Web Sources for Weather Information

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Introduction

Birders in general and hawk watchers in particular must be aware of the weather. Not only does it determine our comfort level out in the field but it plays an important role in where, when and how visible the birds will be.

And we live in marvelous times with the weather conditions, weather history, and weather predictions at our finger tips over the internet. I remember when the weather information was only available 5 minutes every hour over the radio, with no graphics, sharing time with automobile traffic, and filtered though a non-professional meteorologist who had his/her own point of view on what we needed to know about the weather and no appreciation whatsoever about weather's effects on birds!

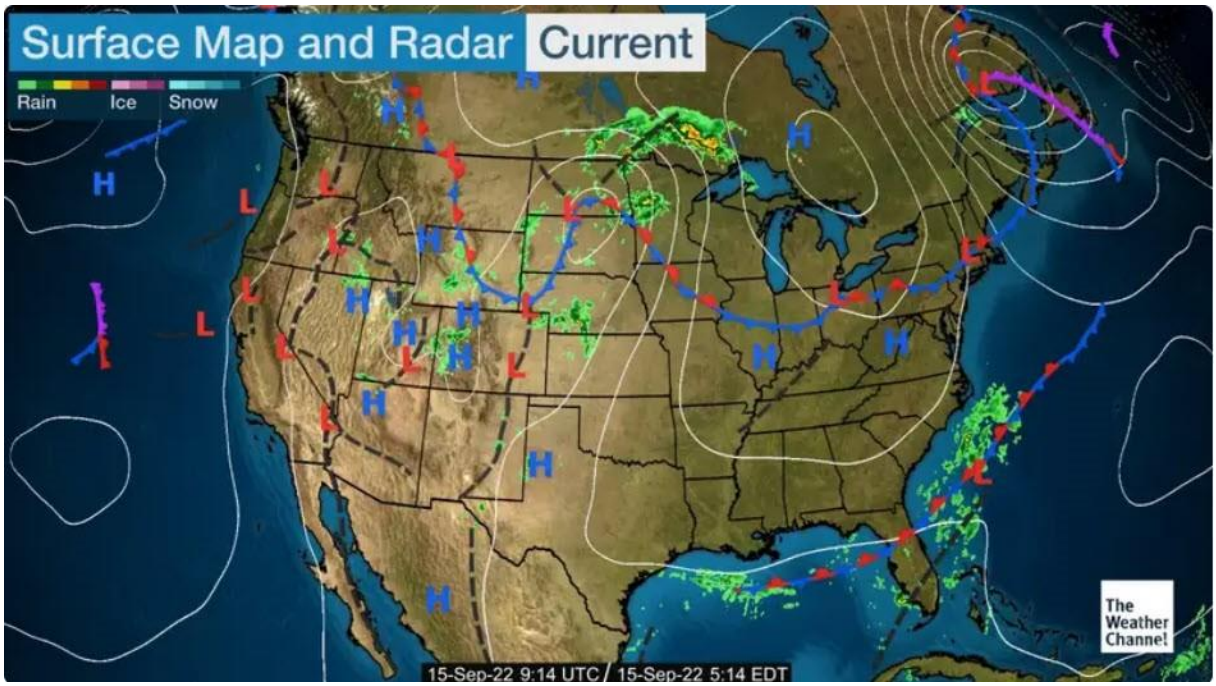
So, I'd like to point out some good ways to get immediate weather information from the web. Unfortunately, this newsletter may not be the best way to do it. So, this article is also on the web, at http://www.battaly.com/nehw/reports/panko/weather.pdf as a pdf, **in color and with clickable links!** I recommend that you go to the web and read the rest of this article there, then you can click on any link immediately and see what I am talking about – and add it to your favorites if you like it. You could also scan through the article here, to see if there is anything of interest to you and then go to the web. There is also a simplified list of all the websites in this article available on the web at http://www.battaly.com/nehw/reports/panko/weather.htm

Air Mass

The first thing I like to know about the weather is what kind of air mass we are in and how is it likely to change in the next 12, 24 and 48 hours.

