



**USING WEATHER DATA FOR PUBLIC HEALTH
SURVEILLANCE, PREVENTION AND PLANNING**

Washington State Department of Health

Extreme Weather Changes Health



Reserve Citizen Airmen deliver aid to Hurricane Maria survivors

By Tech. Sgt. Peter Dean, 927th Air Refueling Wing / Published September 25, 2017



[PHOTO DETAILS](#) / [DOWNLOAD HI-RES](#) 1 of 4

Reserve Citizen Airmen assigned to the 45th Aeromedical Evacuation Squadron, carry patients aboard a C-17 Globemaster III in St. Croix, U.S. Virgin Islands, Sept. 24, 2017. Reserve Citizen Airmen conduct humanitarian mission to St. Croix to evacuate victims affected by Hurricane Maria. (U.S. Air Force photo by Tech. Sgt. Peter Dean)



Texas Army National Guardsmen help residents affected by flooding caused by Hurricane Harvey in Houston, Aug. 27, 2017. Army National Guard photo by Lt. Zachary West



Normal weather can also influence health exposures and behaviors:



Researchers are learning more about weather and health associations:

Association between heavy precipitation events and waterborne outbreaks in four Nordic countries, 1992-2012.

[Guzman Herrador B¹](#), [de Blasio BF²](#), [Carlander A³](#), [Ethelberg S⁴](#), [Hygen HO⁵](#), [Kuusi M⁶](#), [Lund V⁷](#), [Löfdahl M³](#), [MacDonald E⁸](#), [Martinez-Urtaza J⁹](#), [Nichols G¹⁰](#), [Schönning C³](#), [Sudre B¹¹](#), [Trönberg L³](#), [Vold L¹](#), [Semenza JC¹¹](#), [Nygård K¹](#).

The Impact of Extremes in Outdoor Temperature and Sunshine Exposure on Birth Weight.

[Poeran J](#), [Birnle E](#), [Steegers EA](#), [Bonsel GJ](#).

Thunderstorm-related asthma attacks.

[D'Amato G¹](#), [Annesi Maesano I²](#), [Molino A³](#), [Vitale C⁴](#), [D'Amato M³](#).

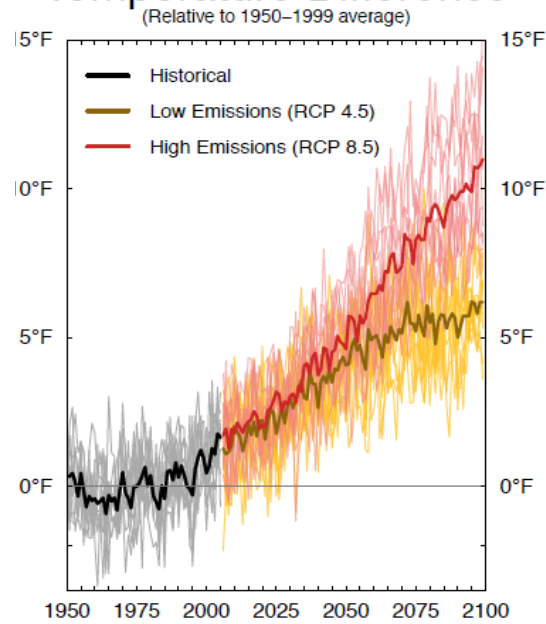
History won't predict the future as well as it once did.

Climate change will destabilize patterns and norms, with consequences for health and public health operations.

