



# Digitizing Options

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# Digitizing Options Dialog Box - 1

Your selection of aerosol type contributes a code letter to the name of the plume and the plume files, and it determines the color of the digitized polygon boundary. This is used primarily for sorting when data are being loaded onto the Plume Project website. There are no other effects.

If this is checked and you have an MP4 license from Exelis, a 9-camera MP4 animation is saved. If it is not checked or you have no MP4 license, 9 JPEG images are saved. If you have an IDL license, you can request MP4 licenses from Exelis at no charge.

If you have a MISR AS\_AEROSOL standard product file for the current orbit, then by checking this button you are notifying MINX to load the file and read it. Whenever you digitize a new region, aerosol data for the points in that region are automatically collected and summarized in a set of histograms which are saved to a file for each plume. *This must be included in datasets destined for the Plume Height Project website.*

If this is checked, identifying information is added to a title bar at the top of map images automatically saved to file when you digitize a plume. *This must be included in datasets destined for the Plume Height Project website.*

Images, profile plots and histograms are always automatically saved for each region digitized. When this button is checked, each height/wind profile will be drawn larger and with fewer annotations than normal to make it more presentable for publication. Also, any map images that are saved, either automatically or manually from the "Save Camera Image" option on the "Task Menu", have the 2-character camera name removed from the lower left corner.

MISR has two standard products that contain global stereoscopic cloud height and wind retrievals: TC\_Stereo and TC\_Cloud. If one of these options is selected, you will be prompted to select the appropriate product file after each retrieval is finished. MINX will read the file and add corresponding standard product heights and winds to the MINX results on the height and wind profiles and histograms.

The screenshot shows the 'Digitizing Options' dialog box with the following sections and options:

- Aerosol Type:**
  - ☒ Dust
  - ☒ Smoke
  - ☒ Volcanic ash
  - ☒ Cloud/snow
  - ☒ Contrails
  - ☒ Other aerosol
- Display Options:**
  - ☐ Save animation as MP4
  - ☐ Show AS\_AEROSOL data
  - ☐ Write info on maps
  - ☐ High quality profile plot
  - ☒ Compare hts w/ TC\_STEREO
  - ☒ Compare hts w/ TC\_CLOUD
  - ☒ Do not compare heights
- Wind-Corrected Height Filters:**
  - Min hght above terrain (km): 0.250000
  - Max hght above sea level (km): 0.00000
  - ~ Maximum wind speed (m/s): 30.0000
- Retrieval Options:**
  - ☒ Retrieve along line
  - ☒ Retrieve inside polygon (default)
  - ☒ Use no wind direction (MINX "cloud")
  - ☒ Provide wind direction (MINX "plume")
  - ☐ Bi-directional wind
  - ☒ Match w/ red band (hi-res)
  - ☒ Match w/ blue band (pseudo hi-res)
  - ☒ Match twice: w/ red and blue (default)
  - ☒ Match w/ blue over land, red over water
  - ☒ Small image matcher
  - ☒ Medium image matcher (default)
  - ☒ Large image matcher
  - ☒ X-Large image matcher
  - ☒ Match A cameras
  - ☒ Match A, B cameras
  - ☒ Match A, B, C cameras (default)
  - ☒ Match A, B, C, D cameras
  - ☒ Match C, D cameras
  - ☐ Relax retrieval thresholds
- Sample Spacing (km):**
  - ☐ 0.55
  - ☒ 1.1 (default)
  - ☐ 2.2
  - ☐ 3.3

Buttons at the bottom: OK, Cancel, Reset, PDF Help

Red arrows point from the text blocks to the following options in the dialog box:

- From the first text block to the 'Aerosol Type' section.
- From the second text block to the 'Save animation as MP4' option.
- From the third text block to the 'Show AS\_AEROSOL data' option.
- From the fourth text block to the 'Write info on maps' option.
- From the fifth text block to the 'High quality profile plot' option.

If the cursor hovers over a button, context-sensitive help is shown.

# Digitizing Options Dialog Box - 2

**This filter establishes the lower-limit of retrieved wind-corrected heights relative to ground level.**

The retrieval algorithm cannot distinguish between aerosols above the terrain and the terrain itself. So if the cameras aren't adequately co-registered, or if the terrain model (DEM) is not accurate enough where you are digitizing, MINX may retrieve heights from the terrain tens or hundreds of meters above ground level. Set the value of this parameter to suppress these invalid terrain retrievals from wind-corrected height records. The default value is generally good, but especially for aerosols that may be close to the ground, and when camera co-registration is very good, the value may need to be set to as low as 0.1 km above the terrain. This value does not affect zero-wind heights.

**This filter establishes the upper-limit of retrieved wind-corrected heights relative to sea level.**

It is not uncommon for aerosol plumes to be partially exposed beneath patchy clouds. It is tedious to digitize around clouds to exclude them and thus avoid contaminating valid aerosol heights and winds with cloud heights and winds. This parameter makes it easier to exclude unwanted heights by suppressing those that are higher than the indicated height above sea level. In order to determine what value to assign, it is necessary to digitize a feature several times. In the first pass, assign a large enough value to determine, from the height profile, whether there is a clean separation between the heights of clouds and aerosol. If there is, perform a second pass and set the filter to a value between the plume heights and cloud heights.

**This filter establishes the upper-limit of retrieved absolute wind-speed in either the across-track or along-track direction.**