Surface weather maps are ideal for this, first from the weather channel: https://weather.com/maps/currentusweather

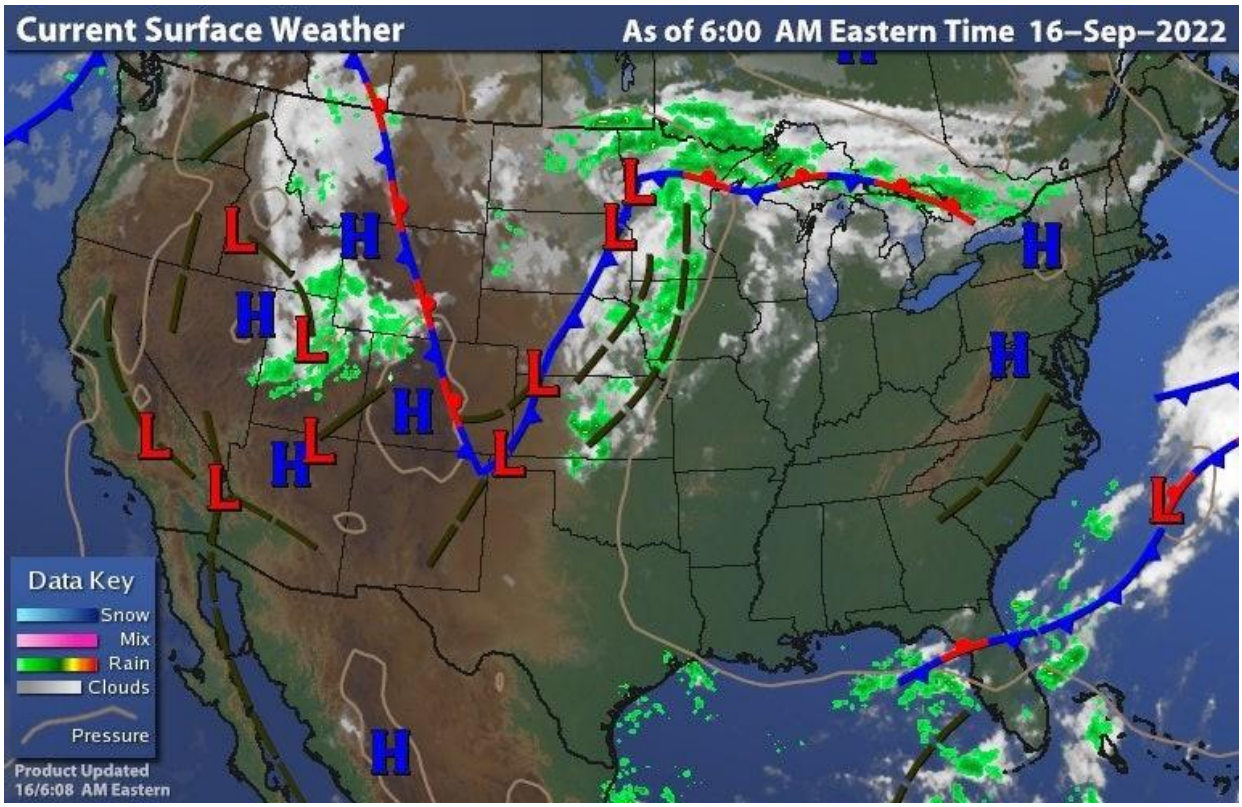
From 9/15/22 (5am)



You can see a cold front passed through the northeast overnight and the combined circulation around a high and a low will produce strong NW winds. What more could a hawk watcher want?

https://www.wunderground.com/maps/current-weather/mixed-surface-analysis

From 9/16/22:



This map is a day later and from a different website. You can see the progress of the cold front. The good news is that this wunderground map shows the cloud cover as well as the air masses and winds. The bad news is that it shows fewer isobaric lines and often is 6 or 8 hours behind the time noted on the map. But it is also a check on the first weather channel map – they will often draw the locations of the Highs and Lows differently – occasionally very differently. I often prefer the weather channel map but need the wunderground for the cloud cover. So, I like to look at both every day.

If there are serious differences between the two, or I just don't understand what they're trying to tell me I check out: https://www.nws.noaa.gov/outlook_tab.php
This site gives lots of maps, current and forecast.