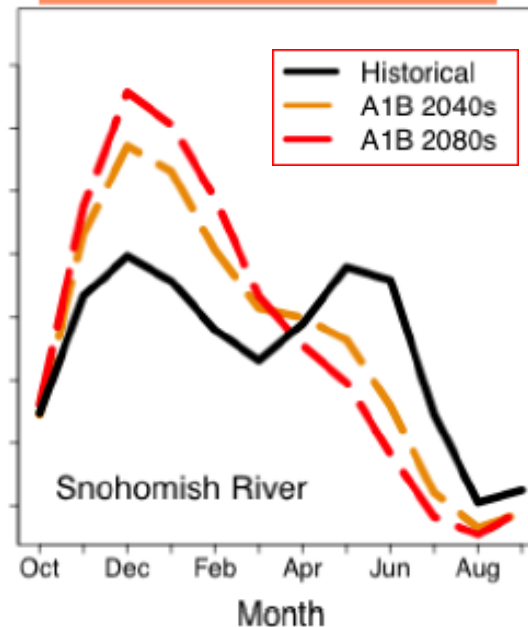
Weather data may give public health an extra measure of control in an increasingly uncertain environment.

Temp and Streamflow figures: *Puget Sound State of Knowledge Report (2015)*. UW Climate Impacts Group. See citation in notes.

Temperature Difference



Mixed rain and snow (Red)





Session Objectives

GOAL:

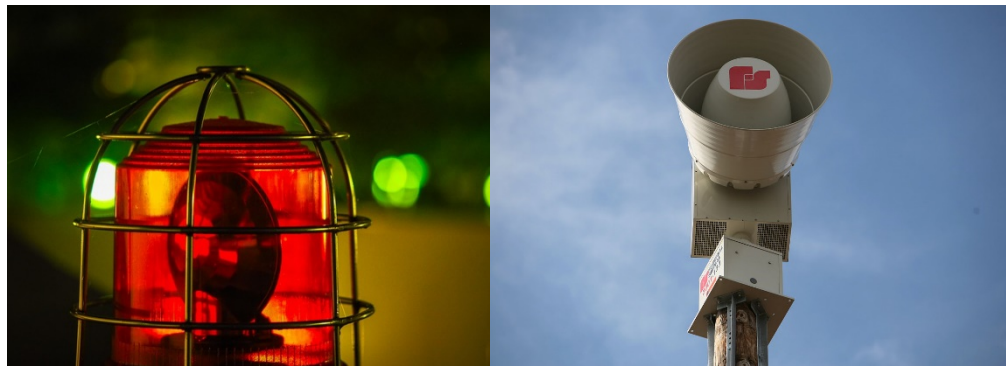
Spur interest in & lower barriers to using weather data in public health practice.

