Center for Coasts, Oceans, and Geophysics

**CSD:** Chemical Sciences Division

**CWC:** Center for Weather and Climate

**EEO:** Equal Employment Opportunity

**ESRL:** Earth System Research Laboratory

**GMD:** Global Monitoring Division

**GSD:** Global Systems Division

**NCEI:** National Centers for Environmental Information (formerly NGDC)

**NESDIS:** National Environmental Satellite, Data, and Information Service

**NOAA:** National Oceanic and Atmospheric Administration

**NOS:** National Ocean Service

**NWS:** National Weather Service

**OAR:** Office of Oceanic and Atmospheric Research or NOAA Research

**PSD:** Physical Sciences Division

**SWPC:** Space Weather Prediction Center

**WFO:** Weather Forecast Office