A weak point for these maps is that they do not show much of Canada or the Atlantic waters. Sometimes a High or Low is located up there and it is a strong determinant of the winds in the Northeast US. A site that maps much of Eastern Canada and the north Atlantic is given on: https://www.weatherroanoke.com/natlantic.html

For the final look at the air mass, I go back to the weather channel:
https://weather.com/maps/ustemperaturemap and
https://weather.com/maps/currentdewpoint

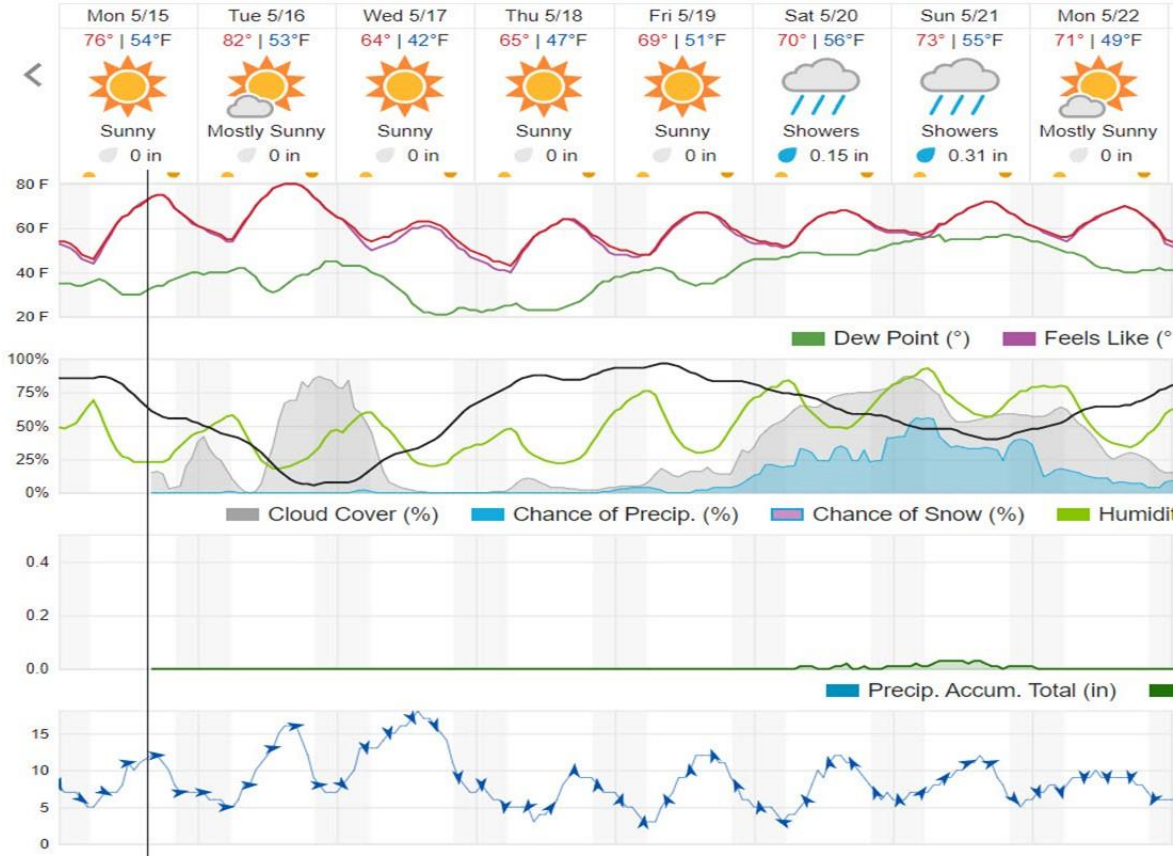
The dewpoint and current temperature are often helpful in defining the boundaries of the air masses and the strength of the cold fronts. Very often a change in dew point defines the edge of an air mass.

Predictions

The best single way to get a prediction for the current day and sometime into the future is the 10-day forecast from wunderground:
https://www.wunderground.com/forecast/us/ny/hartsdale?cm_ven=localwx_10day

This is a sample for Hartsdale. You can get the forecast for many other locations by using the "Search Locations" box in the upper right. You can either input a city name or the 3-letter code for the airport near the location you are looking for. You can get the 3-letter code and location from the map at https://www.wunderground.com/maps/radar/summary/bgm

Here is a sample of 8 days of the 10-day forecast for Hartsdale, NY for 5/15/23:



(The chart on the web is in color and much easier to read than the b&w version reproduced here.)

Temperature, Wind Chill, Dew Point, Barometric Pressure, Humidity, Cloud Cover, Chance of Precipitation, Accumulated Precipitation, Wind Speed and Wind Direction are graphically plotted for all days predicted.

Like any prediction it is sometimes wrong, but it is very good for current day and the next. And it is more likely to fail to predict correctly the further out you go. A built-in tendency is for predictions to be early. So, if it predicts north winds on the morning of the fourth day out, it will likely be wrong, but the winds will occur on the fifth day.