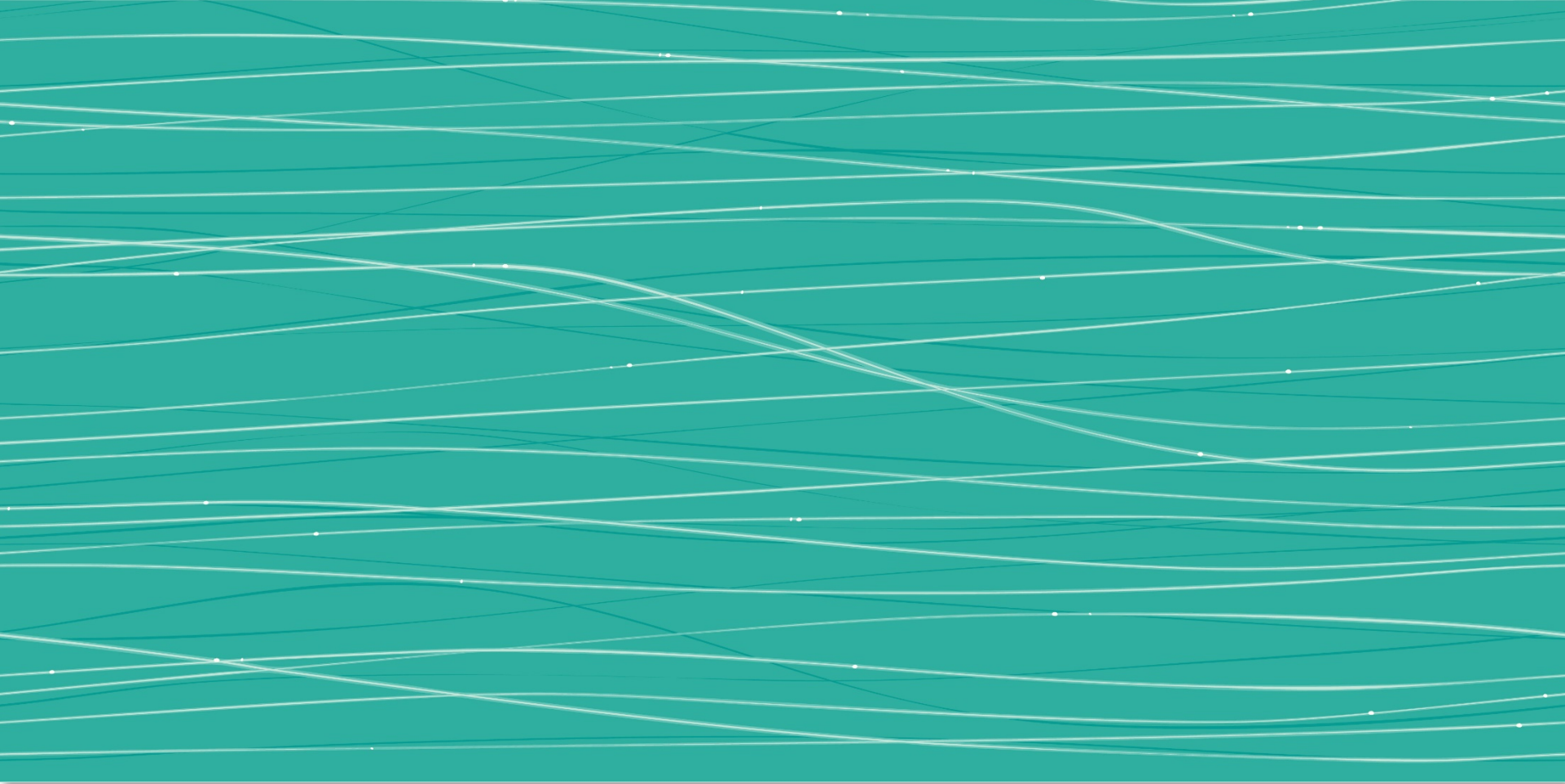
PRESENTATION & DISCUSSION OBJECTIVES:

1. Weather data: practical value for public health now; part of a climate-ready public health system in the future.
2. Illustrate practical application of weather data use in the context of public health operations in three programs.
3. Explore state of weather data use public health in NW:
 - a. Current extent
 - b. Opportunities
 - c. Hurdles
4. Novel partnerships that can help optimize use

Weather can inform Essential PH Functions

- **Understand risk and exposure** retrospectively
- **Examine changing seasonality** of risk factors
- Use forecasts to inform **early detection and response systems**
- **Predict** risk & surge; **forecast** windows of opportunity?
- **Plan** (and budget) workforce capacity needs
- **Enhance** health promotion/protection **messaging timing**
- **Model** future risk/burden of **climate-sensitive health conditions**





DISCUSSION

Experience & Opportunities?

- What are others' experiences applying weather data in a public health context?
- What health conditions or risk/protective factors could be weather-sensitive, and useful to explore?



Transosonde balloon ready for launching.



