PropView 1.5.5 Help

PropView uses the IonCap propagation prediction engine to forecast the minimum and maximum useable frequencies between two locations over a specified 24 hour period. Results are rendered in an easy-to-understand color-graphic display. You can specify locations via direct latitude/longitude entry. Alternatively, PropView interoperates with DXView (version 1.5.1 or later) to allow location selection via DXCC prefix entry or by clicking on locations on a world map.

PropView can assess actual propagation by monitoring beacons in the NCDXF/IARU Network, either by band, by location, or by bearing from your QTH. When Commander (version 3.7.3 or later) is running, PropView can automatically QSY your radio to the current beacon's frequency. When DXView is running, PropView can display the current beacon location on DXView's world map and rotate your antenna to the appropriate bearing.

PropView Prerequisites

To use PropView, you need

- a PC running Windows 95 (v4.00.950 B or v4.00.950 C), Windows 98, Windows 2000, or Windows NT, ideally
    - 75 MHz Pentium or better
    - 32 MB RAM or better
- an SVGA display or better

PropView Download and Installation

Installing or Upgrading the DXLab Launcher
The **DXLab Launcher** automates the installation of new DXLab applications, including PropView, and the upgrading of already-installed DXLab applications.

If you're an aspiring DXLab user who has **not installed any DXlab applications** on your PC, or if you're a long-time DXLab user who has **never installed the Launcher**, then installing the Launcher will make it easy to install new DXLab applications and keep them up to date as upgrades are released.

Step-by-step guides for installing the Launcher are available, both in HTML for browsing (http://www.dxlabsuite.com/dxlabwiki/InstallLauncher) and in PDF for printing (http://www.dxlabsuite.com/Download%20and%20Installation.pdf).

You can uninstall PropView by running the Add/Remove Programs applet on the Windows control panel.

If you have questions or suggestions, please post them on the DXLab reflector at http://groups.yahoo.com/group/dxlab.

If you're not a member, you can sign up at http://www.dxlabsuite.com/reflector.htm.

PropView Configuration

Configuration Panels
PropView's Configuration screen contains three panels:

The **Frequency-dependent Settings** panel lets you specify a Takeoff Angle and Output Power for each amateur band. When this panel's **Enable** box is checked and Commander is running, PropView will update the Takeoff and Power settings using the values specified in this panel for the transceiver's current frequency band. You can specify the band definitions using the facility described below.

The **Distance Units** panel lets you specify whether distances from your QTH to beacons are shown in miles or kilometers.

The **Forecasting Engine** panel lets you choose IONCAP, ICEPAC, or VOACAP to generate propagation forecasts; the IONCAP engine is not available when running on a 64-bit version of Windows.

The **Guidance panel** lets you control the action of explanatory popup windows and specify the browser you use to read online help:

show control explanations	when checked, enables the display of explanatory information when the mouse cursor lingers over a textbox, button, checkbox, display pane, or setting.
Browser pathname	if this setting is blank, PropView displays online help using your PC's default HTML browser; if this setting contains the pathname of an HTML browser, PropView displays online help using that browser.

If the **Display information in title bars** box is checked, PropView displays status information in window title bars (uncheck when running on Vista).

When the **Use multiple monitors** box is checked, PropView windows that resided on a secondary monitor during the previous session will be restored to the same secondary monitor on startup; when not checked, all windows are restored to the primary monitor on startup

Checking the **Log Debugging Info** box directs PropView to record diagnostic information into the file `errorlog.txt` in PropView's folder.

Defining Bands
PropView utilizes a set of band definitions contained in a file. At startup, PropView checks its folder for the file `Bands.txt` ; if found, the contents of this file are interpreted as user-defined band specifications in the format shown below. If `Bands.txt` is not found, then PropView checks its folder for the file `DefaultBands.txt`, which every PropView release installs. `DefaultBands.txt,` is a file containing one line per band::

```
160M, 1.800, 2.000
80M, 3.500,4.000
60M, 5.3305,5.405
40M, 7.000,7.350
30M, 10.100, 10.150
20M, 14.000, 14.350
17M, 18.068, 18.168
15M, 21.000, 21.450
12M, 24.890, 24.990
10M, 28.000, 29.900
6M, 50.000, 54.000
```

Each line contains three parameters, separated by commas: the band name, the band's lower edge in megahertz, and the band's upper edge in megahertz.