Another good place to get the forecast is from the National Weather Service: https://forecast.weather.gov/MapClick.php?lat=41.06237&lon=-73.70456#.WSywDOsrKUk

This URL is for the prediction at Westchester County NY Airport. By putting in the 3-letter code for any airport you will get a wide selection of places. If you precede the 3-letter code with the letter “k” you will go directly to the airport. And once there, you can use the map on the lower right to move closer to the location you are interested in. You can also input the city and state for the location you are interested in, but the prediction is a little different from the nearest airport & the exact location is a little vague.

The forecast is given verbally, and is both a strong point and weak point. I like to use it as a check. After I’ve formed my own opinion on what the weather will be, I’ll check the verbal forecast such as:

Tonight: Mostly clear, with a low around 52. West wind 7 to 10 mph.

Tuesday: Increasing clouds, with a high near 81. West wind 8 to 14 mph.

Tuesday Night: Mostly cloudy, with a low around 51. West wind around 10 mph becoming north after midnight.

Wednesday: Sunny, with a high near 64. North wind 13 to 15 mph.

Thursday: Etc., etc.

Projected movement of Highs and Lows

But what I find even more valuable, is a link at the bottom of the above webpage “Forecast Discussion”. This gives the SYNOPSIS for the day in more technical ‘weather speak’, in terms of air masses, their types and predicted movement: (underlined terms are “clickable” for the definition of the term) The following example is strongly edited to reduce wordiness, so it is not complete, but shows the extent of forecast topics included.

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FXUS61 KOKX 081130
AFDOKX

Area Forecast Discussion
National Weather Service New York NY
730 AM EDT Mon May 8 2023

.SYNOPSIS...
Weak high pressure builds in from the northwest though tonight, while a frontal boundary
stalls over the Mid Atlantic states. A frontal wave over the Ohio Valley tracks to the
south of the area on Tuesday, followed by high pressure building in for the second half
of the week. A back door cold front will then approach from the north and may enter the
area late Friday night into Saturday, then lift back to the north later this coming
weekend. Another frontal system will then begin to approach from the southwest on
Sunday.

.NEAR TERM /UNTIL 6 PM THIS EVENING/...
Following a weak cold frontal passage this morning ...
&&

.SHORT TERM /6 PM THIS EVENING THROUGH WEDNESDAY/...
With an upper low over the Canadian Maritimes and a shear axis ...
.LONG TERM /WEDNESDAY NIGHT THROUGH SUNDAY/...
No significant changes in the long term and stuck close to ...

.AVIATION /12Z MONDAY THROUGH FRIDAY/...
Weak high pressure builds in from the northwest though tonight...

 ...NY Metro (KEWR/KLGA/KJFK/KTEB) TAF Uncertainty...

Gusts may be occasional at times today. an occasional gust higher than forecast can not
be ruled out.

Low chance of a shower early Tuesday morning as low pressure passes south and west of the
area.
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...**OUTLOOK** FOR 12Z TUESDAY THROUGH FRIDAY...

Tuesday: Mainly **VFR** ...

Wednesday: **VFR**.

.MARINE...
A weak pressure **gradient** should keep winds and **seas** below **advy** levels through the end of the week.

.**HYDROLOGY**...
No hydrologic concerns exist through next week.