Identify Hurdles & Gauge Interest in Partnerships

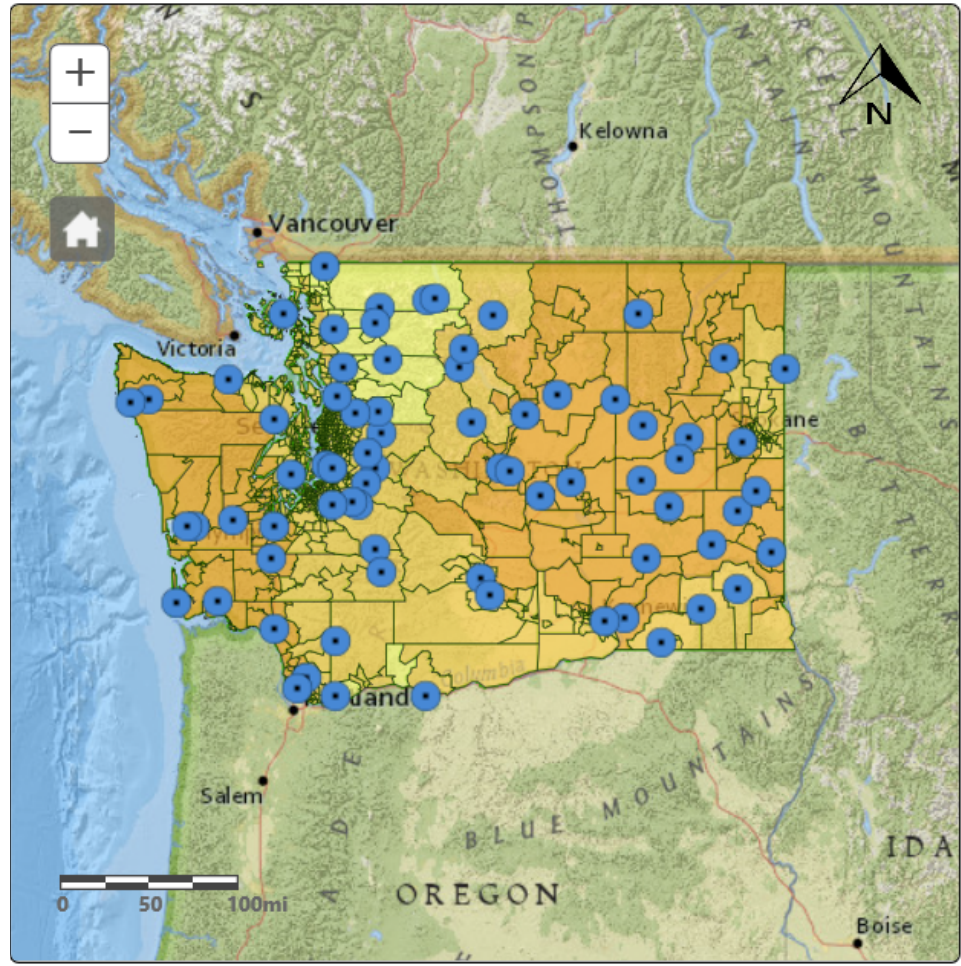
- What are some of the hurdles for public health practitioners in using weather data in surveillance, analysis, planning or response functions more widely?
- What are the challenges to partnering between public health practice and meteorological experts?
- What kinds of projects can bring public health decision makers together with weather experts?

Resources

- Office of the Washington State Climatologist (**OWSC**) (www.climate.Washington.edu) – newsletter, data utilities
- NOAA **National Weather Service** (www.cpc.ncep.noaa.gov)
- NOAA RISA **Climate Program Office** (cpo.noaa.gov)
- **Western Regional Climate Center** (wrcc.dri.edu)
- NCAR Research Applications Laboratory (<https://ral.ucar.edu>)
- WSU **AgWeatherNet** (weather.wsu.edu)
- National Integrated Drought Information System (NIDIS)
Drought.gov: tools for viewing current conditions, outlooks, impacts of drought, as well as other indicators
- NW Interagency Coordination Center - various weather related decision making tools (gacc.nifc.gov/nwcc/predict/weather.aspx)
- NW Climate Toolbox (climatetoolbox.org)
- DOH **Washington Tracking Network** (www.doh.wa.gov/WTN)
 - Indicators: extreme heat, heavy precipitation from 2000-2016
 - Data Notes provide primer on weather data sources
- **RHINO** - Washington's syndromic surveillance system

Heavy Precipitation Days (Rain/Snow/Hail)

Geography: Census Tract, Year: 2016



Legend (Measure 1)

