



MacDoppler for Cocoa	3
<i>Features</i>	3
<i>Registration</i>	3
2D Map Panel	4
<i>Controls</i>	4
3D Map Panel	5
<i>Controls</i>	5
Track List Panel	7
<i>Controls</i>	7
<i>Column Headings</i>	7
Horizon Panel	9
Radio Panel	10
<i>Controls</i>	10
<i>Full Doppler Tuning</i>	10
Rotators Panel	11
<i>Controls</i>	11
Logging Window	12
<i>Controls</i>	12
Predictions Window	13
Radio Preferences	14
<i>Controls</i>	14

<i>Tuning Dial Tracking</i>	14
Rotator Preferences	16
<i>Controls</i>	16
<i>Predictive Dead-Spot Crossing</i>	16
Site Preferences	17
<i>Registration</i>	17
<i>Controls</i>	17
<i>Console Debug Log</i>	18
Modes Preferences	19
<i>Controls</i>	19
<i>Column Headings</i>	19
Gateway Preferences	21
Menus	22
<i>File</i>	22
<i>Options</i>	23
Revision History	24
License and User Agreement	25
<i>Software License Agreement</i>	25

MacDoppler for Cocoa

MacDoppler for Cocoa was re-written from the ground up to take full advantage of all the great Cocoa capabilities in OS X on PPC as well as Intel hardware. MacDoppler will provide any level of station automation you need from assisted Doppler Tuning and Antenna Pointing right on up to fully automated Satellite Gateway operation.

MacDoppler for Cocoa carries on the rich tradition pioneered by MacDopplerPRO which is in use around the world by Amateur Radio operators, satellite spotters, educators and commercial customers from CBS News to the International Space Station Amateur Radio Hardware Management program, Delta Telemetry Tracking and Control at Integrated Defense Systems, Florida State University and the Cal-Poly Cube-Sat Project.

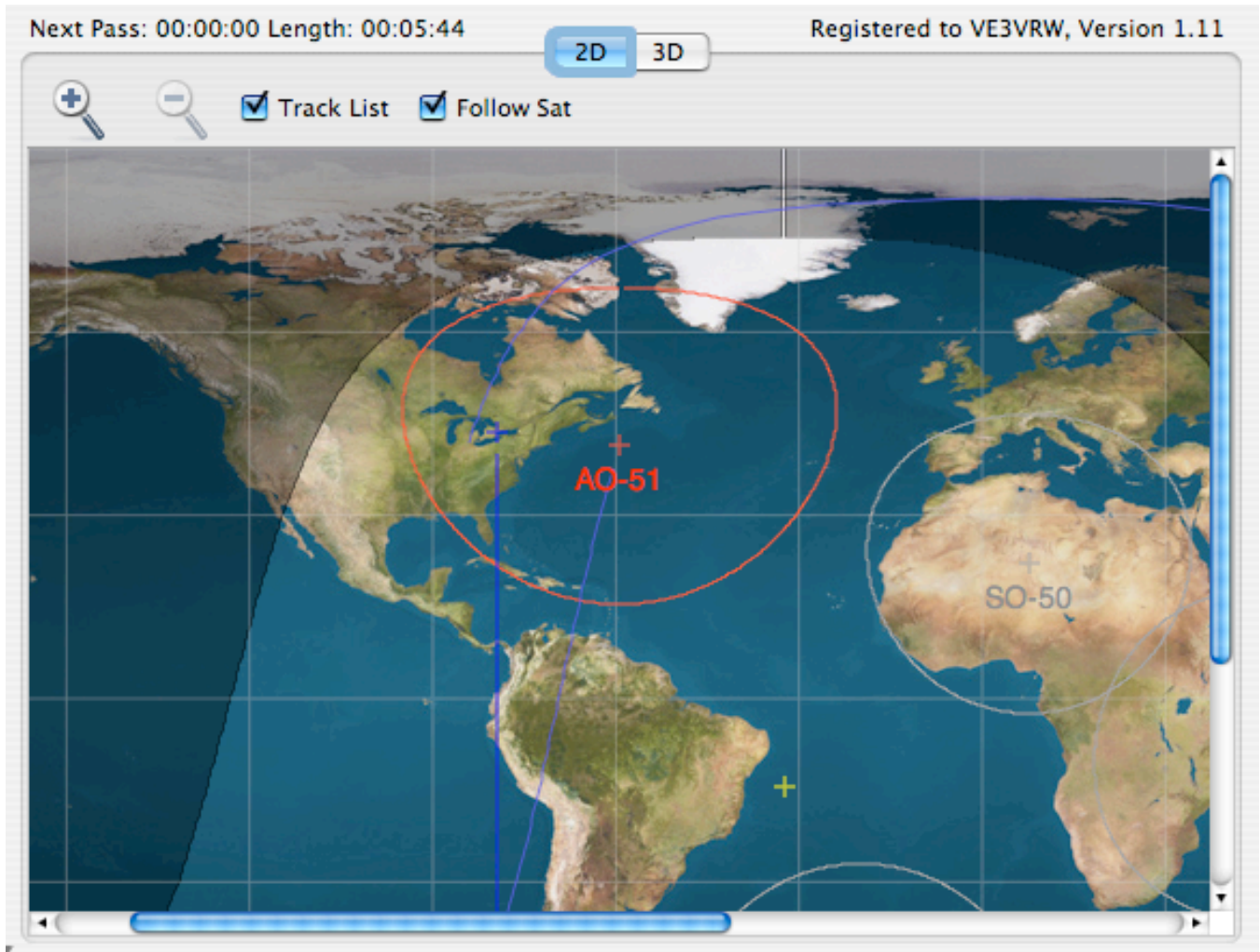
Features

- Universal Binary runs under OS X Intel or PPC.
- Automated internet download of keplerian elements.
- Track List sorted in real-time order of next pass.
- High Resolution Maps from "The Living Earth, Inc."
- Full predictive dead spot crossing so that a pass is never interrupted by the beam heading passing a dead spot.
- Speech advisory of next satellite AOS and Maximum Elevation.
- Horizon Window shows upcoming passes on a time line.
- Built in support for Satellite Gateway using Ontrak ADR101.
- Tuning Dial Tracking allows you to tune the downlink from your radio's front panel while MacDoppler automatically adjusts the uplink.
- QSO Logging integrated with MacLoggerDX and ARRL LOTW.

