



# Global and Regional Weather Forecast Accuracy Overview 2017 - 2020

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## Introduction

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Everyone is impacted by the weather and virtually everyone has at least some degree of interest in knowing what the weather will be like in the coming days. Relying on weather forecasts helps people to plan for severe and deadly weather events and stay safe, keep property protected, and make normal daily plans such as commutes, picnics, hikes, day trips, knowing how to dress, planning for impactful allergies or other health-related issues, and more. Substantial financial impacts can be at stake for businesses that depend on planning based on weather forecasts such as those dependent on energy, agriculture, and transportation. In 2020, the world saw \$22 billion USD in weather disaster damages, shattering the previous record of \$16 billion.

This causes people and businesses to look to weather forecasts – and their accuracy – more than ever to try to mitigate losses by preparing for what is coming. If weather forecasts are not accurate, damages go up and the perception of forecasting value goes down. It is important for businesses that rely on weather forecasts to evaluate the accuracy of past weather forecasts to help evaluate risk and opportunities. It is also imperative for weather forecast providers themselves to evaluate the accuracy of past forecasts to be able to identify areas for which improvement is needed. Not only is this improvement important to sustain relationships and trust with customers and users of their forecasts, but is necessary to save lives and minimize damages from severe weather events.

This report provides a holistic analysis of weather forecast performance for 84 different metrics for forecasts made one to nine days in advance in eight regions around the world as well as a global summary. This report examined forecasts from 17 different weather forecast providers, seven of which provided forecasts for all years and regions. Four additional global providers were added in 2020. Five providers were regional only, and one provider, MeteoGroup stopped providing forecasts to ForecastWatch due to acquisition at the end of 2019. Over 140 million forecasts were gathered and analyzed for accuracy for this report were from 1,424 locations in these eight regions: United States, Canada, Central America, South America, Europe, Africa, Middle East, Asia/Pacific. Each provider was given one point for each time the provider finished in first place for each metric. For ties the single point was divided equally by the number of providers. The total number of points were counted and is the metric used in this report.

In this analysis, The Weather Channel was determined to be the overall most accurate provider globally, but the most accurate provider varied some by region of the world and meteorological element. In addition, some weather forecast providers did not forecast for all years, all locations, or all metrics, and thus could not win or earn points for those.

## Weather Metrics Analyzed

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### Temperature Metrics

ForecastWatch analyzed 24-hour high and low temperature and MOS high and low temperature forecasts using 9 metrics each, for a total of 36 temperature metrics. The nine metrics were average error (bias), standard deviation of error, most negative error, most positive error, average absolute error, root-mean-squared error, percentage of forecasts within three degrees Fahrenheit, percentage of forecasts with no error, and percentage of busted forecasts.

#### Forecast Time Period Definitions

The 24-hour high temperature is defined as the highest temperature in the 24-hour local standard time calendar day, while the 24-hour low temperature is defined as the lowest temperature in that same 24-hour calendar day. The MOS high is defined as the highest temperature in a time period typically defined by Model Output Statistics (MOS) as the “daytime” in the U.S. Eastern Time Zone (7 a.m. to 7 p.m. Eastern Time or 12 UTC to 0 UTC); thus, 7 a.m. to 7 p.m. local standard time is used for all locations for the “MOS High.” The MOS low is similar, but it uses the period of 7 p.m. to 8 a.m. local standard time.

For high temperature forecasts and the 24-hour low, the days out is determined by subtracting the forecast day from the day the forecast was collected. For example, a 24-hour high temperature forecast for June 10, 2021 collected on June 1, 2021 would be a nine day out forecast. For MOS low, the end day of the period is used. Thus, if the MOS low period was 7 p.m. June 9, 2021 through 8 a.m. June 10, 2021, the June 10 date would be used for days out calculations.

#### Observed High and Low Temperature

The maximum temperature from the 7 a.m. to 7 p.m. local standard time hourly observations was used to construct the high temperature observation. The minimum temperature from the 7 p.m. to 8 a.m. local standard time hourly observations was used to construct the low temperature observation. No attempt to determine high and low temperatures outside these time periods, curve fit, or otherwise determine an intra-hour temperature estimate was performed.

#### Average Error (Bias)

Temperature bias is the positive or negative difference between forecast temperature and observed temperature. Bias helps answer the question of how well the average high (or low) temperature forecast corresponds to the average high (or low) observed temperature. If the bias is negative, it means on average that the forecasted high or low temperature was lower than the observed

temperature, and if it is positive, that the forecasted temperature was on average higher than the observed temperature. A win in this metric would be the provider with the average error closest to zero, whether positive or negative.

### **Standard Deviation of Error**

This is the standard deviation of the measured error of all forecasts when compared to observed temperatures. The lower the standard deviation, the smaller the variation of errors and thus the more consistent the forecast temperature errors. Thus, a win in this metric would be the provider with the lowest standard deviation of error.

### **Minimum Recorded Error and Maximum Recorded Error**

The minimum and maximum recorded errors are the most negative and most positive errors recorded between forecast temperatures and the observed temperatures. Wins in these metrics would be the smallest absolute minimum recorded error (closest to zero).

### **Average Absolute Error**

The average absolute error represents the average of the absolute value of the difference between forecast temperatures and observed temperatures. This means that all errors are positive and represent the average magnitude of error. This measures how far off the set of forecasts is on average without regard for whether they are too high or too low. The provider with the smallest average absolute error would be the winner in this metric.

### **Root-Mean-Squared Error (RMSE)**

To calculate RMSE, the arithmetic difference of a high temperature forecast-observation pair is squared, then all squared errors summed, and then divided by the number of events. Finally, the square root is taken of the sum. A lower RMSE means more accurate forecasts; a higher RMSE means less accurate forecasts. A set of forecasts that show greater variance are penalized more and will have a higher RMSE error than forecasts with consistent error. A perfect set of forecasts would have a RMSE equal to zero. The provider with the smallest root-mean-squared error would win this metric.

### **Percentage of Forecasts Within Three Degrees Fahrenheit**

This metric refers to the percentage of forecasts that were within 3°F, either too high or too low, of the observation. The winner in this metric would be the provider with the highest percentage of forecasts within three degrees Fahrenheit.

## Percentage of Forecasts With No Error

This metric refers to the percentage of forecasts with an error of less than 1°F from the observation. In other words, the integer part of the error is zero. The winner in this metric would be the provider with the highest percentage of forecasts with no error. Note that this is a subset of the above metric.

## Percentage of Busted Forecasts

A “bust” is a forecast error of greater than 10° Fahrenheit, either positive or negative. The winner in this metric would have the smallest percentage of busted forecasts.

## Opacity Metrics

ForecastWatch analyzed 24-hour and daytime (7 a.m. to 7 p.m.) MOS opacity forecasts using seven metrics each, for a total of 14 total opacity metrics. The first three metrics were opacity bias, opacity average absolute error, and opacity standard deviation of error, all using a percentage of sky cover forecast. The next four metrics were percentage of text forecasts with same sky, text sky forecast bias, icon forecasts with same sky, and icon sky forecasts bias.

### Opacity Bias

Opacity bias is the average error of opacity (percentage of clear sky) forecasts. A negative bias means that forecasts were sunnier than observed, while a positive bias means that forecasts were cloudier than the observed sky cover. The winner in this metric would be the provider with the smallest absolute bias, or the bias closest to zero.

### Opacity Average Absolute Error

Opacity absolute error is defined as the average absolute error of the opacity forecasts. This means that all errors are positive and represent the average magnitude of error. This measures how far off the set of forecasts is on average without regard for whether they are too high or too low. The lowest average absolute error would win this metric.

### Opacity Standard Deviation of Error

The opacity standard deviation of error is the average standard deviation of the difference in opacity between the forecast and the observation. The lowest standard deviation would win this metric.

### Percentage of Text Forecasts with Same Sky

This is defined as the percentage of forecasts when the observed sky cover was the same as the text forecast provided. Sky cover observations and text forecasts were converted to canonical METAR reported sky covers: clear (sunny), few (mostly sunny), scattered (partly sunny/partly cloudy), broken

(mostly cloudy), and overcast (cloudy). For example, a forecast of “scattered clouds” would be categorized in the Scattered category. The provider with the highest percentage of text forecasts with the same sky cover would win this metric.

### **Text Sky Forecast Bias**

A text forecast for opacity is one that can be categorized into one of the five canonical sky conditions (sunny, mostly sunny, partly sunny/ partly cloudy, mostly cloudy, and cloudy). Canonical sky conditions from observations are calculated by taking the derived opacity and grouping into the appropriate sky condition.

Assuming sunny is 0% opacity, mostly sunny is 25%, partly sunny/partly cloudy is 50%, mostly cloudy is 75%, and cloudy is 100%, the text forecast bias is the average difference between a text forecast of sky cover and observed sky cover. The provider with the lowest absolute bias would win this metric.

### **Percentage of Icon Forecasts with Same Sky**

This is defined as the percentage of forecasts when the observed canonical sky cover was the same as an icon forecast provided. The provider with the highest percentage of icon forecasts with the same sky would win this metric.

### **Icon Forecast Bias**

An icon forecast for opacity is one that can be mapped to one of the five canonical sky conditions (sunny, mostly sunny, partly sunny/partly cloudy, mostly cloudy, and cloudy). Canonical sky conditions from observations are calculated by taking the derived opacity and grouping into the appropriate sky condition.

Assuming sunny is 0% opacity, mostly sunny is 25%, partly sunny/partly cloudy is 50%, mostly cloudy is 75%, and cloudy is 100%, the icon forecast bias is the average difference between an icon forecast of sky cover and observed sky cover.

## **Precipitation Metrics**

ForecastWatch analyzed 24-hour probability of precipitation using 13 metrics and text precipitation forecasts using five metrics, for a total of 18 unique metrics. The 13 probability of precipitation metrics were Brier score, Brier skill score, and eleven bins of POP forecasts (0%, 10%, 20%, ..., 100%) relative to the percent of time precipitation occurred. The five text precipitation forecast metrics were text forecast precipitation bias, hit rate, false alarm rate, percent correct, and ETS or equitable threat score.

## Observed Precipitation

Precipitation measurements were taken from 24-hour local standard time precipitation observations. In the United States and Canada, if 0.01 inches or more of liquid-equivalent precipitation fell during any hour of that day, it was classified as a precipitation day. Internationally, if the observation report of weather noted precipitation, it was considered a precipitation day. Otherwise, it was considered a non-precipitation day.

If a text forecast mentioned precipitation, it was considered a forecast for precipitation. If precipitation was not mentioned, it was considered a non-precipitation forecast.

## Percentage of POP Forecasts for Each Bin (0%, 10%, 20%, etc.)

POP forecasts were compared against precipitation measured or observed at the locations analyzed. The forecasts were grouped into eleven bins: 0%, 10%, 20%, etc., through 100%. A POP forecast between 0% and 5% (inclusive) was binned into the 0% bin, 5% (exclusive) to 15% (inclusive) into the 10% bin, and so on until the 100% bin, which consisted of forecasts between 95% and 100% (inclusive). The percentage of precipitation events for the forecasts in each bin was calculated. Finally, the difference between the POP forecast bin and the percentage of precipitation events for forecasts within that POP was measured, with the winner being the provider who came closest to the bin percentage. For example, if for all 70% probability of precipitation forecasts a provider made, there was precipitation 78% of the time, and for another, it was 68% of the time, the winner would be the provider where there was precipitation observed 68% of the time they forecast a 70% chance of precipitation.

## Brier Score

Probability of precipitation (POP) can be assessed in two ways: reliability and resolution. A POP forecast is reliable when precipitation occurs the same percentage of time it is predicted. For example, if it rained 10% of the time the POP forecast called for a 10% chance of rain, the POP forecast would be considered reliable. But reliability is only half of the equation. Consider a scenario in which a forecaster always predicts a 30% of rain for a given location and, on average, there is precipitation in that location three out of every ten days. The POP forecast would be reliable, but not necessarily useful because it does not define with absolute certainty whether rain will take place or not. It is not resolved.

The other measure of a forecast is resolution. A resolved POP forecast would always predict either no chance of precipitation or a 100% chance of precipitation since precipitation either occurs or it does not. There is no place for POP in a resolved forecast. Now consider a forecast that predicts a 100% chance of precipitation on dry days and a 0% chance of precipitation on rainy or snowy days. It is

resolved because it predicted either precipitation or completely dry conditions, but this example shows that a resolved forecast may not necessarily be reliable.

Therefore, to fully evaluate a POP forecast, both reliability and resolution must be considered. A Brier score, which considers both reliability and resolution, is one measure used to evaluate POP forecasts. A Brier score ranges from zero to one, with zero being perfectly reliable and resolved. The winner in this metric would be the provider with the lowest Brier score.

### **Brier Skill Score**

The Brier skill score measures a Brier score against a reference forecast. The reference forecast used here is a persistence forecast, which forecasts 0% POP into the future if it is dry today, and 100% POP if there is precipitation today. A higher value represents better forecast performance, thus the winner in this metric would be the provider with the highest Brier skill score.

### **Text Precipitation Forecast Precipitation Bias**

Precipitation bias refers to the propensity to predict more, or less, precipitation than is observed. A bias of greater than one reflects a wet bias (more precipitation forecast than occurs). The provider with a text precipitation forecast precipitation bias closest to zero, either negative or positive, would win this metric.

### **Text Precipitation Forecast Hit Rate**

Hit rate, also known as probably of detection, is the percentage of time that precipitation was forecast when it occurred. The winner of this metric would be the provider with the highest percentage.

### **Text Precipitation Forecast False Alarm Rate**

False alarm rate, also known as probability of false detection, is the percentage of time that precipitation did not occur when it was forecast. The provider with the lowest false alarm rate would be considered the winner of this metric.

### **Text Precipitation Forecast Percent Correct**

Percent correct is the percentage of time that forecasts (for both precipitation and no precipitation) were correct. The highest percent correct would win this metric.

### **Text Precipitation Forecast Equitable Threat Score**

Equitable threat score (ETS), also known as critical success index, measures the skill of a forecast relative to chance. ETS helps answer the question of how well forecast precipitation events corresponded to the observed precipitation events (accounting for hits due to chance). Zero indicates no skill, and a one indicates perfect skill. The provider with the highest ETS would win this metric.

## Wind Metrics

ForecastWatch analyzed 24-hour and daytime MOS wind forecasts using eight metrics for a total of 16 metrics for wind forecasts. The eight wind metrics analyzed were wind speed bias and average absolute error, wind direction bias and average absolute error, same and opposite octant in eight-point compass rose percentage, and same and opposite Sedecimant in 16-point compass rose percentage.

### Wind Speed Bias

Average wind speed bias is the positive or negative difference between forecast wind speed and observed wind speed. If the bias is negative, the forecasted wind speed on average was lower than the observed wind speed, and if it is positive, the forecasted wind speed was on average higher than the observed wind speed. The provider with a wind speed bias closest to zero would win this metric.

### Wind Speed Average Absolute Error

This measure takes the absolute value of the error (bias) of each forecast so that all errors are positive, and then averages all errors. This measures how far off the set of forecasts is on average without regard for whether they were too high or too low. The provider with the lowest average absolute error would win this metric.

### Wind Direction Bias

Wind direction bias is the positive or negative difference between forecast wind direction and observed wind direction. Bias helps answer the question of how well average forecast wind direction corresponds to the average observed wind direction. A positive bias means that the forecasted wind direction was more clockwise than the observed wind direction, and a negative bias means the forecasted wind direction was more counterclockwise than the observed wind direction. The winning provider would have its wind direction bias closest to zero.

### Wind Direction Average Absolute Error

Average direction absolute error is the average of the absolute value of the difference between forecast wind direction and observed wind direction in degrees. The provider with the lowest wind direction average absolute error would win this metric.

### Same Octant in 8-Point Compass Rose Percentage

The wind direction 8-point compass percent correct measure reflects the percentage of time a wind forecast accurately predicts the observed wind direction based on eight possible octants, or wind

directions: north, northeast, east, southeast, south, southwest, west, and northwest. The highest percentage of wind direction forecasts in the same octant would win this metric.

### **Opposite Octant in 8-Point Compass Rose Percentage**

This metric reflects the percentage of time a wind forecast falls in the opposite octant (for example, north instead of south) that is observed based on the eight possible octants listed above. The lowest percentage of wind direction forecasts in the opposite octant from the observed average wind direction would win this metric.

### **Same Sedecimant in 16-Point Compass Rose Percentage**

The wind direction 16-pt compass percent correct measure reflects the percentage of time a wind forecast accurately predicts the observed wind direction observed based on sixteen possible sedecimants, or wind directions: north, north-northeast, northeast, east-northeast, east, east-southeast, southeast, south-southeast, south, south-southwest, southwest, west-southwest, west, west-northwest, northwest, and north-northwest. The highest percentage of wind direction forecasts in the same sedecimant would win this metric.

### **Opposite Sedecimant in 16-Point**

This metric reflects the percentage of time a wind forecast falls in the opposite sedecimant (for example, north-northwest instead of south-southeast) that is observed based on the sixteen possible sedecimants listed above. The lowest percentage of wind direction forecasts in the opposite sedecimant from the observed average wind direction would win this metric.

## Weather Forecast Providers

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- **AccuWeather** Forecasts were collected using the AccuWeather API at <http://api.accuweather.com> using a specific location code.
- **AerisWeather** - Forecasts were collected starting January 1, 2020 using the AerisWeather API at <https://www.aerisweather.com/develop/api/>
- **BBC (Europe Only)** - Forecasts were collected by collecting forecasts from the BBC website at <https://www.bbc.co.uk/weather/>
- **Dark Sky** Forecasts were collected using the Dark Sky API at <http://api.forecast.io>. Latitude and longitude of the observation station were used to retrieve specific forecasts.
- **Environment Canada** (Canada only) - Forecasts were collected by collecting forecasts from the Environment Canada weather forecast website at <https://weather.gc.ca/>
- **Foreca/Vaisala** Forecasts were collected from the 10-day forecast page at <http://www.foreca.com>. During the analysis period, this transitioned from using forecasts from the Foreca website to using the API that populates the page. The location parameter used was the city and state of the observation location for the website, and a location code (either ICAO or WMO) for the API.
- **Global News** (Canada Only) - Forecasts were collected by collecting forecasts from the Global News website at <https://globalnews.ca/>
- **Global Weather Corporation** – Forecasts were collected via a private commercial API provided by Global Weather Corporation.
- **MeteoGroup** - Forecasts were collected until December 31, 2019 via a private commercial API after which MeteoGroup merged with DTN and stopped providing API access to ForecastWatch.
- **NWS Website Website** (US Only) - Forecasts were collected by collecting forecasts from the NWS website at <https://www.weather.gov>
- **NWS Digital Forecast** (US Only) - Forecasts were collected using the NWS Digital Forecast API at <https://graphical.weather.gov/xml/>
- **Open Weather** - Forecasts were collected starting January 1, 2020 using the Open Weather API at <https://api.openweathermap.org/>

- **Pelmorex** – Forecasts were collected via a private commercial API provided by Pelmorex.
- **The Weather Channel** – Forecasts were provided by a private commercial API from <https://api.weather.com> Latitude and longitude of the observation stat were used to retrieve specific forecasts.
- **Weatherbit** - Forecasts were collected starting January 1, 2020 using the Weatherbit API from <https://api.weatherbit.io/>
- **Weerplaza** - Forecasts were collected starting January 1, 2020 by collecting forecasts from the Weerplaza website at <https://www.weerplaza.nl/>
- **World Weather Online** - Forecasts were collected using the World Weather Online API from <http://api2.worldweatheronline.com/>

## Collection Methodology

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### Observation Data

Observation data was collected from the primary Automated Surface Observing System (ASOS) network in the United States as well as international equivalents. United States and International data collected from the Integrated Surface Database (ISD) product. Canadian data was collected from Environment Canada. All products consisted of hourly and daily observation parameters.