- # Heavy Precip. Days
- 3 - < 4
 - 4 - < 5
 - 5 - 6

Locate Address

Enter a County, Zip Code,

Adjust Transparency



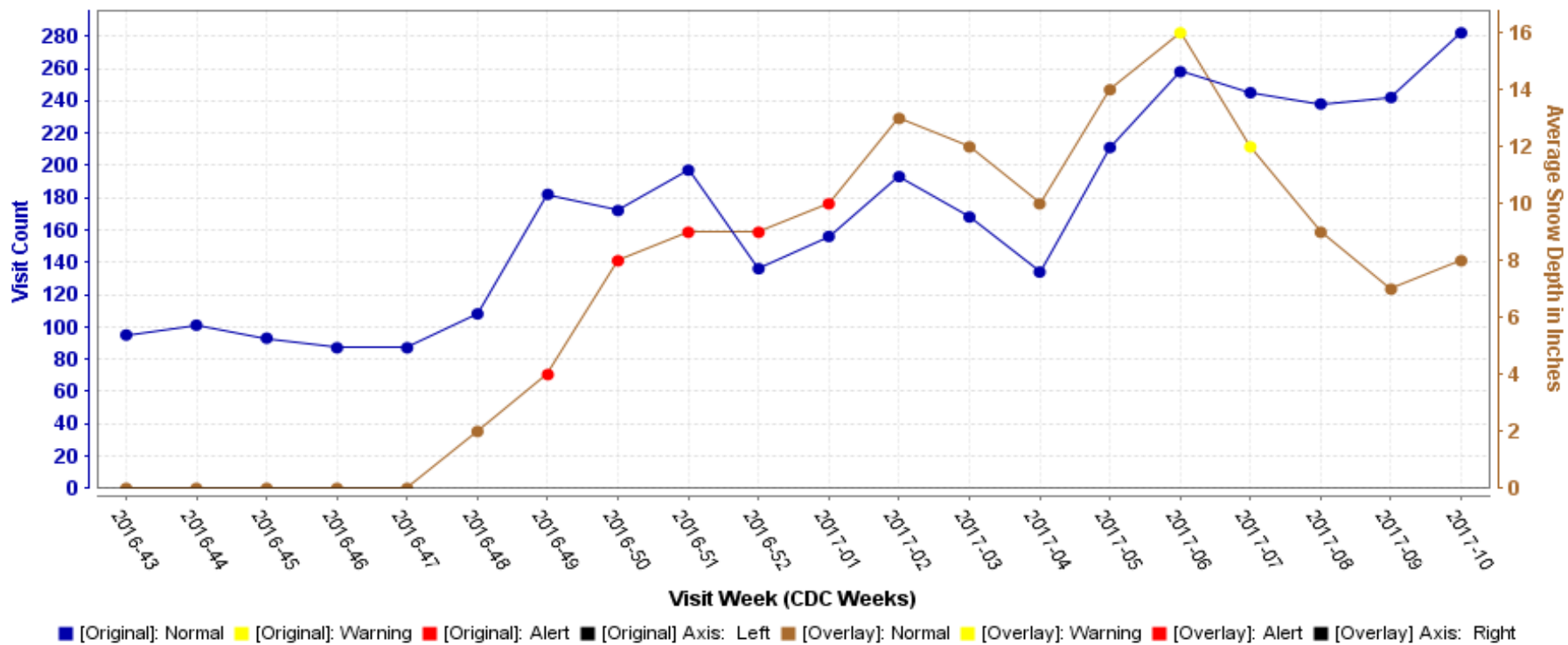
Select Layers to Display

- Extreme Heat Stations
- Heavy Precipitation Stations

RHINO Dashboard

DOH Syndromic Surveillance

Emergency Department Visits for a Chief Complaint Indicating a Motor Vehicle Collision in CDC Weeks and Average Snow Depth in Inches in Washington State, 2016-2017



Next steps

Wanted:

- Perspectives on “current state” of weather data use in public health in the northwest and elsewhere
- Ideas re: weather data uses with a public health application
- Partnerships & pilot funding that help us get there
- Interests re: training on meteorological data use / application

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