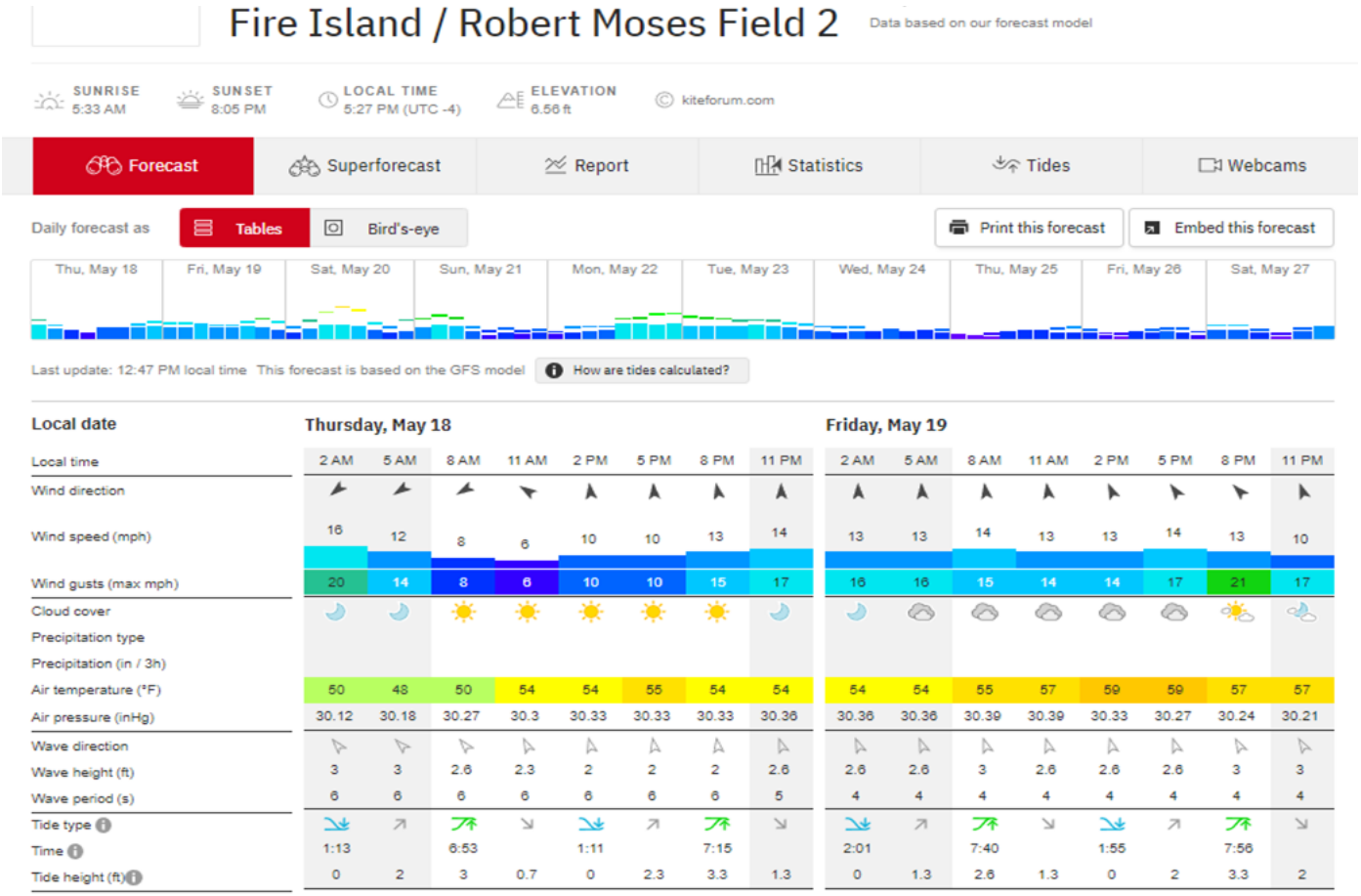
.**TIDES**/**COASTAL FLOODING**...
Based on the Sunday night high **tide** cycle ...

.OKX WATCHES/WARNINGS/ADVISORIES...
CT...None.
NY...None.
NJ...None.
MARINE...None.

This forecast is for a wide area centered around an airport. And the Aviation section is often a nice addition to the Synopsis section. And so is the Marine section for coastal watches.

The webpage also provides links and maps, on the right-hand side. The surface map shows the area being forecasted and it is zoomable to anywhere in the US. If you click anywhere on the map, you will get the local forecast at that point. If you click on the map on open water you will get a specialized Marine Forecast for the marine location. Under the map is a section labeled Additional Resources. Here you will find: a Doppler Radar map (precipitation), Satellite (cloud coverage) maps and many other weather links.