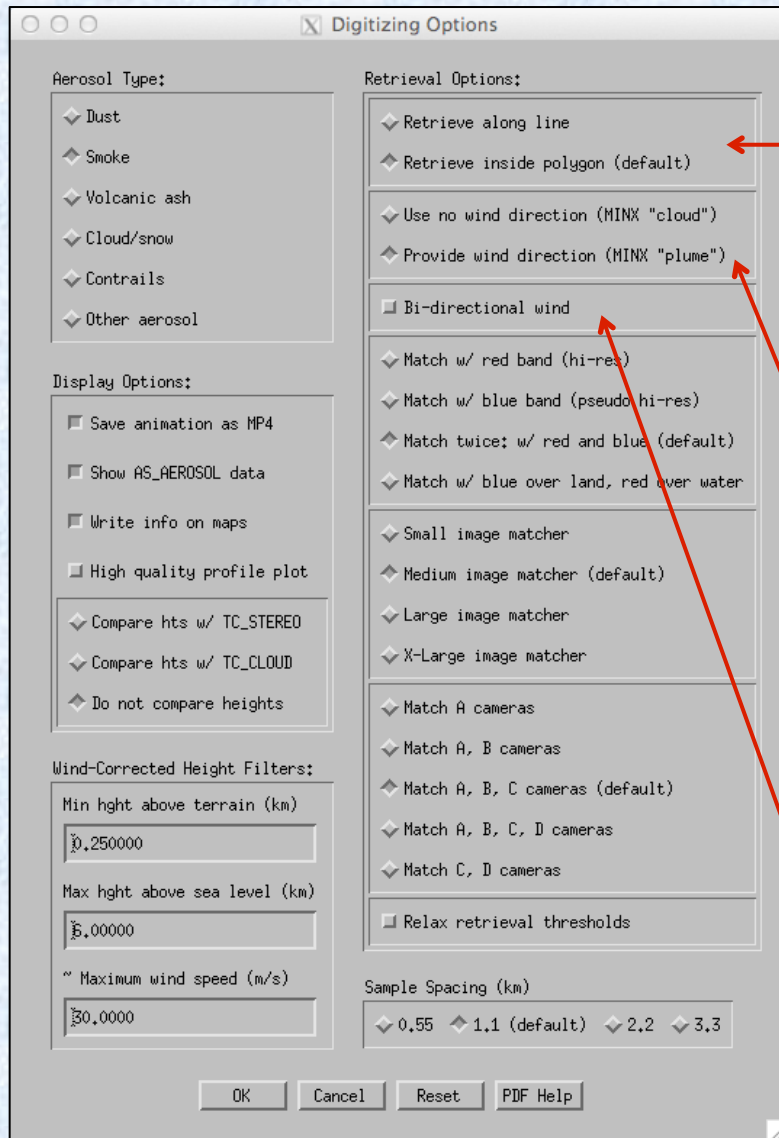
This filter and the upper-limit height filter above affect the computation time for height/wind retrievals. Use the smallest reasonable values in these fields to minimize run time. The value assigned to this parameter can also be used to exclude height/wind retrievals for fast-moving aerosols.

The screenshot shows the 'Digitizing Options' dialog box with the following sections and settings:

- Aerosol Type:** Dust, Smoke, Volcanic ash, Cloud/snow, Contrails, Other aerosol (all selected).
- Display Options:** Save animation as MP4, Show AS\_AEROSOL data, Write info on maps, High quality profile plot (all checked). Compare hts w/ TC\_STEREO, Compare hts w/ TC\_CLOUD, and Do not compare heights (all selected).
- Wind-Corrected Height Filters:** Min hght above terrain (km) is 0.250000. Max hght above sea level (km) is 5.00000. ~ Maximum wind speed (m/s) is 30.0000. Red arrows point to these three fields.
- Retrieval Options:** Retrieve along line, Retrieve inside polygon (default), Use no wind direction (MINX "cloud"), Provide wind direction (MINX "plume") (all selected). Bi-directional wind (unchecked). Match w/ red band (hi-res), Match w/ blue band (pseudo hi-res), Match twice: w/ red and blue (default), Match w/ blue over land, red over water (all selected). Small image matcher, Medium image matcher (default), Large image matcher, X-Large image matcher (all selected). Match A cameras, Match A, B cameras, Match A, B, C cameras (default), Match A, B, C, D cameras, Match C, D cameras (all selected). Relax retrieval thresholds (unchecked).
- Sample Spacing (km):** 0.55, 1.1 (default), 2.2, 3.3 (all selected).
- Buttons:** OK, Cancel, Reset, PDF Help.



# Digitizing Options Dialog Box - 3



**You can retrieve heights and winds either along a digitized line or inside a digitized polygon.**

If you choose "Retrieve along line", then the digitized line serves both as the wind direction line and as the line along which height/wind retrievals will be made. The digitized line will be splined and resampled at a uniform interval set by the "Sample Spacing" parameter. This is useful for generating a single-valued height profile and for reducing computation time when testing a scene. "Retrieve along line" is available only when "Provide wind direction" is chosen.

If you choose "Retrieve inside polygon", you must digitize a closed polygon. Height retrievals will be performed on a regular grid of points inside the polygon where grid interval is set by the "Sample Spacing" parameter. You can provide a wind direction or not, depending on the checked item in the next box. See additional description in slide below.

"Use no wind direction" computes only zero-wind heights which assumes the entire disparity or offset between camera images is due to parallax (wind is discounted). This may be your only height determination option if you lack wind direction information, though there may be a significant error in the results. You will need to digitize a closed polygon surrounding the aerosol or cloud of interest, but no wind vector is needed. This defines the MINX "cloud" type.

"Provide wind direction" computes both zero-wind heights plus winds and wind-corrected heights. This is the appropriate option whenever you have knowledge of wind direction from any source that you can use to establish a wind vector. You must digitize a closed polygon as well as a direction line. This defines the MINX "plume" type.

Checking the "Bi-directional wind" box instructs MINX to use the wind direction you provide plus its 180 degree opposite in determining heights. This can be useful in a left-to-right transect across the eye of a hurricane, for example, where wind directions reverse.

**If the cursor hovers over a button, context-sensitive help is shown.**

# Digitizing Options Dialog Box - 4

The screenshot shows the 'Digitizing Options' dialog box with several sections. Red arrows point to the following options:

- Retrieval Options:**
  - ☒ Match w/ red band (hi-res)
  - ☒ Medium image matcher (default)
  - ☒ Relax retrieval thresholds

Other visible options include:

- Aerosol Type:** Dust, Smoke, Volcanic ash, Cloud/snow, Contrails, Other aerosol.
- Display Options:** Save animation as MP4, Show AS\_AEROSOL data, Write info on maps, High quality profile plot, Compare hts w/ TC\_STEREO, Compare hts w/ TC\_CLOUD, Do not compare heights.
- Wind-Corrected Height Filters:** Min hght above terrain (km) [0.250000], Max hght above sea level (km) [0.00000], ~ Maximum wind speed (m/s) [30.0000].
- Sample Spacing (km):** 0.55, 1.1 (default), 2.2, 3.3.

Buttons at the bottom: OK, Cancel, Reset, PDF Help.