Registration

MacDoppler for Cocoa must be registered for some features to work and to work beyond the 5 minute time limit. Register online with the Kagi or PayPal secure servers or instantly directly through the program. MacDoppler for Cocoa - Single User License \$98.00 USD. There is no upgrade path from MacDopplerPRO or Lite to MacDoppler for Cocoa. MacDopplerPRO and Lite v2.9.3 will still be available and bugs fixed but no new features will be added.

2D Map Panel



Controls

+ and - buttons allow you to change the map resolutions from 1024x512 up to 8192x4096.

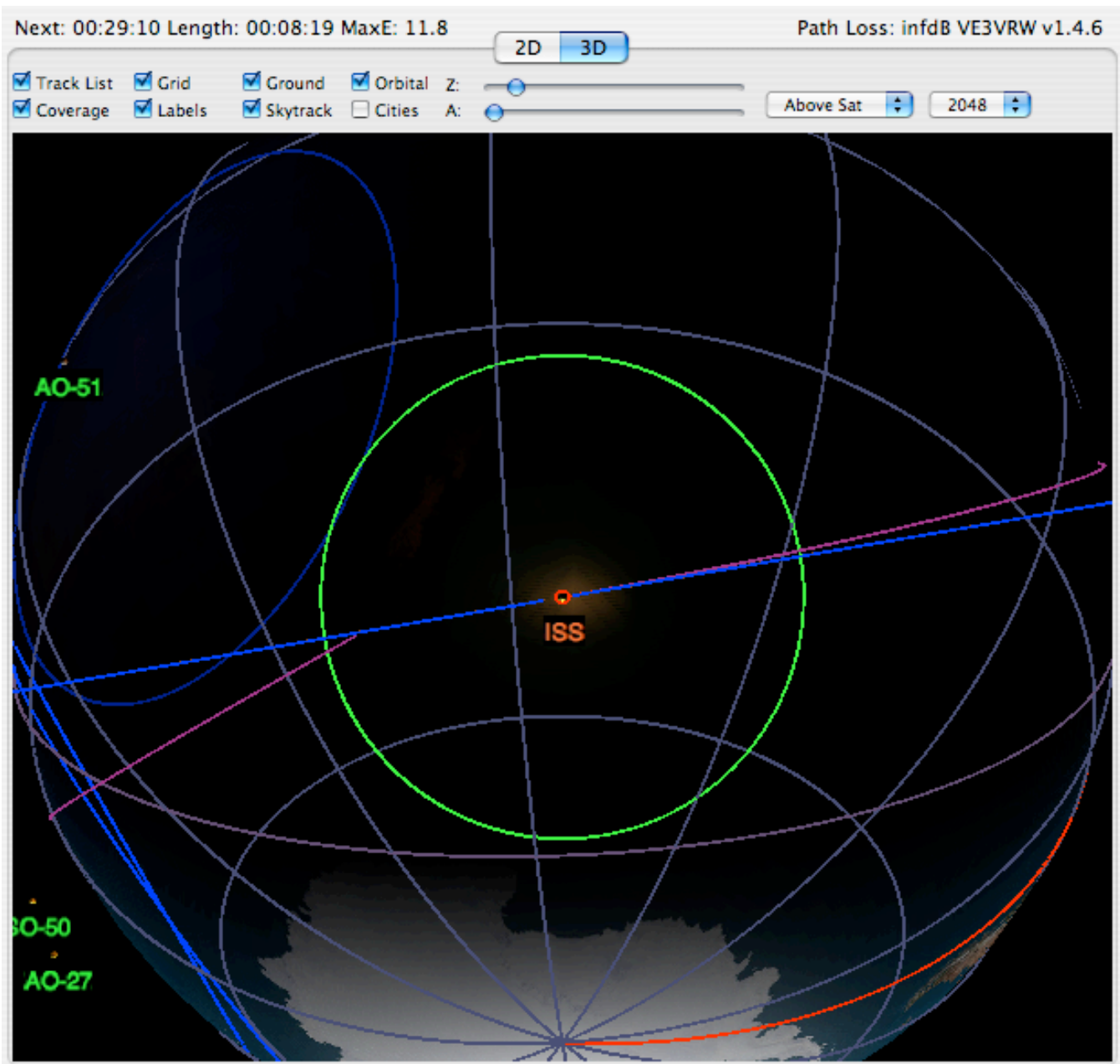
Track List check box enables the display of all the tracked satellites rather than just the next one visible.

Follow Sat checkbox will cause the map to scroll to include the geographical position of the next satellite.

The disclosure triangle will hide the **Horizon/Track List** and **Radio/Rotator** Panels to allow more screen space for the map.

The virtual time slider will allow you to step forward or back in time.

3D Map Panel



Controls

- Track List** Displays all the tracked satellites not just the next one visible.
- Coverage** Display the satellite ground coverage areas.
- Grid** Display the latitude/longitude grid.
- Labels** Display the satellite name labels.

- Ground** Displays the path over ground the satellite will trace.
- Sky Track** Displays the path in space that the satellite will trace.
- Orbital** Displays the Orbital Plane.
- Cities** Displays the cities in the locations database.
- resolution** popup allows the choice of several texture map resolutions. Not all video cards will be able to display the higher texture map resolutions.
- Camera POV** popup selects the camera point of view (above satellite, above site, behind satellite).

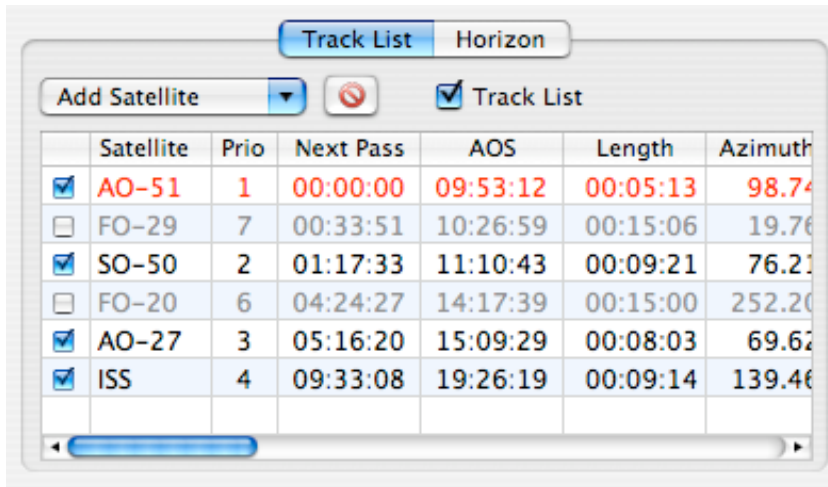
The **Z** slider will control the camera distance, the **A** slider will control the ambient lighting level.

