



Sunny and 71°F...with Patchy Frost?

Improving NWS Public Forecasts

**NWS OST & OCWWS social science
collaboration with NCAR Societal Impacts
Program**

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Friday



**Patchy
Frost
Hi 71 °F**



Background



Forecast at a Glance



Text Forecast



Icons



Headline



Your National Weather Service forecast

Collegeville PA

Enter Your "City, ST" or zip code

NWS Philadelphia, PA [Mobile Weather Information](#) | [En Español](#)
Point Forecast: Collegeville PA **Last Update:** 3:59 am EDT Oct 1, 2009
 40.19°N 75.46°W **Forecast Valid:** 11am EDT Oct 1, 2009-6pm EDT Oct 7, 2009

Forecast at a Glance

Today	Tonight	Friday	Friday Night	Saturday	Saturday Night	Sunday	Sunday Night	Monday
Mostly Sunny Hi 63 °F	Partly Cloudy Lo 42 °F	Slight Chc Showers Hi 70 °F	Showers Likely Lo 59 °F	Showers Likely Hi 74 °F	Chance Showers Lo 51 °F	Sunny Hi 71 °F	Partly Cloudy Lo 47 °F	Sunny Hi 68 °F

Detailed 7-day Forecast | **Detailed Point Forecast** [\[Move Down\]](#)

Today: Mostly sunny, with a high near 63. West wind between 8 and 11 mph.

Tonight: Partly cloudy, with a low around 42. Light south wind.

Friday: A slight chance of showers after 2pm. Mostly cloudy, with a high near 70. South wind between 5 and 10 mph. Chance of precipitation is 20%.

Friday Night: A chance of showers, then showers likely and possibly a thunderstorm after midnight. Cloudy, with a low around 59. South wind around 9 mph. Chance of precipitation is 70%. New rainfall amounts between a tenth and quarter of an inch, except higher amounts possible in thunderstorms.

Saturday: Showers likely and possibly a thunderstorm. Mostly cloudy, with a high near 74. South wind between 8 and 13 mph. Chance of precipitation is 60%. New rainfall amounts between a quarter and half of an inch possible.

Click Map for Forecast [Disclaimer](#)

Map | Satellite | Terrain

Lat/Lon: 40.19°N 75.46°W Elevation: 200 ft



Why this project?



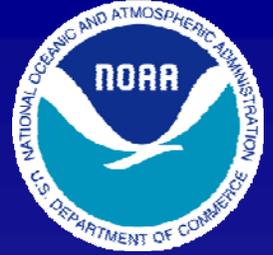
- Weather.gov is the public face of the NWS
- Public forecast web pages are accessed upwards of 100 million times a day (~40 million on average weather day)
- Explicitly identified in National Research Council report *“Completing the Forecast”* (2006)
- Problems exist with public forecasts
 - Information can be misleading
 - Information can be inconsistent
 - Information can be incomplete



Premise: Project objective is to improve communication and to reduce misleading, inconsistent, and incomplete information; it is not intended to improve the “cosmetics” of the web pages.



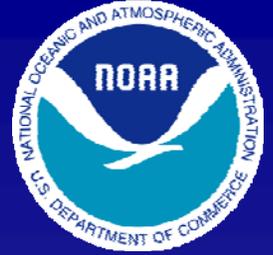
History of NWS Point Forecasts



- **2000/1: Corporate Web Interface (CWI) project**
 - Based on zone forecast (area) text product
 - Word pattern matching used for NWS developed icons
- **2002/3: Local tests out of Kansas**
 - Test of making words from digital data
- **2004: Regional deployment**
 - Refinement of word coding
 - Performance tuning
- **2006/7: Deployment into operations**
 - High performance/availability
- **2008: Marine/Tropical weather versions**



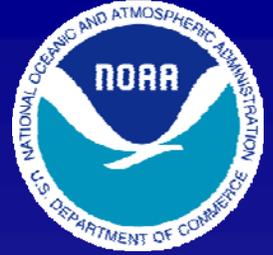
Relevance to NWS mission



- This research is directly relevant to the NWS mission of protecting life and property, because it examines people's interpretation and use of forecast information with an eye toward improving this information to enhance people's decision-making in the future
- The success of NWS's mission should not just be measured by the accuracy of its information, but by the effectiveness of its application



Statement of Need



Emails from users...

“why do we show the [icon] for the worst possible weather for that day, even if there is only a 10% chance, or if there is a 100% chance, but only for one hour during the early morning hours for instance .”

“when there is a possibility of showers/thunderstorms...regardless if it is 20% or 80% why do you put "HEAVY RAIN" under the day's icon”

“the weather icons are more severe than they need to be, do not match the words of the predictions well, and do not reflect the dominant weather of the day”

Wednesday



70%

Tstms
Likely
Hi 67 °F

Thursday



30%

Chance
Tstms
Hi 68 °F

Friday

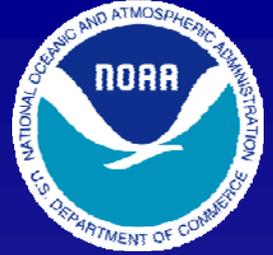


20%

Slight Chc
Tstms
Hi 63 °F



Statement of Need



Confusing text forecast

NWS 48-hr text forecast – Rain and snow likely before noon, then snow. High near 30. Chance of precipitation is 80%. **New precipitation amounts between a half and three quarters of an inch possible.**

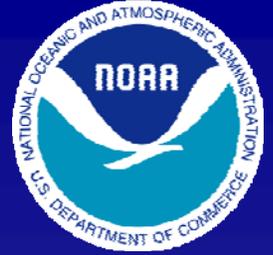
Email from a user – Your site is saying **1/2 to 3/4 inches on Friday...** bummer, not thinking that will do it (cancel school)!

NWS Hazardous Weather Outlook – Snowfall amounts in excess of 6-8"

**Should people have to check multiple products to understand?
How does inconsistent information affect their perception and use?**



Research Phases



- **Phase 1:** Lay the groundwork and further develop the project scope
- **Phase 2:** Characterize the key limitations of current public forecast information and identify primary areas for improvement
- **Phase 3:** Assess users' interpretations of, uses of, and preferences for the public forecast information, including information currently provided and possibilities for future information
- **Phase 4:** Identify and implement experimental changes to the public forecast information resulting from the research, and assess public feedback



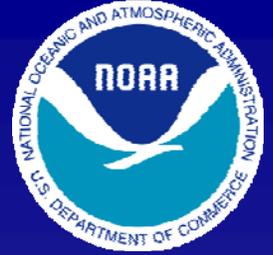
Issues



- Icons
- Temporal representation
- Forecast uncertainty information
- Consistency between icons, headline, text
- Technical constraints
- Ongoing efforts around NOAA
- Public-private sector balance



Path Forward



- 2-year effort, jointly funded by OST and OCWWS across FY09-11
 - **Bringing together the science, operations, & users**
- #1 key to success – a strong partnership

Social Science Research

+

Physical Science Research

+

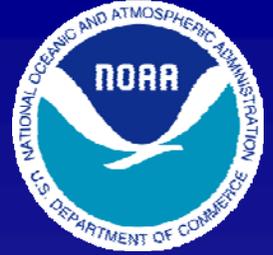
Operational Forecasting

+

Technical Considerations



Questions?



Team Composition:

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Eli Jacks & Andy Horvitz (OCWWS)

Bob Bunge (OCIO)

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