**Select which MISR band(s) to use in the image matching step of the height retrieval.**

MINX can retrieve heights with either/both the red and blue bands. The red band has the highest native resolution and should be used if it provides acceptable results, especially over water and for retrieving heights of clouds or other optically dense aerosols. If an aerosol is not optically dense and/or lies over a bright surface, then the blue band will often produce more and better results. If a plume extends across a coastline to lie over both land and water, "Match w/ Blue and Red" may produce superior results. *Retrievals destined for MISR's Plume Project website must use the "Match Twice: w/ red and blue" option throughout.*

**Select the size of the image matcher.**

This affects the quality of the retrieval and the speed of the operation. The default matcher is appropriate for most purposes. Large matchers run more slowly, generate smoother retrieval results and may increase the number of successful retrievals. The small matcher may provide improved results over thin aerosols with fine detail in the underlying terrain. Matchers vary in size from 7 pixels to 15 pixels square for "Small", "Medium" and "Large" matchers. The "X-Large" matcher is extremely slow and smooths out much of the spatially-variable detail in retrieved heights. See additional description in slide below.

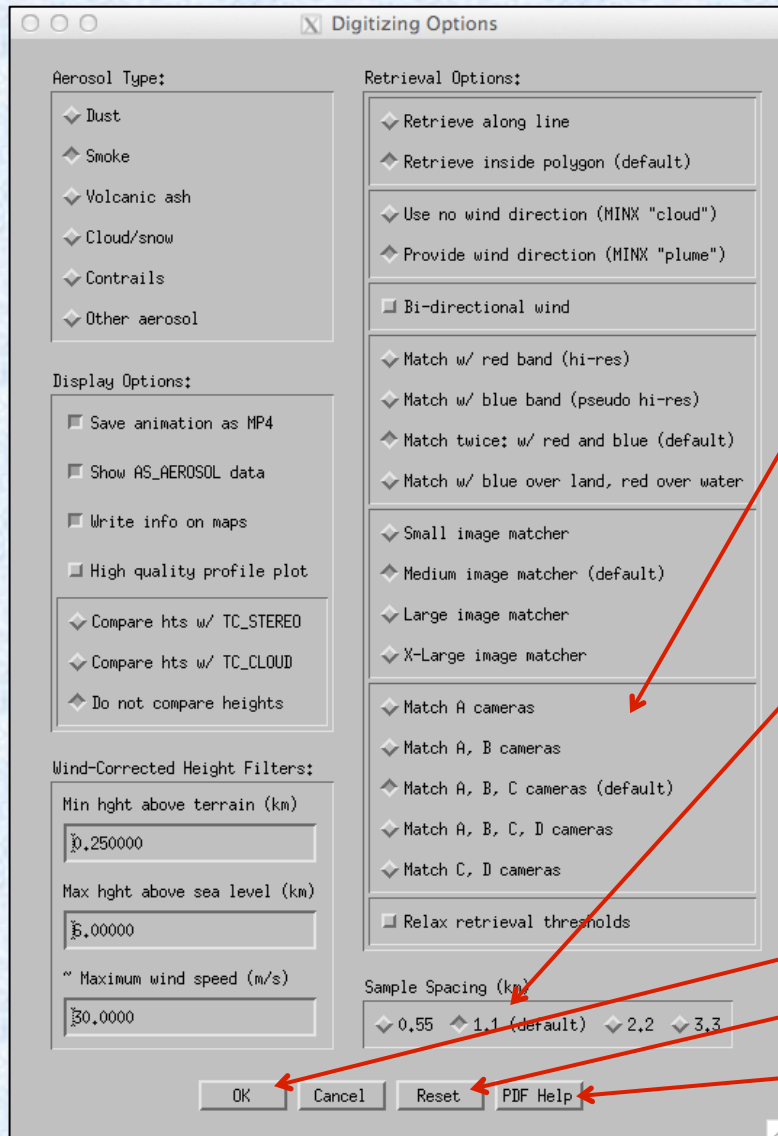
**Choose to accept height retrievals with a lower level of confidence in their quality.**

The default retrieval thresholds are appropriate for most purposes. If you relax these thresholds, you can often increase the number of retrievals significantly, but possibly at the expense of accuracy. The thresholding algorithm is based on several parameters including the number of camera pairs that return similar results, on the clustering of results within a certain distance (threshold) of each other and on the proximity of the direction of motion to the along-track direction. It is often very useful to select this option when the number of successful retrievals in an aerosol region is small or zero.

If the cursor hovers over a button, context-sensitive help is shown.



# Digitizing Options Dialog Box - 5



**Select which cameras to image-match against the An reference camera.**

The default option uses the 6 cameras nearest nadir (Cf, Bf, Af, Aa, Ba and Ca) and is almost always the best choice. Adding the D cameras (Df and Da) slows retrievals and is useful only if an aerosol is relatively stratiform and otherwise produces poor retrievals. If you choose to use only the 2 A cameras or the 4 A and B cameras, you should also select "Relax retrieval thresholds", because fewer cameras are available to pass the threshold tests.

**Select the spatial frequency for retrieval attempts.**

This parameter determines the spacing between grid points in a plume polygon or between sample points on a splined direction line where height/wind retrievals are attempted. The permissible values are multiples of MISR's high-resolution pixel size (0.275 km). Closer spacing increases computation time by the square of the ratio (e.g., using 0.550 km spacing requires 16 times as long to run as using 2.2 km spacing).

The amount of spatial detail you can extract from a scene is affected not only by the sample spacing, but also by the size of the image matcher. Smaller values of both increase the spatial detail. Smaller values of image matcher size increase noise, while smaller values of sample spacing generally increase the number of successful retrievals.