Dragging the mouse pointer over the display will move the camera in the X (longitude) and Y (latitude) directions.

If you hold down the **command** key, the mouse pointer will move the camera in the X and Z (altitude) directions.

When you release the drag, the camera will snap back to it's original position unless you hold down the **shift** key at mouse up time.

Track List Panel



The **Track List** panel displays the satellites in the current track list sorted automatically in the order of upcoming visibility.

Controls

Add Satellite popup allows you to add any satellite from your keplerian database to the track list.

delete button allows you to remove any satellite from the Track List.

Track List check box determines if MacDoppler will automatically switch to the next visible satellite or continue to track only the selected satellite.

If two or more satellites are all visible at the same time and the Track List is enabled the satellite with the highest priority (lowest number) will be tracked.

Column Headings

Check Box Enables/Disables Satellite tracking for this satellite.

Satellite Satellite Name from keplerian elements.

Priority User assigned priority.

Next Pass Time till AOS.

AOS Local or UTC time of next pass (Set in Options Menu: UTC Display).

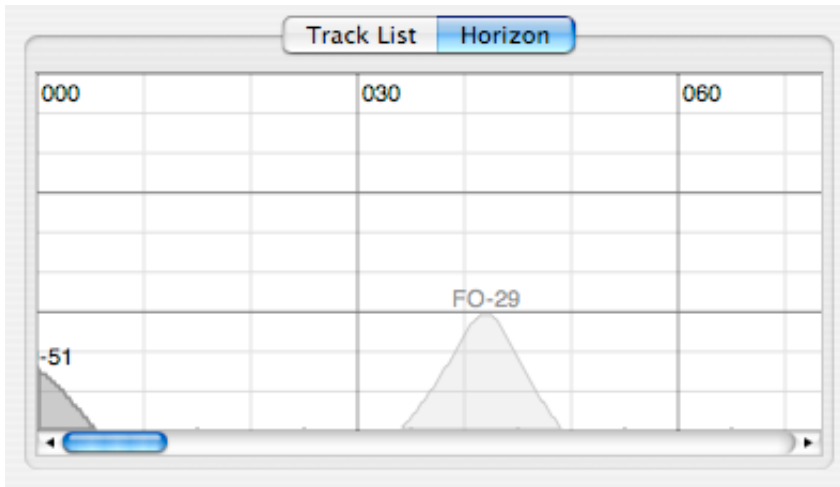
Length Length of upcoming pass, or remaining time while visible. (hh:mm:ss).

Azimuth Current azimuth in degrees.

Elevation Current elevation in degrees.

ΔE	A + sign indicates that the satellite's elevation is increasing.
Max E	Maximum elevation during next pass in degrees.
Latitude	Current latitude of sub-satellite point in degrees.
Longitude	Current longitude of sub-satellite point in degrees.
Altitude	Current altitude of satellite in kilometers.
ΔA	A + sign indicates that the satellite's altitude is increasing.
Range	Current range from satellite to site location in kilometers or miles (see site settings).
Phase	in ticks (0-255), specifies the mean angle of the Satellite on an orbit ellipse at a particular time, assuming a constant mean motion throughout the orbit. It is the angle which describes the position of the Satellite relative to perigee. At perigee, the Mean Anomaly is zero, it increases to 180 degrees at apogee (128 ticks), then back to perigee at 360 degrees (255 ticks). For circular orbits, the Phase is the angle between perigee and the current satellite position.
Squint	If BLat and BLon values are entered in Modes preferences for this satellite, Squint Angle is the angle in degrees between the line from the Satellite to your station and the line from the satellite down the bore site of it's antenna.
Planar Cr	Time till next planar crossing.
Max Elev	Local or UTC time of Satellite's maximum elevation. (hh:mm:ss).
Apogee	Local or UTC time of Satellite's Apogee, or "N/A" if Apogee does not occur while the satellite is visible from your location. (hh:mm:ss). Note: This corresponds to a Phase of 128 ticks or 180 degrees.
LOS	Local or UTC time of Satellite LOS. (hh:mm:ss).
Velocity	of the Satellite relative to the site in km/sec or miles/sec (see site settings).
Eclipse	Sun if the satellite is illuminated by the Sun, else Drk .
ΔEclipse	Time (hh:mm:ss) until change of eclipse from Sun to Drk or Drk to Sun .
Orbit	Orbit number of the Satellite.
Path Loss	Path loss of the Satellite. Standard "Friis" equation for free space loss between isotropic radiators.
Index	Index number of satellite in keps database.

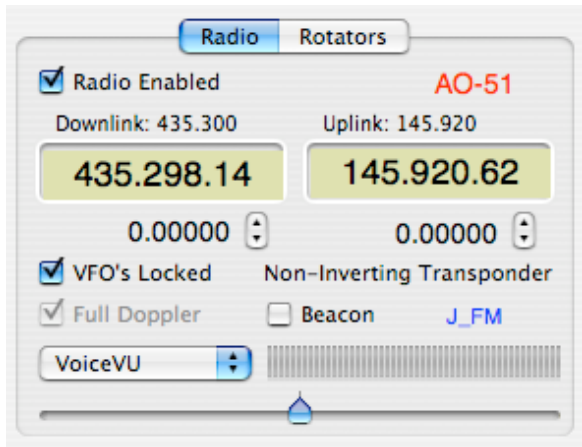
Horizon Panel



The **Horizon Panel** plots the tracked satellites' upcoming elevation in the Y axis (0-90) against time in minutes in the X axis.

If the satellite is disabled or not tracked during those hours the graph for that satellite will be grayed out.

Radio Panel



Controls

The **Radio Enabled** checkbox controls the connection to the radio interface.

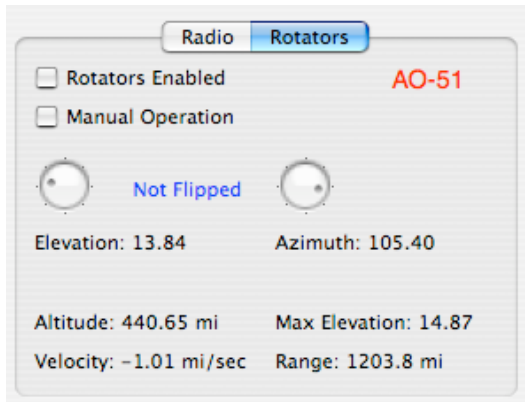
If the up link/down link frequency numbers in your **Modes** preferences are slightly off simply disengage the **VFO's Locked** check box by clicking on it. This will allow you to make fine adjustments to the up link and down link frequencies independent of one another. Several clicks on the up or down buttons are usually all that is required. Re-engage the **VFO's Locked** check box and the change you have made will track throughout that channel. When the VFO's Locked button is unchecked the VFO slider adjusts the Uplink only. The **Modes** popup allows you to choose one of the modes defined in the **Modes** preferences panel.

the **Beacon** checkbox replaces the downlink frequency with the beacon frequency in the Modes database and sets the radio communication mode to CW.