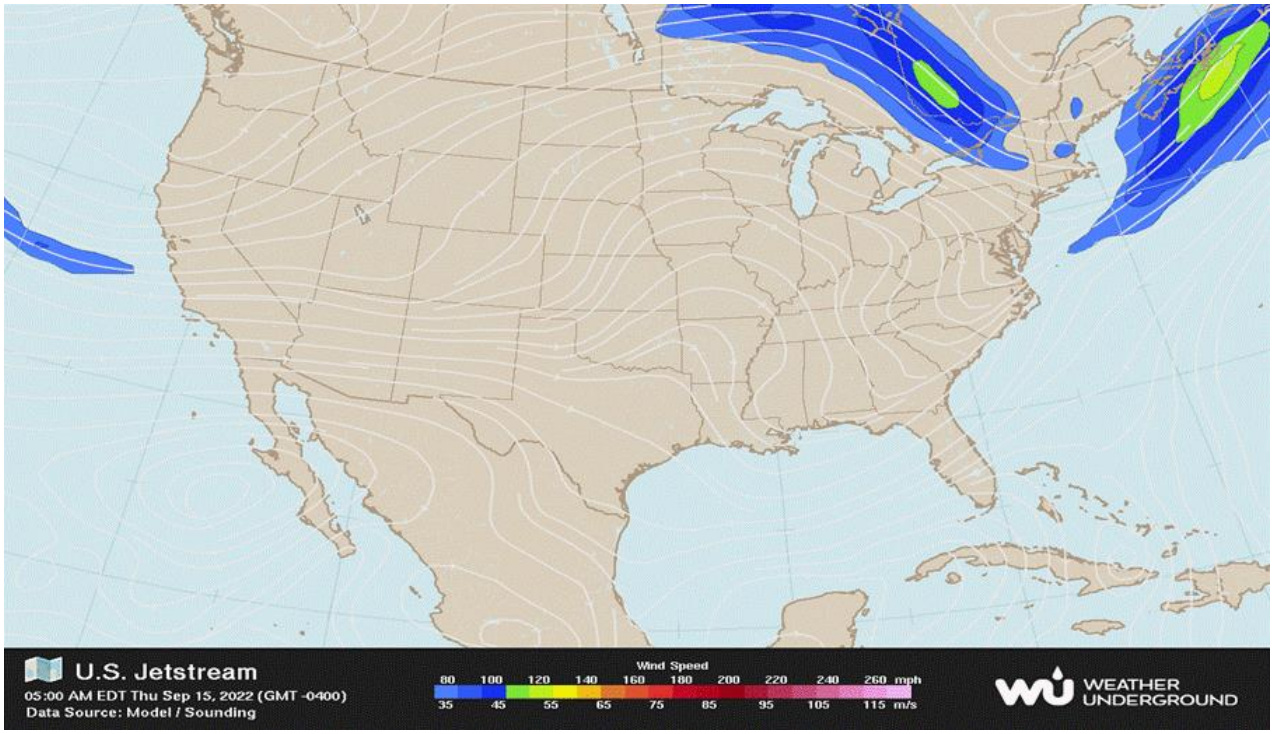
Recent years have brought a new sport to our inshore waters – wind surfing. These wind surfers are extremely interested in what the winds will be and have originated a series of web sites that predict the winds and I have found these to be even more accurate than the National Weather Service predictions – perhaps because they are even more local. Here's one: https://www.windfinder.com/forecast/fire_island_robert_moses_field_2



This page gives 6 days of predictions. The accuracy falls off the further out you go. Clicking on “Map”, “Locations” or searching by city name under “Search” will bring you to a surprising number of locations including some inland rivers and lakes. They also offer a number of other graphical and numerical formats and historical data by day and by month. And, in my experience, they give the best prediction of wind speeds and direction.

Clicking on the “more”, at the far right top, will bring you to another group of options, including “wind & weather map” which will bring you to a zoomable global wind map, such as: https://www.windfinder.com/#9/41.1083/-73.2002

The jet stream is often helpful in understanding the weather conditions:



https://www.wunderground.com/maps/wind/jet-stream

This is an instantaneous shot of the Jet Stream at 5 am on 9/15/22. It clearly shows how the jetstream would steer a moderate cold front into our area. Such Jet Stream maps can give you a heads up of approaching cold fronts a day or two in advance and an indicator of how strong and how extensive the NW winds will be.

An even better multiple day, zoomable view of the Global Jet stream is at: https://www.netweather.tv/charts-and-data/global-jetstream#2023/05/21/0600Z/jetstream/surface/level/overlay=jetstream/orthographic=-6.72,57.59,356

But this level of detail is not usually necessary. And the instant glimpse at the wunderground site is usually enough for birding purposes.

The jet stream is usually too high to directly impact hawk migration. But often the speed and direction of upper-level winds will impact their movement because their effect, though weakened, can sometimes extend as low as 3000 ft. And this is well within the heights that hawks will fly. Wind speed and direction is available for every 3000 feet for every 6 hours at: https://www.usairnet.com/cgi-bin/Winds/Aloft.cgi?icao=JFK&hr=06

Precipitation:

The forecasts will make predictions of the precipitation expected in your area. However, for hawk watch purposes you need more. The weather prediction for your area may be for sunshine and NW winds, but if there is a large area of precipitation between you and the source region of the hawks that pass your site, there will be no hawks at your site.