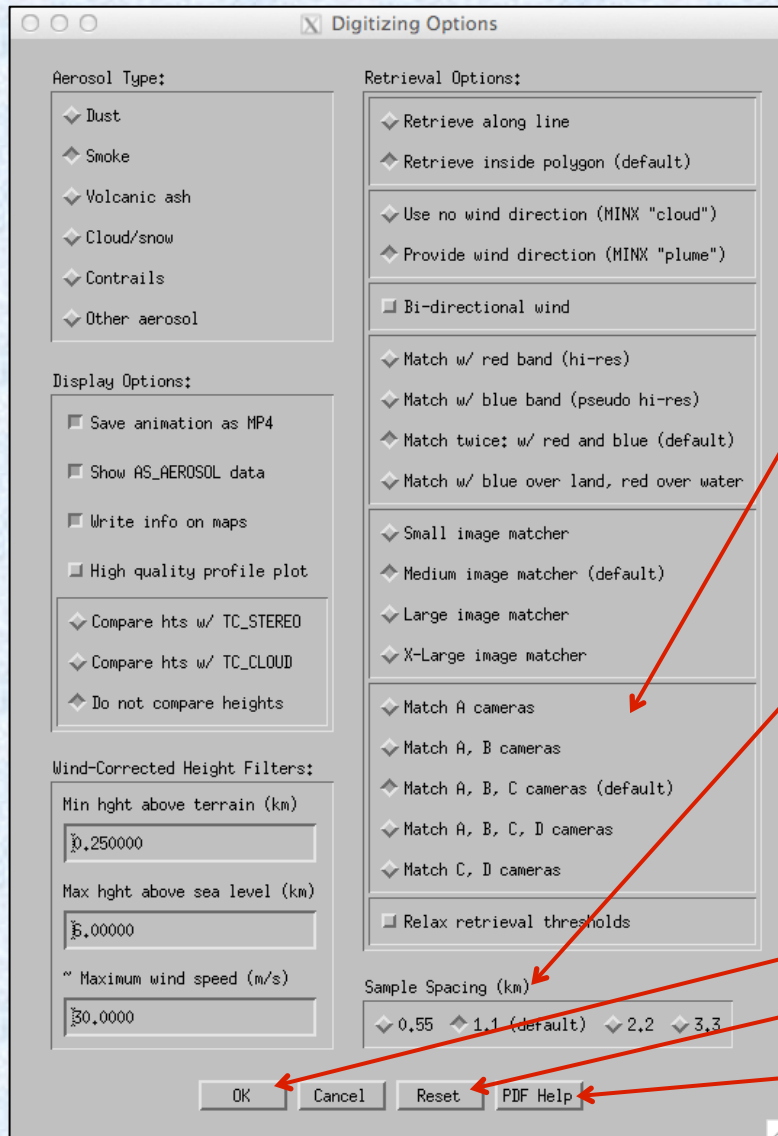
Clicking "OK" puts MINX into digitizing mode.

"Reset" returns all digitizing parameters to their default state.

Shows a PDF help file for these digitizing options.

**If the cursor hovers over a button, context-sensitive help is shown.**

# Digitizing Options Dialog Box - 5



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The amount of spatial detail you can extract from a scene is affected not only by the sample spacing, but also by the size of the image matcher. Smaller values of both increase the spatial detail. Smaller values of image matcher size increase noise, while smaller values of sample spacing generally increase the number of successful retrievals.

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Shows a PDF help file for these digitizing options.

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# Digitizing Procedure Overview

(refer to the “DigitizingInstructions.pdf” document for details)

- 1) **Load Level 1 radiance images:**
  - a. If no land is present in a scene, use GRP\_ELLIPSOID (GRP\_TERRAIN will be empty).
  - b. In all other cases, use GRP\_TERRAIN. Using GRP\_ELLIPSOID images over land will produce invalid results, more so the greater the terrain elevation.
- 2) **Load MODIS fire pixels if available.**
- 3) **Adjust image color and brightness if needed.**
- 4) **Assess and correct camera co-registration errors.**
- 5) **For each feature (plume or cloud or geometric region) in the scene:**
  - a. Carefully study feature geometry and context during camera animation to understand the scene and to determine:
    - Outline of feature to digitize.
    - Wind direction to digitize.
    - Retrieval parameters to use (select from “Digitizing Options” dialog box).
  - b. Digitize feature:
    - Digitize outline and wind direction.
    - Select AGP, biomes and GP\_GMP product files to load when prompted (required - only once).
    - Select other MISR product files when prompted (optional - only once).
  - c. Evaluate digitizing results:
    - Study height/wind plots and map color overlays.
    - Delete digitized feature if not satisfactory.
    - Redigitize with new parameters if necessary.



# Digitizing Procedure - 1

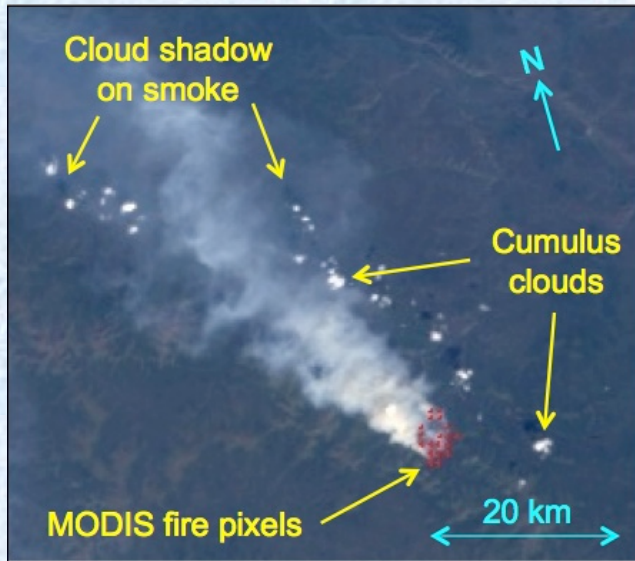


Figure 1



Figure 2

- 1) Figure 1 shows a large smoke plume from a shrublands/forest fire in the Yukon Territory, Canada on 25 June 2004, imaged by MISR's nadir (An) camera. The smoke is being blown toward the NNW from a fire whose radiative power (FRP) is 1636 MWatt. There are small cumulus clouds drifting over the smoke.
- 2) To begin digitizing, click the left mouse button slightly *behind* (upwind of) the source of the plume (Figure 2). This point should be selected carefully, making sure you will be able to encircle the aerosol plume as well as all the MODIS fire pixels, if present, that you believe are associated with this plume. The total FRP for these fire pixels will be computed by MINX and reported in the output text file generated after the height retrieval process has finished. A large aqua dot will mark the location of the first point (aqua is the color that represents smoke - each aerosol type has its own color).