### Observed High and Low Temperature

The maximum and minimum temperature observations are from the 24-hour local time temperature observations and were used to construct the high and low temperature observation. These observations are generally either FM-12 (SYNOP), FM-15 (METAR), or FM-16 (SPECI) records. United States 24-hour high and low temperature observations were collected from the Summary of the Day (SOD) records which use five minute sampling. All 24-hour high and low international observations were derived from hourly and special report observations. No attempt to curve fit or otherwise determine an intra-hour temperature estimate was performed.

### Observed Precipitation

Precipitation measurements were taken from 24-hour local time precipitation observations. For United States and Canada locations if 0.01 inches or more of liquid-equivalent precipitation fell during any hour of that day, it was considered to be a day with precipitation. Internationally, precipitation

reports were used to determine precipitation observations. The occurrence or non-occurrence of precipitation was then compared to the POP forecast.

## Observed Wind

Wind conditions were taken from hourly observations over the course of a 24-hour period from local midnight to midnight. These observations were then averaged to construct the daily wind observation.

## Forecast Collection

Data was collected from each of the eight regions at specific times during the day. In **Error! Reference source not found.** the Table 1 for example, daily temperature forecasts were collected at 22:00 UTC (6 p.m. Eastern Standard Time) in the United States and continued until all forecasts were collected. For each location, forecasts from all providers were collected at the exact same time.

Region	Collection Time	Number of Stations
United States	22:00 UTC	1,045
Canada	21:40 UTC	36
Europe	16:00 UTC	220
Asia Pacific	08:00 UTC	65
Africa	15:30 UTC	13
Middle East	13:00 UTC	20
Central America	23:00 UTC	11
South America	21:00 UTC	14

Table 1. Regions and Collection Times

## Validity

Forecasts were considered valid if they were complete (i.e., they contained a high and low temperature forecast, a POP forecast, and a wind forecast), and if they passed both manual and automated audits. These audits checked for out-of-bounds values and other indicators that suggested the forecast should be marked as invalid. Forecasts that were simply bad (inaccurate or wrong) were not considered invalid. However, forecasts issues caused by system errors or delivery

problems (such as a -32768 degree high temperature, a 120% chance of rain or a 270 kph wind speed) were declared invalid.

## Global Skill Summary

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Counting the number of total first place finishes for the 84 metrics evaluated by ForecastWatch reveals that The Weather Channel recorded the greatest number of points for every year from 2017 through 2020 globally of the 17 weather forecast providers analyzed. This held true for forecasts for every time period from one day in advance through nine days in advance. For 2017 through 2019, thirteen providers were evaluated. For 2020, AerisWeather, OpenWeather, Weatherbit and Weerplaza were added to ForecastWatch, but MeteoGroup dropped out, bringing the total to sixteen evaluated providers.

Only six providers (AccuWeather, Dark Sky, Foreca/Vaisala, Pelmorex, The Weather Channel, and World Weather Online) provided forecasts for most metrics for all four years and for all eight regions. The BBC, Environment Canada, Global News, and NWS Website/NWS Digital Forecast each only forecasted for one region; all other providers' skill were based on an average of all eight regions. Global Weather Corporation forecast globally, but only provided forecasts for temperature and precipitation (not POP, sky cover, or wind), encompassing 41 metrics, which was not a majority of metrics for the analysis period.

The Weather Channel recorded the most first-place finishes globally for every year and every time period. It should be noted however that when counting only the percentage of first-place points relative to the number of metrics forecasted, Global Weather Corporation had the best percentage of global first-place finishes for 2017 for forecasts one day, two days, six days, and seven days in advance and for 2018 for forecasts one day in advance, and MeteoGroup had the best percentage for 2019 for six days in advance (all other highest percentages belonged to The Weather Channel). For example, for forecasts one day in advance in 2017, although The Weather Channel had 27.24 best points (34.9% of their average 78 metrics analyzed that year across all regions) and the Global Weather Corporation only had 15.21 best points, Global Weather Corporation only provided forecasts for temperature and precipitation (not POP), encompassing 41 metrics, so these 15.21 best points represented 37.1% of the total possible points for this provider due to their more limited forecast metrics. MeteoGroup only provided forecasts encompassing 62 metrics, and their 23.55 best points in 2019 for the six-day out time period was 37.8% of the total number of metrics provided, leading all weather forecast providers for that year and day out.

The largest decreases in best point percentages between 2017 and 2020 were seen by Global Weather Corporation, which generally saw their best points as a percentage of all metrics drop from around 15-20% for most time periods in 2017 to 5-10% in 2020 (their percentages of just the metrics for which they forecasted generally dropped from around 30-40% in 2017 to 10-20% in 2020). Dark Sky generally saw the greatest improvement in first-place percentages, from roughly 1-3% in 2017 to 7-12% in 2020. Note that these were for forecasts one to seven days in advance; Dark Sky did not provide forecasts for eight and nine days in advance.

## Forecasts by Time Period

All 17 weather forecast providers had forecasts evaluated in at least one year and at least one region for forecasts up to four days in advance. Of the 17 providers, 16 providers (all but the National Weather Service Website as they only provided four full days on their website) had forecasts evaluated for five and six days in advance. Environment Canada, MeteoGroup, and the NWS Digital Forecast had no forecasts evaluated after six days in advance, and Dark Sky only had forecasts evaluated through seven days in advance. The providers that had at least some forecasts for at least one region and at least one year evaluated for eight in nine days in advance were all the other providers – AccuWeather, AerisWeather, the BBC, Foreca/Vaisala, Global News, Global Weather Corporation, OpenWeather, Pelmorex, The Weather Channel, Weatherbit, Weerplaza, and World Weather Online, some of which – as mentioned above – only provided forecasts for one region and/or less than all four years.

For next-day forecasts, in 2017 The Weather Channel amassed over 27 best points – points for first-place finishes – which accounted for over 32% of the parameters for which there were forecasts made. Global Weather Corporation recorded 15.21 best points (18% of all metrics). The Weather Channel continued to see the most first point finishes each year, with 25.66 best points (31%) in 2018, 33.53 best points (40%) in 2019, and 34.53 best points (41%) in 2020. MeteoGroup had the second greatest number of first place finishes in 2018 and 2019 (13.68 and 12.84 best points, respectively), while AccuWeather had the second most in 2020 (8.77 best points).

The numbers and percentages of best points were similar for all other forecasts two to nine days in advance as they were for next-day forecasts. The Weather Channel led in both categories globally for all years and all numbers of days in advance. AccuWeather makes the closest approach to The Weather Channel's best points totals and percentages in three and 4-day forecasts, where their percentages were around 20% of the maximum possible best points. These ranges of forecasts also were The Weather Channel's lowest percentages, around 30%. After forecasts four days in advance, AccuWeather's best points quickly fell to around 10% or less, and The Weather Channel again

dominated first-place finishes, reaching a maximum of 53.2% of the best points globally with 8-day forecasts in 2018 when only eight providers had forecasts analyzed. Part of this reason, however, was because The Weather Channel forecasted for all metrics and all regions. Some other providers, particularly Global Weather Corporation, also approached The Weather Channel and AccuWeather at times when evaluating just the percentage of best points relative to only the number of metrics provided.

In the tables provided for each time period and region below, grey cells indicate what provider did not have any forecasts analyzed for that time period, year, and region, while the yellow highlighted cells indicate the leader in best points for that particular year, time period, and region combination. Table 2 through Table 10 show the results of the global forecast analysis (number of first-place forecasts and percentage of all possible metrics) for forecasts one through nine days in advance.

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	8.70	10.36%	6.51	7.75%	11.40	13.57%	8.77	10.44%
AerisWeather							0.79	0.94%
BBC	0.29	0.35%	0.88	1.04%	0.29	0.35%	0.73	0.87%
Dark Sky	2.94	3.49%	5.03	5.98%	2.48	2.96%	8.13	9.68%
Environment Canada	0.03	0.03%	0.00	0.00%	0.06	0.07%	0.06	0.07%
Foreca/Vaisala	1.66	1.97%	4.47	5.32%	2.77	3.29%	1.97	2.35%
Global News	0.09	0.10%	0.32	0.38%	0.28	0.34%	0.06	0.07%
Global Weather Corp	15.21	18.11%	12.54	14.93%	7.13	8.49%	5.97	7.11%
MeteoGroup	7.00	8.33%	13.68	16.29%	12.84	15.29%		
NWS Digital Forecast	1.47	1.75%	2.94	3.50%	1.47	1.75%	1.47	1.75%
NWS Website	2.20	2.62%	0.00	0.00%	0.18	0.22%	3.12	3.71%
OpenWeather							1.11	1.32%
Pelmorex	11.16	13.28%	5.75	6.84%	2.99	3.56%	2.97	3.54%
The Weather Channel	27.24	32.43%	25.66	30.55%	33.53	39.91%	34.53	41.10%
Weatherbit							3.71	4.42%
Weerplaza							2.23	2.66%
World Weather Online	6.02	7.17%	6.24	7.43%	8.58	10.21%	8.38	9.98%

Table 2. Global One Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	10.26	12.21%	6.84	8.14%	9.62	11.45%	9.63	11.46%
AerisWeather							0.89	1.06%
BBC	0.29	0.35%	0.76	0.90%	0.58	0.69%	0.88	1.04%
Dark Sky	2.91	3.47%	5.60	6.67%	5.33	6.34%	7.49	8.91%
Environment Canada	0.03	0.03%	0.06	0.08%	0.10	0.12%	0.03	0.03%
Foreca/Vaisala	2.83	3.36%	4.36	5.19%	4.18	4.98%	6.22	7.40%
Global News	0.03	0.03%	0.40	0.47%	0.33	0.39%	0.28	0.33%
Global Weather Corp	14.69	17.49%	11.58	13.79%	7.32	8.72%	5.99	7.13%
MeteoGroup	7.52	8.95%	12.15	14.47%	10.48	12.48%		
NWS Digital Forecast	2.20	2.62%	1.71	2.04%	2.20	2.62%	0.24	0.29%
NWS Website	0.98	1.17%	2.08	2.48%	0.98	1.17%	4.89	5.83%
OpenWeather							1.18	1.40%
Pelmorex	12.25	14.58%	5.69	6.78%	1.67	1.99%	2.68	3.19%
The Weather Channel	24.51	29.18%	25.77	30.68%	33.65	40.06%	32.67	38.89%
Weatherbit							2.54	3.02%
Weerplaza							3.05	3.64%
World Weather Online	5.50	6.55%	6.99	8.32%	7.55	8.99%	5.34	6.36%

Table 3. Global Two Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	12.50	14.88%	17.49	20.82%	12.62	15.02%	17.61	20.97%
AerisWeather							0.94	1.12%
BBC	0.44	0.52%	1.17	1.39%	0.29	0.35%	1.17	1.39%
Dark Sky	1.48	1.76%	3.82	4.55%	3.21	3.82%	8.95	10.65%
Environment Canada	0.00	0.00%	0.03	0.03%	0.00	0.00%	0.00	0.00%
Foreca/Vaisala	2.20	2.62%	5.65	6.72%	4.94	5.89%	7.16	8.52%
Global News	0.04	0.05%	0.44	0.52%	0.35	0.42%	0.20	0.24%
Global Weather Corp	10.78	12.84%	6.13	7.30%	5.71	6.80%	6.71	7.99%
MeteoGroup	10.20	12.14%	12.35	14.71%	10.28	12.24%		
NWS Digital Forecast	1.47	1.75%	1.47	1.75%	2.81	3.35%	1.47	1.75%
NWS Website	2.94	3.50%	0.73	0.87%	1.35	1.60%	3.67	4.37%
OpenWeather							1.32	1.58%
Pelmorex	9.59	11.41%	6.75	8.03%	3.67	4.37%	2.16	2.57%
The Weather Channel	25.42	30.26%	21.13	25.15%	33.07	39.37%	24.34	28.98%
Weatherbit							0.89	1.05%
Weerplaza							1.70	2.03%
World Weather Online	6.96	8.29%	6.84	8.14%	5.69	6.77%	5.72	6.81%

Table 4. Global Three Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	10.20	12.14%	16.25	19.34%	15.48	18.42%	17.43	20.74%
AerisWeather							0.45	0.54%
BBC	1.17	1.39%	1.02	1.22%	0.44	0.52%	0.56	0.67%
Dark Sky	2.38	2.83%	2.60	3.09%	1.41	1.68%	7.41	8.82%
Environment Canada	0.00	0.00%	0.03	0.03%	0.04	0.04%	0.00	0.00%
Foreca/Vaisala	3.46	4.12%	3.51	4.18%	3.23	3.85%	5.21	6.20%
Global News	0.11	0.13%	0.44	0.52%	0.36	0.43%	0.26	0.30%
Global Weather Corp	9.98	11.88%	3.92	4.66%	5.57	6.63%	4.13	4.92%
MeteoGroup	9.60	11.42%	10.89	12.97%	10.51	12.51%		
NWS Digital Forecast	2.20	2.62%	1.84	2.19%	1.62	1.92%	1.47	1.75%
NWS Website	3.67	4.37%	3.30	3.93%	3.33	3.96%	6.24	7.43%
OpenWeather							0.45	0.54%
Pelmorex	13.21	15.72%	7.45	8.87%	4.82	5.74%	2.73	3.25%
The Weather Channel	24.37	29.01%	26.24	31.24%	31.11	37.03%	27.19	32.37%
Weatherbit							2.92	3.48%
Weerplaza							2.72	3.24%
World Weather Online	3.67	4.36%	6.51	7.75%	6.10	7.26%	4.84	5.76%

Table 5. Global Four Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	4.32	5.14%	11.00	13.09%	9.92	11.81%	10.14	12.07%
AerisWeather							0.96	1.15%
BBC	0.73	0.87%	0.15	0.17%	0.44	0.52%	0.58	0.69%
Dark Sky	3.89	4.63%	1.68	2.01%	1.41	1.68%	9.37	11.16%
Environment Canada	0.03	0.03%	0.03	0.03%	0.06	0.07%	0.00	0.00%
Foreca/Vaisala	4.24	5.05%	4.88	5.80%	3.46	4.12%	4.29	5.10%
Global News	0.13	0.16%	0.44	0.53%	0.32	0.38%	0.18	0.21%
Global Weather Corp	11.80	14.05%	5.80	6.91%	6.28	7.47%	5.19	6.18%
MeteoGroup	9.96	11.86%	12.33	14.68%	12.30	14.65%		
NWS Digital Forecast	2.57	3.06%	3.67	4.37%	3.12	3.71%	2.94	3.50%
OpenWeather							1.23	1.47%
Pelmorex	15.69	18.68%	6.44	7.67%	5.57	6.63%	3.36	4.00%
The Weather Channel	27.47	32.70%	30.82	36.69%	34.84	41.48%	35.19	41.89%
Weatherbit							2.28	2.72%
Weerplaza							3.64	4.33%
World Weather Online	3.16	3.76%	6.75	8.04%	6.28	7.48%	4.65	5.54%

Table 6. Global Five Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	5.92	7.04%	5.16	6.14%	2.98	3.54%	8.04	9.57%
AerisWeather							2.03	2.42%
BBC	0.00	0.00%	0.36	0.43%	0.58	0.69%	0.58	0.69%
Dark Sky	1.77	2.11%	2.12	2.52%	1.42	1.69%	7.01	8.35%
Environment Canada	0.03	0.03%	0.00	0.00%	0.00	0.00%	0.00	0.00%
Foreca/Vaisala	4.65	5.53%	5.98	7.12%	4.85	5.77%	4.23	5.04%
Global News	0.07	0.08%	0.35	0.41%	0.25	0.30%	0.12	0.15%
Global Weather Corp	13.63	16.23%	12.28	14.62%	7.97	9.49%	5.57	6.63%
MeteoGroup	11.17	13.30%	11.51	13.70%	23.55	28.04%		
NWS Digital Forecast	7.34	8.74%	4.41	5.24%	3.67	4.37%	4.04	4.81%
OpenWeather							2.05	2.44%
Pelmorex	13.81	16.44%	6.62	7.88%	7.47	8.89%	3.72	4.42%
The Weather Channel	23.29	27.73%	28.48	33.91%	26.47	31.51%	35.10	41.78%
Weatherbit							2.35	2.79%
Weerplaza							2.85	3.39%
World Weather Online	2.31	2.75%	6.73	8.02%	4.79	5.71%	6.32	7.53%

Table 7. Global Six Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.52	7.77%	3.81	4.54%	5.61	6.68%	2.77	3.30%
AerisWeather							2.52	3.00%
BBC	0.00	0.00%	0.68	0.81%	0.88	1.04%	0.34	0.41%
Dark Sky	1.69	2.01%	5.58	6.64%	4.62	5.50%	6.07	7.23%
Foreca/Vaisala	7.31	8.71%	7.25	8.63%	7.55	8.98%	3.69	4.40%
Global News	0.00	0.00%	1.08	1.28%	0.26	0.31%	0.21	0.25%
Global Weather Corp	16.94	20.17%	13.07	15.56%	12.16	14.48%	9.16	10.91%
OpenWeather							2.25	2.68%
Pelmorex	15.55	18.52%	9.02	10.74%	14.58	17.36%	6.59	7.85%
The Weather Channel	30.18	35.93%	36.67	43.65%	32.52	38.72%	37.13	44.21%
Weatherbit							3.32	3.95%
Weerplaza							3.75	4.46%
World Weather Online	5.80	6.90%	6.84	8.15%	5.82	6.93%	6.19	7.37%

Table 8. Global Seven Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.19	7.36%	2.40	2.85%	4.73	5.63%	4.87	5.80%
AerisWeather							3.28	3.91%
BBC	0.00	0.00%	0.88	1.04%	0.58	0.69%	0.44	0.52%
Foreca/Vaisala	5.78	6.88%	7.38	8.79%	9.95	11.84%	2.74	3.26%
Global News	0.00	0.00%	0.99	1.18%	0.26	0.32%	0.23	0.27%
Global Weather Corp	15.72	18.72%	11.42	13.59%	14.43	17.18%	12.11	14.42%
OpenWeather							3.84	4.57%
Pelmorex	17.88	21.29%	12.23	14.56%	14.07	16.74%	2.77	3.30%
The Weather Channel	32.26	38.40%	44.66	53.17%	34.37	40.91%	38.32	45.62%
Weatherbit							2.15	2.56%
Weerplaza							7.75	9.22%
World Weather Online	6.17	7.35%	4.04	4.81%	5.61	6.68%	5.51	6.56%

Table 9. Global Eight Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	9.50	11.31%	7.26	8.65%	8.76	10.43%	4.65	5.53%
AerisWeather							2.86	3.40%
BBC	0.00	0.00%	0.73	0.87%	0.44	0.52%	0.58	0.69%
Foreca/Vaisala	6.40	7.62%	8.35	9.94%	8.44	10.04%	3.13	3.73%
Global News	0.00	0.00%	1.08	1.28%	0.21	0.25%	0.31	0.37%
Global Weather Corp	12.03	14.32%	12.39	14.76%	15.04	17.90%	11.14	13.26%
OpenWeather							3.21	3.82%
Pelmorex	18.10	21.55%	8.82	10.50%	13.85	16.49%	5.34	6.36%
The Weather Channel	31.81	37.87%	40.97	48.77%	31.86	37.93%	38.50	45.84%
Weatherbit							3.35	3.99%
Weerplaza							6.13	7.30%
World Weather Online	6.16	7.33%	4.40	5.24%	5.42	6.45%	4.79	5.70%

Table 10. Global Nine Day Out Forecast First Place Points and Percentages

## United States Skill Summary

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The results for first place finishes in the United States region are similar to the global results. The Weather Channel captured first-place finishes for all years and days in advance except for forecasts six days in advance in 2019, when MeteoGroup finished first more often than any other provider.