A very good precipitation map for the entire US is available at:
https://www.wunderground.com/maps/radar/summary
and just for the Northeast at:
https://www.wunderground.com/maps/radar/summary/bgm
These maps also have the bonus of giving the direction the precipitation is moving and showing the location of all major airports and their 3-letter codes. Which can be converted to the 4-letter code merely by preceding the 3-letter code with a "k".

For current and the past 12 hours you can access the National Weather Service doppler radars at: http://weather.rap.ucar.edu/radar/

This will bring you to the radar site where you can choose the closest radar site near you. Many other data sources are available from the menu at the top of the page. Choose "satellite" and you'll get a beautiful image of the regional cloud cover:
http://weather.rap.ucar.edu/satellite/

However, it is a static picture of the current cloud cover with no indication of how it will be changing. If you would like a prediction of the location and movement of precipitation over the next 4 hours or 10 days you can check out:

https://www.msn.com/en-us/weather/maps/precipitation/in-Irvington,NY?loc=eyJsIjoiSXJ2aW5ndG9uIiwiciI6Ik5ldyBZb3JrIiwiYyI6IlVuaXRlZCBTdGF0ZXMiLCJpIjoiVVMiLCJnIjoiZW4tdXMiLCJ4IjoiLTczLjg2NjgzNjU0Nzg1MTU2IiwieSI6IjQxLjAzOTY2NTIyMjE2Nzk3In0%3D&weadegreetype=F&ocid=winp1taskbar&zoom=8&rc=1&animation=0

I don't use this site enough to be able to determine its accuracy compared to other predictions. Essentially I'm assuming that the website for one of your local TV stations will also have a good Doppler Radar map to show you current and past conditions.

Historical data - Weather that Was

Weather often does not turn out as predicted. You can always get a record of what weather occurred at your nearest airport for the last three days. For the weather at JFK:
https://w1.weather.gov/data/obhistory/KJFK.html

Sample:

Date	Time (edt)	Wind (mph)	Vis. (mi.)	Weather	Sky Cond.	Temperature (°F)				Relative Humidity	Wind Chill (°F)	Heat Index (°F)	Pressure		Precipitation (in.)		
						Air	Dwpt	6 hour Max.	6 hour Min.				altimeter (in)	sea level (mb)	1 hr	3 hr	6 hr
10	08:51	N 8	10.00	Mostly Cloudy	SCT025 SCT160 BKN230	76	70			82%	NA	77	29.75	1007.5			
10	07:51	N 8	10.00	Mostly Cloudy	FEW010 FEW025 BKN160 BKN230	75	71	75	71	88%	NA	NA	29.75	1007.3			
10	06:51	NW 7	10.00	Mostly Cloudy	FEW012 BKN024 BKN130 BKN220	73	71			94%	NA	NA	29.74	1007.1			
10	05:51	W 7	10.00	Mostly Cloudy	SCT035 SCT130 BKN220	72	70			94%	NA	NA	29.72	1006.5			
10	04:51	W 6	10.00	Mostly Cloudy	FEW013 SCT021 BKN150	72	70			94%	NA	NA	29.71	1006.1			

You can get this data by entering the four-letter code for any airport in the US. Or you can get the nearest airport if you enter a City and State, or zip code.
It is also available by clicking on “3 day History”, under more information, on the right, half way down the page on:
https://forecast.weather.gov/MapClick.php?lat=41.06237&lon=-73.70456#.WSywDOsrKUk

For the hawk watches of interest to me, I visit the nearest airport, download and save the data to Excel every three days.

I often would like to know what the weather was at an airport for which I do not save data, sometimes back several years. On https://www.wunderground.com/history you can find this data, just scroll down the page. Unfortunately, summaries of weekly and monthly data do not include wind direction. Wind direction it is only available hourly, which requires viewing one day at a time.

There is a way to get these airport surface hourly reports from any airport for as long as the airport has been in operation without paying a commercial company to supply them. A website that does this is: https://www.climate.gov/

In particular:
https://www.climate.gov/maps-data/dataset/wind-roses-airports-around-world-graphics-or-raw-data-tables

Carefully follow the detailed directions given on the site, and you can download all the weather data in numerical form from any airport as far back as the airport has been in

operation. You can also create “wind roses” which lump the wind speed by direction over any time and date period.