## Digitizing Procedure - 2

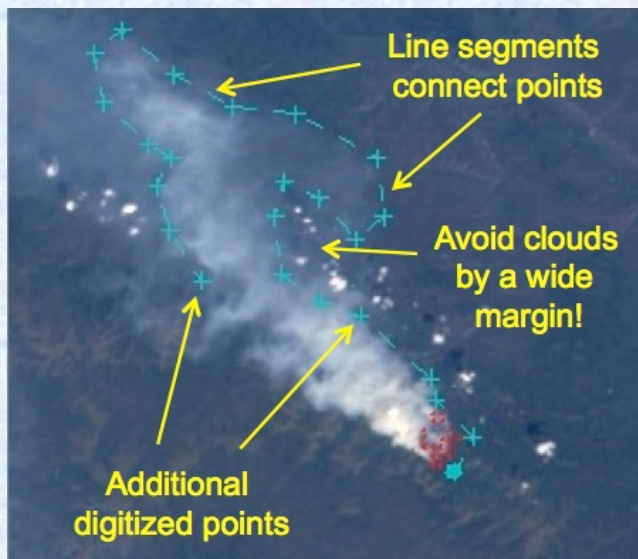


Figure 3

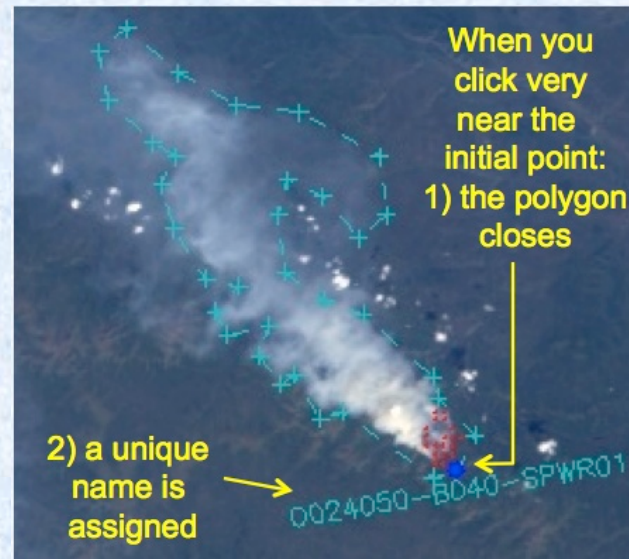
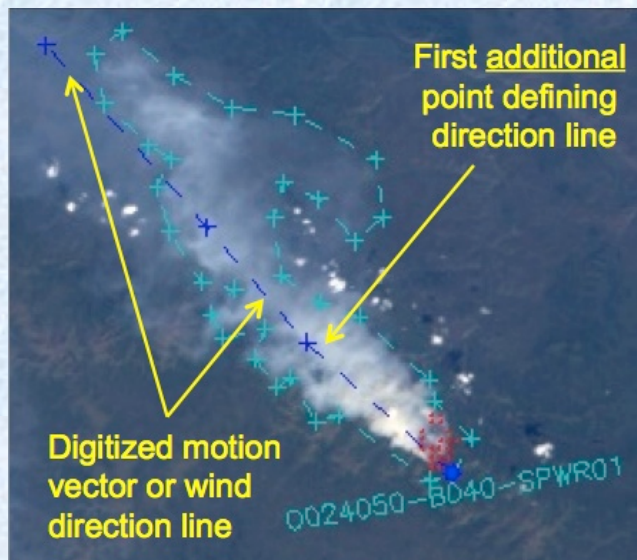


Figure 4

- 3) As you click the left mouse button on more points along the boundary of the plume, colored plus symbols (+) will appear with dashed lines connecting them to previous points (Figure 3). Define the plume boundary with only as many points as are needed to adequately capture the region of smoke for which you wish to retrieve heights. Notice that the cumulus clouds have been carefully avoided; very small bright features can seriously contaminate height retrievals.
- 4) As you finish digitizing the plume and prepare to close the polygon, click the left mouse button as close as possible to the first point. If you are within a few pixels, the line will automatically close, and the polygon you have created will be assigned a unique name that will be posted near the first digitized point (Figure 4). This name consists of the orbit number, the block number that the first digitized point falls in and a sequential plume number within *that block*.
- 5) If you haven't closed the polygon for a plume and are not satisfied with your digitizing, you can cancel work in progress by clicking the right mouse button anywhere on the MINX image. This will erase the digitized points from the screen and internal storage, and you can start over.



# Digitizing Procedure - 3



**Figure 5**

After you have left-clicked to close the polygon, you are ready to specify the direction in which the smoke particles of the plume are currently moving. The “first/last” point digitized is automatically assigned to become the first point in a direction line that you complete by continuing to digitize with the left mouse button (Figure 5). If the direction of motion is reasonably linear, you can define the direction with only one additional point, but you can digitize as many points as you wish. A direction line with more than two points will automatically be fit with a spline.

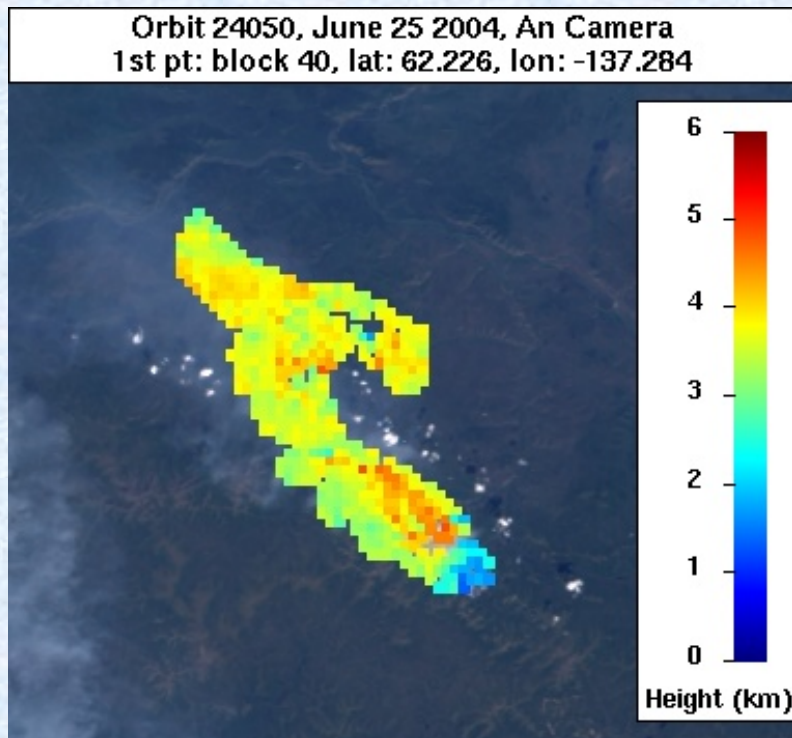
- 6) If you believe that the plume is affected by windshear, bend the direction line in the direction you think the winds were blowing *at the time the image was acquired*, not the direction the winds were blowing when the smoke was emitted. The direction line does not have to be confined to the plume polygon and should extend past the end of the plume so it can be clearly seen on the captured images.
- 7) The plume direction of motion is computed and stored by MINX at many points on the direction line. When plume heights and winds are later computed at grid points in the interior of the polygon, the direction used in the height calculation for the grid point being evaluated is taken from the point on the direction line nearest to it. Therefore, rapid changes in wind direction within any sequence of three-points on the direction line should not be introduced – make the transition gradual over a few closely-spaced points if necessary.