As with the global results, Dark Sky generally saw the largest improvement in first-place finishes, particularly with forecasts two days in advance and beyond, earning 1-4% of first place finishes in 2017 and 9-13% of first-place finishes in 2020 while the number of metrics for which it forecasted remained the same (all 84 metrics). Pelmorex saw the largest decrease in first place finishes for most time periods, with generally over 10% in 2017 to less than 3% in 2020.

The United States was the only region for which The National Weather Service Website and NWS Digital Forecast produced forecasts. Both providers saw generally less than 6% of first-place finishes, though there were a few exceptions, with the National Weather Service Website seeing 10% of first-place points for 4-day out forecasts in 2020 and the NWS Digital Forecast seeing as high as 12% of first-place points for 6-day out forecasts in 2017.

Table 11 through Table 19 show the total number of first place finishes and percentages of total possible points for each weather forecast provider and forecast day in advance for the United States region.

### Individual Metrics

While not shown in the tables, it is instructive to break down the first place finishes for each provider by the forecasted metric. This will help in understanding how the best points were calculated and in evaluating the value to place on the first-place finish metric overall.

#### Temperature

The Weather Channel performed well overall for temperatures, with the most first-place finishes in nearly every forecast day in advance. AccuWeather, however, earned the greatest number and percentage of first place finishes for forecasts three and four days in advance. Global Weather Corporation earned over 30% of the share of first place finishes as well for seven to nine days out, and over 20% for most other forecast days, although The Weather Channel and/or AccuWeather surpassed them on all forecast days in advance for the most.

Interestingly, although The Weather Channel prevailed overall in temperature for the greatest number of first-place finishes, their victories were largely limited to MOS temperatures, both high and low. In

other words, The Weather Channel was best at forecasting high temperatures for the 7 a.m. to 7 p.m. local standard time interval and low temperatures for the 7 p.m. to 8 a.m. local standard time interval, for which they earned averages of 25 of 36 first place finishes for every forecast day in advance. They did not do as well forecasting 24-hour high and low temperatures, for which they only earned an average of five to six of 36 total possible first-place finishes. These 24-hour forecast high and low temperatures differ largely because there are times when the high or low temperature of each day do not occur during the hours above. Instead, Global Weather Corporation was best in both categories, earning an average of 18 of 36 first place finishes for 24-hour high temperatures and 13 of 36 first place finishes for 24-hour lows; AccuWeather was a close second for 24-hour low temperature forecasts with an average of 11 first-place finishes. AccuWeather was best at these 24-hour low temperature forecasts in the short range, with an average of 17.2 first-place finishes (of 36) for 1-5 day in advance forecasts and as many as 22.5/36 for forecasts four days in advance. Beyond 5-day forecasts, Global Weather Corporation takes over dominating forecasting for 24-hour low temperature forecasts.

The reason for this disparity is because each provider emphasizes different markets and use cases for their high and low temperature forecasts. When you see a high temperature forecast for The Weather Channel, it generally is the forecast that will occur during waking hours, while Global Weather Corporation, and AccuWeather to a lesser extent, more generally forecast for the full 24-hour day. As forecasting providers move to providing APIs, they can provide multiple temperature forecasts, useful for different types of customers. On January 1, 2021, ForecastWatch began accepting these multiple forecasts, but for this report, each provider only supplied one temperature forecast that was evaluated for both daytime MOS (and nighttime for low) and 24-hour time periods.

## Opacity

MeteoGroup, Pelmorex, and World Weather Online combined to earn an average of 49 of the 63 first place finishes each for MOS daypart and 24 hour local standard time forecasts for opacity (sky cover), with Pelmorex earning the highest number of first-place finishes in this metric and MeteoGroup earning the most on average per year (MeteoGroup did not have forecasts to analyze for 2020 or beyond six days in advance). Pelmorex earned 18 of 63 first place finishes for 24-hour opacity forecasts and 19 of 63 for MOS opacity forecasts, World Weather Online earned 16 of 63 for 24-hour opacity forecasts and 15 of 63 for MOS opacity forecasts, and MeteoGroup earned 15 of 63 first place finishes for both. All other weather forecast providers only earned a combined total of 14 of the 63 first-place finishes.

MeteoGroup and World Weather Online generally dominated short-term (one through three days out) opacity forecasts, while Pelmorex pulled into a virtual tie for second with World Weather Online,

a little behind MeteoGroup, for four, five, and six days out, then pulled ahead in opacity forecasts for seven to nine days out after MeteoGroup's forecasts dropped out, with World Weather Online and The Weather Channel in a virtual tie for second in opacity forecasts for seven to nine days out. In fact, The Weather Channel earned most of their first place finishes for opacity forecasts during the extended range of seven to nine days out.

## **Precipitation**

The best weather forecast provider for precipitation in the United States, in terms of first-place finishes, was The Weather Channel, which earned 35 of 117 first-place finishes, on average, for 24-hour POP (probability of precipitation) forecasts and 20 of 45 first place finishes for 24-hour precipitation forecasts. Global Weather Corporation and OpenWeather did not forecast POP. Several other weather forecast providers earned an average of more than 10 of the 117 first place finishes for 24-hour POP forecasts, including Pelmorex (18), AccuWeather (16), Foreca/Vaisala (16), and Dark Sky (11), but no other weather forecast provider other than The Weather Channel earned more than five of the 45 first place finishes for 24-hour precipitation forecasts. This resulted in The Weather Channel dominating overall first-place finishes for precipitation forecasts.

No obvious distinguishing differences existed by forecast day in advance for either 24-hour POP and 24-hour precipitation forecasts. For 24-hour POP forecasts, The Weather Channel led in terms of the number of first place finishes for every forecast day in advance. Every day out also had many other weather forecast providers, largely those listed in the previous paragraph, vying for second the greatest number of bests. For 24-hour precipitation forecasts, The Weather Channel had a large advantage in terms of the greatest number of first place finishes for every forecast day in advance.

## **Winds**

First-place finishes for wind forecasts for the United States region were again dominated by The Weather Channel, which earned an average of 48 of 72 first place finishes for 24-hour winds forecasts and 55 of 72 for MOS winds forecasts. No other weather forecast provider earned more than nine of 72 first place finishes for 24-hour winds forecasts (World Weather Online) and seven of 72 first place finishes for MOS winds forecasts (AccuWeather). In fact, of the 576 total possible first-place finishes involved in wind speeds (for each metric, each forecast day in advance, and each year), The Weather Channel earned a total of 411 of them, or over 71%. No other weather forecast provider earned more than 49 (8.5%, AccuWeather). Given this, unsurprisingly the Weather Channel dominated wind forecasts for every forecast day in advance, earning between 66% and 75% of the first place finishes on any given forecast day.

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	8.53	10.16%	5.33	6.35%	11.75	13.99%	9.25	11.01%
AerisWeather							1.00	1.19%
Dark Sky	3.20	3.81%	6.00	7.14%	1.75	2.08%	8.00	9.52%
Foreca/Vaisala	1.70	2.02%	3.83	4.56%	2.00	2.38%	0.50	0.60%
Global Weather Corp	14.53	17.30%	13.00	15.48%	7.00	8.33%	4.25	5.06%
MeteoGroup	5.00	5.95%	11.00	13.10%	11.00	13.10%		
NWS Digital Forecast	2.00	2.38%	4.00	4.76%	2.00	2.38%	2.00	2.38%
NWS Website	3.00	3.57%	0.00	0.00%	0.25	0.30%	4.25	5.06%
OpenWeather							1.00	1.19%
Pelmorex	10.00	11.90%	5.00	5.95%	2.00	2.38%	1.00	1.19%
The Weather Channel	30.03	35.75%	28.83	34.33%	37.25	44.35%	37.75	44.94%
Weatherbit							4.00	4.76%
Weerplaza							2.00	2.38%
World Weather Online	6.00	7.14%	7.00	8.33%	9.00	10.71%	9.00	10.71%

Table 11. United States One Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	9.67	11.51%	5.00	5.95%	10.33	12.30%	10.67	12.70%
AerisWeather							1.00	1.19%
Dark Sky	3.00	3.57%	6.50	7.74%	6.00	7.14%	8.00	9.52%
Foreca/Vaisala	3.00	3.57%	4.00	4.76%	3.00	3.57%	6.00	7.14%
Global Weather Corp	13.83	16.47%	12.00	14.29%	7.33	8.73%	5.00	5.95%
MeteoGroup	6.00	7.14%	11.00	13.10%	9.00	10.71%		
NWS Digital Forecast	3.00	3.57%	2.33	2.78%	3.00	3.57%	0.33	0.40%
NWS Website	1.33	1.59%	2.83	3.37%	1.33	1.59%	6.67	7.94%
OpenWeather							1.00	1.19%
Pelmorex	12.00	14.29%	5.00	5.95%	0.00	0.00%	1.00	1.19%
The Weather Channel	27.17	32.34%	27.33	32.54%	36.00	42.86%	34.33	40.87%
Weatherbit							2.00	2.38%
Weerplaza							3.00	3.57%
World Weather Online	5.00	5.95%	8.00	9.52%	8.00	9.52%	5.00	5.95%

Table 12. United States Two Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	13.00	15.48%	19.83	23.61%	13.00	15.48%	21.00	25.00%
AerisWeather							1.00	1.19%
Dark Sky	1.00	1.19%	4.00	4.76%	3.00	3.57%	10.00	11.90%
Foreca/Vaisala	2.00	2.38%	5.33	6.35%	3.00	3.57%	7.00	8.33%
Global Weather Corp	8.50	10.12%	4.83	5.75%	5.33	6.35%	6.00	7.14%
MeteoGroup	9.50	11.31%	11.00	13.10%	9.00	10.71%		
NWS Digital Forecast	2.00	2.38%	2.00	2.38%	3.83	4.56%	2.00	2.38%
NWS Website	4.00	4.76%	1.00	1.19%	1.83	2.18%	5.00	5.95%
OpenWeather							1.00	1.19%
Pelmorex	8.50	10.12%	6.00	7.14%	3.00	3.57%	0.00	0.00%
The Weather Channel	28.50	33.93%	23.00	27.38%	36.00	42.86%	24.00	28.57%
Weatherbit							0.33	0.40%
Weerplaza							1.33	1.59%
World Weather Online	7.00	8.33%	7.00	8.33%	6.00	7.14%	5.33	6.35%

Table 13. United States Three Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	10.00	11.90%	17.50	20.83%	16.53	19.68%	20.00	23.81%
AerisWeather							0.00	0.00%
Dark Sky	2.00	2.38%	2.50	2.98%	1.00	1.19%	8.00	9.52%
Foreca/Vaisala	4.00	4.76%	3.00	3.57%	2.00	2.38%	4.50	5.36%
Global Weather Corp	7.00	8.33%	2.00	2.38%	4.53	5.40%	2.50	2.98%
MeteoGroup	9.00	10.71%	10.50	12.50%	10.00	11.90%		
NWS Digital Forecast	3.00	3.57%	2.50	2.98%	2.20	2.62%	2.00	2.38%
NWS Website	5.00	5.95%	4.50	5.36%	4.53	5.40%	8.50	10.12%
OpenWeather							0.00	0.00%
Pelmorex	14.00	16.67%	6.00	7.14%	4.00	4.76%	1.00	1.19%
The Weather Channel	28.00	33.33%	29.00	34.52%	33.20	39.52%	26.50	31.55%
Weatherbit							3.00	3.57%
Weerplaza							3.00	3.57%
World Weather Online	2.00	2.38%	6.50	7.74%	6.00	7.14%	5.00	5.95%

Table 14. United States Four Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	2.00	2.38%	11.00	13.10%	10.50	12.50%	10.00	11.90%
AerisWeather							1.00	1.19%
Dark Sky	4.00	4.76%	1.00	1.19%	1.00	1.19%	11.00	13.10%
Foreca/Vaisala	4.00	4.76%	4.00	4.76%	2.75	3.27%	3.00	3.57%
Global Weather Corp	11.00	13.10%	5.00	5.95%	5.50	6.55%	4.00	4.76%
MeteoGroup	10.00	11.90%	10.00	11.90%	11.75	13.99%		
NWS Digital Forecast	3.50	4.17%	5.00	5.95%	4.25	5.06%	4.00	4.76%
OpenWeather							1.00	1.19%
Pelmorex	17.00	20.24%	5.00	5.95%	5.00	5.95%	1.00	1.19%
The Weather Channel	31.50	37.50%	36.00	42.86%	37.25	44.35%	38.00	45.24%
Weatherbit							2.00	2.38%
Weerplaza							4.00	4.76%
World Weather Online	1.00	1.19%	7.00	8.33%	6.00	7.14%	5.00	5.95%

Table 15. United States Five Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	5.00	5.95%	5.00	5.95%	2.00	2.38%	9.00	10.71%
AerisWeather							2.50	2.98%
Dark Sky	1.00	1.19%	2.00	2.38%	1.00	1.19%	8.00	9.52%
Foreca/Vaisala	4.00	4.76%	5.00	5.95%	4.00	4.76%	3.00	3.57%
Global Weather Corp	13.00	15.48%	12.00	14.29%	6.00	7.14%	3.00	3.57%
MeteoGroup	11.00	13.10%	10.00	11.90%	29.00	34.52%		
NWS Digital Forecast	10.00	11.90%	6.00	7.14%	5.00	5.95%	5.50	6.55%
OpenWeather							2.00	2.38%
Pelmorex	15.00	17.86%	5.00	5.95%	7.00	8.33%	2.00	2.38%
The Weather Channel	25.00	29.76%	32.00	38.10%	26.00	30.95%	37.00	44.05%
Weatherbit							2.00	2.38%
Weerplaza							3.00	3.57%
World Weather Online	0.00	0.00%	7.00	8.33%	4.00	4.76%	7.00	8.33%

Table 16. United States Six Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	5.33	6.35%	3.00	3.57%	4.83	5.75%	2.50	2.98%
AerisWeather							3.00	3.57%
Dark Sky	1.00	1.19%	6.50	7.74%	5.00	5.95%	7.00	8.33%
Foreca/Vaisala	7.00	8.33%	6.00	7.14%	6.33	7.54%	2.00	2.38%
Global Weather Corp	16.83	20.04%	13.00	15.48%	11.33	13.49%	8.00	9.52%
OpenWeather							2.00	2.38%
Pelmorex	15.83	18.85%	7.00	8.33%	16.00	19.05%	6.00	7.14%
The Weather Channel	33.00	39.29%	41.00	48.81%	34.50	41.07%	39.50	47.02%
Weatherbit							3.00	3.57%
Weerplaza							4.00	4.76%
World Weather Online	5.00	5.95%	7.50	8.93%	6.00	7.14%	7.00	8.33%

Table 17. United States Seven Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	5.00	5.95%	0.00	0.00%	4.00	4.76%	5.00	5.95%
AerisWeather							4.00	4.76%
Foreca/Vaisala	5.00	5.95%	6.00	7.14%	9.00	10.71%	1.00	1.19%
Global Weather Corp	15.00	17.86%	11.50	13.69%	14.00	16.67%	12.00	14.29%
OpenWeather							4.00	4.76%
Pelmorex	18.50	22.02%	11.50	13.69%	15.00	17.86%	1.00	1.19%
The Weather Channel	35.50	42.26%	51.00	60.71%	36.00	42.86%	41.00	48.81%
Weatherbit							1.50	1.79%
Weerplaza							9.00	10.71%
World Weather Online	5.00	5.95%	4.00	4.76%	6.00	7.14%	5.50	6.55%

Table 18. United States Eight Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	9.00	10.71%	6.50	7.74%	9.00	10.71%	5.00	5.95%
AerisWeather							3.00	3.57%
Foreca/Vaisala	5.00	5.95%	7.50	8.93%	7.50	8.93%	1.50	1.79%
Global Weather Corp	11.00	13.10%	13.33	15.87%	15.00	17.86%	11.00	13.10%
OpenWeather							3.00	3.57%
Pelmorex	18.50	22.02%	7.33	8.73%	14.00	16.67%	4.00	4.76%
The Weather Channel	34.50	41.07%	45.33	53.97%	32.50	38.69%	41.50	49.40%
Weatherbit							3.00	3.57%
Weerplaza							7.00	8.33%
World Weather Online	6.00	7.14%	4.00	4.76%	6.00	7.14%	5.00	5.95%

Table 19. United States Nine Day Out Forecast First Place Points and Percentages

## Canada Skill Summary

The Weather Channel claimed the greatest number of first place finishes in the Canada region for most time periods between 2017 and 2020. Exceptions included MeteoGroup with the greatest number of first place finishes five days in advance in 2018 and Canadian-based Global News, which only provided forecasts for Canada, claiming the greatest number of first place finishes for seven, eight, and 9 days in advance in 2018. Otherwise, The Weather Channel generally claimed 25-40% of first place finishes for every other year and days in advance.

No significant improvements or drop in number of first-place finishes were seen among the weather forecast providers throughout the four-year period from 2017 through 2020. Dark Sky, which showed significant improvement in recent years in the United States region and globally, remained more stagnant in terms of first place finishes in Canada throughout the four years.

In addition to Global News, this was the only region for which Environment Canada produced forecasts. Environment Canada generally earned less than 2% of first-place points for each days out period and year, and forecasted for 55 of the 84 metrics.

Table 20 through Table 28 show the total number of first place finishes and percentages of total possible points for each weather forecast provider and forecast day in advance for the Canada region.