Full Doppler Tuning

In accordance with common practice, in mode JA, the up link (lower) frequency is pegged and the Doppler correction for both transmit and receive is applied to the receive (down link) frequency. Conversely, in mode B the down link (lower) frequency is pegged and the Doppler correction for both transmit and receive is applied to the transmit (up link) frequency. You may also select **Full Doppler** to select Doppler adjustments to be made for both the up link and the down link even when in Mode JA or Mode B - this keeps the frequencies stable with respect to the transponder and no drifting through the transponder will occur. This is useful for QSO's with more than two geographical locations - but of course, all operators engaged in the QSO must be using the same method. (See 'A Recommendation for Doppler Tuning' by Ron Parson, W5RKN, AMSAT Journal, Volume 19, #2 p 18. 1996). 'Full Doppler Tuning' is the norm for the FM birds (AO-27, UO-14 etc.) and the PacSats, so you don't have to select it from the menu when using MODE_J_FM or MODE_B_FM.

Rotators Panel



Controls

- Rotators Enabled** checkbox controls the connection to the serial port that your rotator controller is physically connected to.
- Manual Operation** checkbox allows you to remove the rotator controller from automatic control and set its azimuth and elevation manually with the **Azimuth:** and **Elevation:** controls.
- Elevation:** control displays the rotators elevation (sets elevation in Manual Operation).
- Azimuth:** control displays the rotators azimuth (sets azimuth in Manual Operation).

Logging Window

Log Contact

Call Sign: Grid:

First Name: Time: UTC

Last Name: Up: MHz

Street: Down: MHz

City: Mode:

State: Satellite:

Country: Azimuth: Degrees

zip: Elevation: Degrees

email:

Comments:

My Grid: FN03jq

The logging Window is activated by the **Log QSO** menu item in the **Options** menu.

Controls

QRZ Internet Will do an internet lookup on the contents of the **Call Sign:** field.

Log it Logs the QSO to the log.dat file in the MacDoppler folder.

Done Dismisses the Log Contact window.

Predictions Window

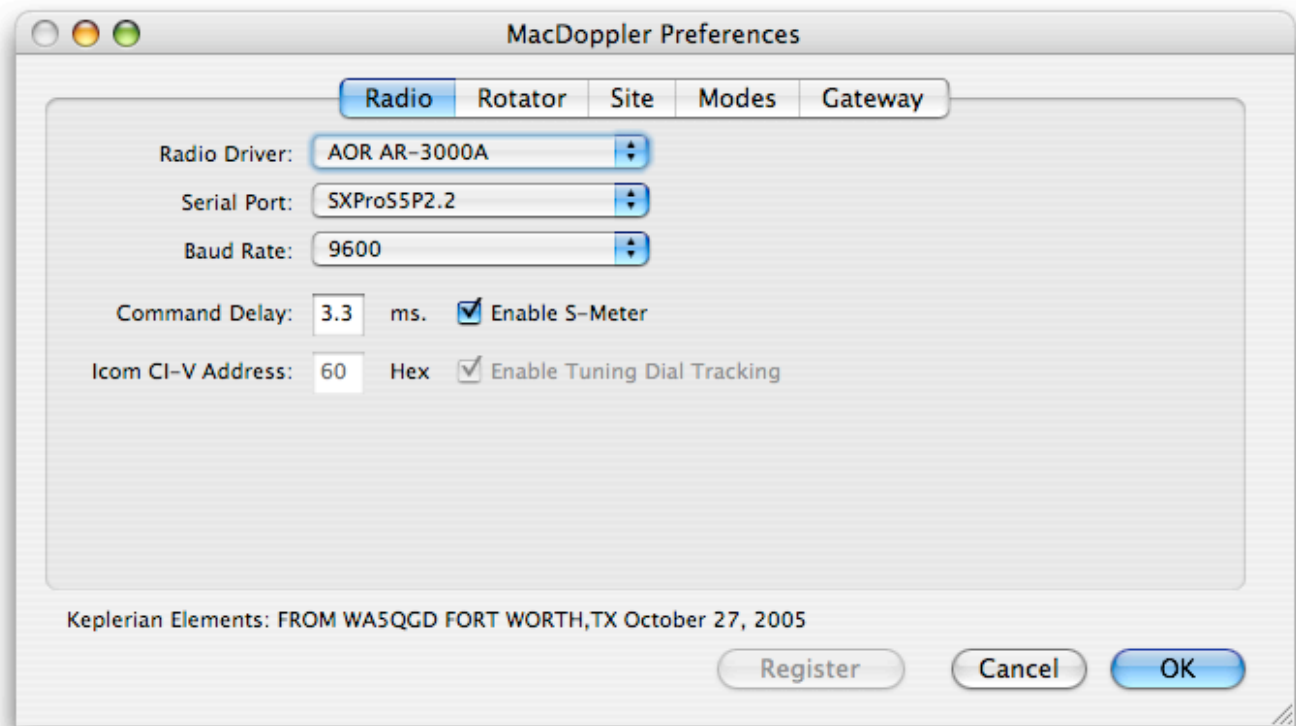


The **Predictions Window** allows you to pick a start time for the current selected satellite and create a tabular predictions text file...

```
MacDoppler Predictions: SO-50
Kep Set:                865
Times:                  UTC
Location:               Toronto ON Canada
Latitude:               43.7064 Degrees
Longitude:              -79.2442 Degrees
Elevation:              200.0 Meters
Run on:                 2005:11:16 14:19:21 UTC
```

Date	Time	Azimuth	Elevation
Aos:	2005/11/17 03:23:45	131.4	0.0
Max:	2005/11/17 03:27:41	98.1	3.5
Los:	2005/11/17 03:31:01	70.5	-0.0
Aos:	2005/11/17 04:59:49	194.5	0.0
Max:	2005/11/17 05:07:06	111.5	43.7
Los:	2005/11/17 05:14:06	40.6	-0.2
Aos:	2005/11/17 06:40:52	243.1	0.1
Max:	2005/11/17 06:48:09	322.8	30.4
Los:	2005/11/17 06:54:50	29.2	-0.0

Radio Preferences



Controls

- Radio Driver:** Selects the driver for the type of radio you are using.
- Serial Port:** Selects the serial port your radio interface is physically connected to.
- Baud Rate:** Selects the baud rate your radio interface is expecting.
- Command Delay:** Milliseconds delay between commands - may be required for some radios.
- Icom CI-V Address:** Hex address Icom radio set to - only required for Icom radios.
- Enable S-Meter** Only supported on some radios.