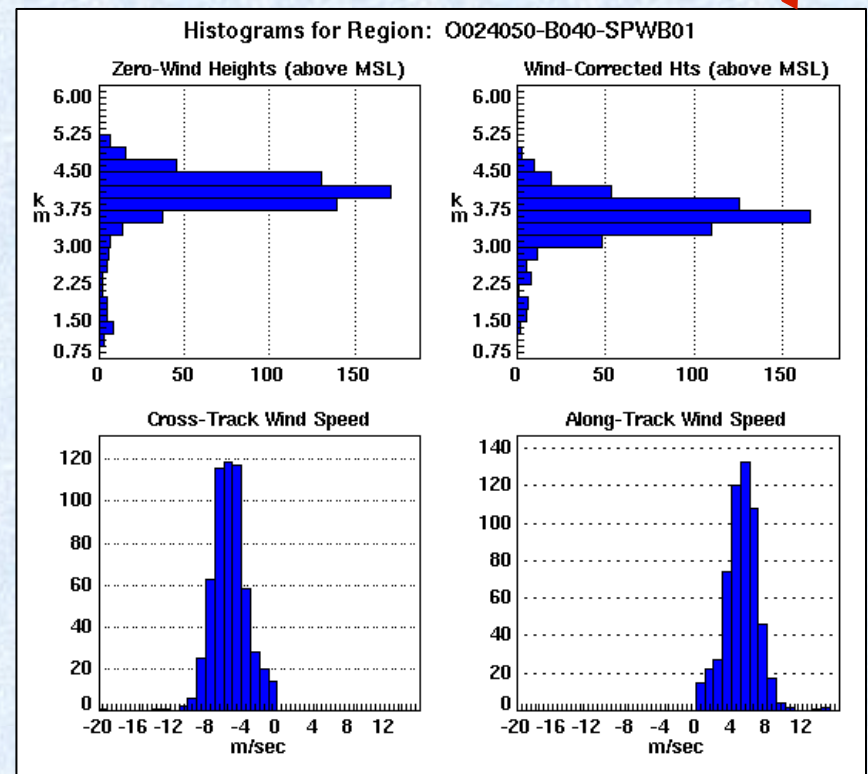
# Retrieval Results - Height / Wind Profile Plot

After the retrieval process has completed, MINX saves several images and a raw data file to disk. If you accessed the height retrieval tool from the MINX “Animate Cameras” option, you can find these files in your Working Directory. If you used the “Process Plume Project” option, the files will be in the directory pointed to by the third line in your PlumeProjOrbitList.txt file which in turn is in your current Project Directory. In either case, the files will be located in a subdirectory whose name is O<orbit>, where <orbit> is the orbit number of the currently loaded scene.

A color-coded image of plume heights is copied from the display on the animation window and embellished.  
A 4-paned histogram that summarizes retrieved height and wind information is also generated.



The color palette for coded heights and the color scale can be changed beginning in MINX 4.0.



# Retrieval Results - Height / Wind Profile Plot

MINX estimates best values for maximum and median plume height above sea level.

Some aerosol height variation and most terrain height variation is because MINX displays multiple data points at the same distance from the origin of the profile.

Distance = 0 on profiles corresponds to the first point digitized, so profiles may appear reversed from map view.

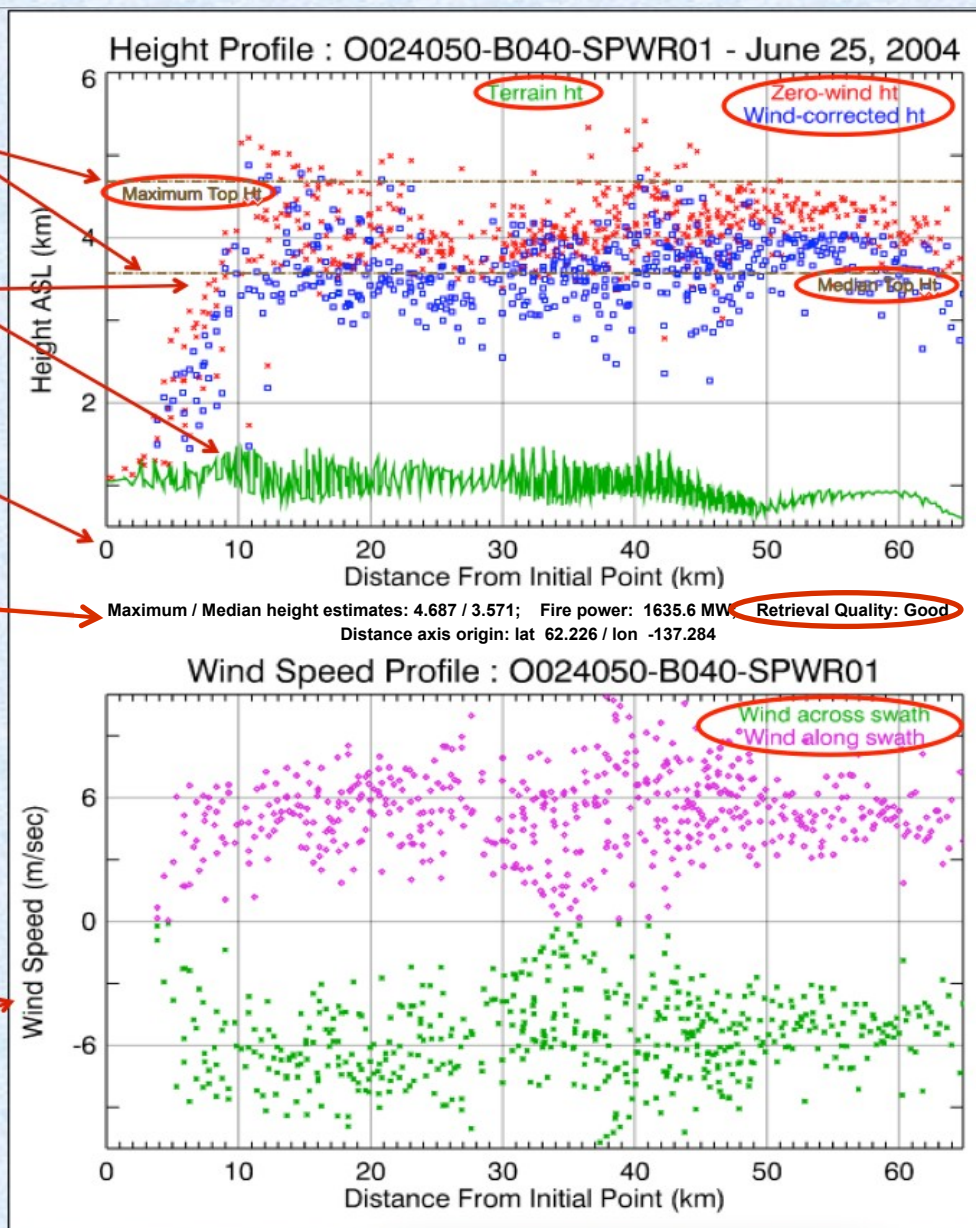
Several values relevant to reviewing plumes are printed between the profiles. Retrieval Quality is especially important.