To add or subtract bands, make a copy of `DefaultBands.txt` in PropView's folder and name it `Bands.txt`. Delete or add lines as required, ensuring that

- each band's lower band edge is less than its upper band edge
- the upper band edge defined on one line is less than the lower band edge defined on the next line

Forecasting Propagation

PropView forecasts the minimum and maximum useable frequencies between a transmitter in one specified location and a receiver in another specified location over the course of a specified day. This forecast is driven by settings that you enter on the **Conditions**, **Transmitter**, and **Receiver** panels in PropView's **Parameters tab**.

Via button in the **Conditions** panel, PropView can also direct SpotCollector to display its 31-day history of Solar and Geomagnetic indices, and download and display a 31-day forecast for Solar and Geomagnetic indices.

Conditions panel

Date	• the day for which a forecast is to be generated, in the format dd-mmm-yyyy • double-clicking on this textbox enters the current UTC date • if the Show Current Time box is checked, the date will automatically be kept current
SFI	• the solar flux index o broadcast by WWV at 18 minutes after each hour o available via N6RT's propagation page o automatically provided by SpotCollector (if running)
K-index	• the geomagnetic K-index o broadcast by WWV at 18 minutes after each hour o available via N6RT's propagation page o automatically provided by SpotCollector (if running)
Avail %	• the required circuit reliability, stated as a percentage representing the likelihood that signal quality will be acceptable
History	when clicked, directs SpotCollector to display its 31-day history of Solar and Geomagnetic indices
Forecast	when clicked, downloads a 31-day forecast for Solar and Geomagnetic indices from http://www.swpc.noaa.gov/ftpdir/latest/45DF.txt and displays it graphically

Your Station panel

Latitude	• the latitude component of your station's location, in standard geographic format • if DXView is installed, PropView sets this component to your QTH latitude
Longitude	• the longitude component of your station's location, in standard geographic format • if DXView is installed, PropView sets this component to your QTH longitude
TakeOff	• your transmit antenna's minimum takeoff angle, in degrees
Power	• your transmitter output power, in watts
Path	• determines whether propagation will be predicted for the short path or for the long path between your station and the DX station

DX Station panel

Latitude	• the latitude component of the DX station's location, in standard geographic format • if DXView is installed, PropView sets this component to its currently-selected location
Longitude	• the longitude component of the DX station's location, in standard geographic format • if DXView is installed, PropView sets this component to its currently-selected location
Man-made noise level	• characterizes the level of man-made noise at the DX station's location: o remote o rural o residential o industrial

Generating a Propagation Forecast

When the above settings have been specified, click the **Predict** button. If the Frequency-dependent Settings panel's **Enable** box is checked and Commander is running, PropView determines your transceiver's current operating frequency and updates the Your Station panel's Takeoff and Power settings based on the values specified in the Frequency-dependent Settings panel for that band; if the Frequency-dependent Settings panel's **Enable** box is not checked, or if Commander is not running, then the Your Station panel's Takeoff and Power settings are not modified. PropView then creates the scripts required to drive the selected forecasting engine, and then initiates that engine. When the forecasting engine has completed its computation, PropView scans the generated numeric forecast and renders it in a graphic display on its **Prediction** tab. If the selected forecasting engine is IONCAP -- a DOS program -- its initiation and execution can take several minutes on slower machines running some versions of Windows. The identity of the engine used to generate a forecast is displayed above that forecast, along with location information.

The generated display on the **Prediction** tab shows time on its horizontal access, and frequency on its vertical access. A frequency scale labeled in MHz is provided along the right margin, and a wavelength scale labeled in meters is provided along the left axis. Below the time axis, PropView displays two horizontal bars indicating the solar position at your station and at the DX station; in these bars, yellow means "sun is up", black means "sun is down", and grey means "twilight"; to display a **Solar Colors** panel that provides a color key for each of these conditions, check **Prediction** tab's **Show Color Keys** box.

The brown Vertical Time Index shows the current UTC time, but can be dragged to any time of day; check the **Show Current Time** box to make the Vertical Time Index resume tracking the current time, and to automatically update the Date.