Tuning Dial Tracking

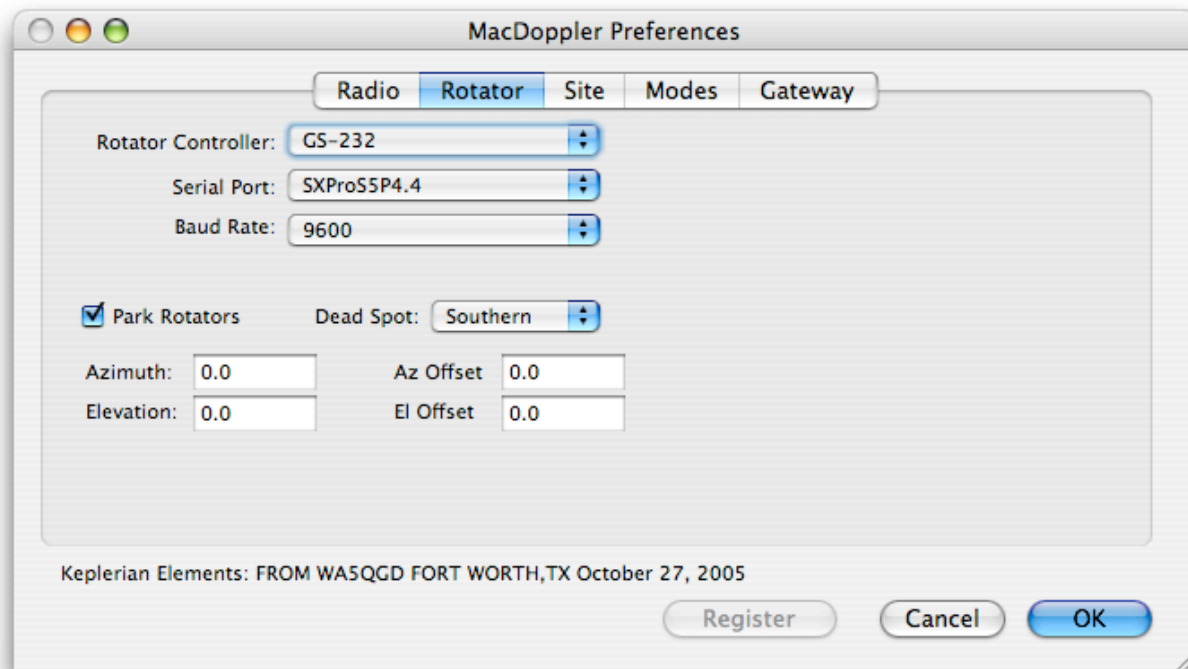
Tuning Dial Tracking allows you to tune the downlink from your radio's front panel while MacDoppler automatically adjusts the uplink. If this option is not available for a particular radio driver it will be grayed out or disabled in the Radio preferences panel.

Spinning the radio's front panel tuning dial will tune the downlink and if the **VFO's Locked** check box is enabled, the correct uplink frequency will automatically be calculated and applied. These offsets are displayed in the Radio Panel just as if they had been applied with the MacDoppler Slider or up/down buttons.

If the up link/down link frequency numbers in your **Modes** preferences are slightly off simply disengage the **VFO's Locked** check box by clicking on it. This will allow you to make fine adjustments to the up link and down link frequencies independent of one another. Several clicks on the up or down buttons are usually all that is required. Re-engage the **VFO's Locked** check box and the change you have made will track throughout that channel.

These offsets are remembered in the preferences. If you want to make the change permanent, simply edit the pairs of uplink/downlink frequencies in the **Modes** preferences.

Rotator Preferences



Controls

Rotator Controller: Selects the driver for the type of rotator you are using.

Serial Port: Selects the serial port your rotator controller is physically connected to.

Baud Rate: Selects the baud rate your rotator controller is expecting.

Park Rotators checkbox enables parking of the rotators between passes.

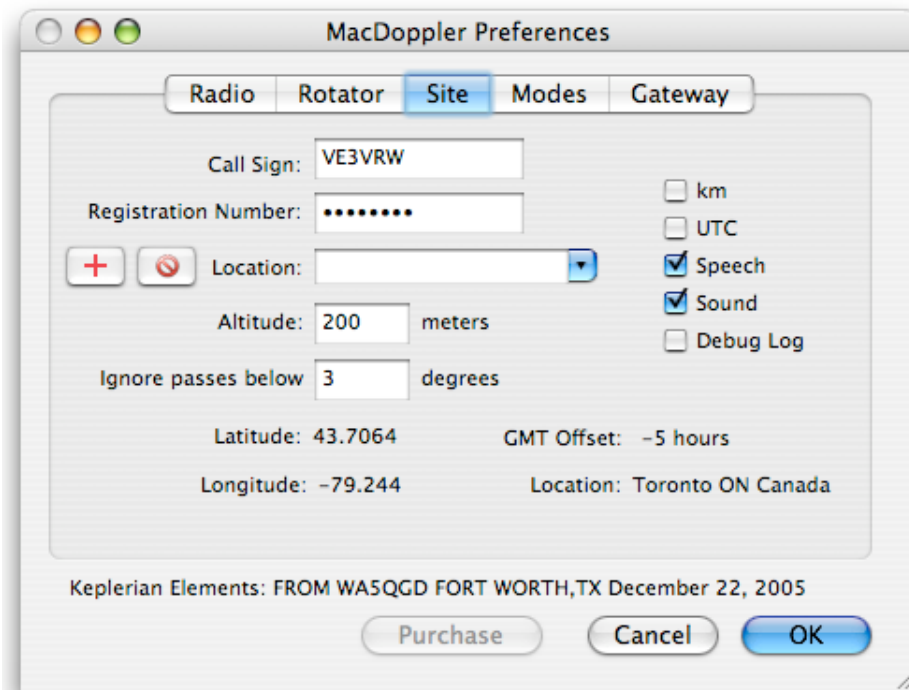
The **Azimuth:** and **Elevation:** text edit fields allow you to set the parking position.

