EARTH
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FREE VERSUS COMMERCIAL WEATHER DATA

WHICH IS RIGHT FOR YOU?

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INTRODUCTION

Public and private sector industries that rely on predictive analytics require highly detailed, easily applicable weather data. Weather impacts a broad spectrum of the economy – from public safety to insurance, local utilities to global shipping, and supply chain management to forecasting snow days at your local elementary school. When organizations know exactly how weather patterns move and evolve, they can preempt losses or interruptions instead of reacting to them.

Your ability to react depends on the quality of data you use to make decisions. Free-to-use weather networks are limited in size, reporting frequency, and skewed to aviation sites while many commercial weather networks lack real-time reporting, comprehensive lightning detection, and deploy lower quality sensors with questionable maintenance and data standards. A comparison of free and commercial weather networks shows only Earth Networks can offer the high-quality weather data you need. What makes weather data "high quality?"

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ACCURACY

Quality weather data is accurate above all else, but some commercial weather networks can vary in quality. Oftentimes, problems occur at the observation level. When enough inaccurate data enters a system, quality suffers.

For example, the Weather Underground service offered by The Weather Channel / IBM imports data collected by community-based weather-watchers, those who've voluntarily gathered weather data, and weather enthusiasts of all kinds. While enthusiasm for weather science is always encouraged, relying on crowd-sourced volunteer data to make important decisions is risky. Equipment used by members of the Weather Underground Personal Weather Station Network is not necessarily professional-grade, professionally installed, maintained, nor continuously calibrated with accuracy checks. These network equipment deficiencies degrade data quality.

Compare that to Earth Networks' weather intelligence data, powered by the world's largest hyperlocal collection of weather monitoring and reporting networks. For more than 20 years, professional-grade expertly-maintained weather stations and lightning sensors provide the most accurate and comprehensive weather data to organizations and enterprises around the world to help them make informed weather-influenced decisions.

PROXIMITY

Quality weather data also accurately represents local conditions. While data from the NWS National Digital Forecast Database (NDFD) is usually accurate, consider the physical locations where the NWS collects its data – mostly from Automated Surface Observing System (ASOS) weather stations erected at remote locations like airports and private farms owned by Cooperative Observer Program volunteers. Because these sensors primarily serve the unique needs of the Federal Aviation Administration (FAA), opportunities for wider use are limited by design.

Furthermore, much has been written about the adverse conditions at airports that skew weather readings. In one such example, retired NWS climatologist Robert Leffler identified numerous environmental factors

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Earth Networks surpasses NWS NDFD data with over 12,000 proprietary weather stations located across the country and around the globe.

that disqualified the Reagan National Airport as a viable weather data source for adjacent communities – heat from jet exhaust, proximity to the Potomac River and low elevation all detract from data quality for users seeking more hyperlocal information, according to The Washington Post.

Say a business used free weather data to schedule maintenance on overhead powerline towers. If that equipment in question does not reside near an airport or other government sensors, what are the chances that business might deploy or avoid deploying repair crews because of inexact weather data? How might that in turn affect maintenance resources spent, remote asset availability or uptime?

NETWORK SIZE

Earth Networks surpasses NWS NDFD data with over 12,000 proprietary weather stations located across the country and around the globe, in more populated locations like schools, stadiums and businesses. As such, users receive hyperlocal weather intelligence on 2.6 million locations worldwide, including advanced long-range lightning detection capabilities

driven from its global lightning network – the largest in the world.

In addition, government agencies and volunteers charged with maintaining weather sensors and the free data they generate are not held to the same standards as commercial providers. Competition drives commercial weather data providers to offer customers better tools and products that enable more useful predictive weather data applications. Little to no such impetus exists in the free weather data sphere, which leads to stagnant data hygiene standards and lackluster adherence to uptime or consistent reporting. According to the NWS, every day an average of 5 to 10 percent of its forecast offices in the continental U.S. fail to report completely on their areas.

GRANULARITY

Weather watchers receive a standard package when they rely on free data from the NWS NDFD, but there's a universe of other possibilities available in commercial markets, not to mention other advancements pertaining to how end users manipulate that data.

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With Earth Networks, users receive hyperlocal weather intelligence on 2.6 million locations worldwide.

Compare the forecast offerings given by NWS against commercial weather data from The Weather Channel and Earth Networks:
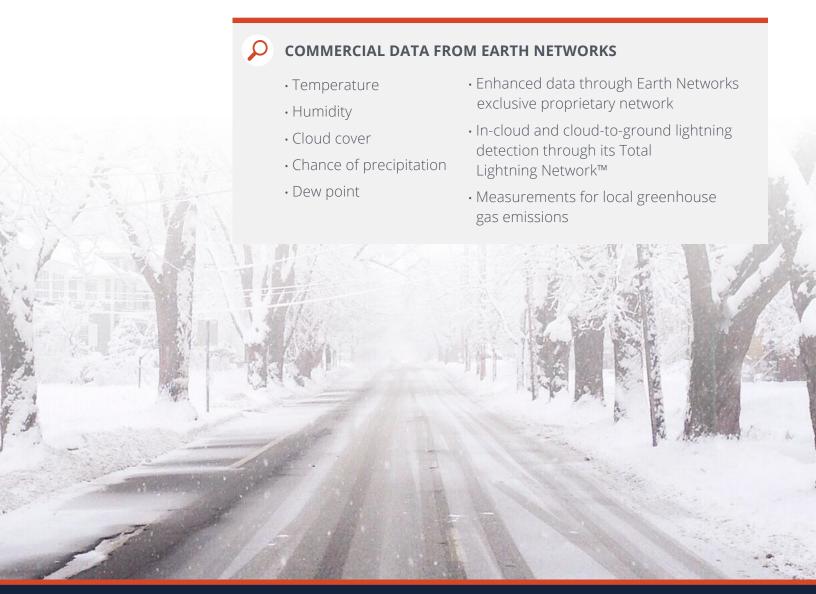
FREE FROM NWS