If the **Plot Critical Frequencies** box is checked, PropView displays the following frequencies hour-by-hour

- the lowest useable frequency (LUF) in black
- the 90%-confidence maximum useable frequency (MUF) in blue
- the 50%-confidence MUF (in green)
- the 10%-confidence MUF (in red)

If the **Show Open Bands** box is checked, PropView displays horizontal lines for each amateur band for which propagation is possible. The width of each line indicates the likelihood that propagation will occur:

- if the band is higher in frequency than the LUF, and lower in frequency than the 90%-confidence MUF, then its associated line is 3 pixels in width
- if the band is higher in frequency than the LUF, and higher in frequency than the 90%-confidence MUF, but lower in frequency than the 50%-confidence MUF, then its associated line is 2 pixels in width
- if the band is higher in frequency than the LUF, and higher in frequency than the 50%-confidence MUF, but lower in frequency than the 10%-confidence MUF, then its associated line is 1 pixels in width

You can generate new short path or long path predictions by click the **Prediction** tab's **Predict SP** or **Predict LP** buttons respectively.

Interpreting PropView Graphs
After generating a prediction for propagation between two locations, check the **Plot Critical Frequencies** box and uncheck the **Show Open Bands** box.

The black curve represents the lowest useable frequency (LUF) as a function of time. Any frequency lower than the black curve will not support communications due to absorption.

The blue, green, and red curves provide a statistical range for the maximum useable frequency (MUF) as a function of time. The actual MUF will be at or above the blue curve with 90% confidence, at or above the green curve with 50% confidence, and at or above the red curve with 10% confidence. Any frequency above the actual MUF will not support communications, due to insufficient reflection. To display a **Critical Frequency Colors** panel that provides a color key for each critical frequency color, check **Prediction** tab's **Show Color Keys** box.

So at any specified time, you can identify which frequencies will likely support communication between the specified locations: they are bounded on the low-end by the black curve, and on the high-end by the statistical range between the blue and red curves. You can use the green curve as a kind of "expected MUF" curve; if you're an optimist, use the red curve for this purpose.

To make it easier to see what ham bands are open when, uncheck the **Plot Critical Frequencies** box and check **Show Open Bands**. Horizontal lines represent ham bands lying between the LUF and statistical MUF. The thickest lines indicates openings based on the 90% confidence MUF (the blue curve), and the thinnest lines indicate openings based on the 10% confidence MUF (the red curve).

If you now check "Plot Critical Frequencies", the relationship between horizontal lines and critical frequency curves should be apparent.

Monitoring Beacons

PropView can assess actual propagation by monitoring beacons in the NCDXF/IARU Network, either by band, by location, or by bearing from your QTH. This beacon network involves 18 continuously transmitting beacons deployed around the world, transmitting on the 20m, 17m, 15m, 12m, and 10m amateur bands. Each beacon has a 10 second **slot** on each band, during which it transmits its callsign in CW followed by 4 dashes of 1 second duration. The callsign and first dash are sent at 100 watts; the remaining dashes are sent at 10 watts, 1 watt, and 0.1 watt respectively. With 18 beacons transmitting in turn, a **cycle** is completed on each band every 3 minutes. To minimize beacon hardware, transmission occurs on one band at a time, yielding a schedule with each beacon transmitting once one each band during a cycle. Listening to every beacon on every band with a single receiver requires five cycles -- 15 minutes.

Monitoring beacons with PropView requires that your PC's clock be accurate to the second. This can be accomplished with free software such as AboutTime or Dimension 4 that periodically synchronizes with time servers over the internet, or with PC hardware that synchronizes with time signals received from WWVH or from GPS satellites such as WinTick.

PropView's Beacon Monitor makes it easy to select the beacons you wish to monitor, and can automate required changes in your receiver's frequency and required changes in the bearing of your directional antenna. To activate the monitor, click the **Monitor** button in the Beacon panel at the bottom of PropView's main window. After PropView displays its **Beacon Monitor** window, check the **Enable** box in the upper left corner of this window's **Monitor panel**.

The **Beacon Monitor** window contains two panels: a **Monitor panel** that lets you specify the beacons to which you wish to listen, and a **Beacon Schedule panel** that shows you the upcoming 18 slots of the schedule PropView has assembled for you.