The **Az Offset:** and **El Offset:** will apply an offset to the calculated beam azimuth and elevation to temporarily correct for any offsets in your rotator mounting or orientation. The physical orientation should be corrected since the software offset results in a reduction of range.

Predictive Dead-Spot Crossing

If **Northern** or **Southern** is selected from the **Dead Spot:** popup Predictive Dead-Spot Crossing is enabled and it causes a line on the 2D Map window to be drawn from your location to the North pole for a Northern Dead-spot or to the South pole for a Southern Dead-spot. The line is normally blue but will switch to red if MacDoppler senses an upcoming Dead-Spot crossing (and will flip the azimuth and elevation commands it sends to the rotator controller so that the pass is not interrupted by the dead-spot crossing).

Site Preferences



Registration

The **Call Sign:** field is for the registered user's amateur radio call sign.

The **Registration Number:** field is for the number you receive by email after registering MacDoppler.

Controls

+ and delete buttons allow you to add new locations to the locations database.

Location: popup allows you to pick your location from the registration database. The location you pick will automatically set the **Latitude:** and **Longitude:**

Altitude: popup allows you to pick your location from the registration database. The location you pick will automatically set the **Latitude:** and **Longitude:**

Ignore passes below: Satellite passes below the minimum elevation will be ignored.

GMT Offset: is automatically determined by the location you have set in your System Settings.

km checkbox allows you to choose between kilometers and miles for all display values.

MacDoppler for Cocoa

UTC checkbox allows you to choose between Local and UCT (Zulu) time for all time displays.

Speech checkbox turns the speech advisories on and off.

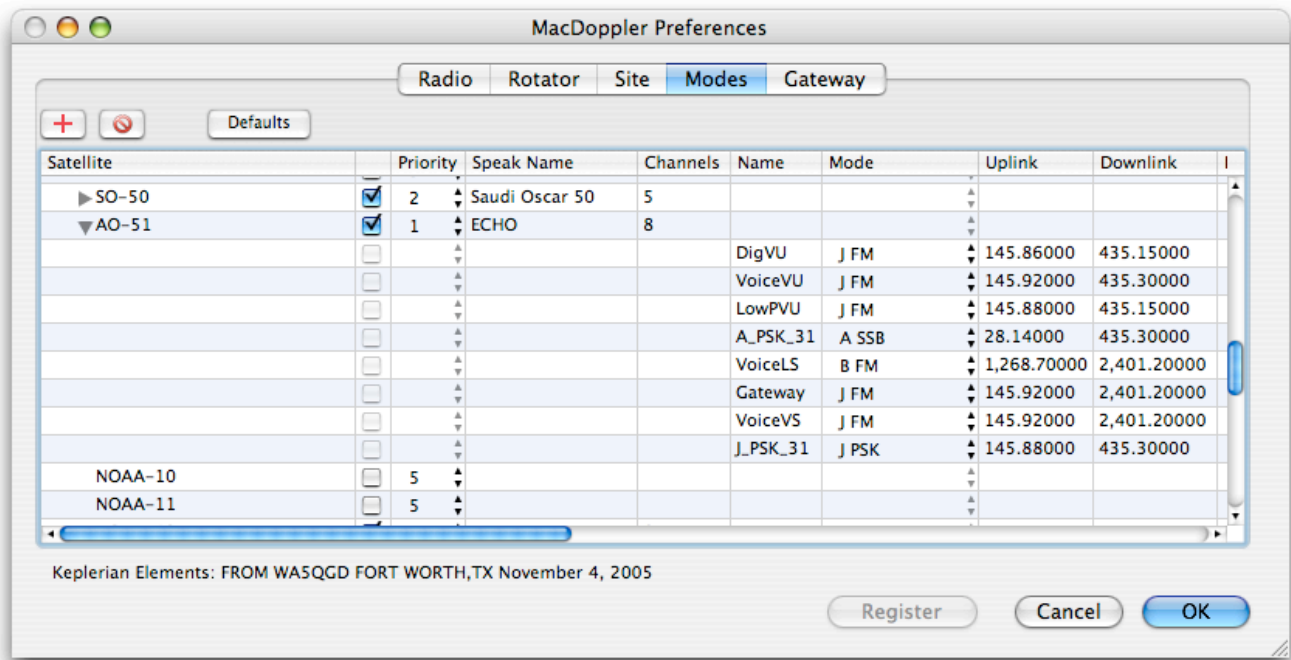
Sound checkbox turns the sound advisories on and off.

Console Debug Log

The **Debug Log** checkbox enables debug info to be printed in the Console Log. This can be useful for debugging radio and rotor drivers...

1. Run the Console application.
2. Set MacDoppler for the mode etc. that you are having a problem with.
3. Disable the **Radio Enabled** checkbox.
4. Enable **Debug Log** in the Site Preferences.
5. Re-enable the **Radio Enabled** checkbox.
6. Wait long enough for the problem to show up.
7. Disable **Debug Log** in the Site Preferences.
8. Copy and paste the Debug output from the Console into an email.
9. Also please send a screen shot of the **Radio Preferences** and the **Radio Panel**.

Modes Preferences



This preferences panel sets the frequency and mode combination for the satellites you are interested in. You can enter up to 128 frequency and mode combinations for each satellite.

No mode record is saved for satellites not in your keplerian elements database. If you import a keplerian elements file with a different set of satellites from the default one some mode records may be discarded. For this reason it is suggested that if you modify your list of satellites and mode records that you export your mode database with the File Menu **Export Modes** command for possible later import.

Controls

- +** Button adds a mode entry to the selected satellite record.
- Delete** Button deletes the selected mode from the satellite record.
- Defaults** Button restores the “factory” default modes and zeros the offset frequencies for all the satellite records.

Column Headings

The check box indicates if the satellite is enabled for tracking in MacDoppler.

- Name:** Channel name.
- Uplink:** Base station transmit frequency in decimal megahertz.
- Downlink:** Base station receive frequency in decimal megahertz.
- Beacon:** Base station beacon frequency (CW mode).