If "Use no wind direction" was selected in the "Digitizing Options" dialog, then Wind-corrected height and both Wind Speeds will not be populated.

Total wind speed is :

$$\sqrt{(\text{wind\_across}^2 + \text{wind\_along}^2)}$$

Wind speed along-track is positive toward the top of the swath. Wind speed across-track is positive toward the right.





# Retrieval Results - Raw Data File

Orbit number : 24050  
Path number : 61  
Block number : 40  
Date acquired : 2004-06-25  
UTC time : 20:41:10  
MINX version : V4.0  
User name : dlnelson  
Date digitized : 2015-03-06

Header section 1:  
general ID

Region name : 0024050-B040-SPWR01  
Region aerosol type : Smoke  
Region geometry type : Polygon  
Region wind dir type : Direction provided  
Retrieved with band : Both - Red  
Retrieved with matcher : Medium  
Retrieved with cameras : A B C  
Retrieval precision : Relaxed  
Min ht > terrain (km) : 0.250  
Max ht > sealevel (km) : 6.000  
Sample spacing (km) : 1.100  
Registration corrected : Yes  
Image color equalized : No

Header section 2:  
height retrieval  
parameters

First point longitude : -137.332  
First point latitude : 62.255  
Geographic region : NorthAmerica  
Biome IGBP name, class : Open shrublands, 7  
Red/blue band better? :  
Perimeter length (km) : 135  
Area (sq km) : 518  
Area per point (sq km) : 1.210  
Num. heights retrieved : 381  
Percent area covered : 89  
Fire elev. (m > MSL) : 1059  
Median ht (m > fire) : 2508  
Max ht (m > fire) : 3807  
Ht std. deviation (m) : 547  
Ht local variation (m) : 122  
|WndDir-AlongDir| (deg) : 43  
Total fire power (MW) : 1636  
Retrieval quality est. : Fair  
Plume has pyro-cumulus : No  
Comments by digitizer : None

Header section 3:  
height retrieval  
summary

Red bars (—) indicate new or modified entries in the MINX V4.0 raw data file.

Level 1 radiance file : MISR\_AM1\_GRP\_TERRAIN\_GM\_P061\_0024050\_AN\_F03\_0024.hdf  
Terrain elevation file : MISR\_AM1\_AGP\_P061\_F01\_24.hdf  
Cam/Sun Geometry file : MISR\_AM1\_GP\_GMP\_P061\_0024050\_F03\_0013.hdf  
SVM Classifiers file : Not Loaded  
Aerosol product file : MISR\_AM1\_AS\_AEROSOL\_P061\_0024050\_F12\_0022.hdf  
IGBP biome grid file : MODIS\_MCD12C1\_IGBP\_BiomeGrid\_2008.dat

Header section 4:  
data files loaded

POLYGON: 18 points in this table define the digitized bounding polygon if present.

Pt#	Long- itude	Lat- itude	Blk	Samp	Line
1	-137.283	62.228	40	939	423
2	-137.223	62.253	40	947	410
3	-137.391	62.412	40	899	357
4	-137.462	62.431	40	884	353
5	-137.542	62.482	40	864	337
6	-137.531	62.555	40	858	308
7	-137.542	62.647	40	846	273
8	-137.677	62.700	40	816	259
9	-137.798	62.692	40	795	268
10	-137.712	62.622	40	818	291
11	-137.759	62.600	40	812	302
12	-137.704	62.488	40	834	343
13	-137.601	62.421	40	860	364
14	-137.648	62.399	40	854	375
15	-137.525	62.319	40	885	400
16	-137.466	62.298	40	898	405
17	-137.315	62.219	40	934	428
18	-137.283	62.228	40	939	423

Digitized polygon  
points table

DIRECTION: 4 points in this table define the digitized direction line if present.

Pt#	Long- itude	Lat- itude	Blk	Samp	Line
1	-137.283	62.228	40	939	423
2	-137.614	62.464	40	853	348
3	-137.710	62.553	40	826	318
4	-137.885	62.790	40	769	234

Digitized  
direction line  
points table

## Raw data Results table

RESULTS: 406 points in this table are samples where NoWind heights or fire power were retrieved.