- Temperature
- Humidity
- Cloud cover
- Chance of precipitation
- Dew point
- "Feels Like" pressure

COMMERCIAL DATA FROM THE WEATHER CHANNEL

- Temperature
- Humidity
- Cloud cover
- Chance of precipitation
- Dew point
- "Feels Like" pressure

COMMERCIAL DATA FROM EARTH NETWORKS

- Temperature
- Humidity
- Cloud cover
- Chance of precipitation
- Dew point

- Enhanced data through Earth Networks exclusive proprietary network
- In-cloud and cloud-to-ground lightning detection through its Total Lightning Network™
- Measurements for local greenhouse gas emissions

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FREQUENCY

Inclement weather can go from bad to worse in a matter of seconds. Recreation.gov, an organization comprised of 12 federal agencies, bureaus and services, estimates about 140 Americans die in flash floods every year. Could these lives be saved with more timely, proactive weather data sent to the people who need it most? That also says nothing of the cost of flood damage, which climate scientists estimate could cost homeowners, businesses and the public sector trillions annually in the coming decades due to climate change.

If safety officials, schools and businesses hope to fully utilize weather data to make in-the-moment decisions about the people they serve – students, employees, drivers, the general public – as well as their facilities and remote assets, they require meteorological services that update as fast as possible. Free weather forecasts from the NWS often update only on the hour, often as infrequently as every three to four hours. Even commercial weather data providers touting weather updates at 15-minute intervals cannot offer "real-time" solutions. Forecasts from Earth Networks update every 2 seconds, so users understand exactly how storms and other weather phenomena are progressing and how it could impact locations at specific points. This real-time input drives the Earth Networks' Dangerous Thunderstorm Alerts that have proven to improve lead times for tornado warnings by up to 50 percent compared to the NWS.

But the challenges of sluggish weather data go beyond time between updates. How can users expect to make high-risk decisions when they must simultaneously refresh webpages or mobile applications manually to determine the latest news? Actionable data ought to complement a professional's acumen with customizable alerts and automatic updates from intuitive, mobile-optimized dashboards. Earth Networks resources are engineered with end users in mind.

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WHICH WEATHER DATA PROVIDER IS RIGHT FOR YOUR ORGANIZATION?

PROVIDER	DETAILS	OVERALL
FREE WEATHER DATA	★ **Imprecise weather data because of a limited network of sensors** · Rural sensor locations that provide observations for general areas · Updated observations approximately every hour · Limited notification capabilities	*Good for general weather observations and forecasts at city level where accuracy is not essential.*
PAID WEATHER DATA PROVIDERS	· Larger network of sensors managed by consumers and weather enthusiasts · As many as 16 different forecast variables · Observation updates every 15 minutes · Limited notification capabilities	*Good for consumers who are planning their daily activities.*
EARTH NETWORKS	★ **Hyperlocal weather data tuned to 2.6 million locations around the world** · Network of over 12,000 professionally-managed sensors in densely populated areas · 25 forecast variables, as well as numerous layers of real-time information · Real-time updates every 2 seconds · Customizable automated alerts and notifications	*Good for commercial-grade weather intelligence where accuracy, frequency and highly complex analytics are critical for providing quality insights and protecting local patrons as part of emergency management procedures.*

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SOURCES

earthnetworks.com/networks/weather | wunderground.com/about/data?mr=1 | nws.noaa.gov/ndfd/faq.htm | verification.nws.noaa.gov/peaknewsletter/peak/2015/2015_Winter_Newsletter.pdf | recreation.gov/marketing.do?goto=acm/Explore_And_More/exploreArticles/Safety__Quickly_Changing_Weather.htm | nssl.noaa.gov/education/svrwx101/thunderstorms/faq/ | sciencenews.org/article/flood-damage-cost-1-trillion-year-2050 | weather.gov/media/lmk/pdf/educational_pages/ASOSandClimateObservations__What_Is_ASOS.pdf | washingtonpost.com/blogs/capital-weather-gang/post/should-reagan-national-remain-dcs-official-weather-station/2012/08/16/ca1f4e70-e7aa-11e1-936a-b801f1abab19_blog.html?utm_term=.810c47592f49 | ottawacitizen.com/news/local-news/capital-temperature-readings-a-tale-of-two-chilly-cities