Within the Monitor panel are three sub-panels, corresponding to the three different ways you can select beacons for inclusion in your schedule:

The **Band sub-panel** lets you monitor all beacons on a specific band. Click the **20m** button, for example, and two things happen:

- most of the callsigns shown the **Beacons sub-panel** are rendered in red font
- a list of **events** appears in the **Beacon Schedule panel**

The **Beacons sub-panel** provides two functions: it lets you select beacons arbitrarily, constructing the shortest possible schedule that includes all of beacons you wish to monitor, and it provides a visual indication -- using red font -- of which beacons are included in the schedule. Depending upon your selections, your schedule may involve up to five 3-minute cycles, containing a total of 90 beacon transmission events. Thus the **Beacon Schedule panel** may show only some of the beacons in your schedule -- those that will be transmitting within the next 180 seconds.

If you have a directional antenna, its convenient to monitor groups of beacons whose bearing from your QTH are within your antenna's beam width. When you chose a beam heading in the **Octant sub-panel**, PropView creates a schedule containing all beacons whose bearing lies within 30 degrees, corresponding to a 60 degree beam width. If you've checked this panel's **Rotate** box and are running DXView version 1.5.1 or later with a PC-controllable antenna rotator, selecting a beam heading will automatically rotate your antenna. Since octants are 45 degrees in width and PropView assumes a 60 degree beam width, don't be surprised if some beacons appear in schedules generated from more than one octant selection.

The **Band**, **Beacons**, and **Octant** sub-panels each provide independent means of generating a beacon schedule, though all use red font in the **Beacons sub-panel** to indicate selected beacons. Whenever you create a schedule using one of these sub-panels, it immediately replaces the previously active schedule. As long as the Enable checkbox in the Monitor panel's upper left corner is checked, PropView will advance the **Beacon Schedule** every 10 seconds; the top-most entry in this schedule identifies the currently transmitting beacon, its location, its

frequency, its bearing from your QTH, and its distance from your QTH in either miles or kilometers, as specified in the configuration window. If you are running DXView version 1.5.1 or later, you can check the **Map** box in the **Monitor panel**; doing so will direct DXView to display the location of the currently-transmitting beacon on its world map. Checking the **Predict** box in the **Monitor panel** directs PropView to compute and display a propagation forecast for the currently transmitting beacon so you can compare actual and predicted propagation.

If you are running Commander version 3.7.3 or later, you can check the **QSY** box in the **Monitor panel** on PropView's **Beacon Monitor** window; doing so will direct Commander to adjust your receiver's frequency so that you can hear the currently-transmitting beacon; you must first set your receiver to the appropriate mode (typically CW). The **Transceiver** sub-panel lets you specify a positive or negative **Offset** in Hertz; you can use this to position beacon signals within your transceiver's receive passband. PropView issues the appropriate QSY directive 2 seconds before the beginning of the next transmission event, allowing you to hear all of the current transmission and giving your radio time to change frequency for the next transmission. Note that PropView only changes your radio's frequency as directed in the beacon schedule. If all events in the schedule occur on 21150 kHz, PropView will set your radio's frequency once; if you manually change frequency or mode, its up to you to appropriately restore the radio's settings. If successive transmission events in the schedule occur on different frequencies, PropView will QSY your radio after each event.

By design, all beacons can be monitored on a single band within one 3-minute cycle. Click the **Band sub-panel**'s 15m button, for example; note that the **Band sub-panel**'s caption parenthetically indicates the schedule length in cycles. If you check a box in the **Beacon sub-panel**, a one-cycle schedule will be created. If you check another box, whether the schedule must be expanded to two cycles depends on which two beacons you have chosen. As you select additional beacons, the schedule is automatically extended to accommodate them. If you select every beacon, a 5-cycle schedule will be generated.

Not all beacons are active, or are active on all bands. If you click the **20m** button, for example, you'll see that 4S7B and 5Z4B remain in black font in the **Beacons** panel. These stations are currently inoperative; you can check their boxes in the **Beacons** panel, but no schedule entries will be generated. The KH6WO beacon is not active on 17m or 12m -- click the appropriate **Band** buttons to see this.

PropView obtains information about Beacon location and Beacon schedules from a pair of text files named BeaconLocation.txt and BeaconSchedule.txt , located in PropView's folder. If the status of one or more beacons changes, these files can be updated and PropView will reflect those changes. Distance and bearing to each beacon is computed using the QTH latitude and longitude specified in the **Transmitter Panel** on the **Parameters tab** of PropView's main window; you can more conveniently set QTH information using DXView. Changing your QTH location is immediately reflected in the distance and bearings shown in the **Beacon Schedule**.