## Individual Metrics

### Temperature

The Weather Channel performed well overall for temperatures in the Canada region. This forecaster claimed the most first-place finishes for every forecast day in advance, with their greatest number of first-place finishes coming for forecasts one, two, and three days in advance. For each of these three days, The Weather Channel had over half of the total possible number of first-place finishes. Overall, The Weather Channel finished in first place for over 46% of the total temperature metrics for all forecast days in advance from 2017 through 2020. Global Weather Corporation saw 17% of their total possible first-place finishes, while AccuWeather had 13%.

As with the United States region, The Weather Channel's first-place finishes were concentrated mostly in the MOS temperature forecast categories, for the 7 a.m. to 7 p.m. local standard time interval for high temperatures and 7 p.m. to 8 a.m. local standard time period for low temperatures. For these, The Weather Channel earned 22 of the possible 36 first-place finishes (on average) for MOS high temperatures forecasts and 24 of the possible 36 first-place finishes (on average) for MOS low temperatures forecasts. For 24-hour high temperatures forecasts, The Weather Channel still had the most, but with an average of only 14 of the possible 36 first-place points, while Global Weather Corporation had 10. AccuWeather had the most first-place finishes for 24-hour low temperatures forecasts with 12, while Global Weather Corporation had 10 and The Weather Channel had 6. AccuWeather had a clear lead for the greatest number of first place finishes for 24-hour low temperatures forecasts for 1-6 days in advance, after which Global Weather Corporation finished in first place more often for seven to nine days out.

### Opacity

AccuWeather was the best weather forecast provider of opacity (sky cover) forecasts in the Canada region, earning 195 of the total 504 (39%) possible first-place finishes. Foreca/Vaisala saw 113 first-place finishes, and MeteoGroup had 82. Because MeteoGroup did not have forecasts in 2020 or beyond six days in advance, their 82 first-place finishes were 33% of their total possible, placing their percentage second behind AccuWeather's. No other weather forecast provider had more than 34 first-place finishes, or 7% of what was possible.

First-place finishes for short-term sky cover forecasts in Canada were largely led by AccuWeather and MeteoGroup, which claimed a combined 60-75% for one to four days out. Foreca/Vaisala began claiming many more of these beginning with 4-days out, when they claimed 21%. AccuWeather continued to claim the most number for each day out through nine- days out, but AccuWeather and Foreca/Vaisala combined saw over 80% of first place finishes for seven through nine days out.

## Precipitation

The Weather Channel narrowly claimed the most number and percentages of finishes for precipitation forecasts in the Canada region with 166 first-place finishes (26%) of those possible. Pelmorex claimed 136.5, or 21% of the possible finishes, and Foreca/Vaisala saw 96, or 17%. Other weather forecast providers with at least 5% of first-place finishes included WeerPlaza (11%), MeteoGroup (10%), Dark Sky (9%), AeriWeather (8%), Global Weather Corporation (8%), AccuWeather (7%), WeatherBit (6%), and World Weather Online (5%).

Because first place finishes for precipitation forecasts, mostly those for 24-hour POP (probability of precipitation) forecasts, were evenly distributed for each forecast day in advance, there were not significantly large differences between weather forecast providers on most forecast day in advance. Pelmorex, however, did best in the shorter term, while The Weather Channel (one to five days in advance) and Foreca/Vaisala did better in the longer term (six to nine days out) in general.

## Winds

Unlike for the United States region, where The Weather Channel claimed a vast majority of first place finishes for wind forecasts, Global News – a Canadian-based provider with forecasts analyzed only for Canada – was a strong challenger for wind forecasting in Canada. In fact, Global News had both the greatest number of first-place finishes (202) and highest percentage of possible first-place finishes (47%) of any provider. The Weather Channel finished second with 30% of possible first-place finishes, and AccuWeather and MeteoGroup claimed 13% and 11%, respectively of possible first-place finishes in the country.

Although Global News had the highest percentage of first place finishes of any provider for each day out except for 8-days out, their forecasting strength was shown most for two to five days out, when it claimed 48-56% of possible first-place finishes each day in advance.

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	15.50	18.45%	13.37	15.91%	14.33	17.06%	16.00	19.05%
AerisWeather							0.00	0.00%
Dark Sky	6.00	7.14%	3.33	3.97%	4.00	4.76%	5.50	6.55%
Environment Canada	1.00	1.19%	0.00	0.00%	2.00	2.38%	2.00	2.38%
Foreca/Vaisala	4.00	4.76%	4.20	5.00%	4.50	5.36%	3.50	4.17%
Global News	3.00	3.57%	11.20	13.33%	10.00	11.90%	2.00	2.38%
Global Weather Corp	6.50	7.74%	8.00	9.52%	4.00	4.76%	2.50	2.98%
MeteoGroup	11.50	13.69%	11.53	13.73%	12.50	14.88%		
OpenWeather							1.00	1.19%
Pelmorex	6.00	7.14%	8.17	9.72%	3.33	3.97%	5.00	5.95%
The Weather Channel	27.50	32.74%	23.20	27.62%	25.33	30.16%	33.50	39.88%
Weatherbit							4.00	4.76%
Weerplaza							2.00	2.38%
World Weather Online	3.00	3.57%	1.00	1.19%	4.00	4.76%	7.00	8.33%

Table 20. Canada One Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	14.83	17.66%	12.25	14.58%	15.50	18.45%	14.33	17.06%
AerisWeather							3.00	3.57%
Dark Sky	7.00	8.33%	3.00	3.57%	5.00	5.95%	3.00	3.57%
Environment Canada	1.00	1.19%	2.25	2.68%	3.50	4.17%	1.00	1.19%
Foreca/Vaisala	6.33	7.54%	3.00	3.57%	2.00	2.38%	6.25	7.44%
Global News	1.00	1.19%	14.00	16.67%	11.50	13.69%	9.83	11.71%
Global Weather Corp	6.00	7.14%	7.75	9.23%	6.00	7.14%	3.08	3.67%
MeteoGroup	11.83	14.09%	14.75	17.56%	10.00	11.90%		
OpenWeather							0.00	0.00%
Pelmorex	6.00	7.14%	5.00	5.95%	1.00	1.19%	5.00	5.95%
The Weather Channel	28.00	33.33%	21.00	25.00%	25.50	30.36%	28.50	33.93%
Weatherbit							6.00	7.14%
Weerplaza							1.00	1.19%
World Weather Online	2.00	2.38%	1.00	1.19%	4.00	4.76%	3.00	3.57%

Table 21. Canada Two Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	13.33	15.87%	11.50	13.69%	16.83	20.04%	19.50	23.21%
AerisWeather							0.00	0.00%
Dark Sky	5.00	5.95%	3.00	3.57%	4.00	4.76%	1.00	1.19%
Environment Canada	0.00	0.00%	1.00	1.19%	0.00	0.00%	0.00	0.00%
Foreca/Vaisala	8.00	9.52%	2.00	2.38%	2.00	2.38%	5.50	6.55%
Global News	1.33	1.59%	15.50	18.45%	12.50	14.88%	7.00	8.33%
Global Weather Corp	7.67	9.13%	6.00	7.14%	6.33	7.54%	5.00	5.95%
MeteoGroup	7.67	9.13%	15.00	17.86%	12.50	14.88%		
OpenWeather							0.00	0.00%
Pelmorex	7.00	8.33%	5.00	5.95%	3.00	3.57%	5.00	5.95%
The Weather Channel	32.00	38.10%	24.00	28.57%	23.83	28.37%	28.00	33.33%
Weatherbit							5.00	5.95%
Weerplaza							4.00	4.76%
World Weather Online	2.00	2.38%	1.00	1.19%	3.00	3.57%	4.00	4.76%

Table 22. Canada Three Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	16.33	19.44%	10.00	11.90%	18.00	21.43%	15.00	17.86%
AerisWeather							2.00	2.38%
Dark Sky	6.50	7.74%	3.50	4.17%	2.00	2.38%	2.00	2.38%
Environment Canada	0.00	0.00%	1.00	1.19%	1.25	1.49%	0.00	0.00%
Foreca/Vaisala	8.00	9.52%	1.83	2.18%	2.00	2.38%	4.00	4.76%
Global News	3.83	4.56%	15.33	18.25%	12.58	14.98%	9.00	10.71%
Global Weather Corp	9.50	11.31%	4.33	5.16%	6.25	7.44%	4.00	4.76%
MeteoGroup	10.00	11.90%	15.33	18.25%	8.33	9.92%		
OpenWeather							0.00	0.00%
Pelmorex	8.00	9.52%	9.50	11.31%	3.00	3.57%	5.00	5.95%
The Weather Channel	20.83	24.80%	20.17	24.01%	28.58	34.03%	32.00	38.10%
Weatherbit							6.00	7.14%
Weerplaza							2.50	2.98%
World Weather Online	1.00	1.19%	3.00	3.57%	2.00	2.38%	2.50	2.98%

Table 23. Canada Four Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	8.75	10.42%	14.17	16.87%	14.50	17.26%	17.00	20.24%
AerisWeather							1.00	1.19%
Dark Sky	6.00	7.14%	2.00	2.38%	2.00	2.38%	2.00	2.38%
Environment Canada	1.00	1.19%	1.00	1.19%	2.00	2.38%	0.00	0.00%
Foreca/Vaisala	9.00	10.71%	3.00	3.57%	6.00	7.14%	4.00	4.76%
Global News	4.75	5.65%	15.67	18.65%	11.33	13.49%	6.33	7.54%
Global Weather Corp	11.25	13.39%	5.67	6.75%	3.50	4.17%	3.00	3.57%
MeteoGroup	8.00	9.52%	17.67	21.03%	9.83	11.71%		
OpenWeather							1.33	1.59%
Pelmorex	6.00	7.14%	8.17	9.72%	3.50	4.17%	5.50	6.55%
The Weather Channel	27.25	32.44%	12.67	15.08%	29.33	34.92%	34.83	41.47%
Weatherbit							4.00	4.76%
Weerplaza							3.00	3.57%
World Weather Online	2.00	2.38%	4.00	4.76%	2.00	2.38%	2.00	2.38%

Table 24. Canada Five Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	8.50	10.12%	7.00	8.33%	16.33	19.44%	17.00	20.24%
AerisWeather							5.50	6.55%
Dark Sky	3.00	3.57%	5.25	6.25%	1.00	1.19%	1.50	1.79%
Environment Canada	1.00	1.19%	0.00	0.00%	0.00	0.00%	0.00	0.00%
Foreca/Vaisala	12.00	14.29%	15.25	18.15%	8.00	9.52%	5.50	6.55%
Global News	2.50	2.98%	12.25	14.58%	8.83	10.52%	4.33	5.16%
Global Weather Corp	10.00	11.90%	11.00	13.10%	8.50	10.12%	3.00	3.57%
MeteoGroup	13.00	15.48%	7.00	8.33%	3.00	3.57%		
OpenWeather							0.00	0.00%
Pelmorex	8.00	9.52%	5.00	5.95%	2.00	2.38%	5.00	5.95%
The Weather Channel	23.00	27.38%	17.25	20.54%	34.33	40.87%	33.83	40.28%
Weatherbit							1.00	1.19%
Weerplaza							6.33	7.54%
World Weather Online	3.00	3.57%	4.00	4.76%	2.00	2.38%	1.00	1.19%

Table 25. Canada Six Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	8.50	10.12%	7.00	8.33%	14.83	17.66%	9.00	10.71%
AerisWeather							4.00	4.76%
Dark Sky	5.00	5.95%	3.00	3.57%	3.00	3.57%	2.00	2.38%
Foreca/Vaisala	14.50	17.26%	13.00	15.48%	13.50	16.07%	2.00	2.38%
Global News	0.00	0.00%	38.00	45.24%	9.17	10.91%	7.33	8.73%
Global Weather Corp	8.00	9.52%	3.00	3.57%	10.33	12.30%	8.00	9.52%
OpenWeather							0.00	0.00%
Pelmorex	9.00	10.71%	4.00	4.76%	2.50	2.98%	8.00	9.52%
The Weather Channel	36.00	42.86%	12.00	14.29%	29.67	35.32%	32.33	38.49%
Weatherbit							4.00	4.76%
Weerplaza							5.33	6.35%
World Weather Online	3.00	3.57%	4.00	4.76%	1.00	1.19%	2.00	2.38%

Table 26. Canada Seven Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	10.00	11.90%	9.00	10.71%	14.83	17.66%	14.50	17.26%
AerisWeather							4.00	4.76%
Foreca/Vaisala	15.00	17.86%	13.00	15.48%	14.00	16.67%	4.00	4.76%
Global News	0.00	0.00%	35.00	41.67%	9.33	11.11%	8.00	9.52%
Global Weather Corp	12.00	14.29%	3.00	3.57%	14.83	17.66%	8.00	9.52%
OpenWeather							0.50	0.60%
Pelmorex	6.00	7.14%	5.00	5.95%	3.00	3.57%	5.50	6.55%
The Weather Channel	39.00	46.43%	17.00	20.24%	27.00	32.14%	33.00	39.29%
Weatherbit							1.50	1.79%
Weerplaza							2.00	2.38%
World Weather Online	2.00	2.38%	2.00	2.38%	1.00	1.19%	3.00	3.57%

Table 27. Canada Eight Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	14.00	16.67%	11.00	13.10%	17.50	20.83%	10.50	12.50%
AerisWeather							4.00	4.76%
Foreca/Vaisala	14.67	17.46%	15.00	17.86%	11.00	13.10%	5.00	5.95%
Global News	0.00	0.00%	38.00	45.24%	7.33	8.73%	11.00	13.10%
Global Weather Corp	8.67	10.32%	5.00	5.95%	9.00	10.71%	6.00	7.14%
OpenWeather							1.00	1.19%
Pelmorex	6.00	7.14%	1.00	1.19%	7.33	8.73%	5.50	6.55%
The Weather Channel	40.67	48.41%	13.00	15.48%	29.83	35.52%	33.00	39.29%
Weatherbit							5.00	5.95%
Weerplaza							1.00	1.19%
World Weather Online	0.00	0.00%	1.00	1.19%	2.00	2.38%	2.00	2.38%

Table 28. Canada Nine Day Out Forecast First Place Points and Percentages

## Central America Region Skill Summary

First-place finishes for the Central America region were generally split between Canada-based Pelmorex and The Weather Channel, with Pelmorex claiming most of the first place finishes for short-term time periods and earlier years, and The Weather Channel claiming more for longer time periods and for more recent years.

For next-day forecasts, Pelmorex had the most first-place finishes in 2017 and 2018, while The Weather Channel claimed more in 2019 and 2020. MeteoGroup was generally a close second or third in their three years from 2017 to 2020 as well. AccuWeather had the second number of first place finishes in 2020, slightly more than Pelmorex. Two-day forecasts saw the greatest number of first place finishes by Pelmorex in 2017 and 2018 and The Weather Channel in 2020. AccuWeather claimed the most in 2019, but first-place finishes were virtually split equally in 2019 between AccuWeather, MeteoGroup, Pelmorex, and The Weather Channel for two-day in advance forecasts.

Continuing the trend of Pelmorex having more first-place finishes in the earlier years and AccuWeather in the later years, Pelmorex claimed more first-place finishes in 2017 and 2018 for 3-day and 4-day in advance forecasts, and in 2017 only for five, six, seven, eight, and nine-day forecasts. Pelmorex also had the greatest number of first place finishes for five and 6-day forecasts in 2019. The Weather Channel claimed more first-place finishes in 2020 (three, four, five, six, seven, eight, and nine-day forecasts), 2019 (four, six, seven, eight, and nine-day forecasts), and 2018 (five,

six, seven, eight, and nine-day forecasts). MeteoGroup had more first-place finishes for 3-day forecasts in 2019, and Pelmorex and The Weather Channel tied for the greatest number of first place finishes for 6-day forecasts in 2019 and for nine-day forecasts in 2017.

As is evident in these patterns, Pelmorex generally saw decreases in the number and percentages of first place finishes over time from 2017 to 2020 while The Weather Channel generally saw increases. For some periods, AccuWeather also saw increases in numbers and percentages over these years. Global Weather Corporation and World Weather Online, particular the latter, saw decreases in percentages over time after claiming 10-15% of first place finishes in 2017.

Table 29 through Table 37 show the total number of first place finishes and percentages of total possible points for each weather forecast provider and forecast day in advance for Central America.

## Individual Metrics

### Temperature

As the region of the world where the overall number of first-place finishes were more split among weather forecast providers, Central America also saw greater uniformity between providers for individual metrics. Temperature forecasts were generally not an exception, with four providers earning at least 13% of their possible points for first-place finishes. However, Pelmorex did have significantly more than other providers, with 38% of the possible first-place finishes. The Weather Channel saw 18%, AccuWeather saw 16%, Global Weather Corporation claimed 14%, and MeteoGroup saw 13%. Pelmorex also claimed the highest numbers of first place finishes for each of the subgroups of temperature forecasts: 24-hour highs, 24-hour lows, MOS highs, and MOS lows. AccuWeather and Global Weather Corporation were significantly better in the 24-hour high and MOS high forecast categories than in the two categories involving low temperatures, while The Weather Channel was significantly better with low temperatures forecasts than with high temperatures forecasts. Pelmorex was also better with low temperature forecasts than with high temperature forecasts, with an average of 16.5 of 36 possible first-place finishes per day in advance for lows and 11 of 36 for highs.

Pelmorex's strong showing of first-place finishes were evenly distributed across all forecast days in advance. AccuWeather generally claimed the greatest number of first place finishes for high temperature forecasts for one to five days out, though had few first place finishes for low temperature forecasts during those days. After five days in advance, AccuWeather's numbers of first place finishes for high temperature forecasts diminished, replaced by Global Weather Corporation, who

claimed the greatest number of first place finishes for high temperature forecasts of any provider for six to nine days in advance.

## Opacity

Five weather forecast providers had at least 17% of their possible first-place finishes for opacity (sky cover) forecasts in Central America: MeteoGroup (33%), Pelmorex (31%), OpenWeather (21%), The Weather Channel (21%), and World Weather Online (17%). Other than The Weather Channel, these providers saw evenly distributed percentages of first place finishes on each forecast day in advance; The Weather Channel had relatively low shares of first place finishes for one to five days out before claiming higher percentages of 25-45% for the six to nine day out periods.

## Precipitation

The best provider of precipitation in Central America, in terms of first-place finishes, was The Weather Channel, which claimed 33% of them. Several other weather forecast providers also claimed at least 10% of their possible first-place finishes: Weatherbit (20%), Dark Sky (17%), Pelmorex (14%), MeteoGroup (14%), and AccuWeather (10%). The Weather Channel claimed the highest number of first place finishes for every forecast day in advance, peaking in the seven to nine day out periods when they claimed 38-42% each day.

## Winds

The Weather Channel dominated the first place finishes for wind forecasts for the Central America region, earning 50% (286 of 576) of the total wind metrics. While the Weather Channel still earned at least 44% of all first place finishes for forecast periods of one to six in advance, significantly more than any other provider for these days, their best days – as with many other metrics and regions – were for forecasts seven to nine days in advance, which are largely days for which other providers do not deliver forecasts. The Weather Channel had 53-63% of first place finishes during these forecast days.