The following website contains an **archive** of doppler radar maps of the US as the weather actually developed in the past (as far back as 2011!):
https://www.pauljhurtado.com/US_Composite_Radar/

Weather Blogs

https://yaleclimateconnections.org/ and
https://www.scientificamerican.com/environment/ and
https://www.climate.gov/

These are three websites that have more detailed articles on various aspects of weather. Topics such as the ENSO (El Nino & La Nina), Hurricane forecasts, and Hurricane damage reports, and climate change reports and predictions are common topics (one or two a week) on these sites. You Tube and https://bestweatherblog.blogspot.com/ also have good discussions of weather topics.

General Birding

All the above sites are more or less useful for general birding as well as hawkwatching. But there is one site that specializes in predicting and recording nocturnal, non-raptor migration:

https://birdcast.info/

It is only active in the spring and fall migration season, but that is when you need the information it provides. And good hawk flights often follow in the morning after a good passerine flight.

Saving Weather Data

There are two uses for this weather information. First is when and where to go to see birds, and second to explain what you and others observed when you were out birding. For the second purpose you may want to save the weather information so that you can go back and search for explanations for what you and others observed. To do this, highlighting the data on the web page and using Cntrl C and Cntrl V to copy and paste it works fine. BUT some pages do not allow you to copy the information this way. To get around this I would recommend “SNAGIT”. It will copy anything on your computer screen and save it in whatever format you choose. The snipping tool in Windows will do this as well, but SNAGIT does it better. It will not only copy your screen, it will scroll copy to include more and copy more than will fit on your screen at one time. I will also copy videos with their sound, and do OCR i.e. convert the text in a picture to text that is editable in a word processor.

The bad news is that it costs around $50 for the base version and is available through:
TechSmith Corporation, www.techsmith.com

Post-migration Winter Movement – Snow Cover

Raptors such as Redtails, Harriers, Roughlegs and Shortears will come south only far enough to reach habitats with reduced snow cover. When heavy snow does fall in these areas they will move further south. A website that helps to predict this movement is: https://www.nohrsc.noaa.gov/nsa/index.html?region=Northeast&year=2023&month=2&day=1&units=e

Large Scale Climate Parameters

There are two large scale weather phenomenon that do not predict daily weather or hawk movement but which influence the average weather and may have an impact on overall migration and/or breeding success. The first is the NAO – the North Atlantic Oscillation. An article was published in 2015 that related spring migration of BWs at Hawk Mountain PA to the NAO. See footnote (*) below. Values for the NAO may be found at: https://www.cpc.ncep.noaa.gov/products/precip/CWlink/pna/nao_index_mrf.shtml

*Han-Kyu Kim; Marta Sendra Vega; Marian Wahl; Chong Leong Puan; Laurie Goodrich; Keith L. Bildstein
Journal of Raptor Research (2015) 49 (4): 471–478. Relationship Between the North Atlantic Oscillation and Spring Migration Phenology of Broad-winged Hawks (*Buteo platypterus*) At Hawk Mountain Sanctuary, 1998–2013
https://doi.org/10.3356/rapt-49-04-471-478.1

Graphic and Tabular values for the NAO are available at: https://www.cpc.ncep.noaa.gov/products/precip/CWlink/pna/nao.shtml

The other large-scale influence on our weather is the ENSO or the El Niño–Southern Oscillation. The ENSO is a periodic fluctuation in sea surface temperature and air pressure in the equatorial Pacific Ocean. The ENSO is one of the most important climate phenomena on Earth due to its ability to change the global atmospheric circulation, which in turn, influences temperature and precipitation across the globe. It has three states, or phases, it can be in. The two opposite phases, “El Niño” and “La Niña,” require certain changes in both the ocean **and** the atmosphere because ENSO is a *coupled* climate phenomenon. “Neutral” is in the middle of the continuum.

A large number of types of ENSO data may be found at: https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml
and the most commonly used ENSO data (3 month averages for surface sea temperatures) at: https://origin.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ONI_v5.php

Ocean Surface Temps

https://www.ospo.noaa.gov/Products/ocean/sst/contour/

These are sometimes useful when tropical storms are moving in the area.

Finally!

Everyone needs to know how much and when snow is forecast. One site that does a good job to my way of thinking is: https://www.weather.gov/okx/winter

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If you have any favorite website for weather data that I didn't mention, ***please let me know!*** (dpanko@pipeline.com)

If you see any website or publication that discusses weather and bird migration, ***please let me know!*** (dpanko@pipeline.com)

If you have any comments on the usefulness of this article, ***please let me know!*** (dpanko@pipeline.com)

A web page has been created that contains most of the websites discussed above. If you visit here: https://www.battaly.com/nehw/reports/panko/weather.htm
you will have quick and easy access to all the links.