Mode: Can be the following labels:

REPEATER	MIR Safex
J_FM	AO-51, AO-27, SO-35, 9600 baud FSK FM: KO-23, KO-25, UO-22
JA_SSB	FO-20, FO-29
B_SSB	AO-10
A_SSB	RS-16
SIMP_FM	DO-17 dove, MIR Simplex
JA_CW	FO-20, FO-29 CW
B_CW	AO-10 CW
A_CW	RS-16 CW
B_FM	SO-35 B FM
JD_MIX	AO-16 etc
WIDE_FM	Weather Sats
T_SSB	Mode T SSB RS-12/13
T_CW	Mode T CW RS-12/13
AM_SIMP	ISS Space walk
SSB_SIMP	Terrestrial SSB
J_EXP	Echo AO-51 Mode J USB Up / FM Down

Tone: CTCSS encode tone (Not supported for all radios).

CTCSS: CTCSS decode tone (Not supported for all radios).
See the YAESU FT-736R Operating Manual, page 45. or the Kenwood TS-2000 Instruction Manual page 33 for Tone and CTCSS Tone index numbers.

Txverter: Transverter uplink offset.

DwnCnvrtr: Down converter downlink offset.

BeamW Up: Half power beam width of the satellite uplink antenna in decimal degrees.

BeamW down: Half power beam width of the satellite downlink antenna in decimal degrees.

Track Hours: Hours when the satellite is active 0-23 1 = active 0 = Inactive.
These 24 characters represent the 24 hours of the day in local time. A '1' signifies that the satellite is active during this hour and is eligible for tracking. A '0' indicates that the satellite is inactive for this hour and if it's predicted AOS is within this hour the satellite will be ignored for that pass, and will show as light grey in the Track List.

Speak Name: Name for the voice advisories to "Speak".
If entered, this name will be "Spoken" instead of the designator i.e. "International Space Station" instead of "ISS".

BLat: (Bahn Latitude) in decimal degrees - sometimes called "Alat".

BLon: (Bahn Longitude) in decimal degrees - sometimes called "Alon".
0,0 indicates the satellite antennas are pointing directly at earth at apogee

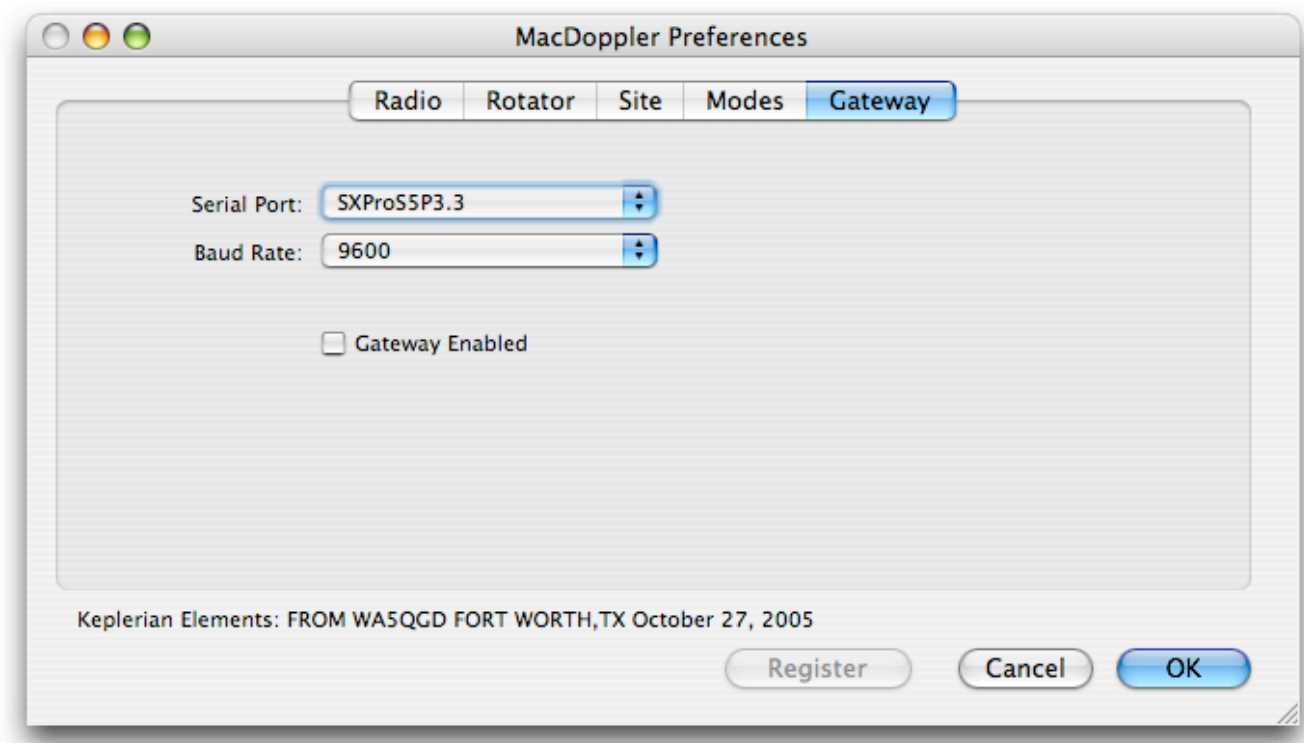
BetweenPasses and OnExit

In addition to the satellites in kepler.dat the Modes database also contains entries for Sun, Moon, **BetweenPasses**, and **OnExit**

BetweenPasses will set the radio between tracked satellite passes if enabled.

OnExit will set the radio when you quit MacDoppler if enabled.

Gateway Preferences



This option allows you to control a gateway radio from MacDoppler using an Ontrak Control Systems ADR101 controller.

<<http://www.ontrak.net/ADR101.htm>>

The gateway will use PA0 to control the gateway radio's PTT and will listen to the COR on PA1 before making announcements over the gateway radio.

<<http://www.dogparksoftware.com/mdpxgateway.html>>

Menus

File



MacDoppler Web Site Opens your web browser at www.dogparksoftware.com/MacDoppler.html.

Register Instant registration with Kagi's secure servers.

Import Keys Import any 2 line keplerian elements file with Macintosh or Unix line endings.

Download Keys Download the 2-line keplerian elements from the AMSAT web site.

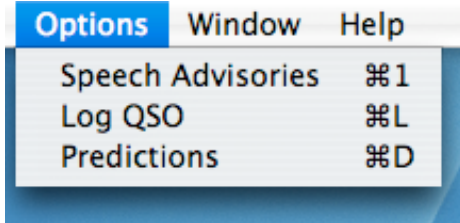
Import Modes Import a tab-delimited text modes file into the internal modes database.

Export Modes Export the internal modes database to a tab-delimited text file.
If you edit or customize the internal modes database you should make a copy of your changes.

Full Screen Display the current Map (2D or 3D) in full screen mode.