AccuWeather was second overall in the number and percentage of first place finishes for Central American winds, with 19%. Dark Sky had 15%, and Weerplaza, OpenWeather, and MeteoGroup all had 10-12%.

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.00	7.14%	11.00	13.10%	14.83	17.66%	15.58	18.55%
AerisWeather							0.33	0.40%
Dark Sky	7.00	8.33%	8.00	9.52%	3.00	3.57%	9.08	10.81%
Foreca/Vaisala	3.67	4.37%	3.00	3.57%	1.33	1.59%	1.83	2.18%
Global Weather Corp	0.83	0.99%	0.00	0.00%	1.50	1.79%	2.00	2.38%
MeteoGroup	16.50	19.64%	18.00	21.43%	18.00	21.43%		
OpenWeather							5.83	6.94%
Pelmorex	32.00	38.10%	22.00	26.19%	18.83	22.42%	15.50	18.45%
The Weather Channel	9.00	10.71%	20.00	23.81%	24.50	29.17%	26.00	30.95%
Weatherbit							4.50	5.36%
Weerplaza							2.33	2.78%
World Weather Online	9.00	10.71%	2.00	2.38%	2.00	2.38%	1.00	1.19%

Table 29. Central America One Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	11.50	13.69%	13.45	16.01%	17.95	21.37%	14.03	16.71%
AerisWeather							0.20	0.24%
Dark Sky	5.00	5.95%	7.00	8.33%	5.50	6.55%	6.17	7.34%
Foreca/Vaisala	2.00	2.38%	0.45	0.54%	6.45	7.68%	3.67	4.37%
Global Weather Corp	2.00	2.38%	1.45	1.73%	0.95	1.13%	3.53	4.21%
MeteoGroup	11.50	13.69%	15.45	18.39%	16.50	19.64%		
OpenWeather							6.20	7.38%
Pelmorex	32.00	38.10%	28.70	34.17%	17.20	20.48%	14.00	16.67%
The Weather Channel	11.00	13.10%	15.50	18.45%	17.45	20.77%	27.17	32.34%
Weatherbit							4.83	5.75%
Weerplaza							3.20	3.81%
World Weather Online	9.00	10.71%	2.00	2.38%	2.00	2.38%	1.00	1.19%

Table 30. Central America Two Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	7.83	9.33%	7.33	8.73%	15.00	17.86%	15.25	18.15%
AerisWeather							2.25	2.68%
Dark Sky	7.00	8.33%	12.50	14.88%	5.50	6.55%	10.83	12.90%
Foreca/Vaisala	3.50	4.17%	0.00	0.00%	3.00	3.57%	3.25	3.87%
Global Weather Corp	4.33	5.16%	3.33	3.97%	1.33	1.59%	1.83	2.18%
MeteoGroup	6.00	7.14%	17.83	21.23%	21.50	25.60%		
OpenWeather							5.00	5.95%
Pelmorex	35.33	42.06%	26.00	30.95%	16.17	19.25%	13.00	15.48%
The Weather Channel	11.00	13.10%	14.00	16.67%	19.50	23.21%	25.08	29.86%
Weatherbit							3.50	4.17%
Weerplaza							3.00	3.57%
World Weather Online	9.00	10.71%	3.00	3.57%	2.00	2.38%	1.00	1.19%

Table 31. Central America Three Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	10.00	11.90%	8.00	9.52%	14.83	17.66%	11.87	14.13%
AerisWeather							0.00	0.00%
Dark Sky	6.50	7.74%	8.00	9.52%	6.00	7.14%	14.00	16.67%
Foreca/Vaisala	3.33	3.97%	4.00	4.76%	7.00	8.33%	2.70	3.21%
Global Weather Corp	7.50	8.93%	6.00	7.14%	1.00	1.19%	3.87	4.60%
MeteoGroup	7.17	8.53%	14.33	17.06%	13.33	15.87%		
OpenWeather							2.50	2.98%
Pelmorex	30.50	36.31%	21.33	25.40%	16.67	19.84%	18.00	21.43%
The Weather Channel	10.00	11.90%	19.33	23.02%	24.17	28.77%	20.87	24.84%
Weatherbit							5.20	6.19%
Weerplaza							4.00	4.76%
World Weather Online	9.00	10.71%	3.00	3.57%	1.00	1.19%	1.00	1.19%

Table 32. Central America Four Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	12.33	14.68%	14.78	17.60%	12.20	14.52%	15.25	18.15%
AerisWeather							1.00	1.19%
Dark Sky	3.00	3.57%	2.25	2.68%	8.00	9.52%	9.58	11.41%
Foreca/Vaisala	2.33	2.78%	0.70	0.83%	7.20	8.57%	11.42	13.59%
Global Weather Corp	8.33	9.92%	1.78	2.12%	3.00	3.57%	0.58	0.69%
MeteoGroup	7.00	8.33%	11.70	13.93%	13.20	15.71%		
OpenWeather							4.00	4.76%
Pelmorex	26.00	30.95%	22.78	27.12%	21.20	25.24%	12.42	14.78%
The Weather Channel	14.00	16.67%	27.50	32.74%	18.20	21.67%	22.17	26.39%
Weatherbit							2.00	2.38%
Weerplaza							4.58	5.46%
World Weather Online	11.00	13.10%	2.50	2.98%	1.00	1.19%	1.00	1.19%

Table 33. Central America Five Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	7.83	9.33%	4.00	4.76%	4.70	5.60%	10.00	11.90%
AerisWeather							1.00	1.19%
Dark Sky	6.50	7.74%	4.00	4.76%	11.00	13.10%	16.33	19.44%
Foreca/Vaisala	1.00	1.19%	5.33	6.35%	1.20	1.43%	3.83	4.56%
Global Weather Corp	11.83	14.09%	9.00	10.71%	8.00	9.52%	1.33	1.59%
MeteoGroup	6.00	7.14%	8.00	9.52%	12.70	15.12%		
OpenWeather							5.00	5.95%
Pelmorex	23.33	27.78%	20.33	24.21%	22.70	27.02%	12.00	14.29%
The Weather Channel	13.50	16.07%	31.83	37.90%	22.70	27.02%	28.17	33.53%
Weatherbit							3.00	3.57%
Weerplaza							2.33	2.78%
World Weather Online	14.00	16.67%	1.50	1.79%	1.00	1.19%	1.00	1.19%

Table 34. Central America Six Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	12.33	14.68%	8.00	9.52%	11.00	13.10%	8.83	10.52%
AerisWeather							2.00	2.38%
Dark Sky	4.00	4.76%	7.00	8.33%	11.00	13.10%	8.00	9.52%
Foreca/Vaisala	2.83	3.37%	4.00	4.76%	1.00	1.19%	1.33	1.59%
Global Weather Corp	9.50	11.31%	5.00	5.95%	7.00	8.33%	6.33	7.54%
OpenWeather							6.33	7.54%
Pelmorex	20.33	24.21%	22.00	26.19%	24.00	28.57%	14.50	17.26%
The Weather Channel	20.00	23.81%	37.00	44.05%	29.00	34.52%	25.67	30.56%
Weatherbit							2.00	2.38%
Weerplaza							7.00	8.33%
World Weather Online	15.00	17.86%	1.00	1.19%	1.00	1.19%	2.00	2.38%

Table 35. Central America Seven Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	7.95	9.46%	12.00	14.29%	11.00	13.10%	5.50	6.55%
AerisWeather							1.00	1.19%
Foreca/Vaisala	2.45	2.92%	4.00	4.76%	4.50	5.36%	3.67	4.37%
Global Weather Corp	12.95	15.42%	7.00	8.33%	5.00	5.95%	7.83	9.33%
OpenWeather							8.50	10.12%
Pelmorex	23.70	28.21%	24.50	29.17%	25.00	29.76%	17.50	20.83%
The Weather Channel	22.95	27.32%	34.50	41.07%	37.50	44.64%	29.67	35.32%
Weatherbit							5.00	5.95%
Weerplaza							4.33	5.16%
World Weather Online	14.00	16.67%	2.00	2.38%	1.00	1.19%	1.00	1.19%

Table 36. Central America Eight Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	9.20	10.95%	9.00	10.71%	11.50	13.69%	3.00	3.57%
AerisWeather							1.67	1.98%
Foreca/Vaisala	4.70	5.60%	6.50	7.74%	1.33	1.59%	4.67	5.56%
Global Weather Corp	16.70	19.88%	11.00	13.10%	3.00	3.57%	9.00	10.71%
OpenWeather							5.00	5.95%
Pelmorex	19.70	23.45%	16.00	19.05%	21.33	25.40%	20.00	23.81%
The Weather Channel	19.70	23.45%	39.50	47.02%	43.83	52.18%	28.00	33.33%
Weatherbit							5.00	5.95%
Weerplaza							5.00	5.95%
World Weather Online	14.00	16.67%	2.00	2.38%	3.00	3.57%	2.67	3.17%

Table 37. Central America Nine Day Out Forecast First Place Points and Percentages

## South America Region Skill Summary

In the South America region, for forecasts one through five-days out, MeteoGroup claimed the greatest number of first place finishes in 2017 and 2018, followed by The Weather Channel in 2019 and 2020. The Weather Channel had the greatest number of first place finishes for six through nine-days out in all years from 2017 to 2020.

This shift over the years from MeteoGroup to The Weather Channel claiming the greatest number of first place finishes in the time periods from one through five days in advance did not result from MeteoGroup receiving less first-place finishes; in fact, in some years, MeteoGroup received more first-place finishes in 2019 than in 2017 and/or 2018 (it is worth noting that no forecasts from 2020 were analyzed for MeteoGroup). Instead, The Weather Channel in most cases saw a strong increase in the number and percentages of first place finishes over time from 2017 to 2020 in South America, mostly at the expense of large decreases by Global Weather Corporation and World Weather Online. It is also worth noting that MeteoGroup did not have forecasts beyond six days, which allowed The Weather Channel to claim as many as 64.3% of the possible first-place finishes (8-day forecasts in 2018).

Table 38 through Table 46 show the total number of first place finishes and percentages of total possible points for each weather forecast provider and forecast day in advance for South America.

## Individual Metrics

### Temperature

South American temperatures were forecasted best by The Weather Channel, which finished in first place for 41% of the metrics analyzed. Three other providers saw just under 20% of first-place finishes: MeteoGroup (19%), Global Weather Corporation (18%), and Pelmorex (17%). AccuWeather was next with 10% of possible first-place finishes. The Weather Channel finished with the most number for all four forecast subcategories: 24-hour high and low and MOS high and low temperatures. However, this provider performed better with MOS high and low forecasts than 24-hour high and low forecasts in South America. For 24-hour high and low forecasts, The Weather Channel earned an average of 11 and 12 of 36 total possible first-place finishes, respectively, with Global Weather Corporation a close second with nine and eight of 36 total possible first-place finishes. Meanwhile, The Weather Channel had 17 to 18 first place finishes for MOS highs and lows forecasts, with no other weather forecast provider earning more than eight of the 36 possible.

For MOS high and low temperature forecasts, The Weather Channel finished with the greatest number of each for five to nine day out forecasts, with large leads in the number of first place finishes for forecasts seven to nine days out as well as one-day out. For two to three days out, first-place finishes for MOS high and low temperature forecasts were nearly evenly split between The Weather Channel, AccuWeather and Global Weather Corporation. For 24-hour high and low temperature forecasts, the lead for the greatest number of first-place finishes was distributed evenly between Global Weather Corporation, MeteoGroup, and Pelmorex for forecasts one to three days in advance. For four day out forecasts, The Weather Channel barely took the lead for first-place finishes, then had significantly more than other providers for five through nine day out forecasts.

### Opacity

Sky cover (opacity) forecasts were best in South America by World Weather Online, which garnered 49% of possible first-place finishes (248 of 504) in this category. This included 123 of 252 best finishes for 24-hour opacity forecasts and 125 of 252 for MOS opacity forecasts, so the provider was equally dominant in both. MeteoGroup was next with 94 total first-place finishes, which was 38% of their total possible first-place finishes since this provider did not have forecasts beyond six days out or for the year 2020. Weerplaza finished with 29% of their possible top finishes, while The Weather Channel came in fourth with 15% of the total possible best finishes.

World Weather Online, MeteoGroup, and Weerplaza dominated opacity forecasts one through six days in advance. Beyond six days out, World Weather Online and The Weather Channel had the

greatest number of first-place finishes, though Pelmorex and OpenWeather also had good showings during these forecast days.

## **Precipitation**

For precipitation in South America, the greatest number of first-place finishes belonged to The Weather Channel, with 237 of the possible 648 (37%). AccuWeather finished with 95 (15% of their maximum possible) and MeteoGroup finished with 91 (28% of their maximum possible). The Weather Channel also led in the number of first place finishes in each subgroup, with 165 of the 468 possible in 24-hour POP (probability of precipitation) forecasts and 72 of the 180 possible in 24-hour precipitation forecasts. For AccuWeather, all 95 of their first-place finishes came in the 24-hour POP forecasts subgroup.

All three of these providers performed evenly throughout all forecast days in advance. However, The Weather Channel, which in many metrics placed first more often in seven through nine days out after some providers such as MeteoGroup no longer have forecasts to analyze, increased their percentage of best finishes again during these three forecast days to 44-49% of first place finishes for South American precipitation.

## **Winds**

Best forecasts for winds in South America were also dominated by The Weather Channel, which claimed over 57% of the first place finishes in this category – 164 of 288 in 24-hour wind forecasts and 166.5 of 288 in MOS wind forecasts. MeteoGroup had 29% of their maximum possible best finishes and AccuWeather had 18%. No other provider had 5% or more of their maximum possible first-place finishes for winds.

Forecasts for five and six days in advance were the most competitive, when The Weather Channel had 45% of the maximum possible best forecasts (five days out) and 48% (six days out), while MeteoGroup had 40% (five days out) and 41% (six days out). The Weather Channel did finish with the greatest number of first place finishes for every forecast day in advance, peaking at 72% of the possible first-place finishes (46 of 64) for forecasts nine days in advance. For forecasts seven to nine days in advance, The Weather Channel had 135 of the total possible 192 first-place finishes (70%), AccuWeather had 39 (20%), and all other weather forecast providers recorded a combined 18 first-place finishes.

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	8.75	10.42%	13.83	16.47%	11.50	13.69%	7.50	8.93%
AerisWeather							0.00	0.00%
Dark Sky	4.50	5.36%	1.50	1.79%	3.00	3.57%	8.33	9.92%
Foreca/Vaisala	0.00	0.00%	0.50	0.60%	0.50	0.60%	2.00	2.38%
Global Weather Corp	8.25	9.82%	8.00	9.52%	5.00	5.95%	4.67	5.56%
MeteoGroup	19.08	22.72%	23.83	28.37%	18.50	22.02%		
OpenWeather							0.00	0.00%
Pelmorex	11.83	14.09%	6.00	7.14%	4.50	5.36%	7.00	8.33%
The Weather Channel	16.58	19.74%	22.33	26.59%	33.00	39.29%	39.50	47.02%
Weatherbit							3.00	3.57%
Weerplaza							7.00	8.33%
World Weather Online	15.00	17.86%	8.00	9.52%	8.00	9.52%	5.00	5.95%

Table 38. South America One Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	15.83	18.85%	11.33	13.49%	9.00	10.71%	9.00	10.71%
AerisWeather							2.00	2.38%
Dark Sky	4.00	4.76%	1.00	1.19%	4.00	4.76%	6.00	7.14%
Foreca/Vaisala	1.00	1.19%	1.00	1.19%	1.00	1.19%	1.00	1.19%
Global Weather Corp	12.83	15.28%	13.08	15.58%	3.00	3.57%	5.00	5.95%
MeteoGroup	18.33	21.83%	23.42	27.88%	20.00	23.81%		
OpenWeather							0.00	0.00%
Pelmorex	6.33	7.54%	5.75	6.85%	4.50	5.36%	5.00	5.95%
The Weather Channel	10.67	12.70%	21.42	25.50%	34.50	41.07%	40.50	48.21%
Weatherbit							2.50	2.98%
Weerplaza							8.00	9.52%
World Weather Online	15.00	17.86%	7.00	8.33%	8.00	9.52%	5.00	5.95%

Table 39. South America Two Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	9.00	10.71%	11.75	13.99%	6.50	7.74%	9.58	11.41%
AerisWeather							2.00	2.38%
Dark Sky	5.00	5.95%	3.00	3.57%	7.17	8.53%	7.00	8.33%
Foreca/Vaisala	2.00	2.38%	0.00	0.00%	2.17	2.58%	3.00	3.57%
Global Weather Corp	16.33	19.44%	14.25	16.96%	2.00	2.38%	2.08	2.48%
MeteoGroup	17.67	21.03%	29.58	35.22%	22.50	26.79%		
OpenWeather							1.00	1.19%
Pelmorex	8.33	9.92%	4.33	5.16%	3.17	3.77%	7.58	9.03%
The Weather Channel	9.67	11.51%	15.08	17.96%	33.50	39.88%	35.75	42.56%
Weatherbit							2.00	2.38%
Weerplaza							9.00	10.71%
World Weather Online	16.00	19.05%	6.00	7.14%	7.00	8.33%	5.00	5.95%

Table 40. South America Three Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	10.00	11.90%	10.33	12.30%	7.00	8.33%	8.50	10.12%
AerisWeather							2.00	2.38%
Dark Sky	6.00	7.14%	3.00	3.57%	5.00	5.95%	8.00	9.52%
Foreca/Vaisala	2.00	2.38%	0.00	0.00%	1.00	1.19%	3.50	4.17%
Global Weather Corp	17.00	20.24%	14.50	17.26%	1.50	1.79%	2.00	2.38%
MeteoGroup	18.00	21.43%	24.83	29.56%	25.00	29.76%		
OpenWeather							0.00	0.00%
Pelmorex	8.00	9.52%	4.00	4.76%	6.00	7.14%	6.00	7.14%
The Weather Channel	8.00	9.52%	19.33	23.02%	29.50	35.12%	39.50	47.02%
Weatherbit							1.50	1.79%
Weerplaza							8.00	9.52%
World Weather Online	15.00	17.86%	8.00	9.52%	9.00	10.71%	5.00	5.95%

Table 41. South America Four Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.33	7.54%	5.00	5.95%	9.33	11.11%	14.83	17.66%
AerisWeather							2.50	2.98%
Dark Sky	6.50	7.74%	2.00	2.38%	2.00	2.38%	11.00	13.10%
Foreca/Vaisala	2.00	2.38%	1.50	1.79%	0.00	0.00%	1.50	1.79%
Global Weather Corp	16.00	19.05%	11.33	13.49%	4.33	5.16%	0.33	0.40%
MeteoGroup	16.33	19.44%	25.33	30.16%	14.33	17.06%		
OpenWeather							1.00	1.19%
Pelmorex	12.00	14.29%	9.00	10.71%	7.33	8.73%	5.83	6.94%
The Weather Channel	9.83	11.71%	23.83	28.37%	38.67	46.03%	35.67	42.46%
Weatherbit							2.00	2.38%
Weerplaza							4.33	5.16%
World Weather Online	15.00	17.86%	6.00	7.14%	8.00	9.52%	5.00	5.95%

