Weather Data

Many choices for Precision Ag applications

In the US alone, there are over 360+ current weather data vendors … supplying different data and insights for agronomic decisions

Which one is best for Precision Ag applications?
The Precipitation Example

Options for collecting precipitation data

• There are several choices when it comes to getting precipitation data for an individual field
  • Get the observation from the nearest official Weather Station
  • Use one of the many radar derived precip estimates
  • Put a weather station on the field
Use the nearest official weather station

The network of official stations is not dense enough

- Rain is extremely localized and can very greatly over small area / distances
- NWS stations are typically located in or near urban areas – not at farm fields
Use radar-derived precipitation data
Good spatial coverage, but poor precision

• Important to remember: Radar Derived precip data is an estimate
• The estimates can vary significantly for a variety of reasons
  • Radar coverage issues
  • Interference / beam blockage - underestimates
  • Echo enhancement - overestimates
DTN’s Agricultural Weather Network

- Combines the largest ag weather network with radar-derived precipitation to produce precise, accurate field-level precipitation amounts
- 6,000 precision on-farm weather stations reporting every 15 minutes
- Weather data is collected centrally, QA’d, archived, and distributed
DTN’s station density

Four times more dense than the official station network
Examples of these issues …
Both the official observations and the radar observations can miss significant rainfall

**Image Summary:**

1. Nearest NWS Radar is 22 miles SE from these locations
2. Radar legend below indicates 24 hour accumulations from 0 to 0.5 inches
3. Local Stations measured over 4 inches
4. Almost a 3 inch difference in less than 3 miles
DTN’s Interpolated Data Service for Precision Ag

DTN combines a dense network with radar data for precise answers

2016 Growing Season Results – (April 15 – Sept 30)

Using official data only:
• Nearest official station 25.1 miles SW
• Precipitation Total = 15.72
• Growing Degree Day Total = 3,367

Adding radar data:
• Lat / Long based from nearby stations
• Precipitation Total = 20.85
• Growing Degree Day Total = 3,278

Using the DTN IDS solution:
• DTN Ag Weather Station
• Precipitation Total = 25.72
• Growing Degree Day Total = 3,067
Other benefits of the DTN Ag Weather Network

Making data useful for end users

Performs all data management functions:

- Communications management
  ✓ Monitor data flow from each station

- Quality Control
  ✓ Clean all data to insure consistency

- Precision Farm-Level Forecasts
  ✓ Generate a hour-by-hour forecast trained by the observations
  ✓ 15 day future view

- Distribution
  ✓ Make all data available for users instantly

- Historical Archive
  ✓ Maintain a historical record of data and metadata for each station
An Agricultural Decision Support System (DSS)

Provides enhanced displays for alerting and planning

DSS provides users:

- Real-time conditions from their weather stations
- Precision Forecasts based on their station’s data
  - Ranked #1 in forecast accuracy for 10 years in a row
- Historical data archive
- Map display of conditions in their area
- Alerting for current and forecast weather changes
  - Calendar for planning operations
- Display on a desktop or mobile device

-Now expanding globally!