Normal Screen Exits full screen mode and quits the application.

Options



Speech Advisories

Turn the Speech Advisories on and off.

Log QSO

Opens the QSO logging window.

Predictions

Opens the Predictions Window to create a tabular predictions file.

Revision History

- v1.01 18-October-2005 First Release.
- v1.05 20-October-2005 Fix for zero serial port crash.
- v1.07 21-October-2005 Import Keps will read Unix or Macintosh line endings.
- v1.10 29-October-2005 Disconnect IC-910 if nothing heard.
- v1.11 30-October-2005 Preliminary Manual added.
- v1.12 05-November-2005 Options menu added.
SIMPLEX_SSB Mode added.
- v1.18 10-November-2005 Mode J_EXP added for AO-51.
Fixed roundoff error in the modes editor.
Defaults button added to Modes editor.
- v1.2 10-November-2005 When VFO's are unlocked slider adjusts uplink.
- v1.21 12-November-2005 Logging and Internet call sign lookup added.
- v1.23 12-November-2005 VFO SLider resolution improved.
- v1.24 14-November-2005 Added Predictions Window.
- v1.25 16-November-2005 Added Save Panel filename defaults and Predictions file header.
- v1.27 22-November-2005 Added minimum pass elevation to the Site Preferences.
- v1.3.2 29-December-2005 Minimum elevation changed to ignore passes below min elev.
- v1.3.8 15-January-2006 Mode Preferences Defaults Button restores the "factory" default modes and zeros the offset frequencies for all the satellite records.
Green line added to Horizon Panel to show minimum elevation.
Added a button to the Radio panel to zero uplink and downlink offsets.
- v1.3.9 16-January-2006 TS-2000 Driver fix for Echo USB/FM mode
MyCall and MyGrid added to log.
- v1.4.0 17-January-2006 Path Loss Calculations added.
- v1.4.1 18-January-2006 Virtual time slider added.
- v1.4.2 20-January-2006 Improved 3D View.
- v1.4.5 22-January-2006 Squint calculations added.
3D 'Behind Sat' camera point of view added.
- v1.4.6 24-January-2006 City lights display added to 3D view.

License and User Agreement

Software License Agreement

PLEASE READ THIS SOFTWARE LICENSE AGREEMENT "LICENSE" CAREFULLY BEFORE USING THE SOFTWARE. BY USING THE SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS LICENSE. IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, PROMPTLY RETURN THE SOFTWARE TO THE PLACE WHERE YOU OBTAINED IT FOR A REFUND.

1. Reservation of Ownership and Grant of License. The software accompanying this License, whether on disk, on compact disc, in read only memory, printed form, or any other media, the related documentation and other materials (collectively, the "MacDoppler Software") are licensed, not sold, to you by Dog Park Software Ltd. and Don Agro ("Dog Park Software Ltd."). Dog Park Software Ltd. and its third party licensor(s) retain exclusive rights, title, and ownership of the copy of the MacDoppler Software and, hereby, grants to Licensee a personal, nonexclusive, nontransferable license to use the MacDoppler Software based on the terms and conditions of this agreement. The MacDoppler Software in this package and any copies, modifications and distributions which this License authorizes you to make are subject to this license.

2. Permitted Uses and Restrictions. This License allows you to use the number of copies of the MacDoppler Software for which license fees have been paid on the computer system(s) and/or specific computer network(s) for the Licensee's own internal use. Except as expressly permitted in this License, you may not decompile, reverse engineer, disassemble, modify, rent, lease, loan, sublicense, distribute or create derivative works based upon the MacDoppler Software in whole or part or transmit the Software over a network or from one computer to another. Your rights under this License will terminate automatically without notice from Dog Park Software Ltd. if you fail to comply with any term(s) of this License.

3. Term. The license granted by this Agreement shall commence upon Licensee's receipt of the MacDoppler Software and shall continue upon such time that 1) Licensee elects to discontinue use of the MacDoppler Software and terminates this Agreement or 2) Dog Park Software Ltd. terminates for Licensee's material breach of this Agreement. Upon termination of this Agreement in either instance, Licensee shall return to Dog Park Software Ltd. the MacDoppler Software and any whole or partial copies, codes, modifications, and merged portions in any form. The parties hereby agree that all provisions, which operate to protect the rights of Dog Park Software Ltd., shall remain in force should breach occur.

4. Limitation of Liability: Dog Park Software Ltd.'s entire liability and Licensee's exclusive remedy shall be the return of the license fee paid for the MacDoppler Software. Dog Park Software Ltd. shall not be liable for indirect, special, incidental, or consequential damages related to Licensee's use of the MacDoppler Software, even if Dog Park Software Ltd. is advised of the possibility of such damage.

5. Controlling Law and Severability: This License shall be governed by and construed in accordance with the laws of Canada and the Province of Ontario, as applied to agreements entered into and to be performed entirely within Ontario between Ontario residents. If for any reason a court of competent jurisdiction finds any provision of this License, or portion thereof, to be unenforceable, that provision of the License shall be enforced to the maximum extent permissible so as to effect the intent of the parties, and the remainder of this License shall continue in full force and effect.

6. No Waiver: No delay or failure to take action under these terms and conditions will constitute a waiver by Dog Park Software Ltd. unless expressly waived in writing by a duly authorized officer of Dog Park Software Ltd.

7. Entire Agreement: The parties agree that this constitutes the sole and entire agreement of the parties as to the matter set forth herein and supersedes any previous agreements, understandings, and arrangements between the parties relating hereto and is effective, valid, and binding upon the parties.

Liability Disclaimer

MacDoppler is a not a professional Satellite Tracking System and should not be used as a primary means of tracking or in any situations where damage to life or property is possible. MacDoppler relies on Orbital Element data and calculations which while accurate enough for it's intended purpose (Amateur Satellite Tracking) is not mission validated and may give false or misleading readings. Please be very careful in using this product since IN NO EVENT SHALL SOFTWARE AUTHOR BE LIABLE TO USER FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGE, INCLUDING, BUT NOT LIMITED TO, LOSS OF REVENUE AND LOSS OF PROFITS, OR LOSS OF LIFE OR PROPERTY, EVEN IF AUTHOR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. The maximum liability accepted will be the refund of the purchase price of this software. Your use of MacDoppler signifies your agreement with these conditions. If you do not agree to these conditions or if these limitations to liability are illegal in your jurisdiction, you must not use the software and must return it for a full refund.

Document updated 2005/11/31 Dog Park Software Ltd. <<http://www.dogparksoftware.com>>