Table 42. South America Five Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	7.00	8.33%	9.50	11.31%	6.58	7.84%	3.50	4.17%
AerisWeather							2.00	2.38%
Dark Sky	5.00	5.95%	1.00	1.19%	4.92	5.85%	8.00	9.52%
Foreca/Vaisala	2.00	2.38%	0.00	0.00%	1.25	1.49%	2.00	2.38%
Global Weather Corp	12.00	14.29%	0.50	0.60%	5.58	6.65%	0.50	0.60%
MeteoGroup	16.00	19.05%	28.00	33.33%	17.75	21.13%		
OpenWeather							0.00	0.00%
Pelmorex	6.00	7.14%	7.00	8.33%	7.50	8.93%	6.00	7.14%
The Weather Channel	22.00	26.19%	33.00	39.29%	33.42	39.78%	45.00	53.57%
Weatherbit							4.00	4.76%
Weerplaza							8.00	9.52%
World Weather Online	14.00	16.67%	5.00	5.95%	7.00	8.33%	5.00	5.95%

Table 43. South America Six Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.50	7.74%	10.00	11.90%	8.83	10.52%	5.25	6.25%
AerisWeather							2.00	2.38%
Dark Sky	2.00	2.38%	3.00	3.57%	6.50	7.74%	4.00	4.76%
Foreca/Vaisala	3.50	4.17%	4.00	4.76%	2.00	2.38%	3.00	3.57%
Global Weather Corp	6.00	7.14%	5.00	5.95%	6.83	8.13%	1.75	2.08%
OpenWeather							3.00	3.57%
Pelmorex	13.00	15.48%	8.00	9.52%	9.00	10.71%	4.50	5.36%
The Weather Channel	36.00	42.86%	49.00	58.33%	43.83	52.18%	45.25	53.87%
Weatherbit							4.25	5.06%
Weerplaza							7.00	8.33%
World Weather Online	17.00	20.24%	5.00	5.95%	7.00	8.33%	4.00	4.76%

Table 44. South America Seven Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	5.00	5.95%	10.00	11.90%	13.50	16.07%	10.50	12.50%
AerisWeather							1.00	1.19%
Foreca/Vaisala	5.00	5.95%	3.00	3.57%	2.00	2.38%	1.00	1.19%
Global Weather Corp	9.67	11.51%	6.00	7.14%	6.00	7.14%	5.50	6.55%
OpenWeather							2.00	2.38%
Pelmorex	12.67	15.08%	11.00	13.10%	7.50	8.93%	7.00	8.33%
The Weather Channel	34.67	41.27%	54.00	64.29%	49.00	58.33%	40.00	47.62%
Weatherbit							3.00	3.57%
Weerplaza							8.00	9.52%
World Weather Online	17.00	20.24%	0.00	0.00%	6.00	7.14%	6.00	7.14%

Table 45. South America Eight Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	5.00	5.95%	9.00	10.71%	9.17	10.91%	12.00	14.29%
AerisWeather							1.00	1.19%
Foreca/Vaisala	3.00	3.57%	3.00	3.57%	7.00	8.33%	3.00	3.57%
Global Weather Corp	6.00	7.14%	3.50	4.17%	5.67	6.75%	3.50	4.17%
OpenWeather							2.00	2.38%
Pelmorex	16.00	19.05%	12.00	14.29%	9.67	11.51%	9.50	11.31%
The Weather Channel	37.00	44.05%	50.50	60.12%	52.50	62.50%	40.00	47.62%
Weatherbit							3.00	3.57%
Weerplaza							5.00	5.95%
World Weather Online	17.00	20.24%	6.00	7.14%	0.00	0.00%	5.00	5.95%

Table 46. South America Nine Day Out Forecast First Place Points and Percentages

## Europe Region Skill Summary

Continuing their strong showing in 2020, The Weather Channel claimed the most first-place finishes in 2020 for every forecast time period in the Europe region. Global Weather Corporation had a strong showing in 2017, claiming the most first-place finishes in 2017 for every forecast time period in Europe. The greatest number of first place finishes in 2018 and 2019 were split between AccuWeather (once), Global Weather Corporation (three times), MeteoGroup (five times), Pelmorex (once), and The Weather Channel (10 times).

Europe was the only region for which the BBC produced forecasts. The BBC claimed less than 10% of the total points for first place finishes across all years and all time periods. In general, the BBC forecasted for 65 metrics for one to four days out in 2017 and 2018 and for 45 metrics for all days out in 2019 and 2020 and for five to nine days out in 2018. However, in 2017 the BBC had eight analyzed metrics for five days out, earning eight first-place finish points (62.5% of the possible points it could have received for only eight metrics).

Table 47 through Table 55 show the total number of first place finishes and percentages of total possible points for each weather forecast provider and forecast day in advance for Europe.

## Individual Metrics

### Temperature

Global Weather Corporation was the best forecaster for temperature forecasts in Europe, claiming 533 total first-place finishes (41% of the total possible). This included the most in 24-hour high temperature, MOS high temperature, and 24-hour low temperature forecasts. For 24-hour low temperature forecasts, Global Weather Corporation claimed by far the most number, with 22.5 of the maximum possible 36 on average per forecast day, with no other provider claiming three or more on average for 24-hour low temperature forecasts. Overall, the BBC was second in terms of the percentage of forecasts the provided earning first-place finishes (29%), although The Weather Channel claimed the second-greatest number of first place finishes with 237 (18% of the maximum possible). MeteoGroup also claimed 20% of their maximum possible first-place finishes. The Weather Channel led all other weather forecast providers for MOS low forecasts, with Global Weather Corporation in second with about half their number.

Global Weather Corporation claimed the highest percentages of first place finishes for temperature forecasts for every forecast day in advance in Europe. This included dominating numbers of first place finishes in 24-hour low temperature forecasts for every forecast day. This provider also dominated first-place finishes in both 24-hour high and MOS high temperature forecasts for six to nine days in advance for Europe, though AccuWeather, which finished second overall for high temperature forecasts, had strong showings for both high temperatures forecast subgroups for one to five days in advance.

### Opacity

The best weather forecast provider for sky cover (opacity) forecasts in Europe was Pelmorex, a category for which Global Weather Corporation (which led in temperature forecasts) did not provide daily forecasts. Pelmorex accumulated 29% of the maximum possible first-place finishes for opacity forecasts. Other providers with more than 10% of their maximum possible first-place finishes included MeteoGroup (22%), The Weather Channel (13%), AccuWeather (12%), and Foreca/Vaisala (12%).

MeteoGroup was the best weather forecast provider for sky cover forecasts for one to three days in advance before Pelmorex took over the greatest number of first-place finishes beginning with four days in advance and through forecasts nine days in advance.

## Precipitation

Foreca/Vaisala earned the title for the greatest number of first place finishes for precipitation forecasts in Europe, accumulating 190 of their maximum possible number (34%). World Weather Online accumulated 111 (17% of the maximum possible) and Pelmorex accumulated 105 (16%). Of the 190 first place finishes by Foreca/Vaisala, 172 of them were recorded for 24-hour POP (probability of precipitation) forecasts. Of the 105 first place finishes by Pelmorex, 104 were recorded for 24-hour POP forecasts. The leader for 24-hour precipitation forecasts was World Weather Online, with 67 first place finishes for 24-hour POP forecasts and 44 for 24-hour precipitation forecasts.

As is expected for precipitation forecasts, especially the POP forecast subgroup, most of the forecast days had first-place finishes split among various providers, but generally Foreca/Vaisala, Pelmorex and World Weather Online led for forecasts 1-3 days in advance before Foreca/Vaisala took a significant lead in forecasts 4-9 days in advance, reaching a peak of over 49% of first place finishes in forecasts 8-days out.

## Winds

The Weather Channel claimed the most first-place finishes for European wind forecasts by a significant margin, earning 54% of the maximum possible. This included 159 of the 288 possible first-place finishes for 24-hour wind forecasts and 154 of the 288 possible for MOS wind forecasts. MeteoGroup had first-place finishes for 27% of their maximum possible, while the BBC claimed 21% of their maximum possible.

The Weather Channel had over 40% of the maximum possible first-place finishes for every forecast day in advance, which led all providers. The exception was for six days out, when The Weather Channel had 42% of all first place finishes and MeteoGroup had 44%. However, because MeteoGroup did not provide forecasts for 2020, their 21 total first place finishes for six day out forecasts were lower than The Weather Channel's 27 first-place finishes.

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	9.00	10.71%	10.33	12.30%	11.00	13.10%	6.33	7.54%
AerisWeather							0.00	0.00%
BBC	2.00	2.38%	6.00	7.14%	2.00	2.38%	5.00	5.95%
Dark Sky	2.00	2.38%	2.00	2.38%	5.00	5.95%	7.00	8.33%
Foreca/Vaisala	1.00	1.19%	6.50	7.74%	5.00	5.95%	7.50	8.93%
Global Weather Corp	21.00	25.00%	13.50	16.07%	11.00	13.10%	17.33	20.63%
MeteoGroup	14.50	17.26%	24.33	28.97%	21.00	25.00%		
OpenWeather							1.00	1.19%
Pelmorex	14.00	16.67%	7.33	8.73%	5.00	5.95%	8.33	9.92%
The Weather Channel	18.50	22.02%	11.00	13.10%	16.00	19.05%	21.50	25.60%
Weatherbit							3.00	3.57%
Weerplaza							1.00	1.19%
World Weather Online	2.00	2.38%	3.00	3.57%	8.00	9.52%	6.00	7.14%

Table 47. Europe One Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	14.00	16.67%	14.50	17.26%	6.50	7.74%	5.00	5.95%
AerisWeather							0.00	0.00%
BBC	2.00	2.38%	5.20	6.19%	4.00	4.76%	6.00	7.14%
Dark Sky	2.00	2.38%	4.00	4.76%	4.00	4.76%	6.00	7.14%
Foreca/Vaisala	2.00	2.38%	6.45	7.68%	9.00	10.71%	7.33	8.73%
Global Weather Corp	19.50	23.21%	13.78	16.41%	10.50	12.50%	12.33	14.68%
MeteoGroup	13.00	15.48%	15.20	18.10%	15.00	17.86%		
OpenWeather							2.00	2.38%
Pelmorex	12.00	14.29%	5.33	6.35%	5.00	5.95%	7.00	8.33%
The Weather Channel	16.00	19.05%	16.28	19.38%	24.00	28.57%	26.33	31.35%
Weatherbit							4.00	4.76%
Weerplaza							2.00	2.38%
World Weather Online	3.50	4.17%	3.25	3.87%	6.00	7.14%	6.00	7.14%

Table 48. Europe Two Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	13.00	15.48%	13.00	15.48%	13.00	15.48%	6.50	7.74%
AerisWeather							1.00	1.19%
BBC	3.00	3.57%	8.00	9.52%	2.00	2.38%	8.00	9.52%
Dark Sky	2.00	2.38%	4.00	4.76%	3.00	3.57%	6.00	7.14%
Foreca/Vaisala	2.00	2.38%	9.00	10.71%	13.33	15.87%	8.00	9.52%
Global Weather Corp	19.00	22.62%	10.50	12.50%	8.33	9.92%	11.50	13.69%
MeteoGroup	16.00	19.05%	16.00	19.05%	14.33	17.06%		
OpenWeather							3.00	3.57%
Pelmorex	12.00	14.29%	9.00	10.71%	4.00	4.76%	8.00	9.52%
The Weather Channel	14.00	16.67%	7.50	8.93%	22.00	26.19%	23.00	27.38%
Weatherbit							1.00	1.19%
Weerplaza							1.00	1.19%
World Weather Online	3.00	3.57%	7.00	8.33%	4.00	4.76%	7.00	8.33%

Table 49. Europe Three Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	11.00	13.10%	17.00	20.24%	14.00	16.67%	11.00	13.10%
AerisWeather							2.00	2.38%
BBC	8.00	9.52%	7.00	8.33%	3.00	3.57%	3.83	4.56%
Dark Sky	3.00	3.57%	3.00	3.57%	2.00	2.38%	4.50	5.36%
Foreca/Vaisala	1.00	1.19%	6.00	7.14%	7.00	8.33%	7.33	8.73%
Global Weather Corp	23.00	27.38%	9.50	11.31%	10.50	12.50%	12.33	14.68%
MeteoGroup	13.00	15.48%	11.50	13.69%	12.00	14.29%		
OpenWeather							2.00	2.38%
Pelmorex	9.00	10.71%	12.00	14.29%	7.00	8.33%	8.00	9.52%
The Weather Channel	10.00	11.90%	11.00	13.10%	21.50	25.60%	27.00	32.14%
Weatherbit							2.00	2.38%
Weerplaza							0.00	0.00%
World Weather Online	6.00	7.14%	7.00	8.33%	7.00	8.33%	4.00	4.76%

Table 50. Europe Four Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	13.00	15.48%	12.00	14.29%	6.00	7.14%	10.00	11.90%
AerisWeather							1.00	1.19%
BBC	5.00	5.95%	1.00	1.19%	3.00	3.57%	4.00	4.76%
Dark Sky	3.00	3.57%	5.00	5.95%	2.00	2.38%	3.00	3.57%
Foreca/Vaisala	6.00	7.14%	10.50	12.50%	6.00	7.14%	9.83	11.71%
Global Weather Corp	16.00	19.05%	8.00	9.52%	11.00	13.10%	12.83	15.28%
MeteoGroup	11.00	13.10%	23.00	27.38%	16.50	19.64%		
OpenWeather							2.00	2.38%
Pelmorex	12.00	14.29%	10.50	12.50%	5.00	5.95%	11.33	13.49%
The Weather Channel	11.00	13.10%	7.00	8.33%	25.50	30.36%	22.00	26.19%
Weatherbit							3.00	3.57%
Weerplaza							2.00	2.38%
World Weather Online	7.00	8.33%	7.00	8.33%	9.00	10.71%	3.00	3.57%

Table 51. Europe Five Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	9.00	10.71%	5.00	5.95%	3.50	4.17%	3.00	3.57%
AerisWeather							0.00	0.00%
BBC	0.00	0.00%	2.50	2.98%	4.00	4.76%	4.00	4.76%
Dark Sky	4.00	4.76%	2.00	2.38%	2.00	2.38%	2.00	2.38%
Foreca/Vaisala	8.00	9.52%	10.50	12.50%	9.00	10.71%	10.00	11.90%
Global Weather Corp	18.83	22.42%	17.50	20.83%	18.00	21.43%	19.50	23.21%
MeteoGroup	14.00	16.67%	21.00	25.00%	7.00	8.33%		
OpenWeather							3.00	3.57%
Pelmorex	10.00	11.90%	12.00	14.29%	9.00	10.71%	8.00	9.52%
The Weather Channel	12.83	15.28%	6.50	7.74%	22.50	26.79%	25.00	29.76%
Weatherbit							4.00	4.76%
Weerplaza							1.00	1.19%
World Weather Online	7.33	8.73%	7.00	8.33%	9.00	10.71%	4.50	5.36%

Table 52. Europe Six Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	12.00	14.29%	5.00	5.95%	6.00	7.14%	1.67	1.98%
AerisWeather							1.00	1.19%
BBC	0.00	0.00%	4.67	5.56%	6.00	7.14%	2.33	2.78%
Dark Sky	4.00	4.76%	3.00	3.57%	2.00	2.38%	2.67	3.17%
Foreca/Vaisala	10.50	12.50%	13.00	15.48%	14.00	16.67%	12.00	14.29%
Global Weather Corp	23.50	27.98%	19.67	23.41%	20.00	23.81%	16.50	19.64%
OpenWeather							3.00	3.57%
Pelmorex	15.00	17.86%	19.00	22.62%	11.00	13.10%	7.00	8.33%
The Weather Channel	15.00	17.86%	14.67	17.46%	19.00	22.62%	27.83	33.13%
Weatherbit							4.50	5.36%
Weerplaza							2.00	2.38%
World Weather Online	4.00	4.76%	5.00	5.95%	6.00	7.14%	3.50	4.17%

Table 53. Europe Seven Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	10.83	12.90%	9.00	10.71%	5.00	5.95%	2.00	2.38%
AerisWeather							1.00	1.19%
BBC	0.00	0.00%	6.00	7.14%	4.00	4.76%	3.00	3.57%
Foreca/Vaisala	10.00	11.90%	15.00	17.86%	16.00	19.05%	10.00	11.90%
Global Weather Corp	25.83	30.75%	16.00	19.05%	21.50	25.60%	16.50	19.64%
OpenWeather							3.00	3.57%
Pelmorex	16.33	19.44%	17.00	20.24%	12.00	14.29%	6.00	7.14%
The Weather Channel	14.00	16.67%	17.00	20.24%	20.50	24.40%	28.50	33.93%
Weatherbit							5.00	5.95%
Weerplaza							3.00	3.57%
World Weather Online	7.00	8.33%	4.00	4.76%	5.00	5.95%	6.00	7.14%

Table 54. Europe Eight Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	13.50	16.07%	10.00	11.90%	5.00	5.95%	0.67	0.79%
AerisWeather							3.00	3.57%
BBC	0.00	0.00%	5.00	5.95%	3.00	3.57%	4.00	4.76%
Foreca/Vaisala	13.50	16.07%	13.00	15.48%	14.00	16.67%	10.00	11.90%
Global Weather Corp	20.50	24.40%	13.50	16.07%	21.33	25.40%	15.67	18.65%
OpenWeather							4.00	4.76%
Pelmorex	18.50	22.02%	14.00	16.67%	15.33	18.25%	8.67	10.32%
The Weather Channel	15.00	17.86%	21.50	25.60%	21.33	25.40%	26.00	30.95%
Weatherbit							5.00	5.95%
Weerplaza							3.00	3.57%
World Weather Online	3.00	3.57%	7.00	8.33%	4.00	4.76%	4.00	4.76%

Table 55. Europe Nine Day Out Forecast First Place Points and Percentages

## Africa Region Skill Summary

For the Africa region, The Weather Channel claimed the greatest first-place finish points for all time periods in 2020, all but one in 2018, the most time periods of 2017, and for 2019 for seven, eight, and nine-days out. For one through six days out, MeteoGroup (which did not have forecasts beyond six days out) claimed the greatest number of first place finishes in 2019. The Weather Channel and MeteoGroup tied for the most number in 2018 for four days out and MeteoGroup claimed the most number alone for 6-days out.

The Weather Channel claimed the greatest number of first place finishes in 2017 for one, two, three, six, seven, eight, and nine days out, with World Weather Online claiming the most number in 2017 for three, four, and five days out (tying for three days out).

MeteoGroup generally showed strong increases from 2017 through 2019 in their percentages of forecasts finishing in first place (with no forecasts in 2020). At the same time, World Weather Online had a strong 2017 but after that generally had a rapid decrease in percentages of first place finishes in Africa, claiming less than 10% for almost every time period in 2018 through 2020.

Table 56 through Table 64 show the total number of first place finishes and percentages of total possible points for each weather forecast provider and forecast day in advance for Africa.

## Individual Metrics

### Temperature

Global Weather Corporation claimed the greatest number of first place finishes for temperature forecasts in Africa (28%), although MeteoGroup (21%), Pelmorex (19%), AccuWeather (17.9%), and The Weather Channel (17.8%) were not far behind. Global Weather Corporation also claimed the greatest number of first place finishes for 24-hour high temperature, 24-hour low temperature, and MOS high temperature forecasts. The Weather Channel claimed the greatest number for MOS low temperature forecasts.

Pelmorex had the greatest percentage of first place finishes for forecasts one day in advance, MeteoGroup had the greatest percentage for forecasts four days in advance, The Weather Channel had the greatest percentage for forecasts eight days in advance, and Global Weather Corporation had the greatest percentages for forecasts two, three, five, six, seven, and nine days in advance. AccuWeather also tied for the greatest number and percentage for forecasts five days in advance.

### Opacity

World Weather Online had a significant advantage in forecasting opacity (sky cover) forecasts for Africa in 2017-2020, with 246 of the possible 504 first-place finishes (49%). Half of these came in the 24-hour opacity forecast subgroup while half came in the MOS opacity forecast subgroup. MeteoGroup had the second highest percentage of their possible best finishes with 26%, while The Weather Channel had the second greatest number of best finishes with 100 (20% of the maximum possible).

World Weather Online also had the greatest number of first place finishes throughout all forecast days in advance from one to nine days in advance. MeteoGroup was second for one to six days out, and after MeteoGroup no longer provided forecasts after six days out, The Weather Channel had the second most number for seven through nine days out.

### Precipitation

The Weather Channel was the best weather forecast provider for precipitation forecasts in Africa. It claimed 36% of the possible first-place finishes (about 236 of the maximum possible 648).

Weatherbit claimed the second highest percentage, with 18% of their maximum possible, while MeteoGroup (17%), Pelmorex (14%), Dark Sky (13%), and AccuWeather (11%) also claimed over 10% of their maximum possible first-place finishes. The Weather Channel saw the greatest number of first place finishes in both the 24-hour POP and 24-hour precipitation forecast subgroups.

The Weather Channel claimed the greatest number of first place finishes for precipitation forecasts for all forecast days in advance. Their share was more than 35% for one to three days out and more than 31% for six through nine days out, with only slight dips to 28-29% of the share of first place finishes for forecasts four and five days in advance.

## Winds

The Weather Channel also claimed a significant advantage in first place finishes for wind forecasts in Africa, with over 52% of all possible best finishes (302 of 576). MeteoGroup saw 24% and AccuWeather saw 16%; no other weather forecast provider recorded more than 7%. The Weather Channel's significant advantage was evenly spread between 24-hour wind and MOS wind forecasts, with 165 of 288 first-place finishes earned for 24-hour wind forecasts and 137 of the maximum possible 288 (just under half) for MOS wind forecasts.

The Weather Channel also had the highest number and percentage of first place finishes for African wind forecasts for every forecast day in advance, with a low of 40% of the share of best finishes for five day out forecasts and a peak of 67% of first place finishes for eight day out forecasts.

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	8.33	9.92%	12.50	14.88%	11.33	13.49%	11.42	13.59%
AerisWeather							0.25	0.30%
Dark Sky	2.00	2.38%	2.00	2.38%	2.00	2.38%	9.00	10.71%
Foreca/Vaisala	1.00	1.19%	2.50	2.98%	5.00	5.95%	10.00	11.90%
Global Weather Corp	10.33	12.30%	6.33	7.54%	1.33	1.59%	7.00	8.33%
MeteoGroup	8.33	9.92%	15.50	18.45%	25.33	30.16%		
OpenWeather							2.00	2.38%
Pelmorex	13.00	15.48%	10.00	11.90%	7.00	8.33%	7.33	8.73%
The Weather Channel	21.00	25.00%	27.17	32.34%	24.00	28.57%	20.75	24.70%
Weatherbit							4.00	4.76%
Weerplaza							5.25	6.25%
World Weather Online	20.00	23.81%	8.00	9.52%	8.00	9.52%	7.00	8.33%

Table 56. Africa One Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	7.83	9.33%	8.50	10.12%	14.00	16.67%	10.83	12.90%
AerisWeather							0.00	0.00%
Dark Sky	3.50	4.17%	1.00	1.19%	2.00	2.38%	10.00	11.90%
Foreca/Vaisala	0.00	0.00%	1.00	1.19%	6.00	7.14%	5.50	6.55%
Global Weather Corp	13.83	16.47%	13.00	15.48%	7.00	8.33%	15.00	17.86%
MeteoGroup	10.83	12.90%	14.83	17.66%	23.50	27.98%		
OpenWeather							0.00	0.00%
Pelmorex	14.50	17.26%	10.33	12.30%	6.00	7.14%	5.50	6.55%
The Weather Channel	17.50	20.83%	28.33	33.73%	17.50	20.83%	22.33	26.59%
Weatherbit							4.33	5.16%
Weerplaza							2.50	2.98%
World Weather Online	16.00	19.05%	7.00	8.33%	8.00	9.52%	8.00	9.52%

Table 57. Africa Two Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	13.00	15.48%	10.00	11.90%	11.83	14.09%	16.00	19.05%
AerisWeather							0.83	0.99%
Dark Sky	3.50	4.17%	0.00	0.00%	1.33	1.59%	8.00	9.52%
Foreca/Vaisala	2.00	2.38%	2.00	2.38%	4.33	5.16%	6.00	7.14%
Global Weather Corp	12.00	14.29%	12.00	14.29%	7.33	8.73%	7.00	8.33%
MeteoGroup	4.50	5.36%	19.50	23.21%	25.33	30.16%		
OpenWeather							1.33	1.59%
Pelmorex	13.00	15.48%	8.00	9.52%	8.00	9.52%	7.00	8.33%
The Weather Channel	18.00	21.43%	22.50	26.79%	17.83	21.23%	19.50	23.21%
Weatherbit							4.50	5.36%
Weerplaza							5.83	6.94%
World Weather Online	18.00	21.43%	10.00	11.90%	8.00	9.52%	8.00	9.52%

Table 58. Africa Three Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	16.00	19.05%	8.25	9.82%	13.50	16.07%	17.83	21.23%
AerisWeather							3.00	3.57%
Dark Sky	3.00	3.57%	1.00	1.19%	2.00	2.38%	8.00	9.52%
Foreca/Vaisala	3.00	3.57%	2.00	2.38%	6.00	7.14%	6.50	7.74%
Global Weather Corp	11.50	13.69%	9.67	11.51%	5.83	6.94%	7.00	8.33%
MeteoGroup	9.00	10.71%	24.42	29.07%	27.33	32.54%		
OpenWeather							0.00	0.00%
Pelmorex	16.50	19.64%	7.25	8.63%	5.00	5.95%	8.00	9.52%
The Weather Channel	8.00	9.52%	24.42	29.07%	16.33	19.44%	20.33	24.21%
Weatherbit							3.33	3.97%
Weerplaza							3.00	3.57%
World Weather Online	17.00	20.24%	7.00	8.33%	8.00	9.52%	7.00	8.33%

Table 59. Africa Four Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	15.67	18.65%	11.00	13.10%	15.00	17.86%	14.00	16.67%
AerisWeather							2.00	2.38%
Dark Sky	4.00	4.76%	2.00	2.38%	6.00	7.14%	7.50	8.93%
Foreca/Vaisala	4.33	5.16%	2.00	2.38%	1.00	1.19%	4.50	5.36%
Global Weather Corp	9.67	11.51%	9.00	10.71%	9.00	10.71%	10.50	12.50%
MeteoGroup	7.83	9.33%	19.50	23.21%	24.33	28.97%		
OpenWeather							1.00	1.19%
Pelmorex	13.00	15.48%	12.00	14.29%	6.33	7.54%	7.50	8.93%
The Weather Channel	12.50	14.88%	21.50	25.60%	14.33	17.06%	22.00	26.19%
Weatherbit							5.00	5.95%
Weerplaza							3.00	3.57%
World Weather Online	17.00	20.24%	7.00	8.33%	8.00	9.52%	7.00	8.33%

Table 60. Africa Five Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	10.00	11.90%	4.50	5.36%	6.83	8.13%	6.00	7.14%
AerisWeather							1.00	1.19%
Dark Sky	4.00	4.76%	5.00	5.95%	2.67	3.17%	10.00	11.90%
Foreca/Vaisala	4.00	4.76%	2.00	2.38%	1.00	1.19%	2.50	2.98%
Global Weather Corp	13.00	15.48%	11.75	13.99%	11.83	14.09%	12.00	14.29%
MeteoGroup	10.00	11.90%	24.25	28.87%	24.67	29.37%		
OpenWeather							0.00	0.00%
Pelmorex	12.00	14.29%	8.25	9.82%	9.67	11.51%	8.50	10.12%
The Weather Channel	18.00	21.43%	21.25	25.30%	20.33	24.21%	31.50	37.50%
Weatherbit							4.50	5.36%
Weerplaza							3.00	3.57%
World Weather Online	13.00	15.48%	7.00	8.33%	7.00	8.33%	5.00	5.95%

Table 61. Africa Six Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	9.00	10.71%	9.25	11.01%	11.50	13.69%	7.50	8.93%
AerisWeather							0.33	0.40%
Dark Sky	4.00	4.76%	6.00	7.14%	10.00	11.90%	9.00	10.71%
Foreca/Vaisala	1.50	1.79%	3.67	4.37%	3.00	3.57%	2.00	2.38%
Global Weather Corp	7.00	8.33%	13.25	15.77%	6.50	7.74%	14.50	17.26%
OpenWeather							4.50	5.36%
Pelmorex	19.00	22.62%	10.25	12.20%	13.00	15.48%	11.00	13.10%
The Weather Channel	29.50	35.12%	33.58	39.98%	34.00	40.48%	20.50	24.40%
Weatherbit							4.33	5.16%
Weerplaza							6.33	7.54%
World Weather Online	14.00	16.67%	8.00	9.52%	6.00	7.14%	4.00	4.76%

Table 62. Africa Seven Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	16.25	19.35%	15.67	18.65%	8.33	9.92%	3.83	4.56%
AerisWeather							4.00	4.76%
Foreca/Vaisala	1.00	1.19%	2.00	2.38%	5.00	5.95%	3.00	3.57%
Global Weather Corp	6.25	7.44%	8.17	9.72%	9.33	11.11%	13.83	16.47%
OpenWeather							2.00	2.38%
Pelmorex	18.75	22.32%	11.50	13.69%	11.50	13.69%	13.33	15.87%
The Weather Channel	24.75	29.46%	36.67	43.65%	42.83	50.99%	26.50	31.55%
Weatherbit							3.50	4.17%
Weerplaza							9.00	10.71%
World Weather Online	17.00	20.24%	10.00	11.90%	7.00	8.33%	5.00	5.95%

Table 63. Africa Eight Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	12.33	14.68%	16.33	19.44%	8.50	10.12%	5.33	6.35%
AerisWeather							3.00	3.57%
Foreca/Vaisala	1.00	1.19%	3.00	3.57%	5.00	5.95%	4.00	4.76%
Global Weather Corp	12.50	14.88%	8.33	9.92%	18.50	22.02%	9.33	11.11%
OpenWeather							3.00	3.57%
Pelmorex	14.33	17.06%	14.00	16.67%	11.00	13.10%	10.00	11.90%
The Weather Channel	29.83	35.52%	35.33	42.06%	36.00	42.86%	29.33	34.92%
Weatherbit							3.00	3.57%
Weerplaza							12.00	14.29%
World Weather Online	14.00	16.67%	7.00	8.33%	5.00	5.95%	5.00	5.95%

Table 64. Africa Nine Day Out Forecast First Place Points and Percentages

## Middle East Region Skill Summary

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The Weather Channel claimed most of the first-place finishes in the Middle East region for all time periods, except for Global Weather Corporation, which had the most in 2017 for the time periods of one through three days in advance. The Weather Channel generally showed the most improvement in first place finishes from 2017 to 2020, particularly in the shortest forecast time ranges, while the Global Weather Corporation showed the greatest decline in numbers and percentages of first place finishes during this time. World Weather Online also showed some large declines after a strong 2017 in terms of the first-place finishes, and MeteoGroup showed a few large increases in first place finishes through their last analyzed forecasts in 2019.

Table 65 through Table 73 show the total number of first place finishes and percentages of total possible points for each weather forecast provider and forecast day in advance for the Middle East.

### Individual Metrics

#### Temperature

The Weather Channel claimed nearly half of the first place finishes for temperature forecasts in the Middle East, with 49.5% (642 of 1296). Global Weather Corporation had 18%, MeteoGroup had 14%, and Pelmorex had 13%. The Weather Channel's significant advantage in temperature forecasting stretched to all four subgroups: 24-hour high temperature (an average of 18.7 of 36), MOS high temperature (19.5 of 36), 24-hour low temperature (14.1 of 36), and MOS low temperatures (19 of 36) forecasts, and all nine forecast days out, with a low of 35% of the share of maximum possible first-place finishes for two days out and a maximum of 68% for nine days out.

#### Opacity

Three weather forecast providers finished with 30% or more of their maximum possible first-place finishes for sky cover forecasts in the Middle East. The greatest number of first-place finishes, as well as the highest percentage, belonged to World Weather Online, which earned 189 of 504 (37.5%). The Weather Channel finished with 164 (32.5%), and MeteoGroup had 30% of their maximum possible best finishes.

World Weather Online had the greatest percentages of first place finishes for forecasts one to two days in advance, while MeteoGroup had the greatest percentages for forecasts three to four days in advance. The Weather Channel earned the greatest percentages of first place finishes for forecasts five through nine days in advance. For nearly all forecast days, however, these three providers carried

the three highest percentages of first-place finishes, though Weerplaza made strong showings with the third highest percentages (25-30%) for forecasts five to seven days in advance.

## **Precipitation**

The best weather forecast provider for Middle East precipitation was Foreca/Vaisala, which forecasted the best in 34% of their metrics analyzed from 2017-2020. Pelmorex was second-best, with 27%. Other providers with more than 10% of their maximum possible included Weerplaza (13%), Weatherbit (13%), and Global Weather Corporation (11%). Pelmorex led with the greatest number of first place finishes for 24-hour POP (probability of precipitation) forecasts, while Foreca/Vaisala led for the greatest number of first place finishes for 24-hour precipitation forecasts.

Forecasts one to three days in advance were most reliably predicted by Pelmorex, which came in with 31-34% of first place finishes during this short-term period. Beginning with four days in advance, however, Foreca/Vaisala claimed the greatest number of best forecasts through nine days in advance, reaching a peak of 45% of their maximum possible best finishes for forecasts nine days in advance.

## **Winds**

Wind forecasts in the Middle East were, without question, most reliably forecasted by The Weather Channel, which earned 361 of the maximum possible 576 first-place finishes (63%) for 2017-2020. AccuWeather claimed 21% of first-place finishes, and no other provider claimed more than 7.5% of their maximum possible points for best forecasts. The Weather Channel's best forecast points were evenly split between 24-hour wind (185 of 288) and MOS wind (176 of 288) forecasts.

The Weather Channel dominated forecasts for each forecast day out, with 58-69% of the maximum possible first-place finishes earned for every forecast day. AccuWeather was also consistent, with 19-25% earned each forecast day.

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.25	7.44%	7.00	8.33%	8.25	9.82%	4.70	5.60%
AerisWeather							0.00	0.00%
Dark Sky	0.25	0.30%	3.00	3.57%	2.50	2.98%	7.00	8.33%
Foreca/Vaisala	1.00	1.19%	16.75	19.94%	9.25	11.01%	2.00	2.38%
Global Weather Corp	20.00	23.81%	4.25	5.06%	0.00	0.00%	4.50	5.36%
MeteoGroup	9.00	10.71%	15.25	18.15%	15.25	18.15%		
OpenWeather							3.00	3.57%
Pelmorex	16.25	19.35%	5.25	6.25%	7.00	8.33%	9.20	10.95%
The Weather Channel	19.25	22.92%	28.50	33.93%	33.75	40.18%	38.20	45.48%
Weatherbit							1.20	1.43%
Weerplaza							5.20	6.19%
World Weather Online	12.00	14.29%	4.00	4.76%	8.00	9.52%	9.00	10.71%

Table 65. Middle East One Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	8.00	9.52%	7.42	8.83%	7.33	8.73%	3.87	4.60%
AerisWeather							0.00	0.00%
Dark Sky	0.50	0.60%	3.00	3.57%	2.00	2.38%	7.00	8.33%
Foreca/Vaisala	2.00	2.38%	12.25	14.58%	13.83	16.47%	5.83	6.94%
Global Weather Corp	22.50	26.79%	5.83	6.94%	4.33	5.16%	2.00	2.38%
MeteoGroup	5.00	5.95%	11.25	13.39%	15.00	17.86%		
OpenWeather							4.00	4.76%
Pelmorex	17.00	20.24%	11.67	13.89%	6.50	7.74%	9.20	10.95%
The Weather Channel	16.00	19.05%	28.58	34.03%	27.00	32.14%	35.20	41.90%
Weatherbit							4.20	5.00%
Weerplaza							3.70	4.40%
World Weather Online	13.00	15.48%	4.00	4.76%	8.00	9.52%	9.00	10.71%

Table 66. Middle East Two Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.00	7.14%	10.00	11.90%	6.67	7.94%	3.20	3.81%
AerisWeather							1.00	1.19%
Dark Sky	1.50	1.79%	3.00	3.57%	2.00	2.38%	8.50	10.12%
Foreca/Vaisala	2.00	2.38%	9.50	11.31%	15.67	18.65%	9.53	11.35%
Global Weather Corp	22.00	26.19%	7.50	8.93%	5.00	5.95%	2.33	2.78%
MeteoGroup	6.50	7.74%	15.00	17.86%	14.67	17.46%		
OpenWeather							3.00	3.57%
Pelmorex	16.50	19.64%	8.50	10.12%	9.00	10.71%	9.70	11.55%
The Weather Channel	17.50	20.83%	25.50	30.36%	24.00	28.57%	33.53	39.92%
Weatherbit							4.50	5.36%
Weerplaza							2.70	3.21%
World Weather Online	12.00	14.29%	5.00	5.95%	7.00	8.33%	6.00	7.14%

Table 67. Middle East Three Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	12.00	14.29%	6.75	8.04%	8.50	10.12%	4.50	5.36%
AerisWeather							0.00	0.00%
Dark Sky	0.00	0.00%	2.00	2.38%	1.00	1.19%	8.00	9.52%
Foreca/Vaisala	2.00	2.38%	9.75	11.61%	12.00	14.29%	10.00	11.90%
Global Weather Corp	17.00	20.24%	11.00	13.10%	6.00	7.14%	4.50	5.36%
MeteoGroup	7.00	8.33%	9.00	10.71%	13.00	15.48%		
OpenWeather							3.00	3.57%
Pelmorex	16.00	19.05%	6.75	8.04%	7.00	8.33%	8.00	9.52%
The Weather Channel	19.00	22.62%	34.75	41.37%	30.50	36.31%	34.50	41.07%
Weatherbit							1.50	1.79%
Weerplaza							4.00	4.76%
World Weather Online	11.00	13.10%	4.00	4.76%	6.00	7.14%	6.00	7.14%

Table 68. Middle East Four Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	13.33	15.87%	9.00	10.71%	9.00	10.71%	3.33	3.97%
AerisWeather							0.00	0.00%
Dark Sky	1.00	1.19%	4.00	4.76%	1.00	1.19%	5.00	5.95%
Foreca/Vaisala	3.00	3.57%	9.33	11.11%	10.00	11.90%	6.83	8.13%
Global Weather Corp	13.83	16.47%	11.17	13.29%	9.00	10.71%	2.33	2.78%
MeteoGroup	4.50	5.36%	9.17	10.91%	16.00	19.05%		
OpenWeather							5.00	5.95%
Pelmorex	11.00	13.10%	6.00	7.14%	6.00	7.14%	7.00	8.33%
The Weather Channel	23.33	27.78%	33.33	39.68%	27.00	32.14%	40.50	48.21%
Weatherbit							2.00	2.38%
Weerplaza							8.00	9.52%
World Weather Online	14.00	16.67%	2.00	2.38%	6.00	7.14%	4.00	4.76%

Table 69. Middle East Five Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	8.00	9.52%	6.00	7.14%	8.00	9.52%	6.50	7.74%
AerisWeather							0.00	0.00%
Dark Sky	2.00	2.38%	3.00	3.57%	4.00	4.76%	4.00	4.76%
Foreca/Vaisala	2.50	2.98%	10.00	11.90%	10.00	11.90%	10.00	11.90%
Global Weather Corp	8.50	10.12%	7.00	8.33%	11.50	13.69%	2.00	2.38%
MeteoGroup	5.00	5.95%	3.00	3.57%	9.00	10.71%		
OpenWeather							4.00	4.76%
Pelmorex	12.00	14.29%	8.00	9.52%	5.50	6.55%	8.00	9.52%
The Weather Channel	33.00	39.29%	45.00	53.57%	30.00	35.71%	36.50	43.45%
Weatherbit							4.00	4.76%
Weerplaza							6.00	7.14%
World Weather Online	13.00	15.48%	2.00	2.38%	6.00	7.14%	3.00	3.57%

Table 70. Middle East Six Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	3.33	3.97%	7.67	9.13%	9.00	10.71%	3.00	3.57%
AerisWeather							1.00	1.19%
Dark Sky	1.00	1.19%	1.00	1.19%	2.00	2.38%	7.00	8.33%
Foreca/Vaisala	3.00	3.57%	12.00	14.29%	10.00	11.90%	10.00	11.90%
Global Weather Corp	9.83	11.71%	2.67	3.17%	5.00	5.95%	6.00	7.14%
OpenWeather							4.00	4.76%
Pelmorex	15.50	18.45%	11.17	13.29%	12.00	14.29%	6.00	7.14%
The Weather Channel	36.33	43.25%	45.50	54.17%	41.00	48.81%	37.50	44.64%
Weatherbit							2.00	2.38%
Weerplaza							4.50	5.36%
World Weather Online	15.00	17.86%	4.00	4.76%	5.00	5.95%	3.00	3.57%

Table 71. Middle East Seven Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	9.00	10.71%	8.00	9.52%	6.00	7.14%	4.00	4.76%
AerisWeather							2.00	2.38%
Foreca/Vaisala	3.00	3.57%	10.00	11.90%	14.83	17.66%	5.00	5.95%
Global Weather Corp	6.50	7.74%	3.00	3.57%	7.33	8.73%	4.50	5.36%
OpenWeather							7.00	8.33%
Pelmorex	12.00	14.29%	8.00	9.52%	7.33	8.73%	5.50	6.55%
The Weather Channel	37.50	44.64%	51.00	60.71%	44.50	52.98%	41.50	49.40%
Weatherbit							5.00	5.95%
Weerplaza							6.50	7.74%
World Weather Online	16.00	19.05%	4.00	4.76%	4.00	4.76%	3.00	3.57%

Table 72. Middle East Eight Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.00	7.14%	6.67	7.94%	7.00	8.33%	2.00	2.38%
AerisWeather							0.00	0.00%
Foreca/Vaisala	5.00	5.95%	8.00	9.52%	13.50	16.07%	9.00	10.71%
Global Weather Corp	7.50	8.93%	5.00	5.95%	5.00	5.95%	4.50	5.36%
OpenWeather							8.00	9.52%
Pelmorex	14.50	17.26%	10.33	12.30%	6.50	7.74%	10.50	12.50%
The Weather Channel	37.00	44.05%	53.00	63.10%	48.00	57.14%	39.00	46.43%
Weatherbit							2.00	2.38%
Weerplaza							5.00	5.95%
World Weather Online	14.00	16.67%	1.00	1.19%	4.00	4.76%	4.00	4.76%

Table 73. Middle East Nine Day Out Forecast First Place Points and Percentages

## Asia/Pacific Region Skill Summary

All but one year and time period combination saw The Weather Channel claim the greatest number of first place finishes for the Asia/Pacific region. Global Weather Corporation, which had a strong 2017 for short-term forecasts up to three days out as in most other regions, claimed the greatest number of first place finishes for two days out in 2017. After that year, Global Weather Corporation’s numbers and percentages of these finishes generally declined significantly, while the numbers and percentages of first place finishes for Dark Sky and Foreca/Vaisala had some strong increases in the short term through the four years.

Table 74 through Table 82 show the total number of first place finishes and percentages of total possible points for each weather forecast provider and forecast day out for the Asia/Pacific region.

## Individual Metrics

### Temperature

Temperatures in the areas analyzed for the Asia/Pacific region were best forecasted by The Weather Channel, which earned 48% of the points for first place finishes in the temperature metric of this region. Of the other providers, only Global Weather Corporation (20%) and Pelmorex (17%) finished with more than 9% of the share of first-place finishes. The Weather Channel also finished first in all

four forecast subgroups: 24-hour high temperature, MOS high temperature, 24-hour low temperature, and MOS low temperature. However, Global Weather Corporation finished in a close second place to The Weather Channel in two of these – the 24-hour high temperature and MOS high temperature forecasts.

With their dominance in forecasting temperatures for the Asia/Pacific region, The Weather Channel finished first for all forecast days in advance as well, earning over 40% for each day in advance. Their peak share of first-place finishes was reached with 55% for forecasts eight days in advance.

## Opacity

World Weather Online best forecasted opacity (sky cover) forecasts for the Asia/Pacific region. It earned 224 of the maximum 504 first-place points (44%). This was twice as much as the next highest percentage earned by Weerplaza (22.2%), followed by The Weather Channel (21.6%) and MeteoGroup (20%). As is the case with most regions and weather forecast providers, the points for opacity forecasts are generally spread rather evenly between 24-hour opacity and MOS opacity forecasts (111 and 113, respectively, for World Weather Online in this case).

For forecast one through three in advance, World Weather Online significantly led for the most first-place finishes, followed by MeteoGroup and Weerplaza close for second. MeteoGroup and Weerplaza then decreased in accuracy relative to other providers, with The Weather Channel increasing to the second highest percentage of first place finishes for five, six, eight, and nine days in advance, behind World Weather Online. The Weather Channel recorded the greatest number of first place finishes for forecasts seven days in advance.

## Precipitation

Forecasting for precipitation in the Asia/Pacific region was a virtual tie for the greatest number of first-place finishes. In terms of the number of first-place finishes, The Weather Channel earned 135, Pelmorex earned 134, and Foreca/Vaisala earned 120. In terms of percentages of their maximum possible first-place finishes, Foreca/Vaisala earned 21.2%, The Weather Channel earned 20.8%, and Pelmorex earned 20.7%. The points for Foreca/Vaisala and Pelmorex were concentrated almost solely in the forecast subgroup of 24-hour POP (a combined 251 of the maximum possible 468 for 24-hour POP forecasts and only three of the maximum possible 180 for 24-hour precipitation forecasts), while The Weather Channel led in 24-hour precipitation forecasts with 69 of the maximum possible 180 first place finishes in that subgroup.

These three providers generally stood out as the top three for precipitation forecasts in this region due to slightly higher numbers of first place finishes in short-term forecasts (one through three days out) and somewhat larger advantages over other providers for longer term forecasts (four through

nine days out). Other providers with at least 10% of their maximum first-place finishes included MeteoGroup (15%), Weatherbit (13%), and Dark Sky (10%).

## Winds

The Weather Channel was dominant in wind forecasting for the Asia/Pacific region, earning 62% of the possible first-place finishes. AccuWeather earned 20%, and OpenWeather claimed 13% of their possible first-place points, though OpenWeather did not forecast for three of the four years in the analysis (only for 2020), so their number of first-place finishes was significantly less than AccuWeather’s. No other provider earned more than 5% of their maximum possible points for first-place finishes.

The Weather Channel’s share of first place finishes never dipped below 57%, which was for forecasts one day in advance and reached a maximum of 67% (43 first place finishes of 64 possible) for forecasts eight and nine days out.

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	7.50	8.93%	5.00	5.95%	6.00	7.14%	4.50	5.36%
AerisWeather							1.00	1.19%
Dark Sky	0.00	0.00%	2.00	2.38%	5.00	5.95%	15.00	17.86%
Foreca/Vaisala	2.00	2.38%	6.00	7.14%	5.00	5.95%	5.00	5.95%
Global Weather Corp	16.50	19.64%	12.00	14.29%	4.00	4.76%	1.00	1.19%
MeteoGroup	7.00	8.33%	19.67	23.41%	11.00	13.10%		
OpenWeather							2.00	2.38%
Pelmorex	18.00	21.43%	7.67	9.13%	7.00	8.33%	10.00	11.90%
The Weather Channel	20.00	23.81%	23.67	28.17%	38.00	45.24%	27.50	32.74%
Weatherbit							2.00	2.38%
Weerplaza							7.00	8.33%
World Weather Online	13.00	15.48%	8.00	9.52%	8.00	9.52%	9.00	10.71%

Table 74. Asia/Pacific One Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	5.00	5.95%	6.00	7.14%	3.50	4.17%	6.00	7.14%
AerisWeather							1.00	1.19%
Dark Sky	2.00	2.38%	1.00	1.19%	1.33	1.59%	7.00	8.33%
Foreca/Vaisala	2.00	2.38%	4.00	4.76%	6.00	7.14%	8.00	9.52%
Global Weather Corp	18.50	22.02%	3.50	4.17%	1.33	1.59%	3.50	4.17%
MeteoGroup	8.50	10.12%	15.50	18.45%	12.50	14.88%		
OpenWeather							1.00	1.19%
Pelmorex	17.00	20.24%	11.50	13.69%	12.00	14.29%	9.00	10.71%
The Weather Channel	17.00	20.24%	34.50	41.07%	39.33	46.83%	29.50	35.12%
Weatherbit							3.00	3.57%
Weerplaza							7.00	8.33%
World Weather Online	14.00	16.67%	8.00	9.52%	8.00	9.52%	9.00	10.71%

Table 75. Asia/Pacific Two Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.33	7.54%	5.75	6.85%	6.25	7.44%	5.50	6.55%
AerisWeather							0.00	0.00%
Dark Sky	3.00	3.57%	1.00	1.19%	6.00	7.14%	7.00	8.33%
Foreca/Vaisala	2.33	2.78%	4.25	5.06%	8.75	10.42%	9.00	10.71%
Global Weather Corp	18.50	22.02%	9.58	11.41%	4.50	5.36%	7.00	8.33%
MeteoGroup	6.00	7.14%	13.33	15.87%	7.25	8.63%		
OpenWeather							1.00	1.19%
Pelmorex	14.00	16.67%	9.25	11.01%	9.00	10.71%	9.50	11.31%
The Weather Channel	18.83	22.42%	32.83	39.09%	35.25	41.96%	27.00	32.14%
Weatherbit							4.00	4.76%
Weerplaza							5.00	5.95%
World Weather Online	15.00	17.86%	8.00	9.52%	7.00	8.33%	9.00	10.71%

Table 76. Asia/Pacific Three Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	5.50	6.55%	5.83	6.94%	7.00	8.33%	5.83	6.94%
AerisWeather							1.00	1.19%
Dark Sky	3.00	3.57%	2.00	2.38%	4.00	4.76%	9.00	10.71%
Foreca/Vaisala	1.00	1.19%	4.00	4.76%	8.00	9.52%	9.33	11.11%
Global Weather Corp	12.50	14.88%	9.83	11.71%	7.50	8.93%	4.00	4.76%
MeteoGroup	7.50	8.93%	6.50	7.74%	7.00	8.33%		
OpenWeather							2.00	2.38%
Pelmorex	14.00	16.67%	13.50	16.07%	9.00	10.71%	6.00	7.14%
The Weather Channel	25.50	30.36%	34.33	40.87%	34.50	41.07%	32.83	39.09%
Weatherbit							3.00	3.57%
Weerplaza							5.00	5.95%
World Weather Online	15.00	17.86%	8.00	9.52%	7.00	8.33%	6.00	7.14%

Table 77. Asia/Pacific Four Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	4.00	4.76%	7.50	8.93%	9.33	11.11%	8.00	9.52%
AerisWeather							0.00	0.00%
Dark Sky	4.00	4.76%	1.00	1.19%	3.50	4.17%	9.50	11.31%
Foreca/Vaisala	1.00	1.19%	3.00	3.57%	4.00	4.76%	6.00	7.14%
Global Weather Corp	11.00	13.10%	8.50	10.12%	5.00	5.95%	3.00	3.57%
MeteoGroup	8.50	10.12%	9.00	10.71%	5.33	6.35%		
OpenWeather							1.00	1.19%
Pelmorex	14.00	16.67%	11.00	13.10%	14.00	16.67%	10.00	11.90%
The Weather Channel	26.50	31.55%	38.00	45.24%	37.83	45.04%	35.50	42.26%
Weatherbit							3.00	3.57%
Weerplaza							2.00	2.38%
World Weather Online	15.00	17.86%	6.00	7.14%	5.00	5.95%	6.00	7.14%

Table 78. Asia/Pacific Five Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	7.00	8.33%	6.00	7.14%	5.00	5.95%	5.00	5.95%
AerisWeather							0.00	0.00%
Dark Sky	4.00	4.76%	1.50	1.79%	3.00	3.57%	9.00	10.71%
Foreca/Vaisala	2.00	2.38%	3.00	3.57%	4.00	4.76%	4.00	4.76%
Global Weather Corp	12.00	14.29%	6.50	7.74%	6.00	7.14%	5.50	6.55%
MeteoGroup	6.00	7.14%	5.00	5.95%	10.00	11.90%		
OpenWeather							1.00	1.19%
Pelmorex	12.00	14.29%	13.00	15.48%	11.00	13.10%	12.00	14.29%
The Weather Channel	29.00	34.52%	43.00	51.19%	40.00	47.62%	36.50	43.45%
Weatherbit							2.00	2.38%
Weerplaza							2.00	2.38%
World Weather Online	12.00	14.29%	6.00	7.14%	5.00	5.95%	7.00	8.33%

Table 79. Asia/Pacific Six Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	6.50	7.74%	6.33	7.54%	7.00	8.33%	4.00	4.76%
AerisWeather							0.00	0.00%
Dark Sky	2.50	2.98%	2.50	2.98%	6.00	7.14%	4.00	4.76%
Foreca/Vaisala	2.33	2.78%	6.00	7.14%	5.50	6.55%	4.33	5.16%
Global Weather Corp	11.83	14.09%	6.33	7.54%	7.50	8.93%	7.33	8.73%
OpenWeather							3.33	3.97%
Pelmorex	16.00	19.05%	10.00	11.90%	12.00	14.29%	12.00	14.29%
The Weather Channel	28.33	33.73%	46.83	55.75%	40.00	47.62%	35.33	42.06%
Weatherbit							4.33	5.16%
Weerplaza							2.33	2.78%
World Weather Online	16.50	19.64%	6.00	7.14%	6.00	7.14%	7.00	8.33%

Table 80. Asia/Pacific Seven Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	5.00	5.95%	7.33	8.73%	5.00	5.95%	5.00	5.95%
AerisWeather							0.00	0.00%
Foreca/Vaisala	2.00	2.38%	4.00	4.76%	6.00	7.14%	6.00	7.14%
Global Weather Corp	5.00	5.95%	6.33	7.54%	6.00	7.14%	7.00	8.33%
OpenWeather							5.00	5.95%
Pelmorex	22.00	26.19%	13.00	15.48%	15.00	17.86%	12.00	14.29%
The Weather Channel	35.00	41.67%	47.33	56.35%	47.00	55.95%	33.00	39.29%
Weatherbit							2.00	2.38%
Weerplaza							7.00	8.33%
World Weather Online	15.00	17.86%	6.00	7.14%	5.00	5.95%	7.00	8.33%

Table 81. Asia/Pacific Eight Day Out Forecast First Place Points and Percentages

Provider	2017 Points	2017 Percent	2018 Points	2018 Percent	2019 Points	2019 Percent	2020 Points	2020 Percent
AccuWeather	4.00	4.76%	6.00	7.14%	11.33	13.49%	7.00	8.33%
AerisWeather							1.00	1.19%
Foreca/Vaisala	4.00	4.76%	6.00	7.14%	5.00	5.95%	4.00	4.76%
Global Weather Corp	6.00	7.14%	4.50	5.36%	6.33	7.54%	7.00	8.33%
OpenWeather							4.00	4.76%
Pelmorex	20.00	23.81%	17.00	20.24%	13.50	16.07%	10.00	11.90%
The Weather Channel	36.00	42.86%	45.50	54.17%	42.83	50.99%	37.00	44.05%
Weatherbit							3.00	3.57%
Weerplaza							5.00	5.95%
World Weather Online	14.00	16.67%	5.00	5.95%	5.00	5.95%	6.00	7.14%

Table 82. Asia/Pacific Nine Day Out Forecast First Place Points and Percentages

## About ForecastWatch.com

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ForecastWatch, a service of Intellovations, LLC, has been the world's premier weather forecast monitoring and analytics company since 2003. Our passion for data drives us every day. We collect weather forecast data from several thousand locations throughout the U.S. and around the world. This information is added to an ever-growing and unparalleled historical database of more than one billion weather forecasts gathered from dozens of weather forecast providers and systems.

We use this vast collection of data to evaluate and compare weather forecast providers, improve decision-making by governments and business entities impacted by weather, improve weather forecasting by meteorologists around the world and educate customers with unbiased reporting. We strive to improve and expand our offerings to meet the needs of our current and future clients, finding ways to partner with them to help them evaluate their own deliverables, keep their customers safe or help make business-critical decisions by analyzing weather forecasts to positively impact revenue, operating costs and risk mitigation costs.

Meteorologists, utilities and energy companies depend on ForecastWatch's accurate data and analysis. Agriculture, futures traders and other companies whose business depends on being right about the weather put their trust in us to help them achieve success. Even consumers benefit from our ForecastAdvisor product. Our data meets the highest standard of scientific inquiry and has been used in several peer-reviewed studies.

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