Pt#	Long- itude	Lat- itude	Blk	Samp	Line	Km to Pt 1	Dg Cw Rel N	Terr. Elev	Feature Ht (m)	NoWind	W/Wnd	F1trd	Windspeed (m/s) Across Along Total	Optical Depth by Band Blue Green Red NIR	Single-Scattering Albedo Blue Green Red NIR	Tau Fraction by Particle Type Small Medium Large	Particle Type Spher.	Ang. Exp.	Power MWatt
1	-137.283	62.228	40	939	423	0.0	325	1047	-9999	-9999	-9999	-9999	-99.9 -99.9 -99.9	-9.999 -9.999 -9.999 -9.999	-9.999 -9.999 -9.999 -9.999	-9.999 -9.999 -9.999	-9.999 -9.999 -9.999	-9.999	-99
2	-137.782	62.682	40	799	271	56.8	342	858	4405	3991	3913	-5.7	7.7 9.6	0.353 0.361 0.368 0.366	0.956 0.986 0.997 0.998	0.122 0.363 0.516	0.400 -0.057	-99	
3	-137.756	62.689	40	803	267	56.9	342	881	4588	3761	3811	-5.6	7.5 9.4	0.353 0.361 0.368 0.366	0.956 0.986 0.997 0.998	0.122 0.363 0.516	0.400 -0.057	-99	
4	-137.761	62.680	40	803	271	56.1	342	845	4444	3730	3794	-6.0	8.0 10.0	0.353 0.361 0.368 0.366	0.956 0.986 0.997 0.998	0.122 0.363 0.516	0.400 -0.057	-99	
5	-137.767	62.670	40	803	275	55.3	341	827	4476	3755	3804	-5.8	7.7 9.6	0.353 0.361 0.368 0.366	0.956 0.986 0.997 0.998	0.122 0.363 0.516	0.400 -0.057	-99	
6	-137.729	62.696	40	807	263	57.0	342	916	4352	3864	3860	-4.1	5.5 6.9	0.353 0.361 0.368 0.366	0.956 0.986 0.997 0.998	0.122 0.363 0.516	0.400 -0.057	-99	
7	-137.735	62.687	40	807	267	56.2	342	889	4453	3908	3889	-4.9	6.5 8.1	0.353 0.361 0.368 0.366	0.956 0.986 0.997 0.998	0.122 0.363 0.516	0.400 -0.057	-99	
8	-137.741	62.677	40	807	271	55.4	342	845	4454	3909	3887	-5.0	6.7 8.3	0.353 0.361 0.368 0.366	0.956 0.986 0.997 0.998	0.122 0.363 0.516	0.400 -0.057	-99	
9	-137.746	62.668	40	807	275	54.5	341	810	4302	3919	3875	-4.0	5.3 6.6	0.353 0.361 0.368 0.366	0.956 0.986 0.997 0.998	0.122 0.363 0.516	0.400 -0.057	-99	
397	-137.292	62.250	40	935	415	2.5	325	977	1309	-9999	-9999	-9999	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99
398	-137.297	62.240	40	935	419	1.6	325	1001	1087	-9999	-9999	-9999	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99
399	-137.303	62.231	40	935	423	1.1	325	1078	1188	-9999	-9999	-9999	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99
400	-137.254	62.275	40	939	403	5.5	325	992	2240	2070	1982	-2.6	1.8 3.2	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99
401	-137.260	62.266	40	939	407	4.4	325	1128	1675	-9999	-9999	-9999	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99
402	-137.265	62.256	40	939	411	3.3	325	1195	1566	-9999	-9999	-9999	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99
403	-137.271	62.247	40	939	415	2.2	325	1166	1419	1418	1518	-0.0	0.0 0.0	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99
404	-137.239	62.263	40	943	407	4.5	325	1199	1315	-9999	-9999	-9999	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99
405	-137.245	62.254	40	943	411	3.5	325	1271	1299	-9999	-9999	-9999	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99
406	-137.251	62.244	40	943	415	2.5	325	1273	1322	-9999	-9999	-9999	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9 -99.9 -99.9	-99.9	-99

You can compute 'EW Windspeed' and 'NS Windspeed' at each point from the values of 'Windspeed Total' and 'Dg Cw Rel N' (wind direction clockwise from north) using these equations:

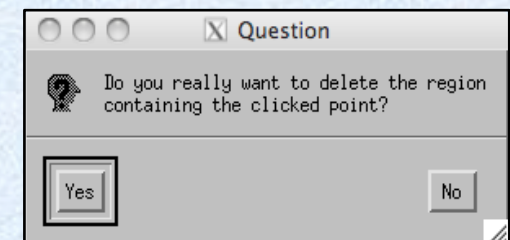
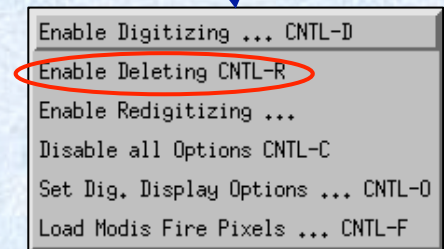
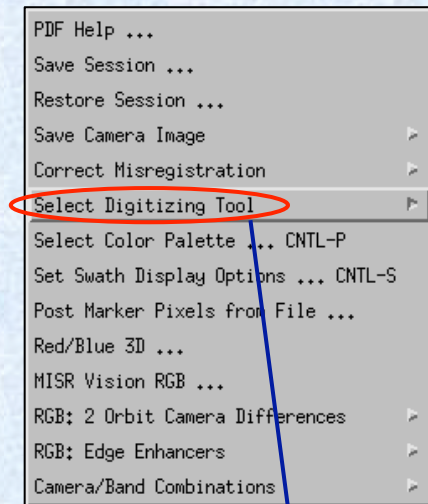
'EW Windspeed' = 'Windspeed Total' \* cos(90-'Dg Cw Rel N') and  
'NS Windspeed' = 'Windspeed Total' \* sin(90-'Dg Cw Rel N').

You can compute 'EW Windspeed' and 'NS Windspeed' at each point from the values of 'Windspeed Total' and 'Dg Cw Rel N' (wind direction clockwise from north) using these equations:  
'EW Windspeed' = 'Windspeed Total' \* cos(90-'Dg Cw Rel N') and  
'NS Windspeed' = 'Windspeed Total' \* sin(90-'Dg Cw Rel N').



# Retrieval Results – Delete Plume

- To delete a region (plume, cloud or line):
  - ① Select “Delete Objects” from “Select Digitizing Tool” submenu or use the keyboard accelerator, CNTL-R
  - ② Left-click in or on any region
  - ③ Click “Yes” in the dialog box to confirm the operation
  - ④ You remain in “Delete” mode until you select a different menu option
- Deleting removes the image and text files from disk, from the animation window and from memory
- The deleted region name may be reused by the next region you digitize in the same block
- If several regions overlap and you click in their intersection, the earliest region digitized will be deleted
- MINX makes it possible to experiment: you may want to digitize, delete and redigitize a region numerous times to determine the best bounding polygon, wind direction and digitizing parameters



# Digitized Region Naming Convention

**O049787-B068-SPWB03** - typical region name in MINX V4.0

**O049787** - MISR Orbit number

**B068** - MISR Block number where initial point was digitized

**SPNB** - region identifiers assigned by MINX based on user's selections in Digitizing Options dialog box (see table below)

**03** - unique region identifier incremented for each new region in each block

## Key to Region Identifier Letters

Letter 1: region aerosol type	Letter 2: region geometry type	Letter 3: wind direction specified by user?	Letter 4: band used in height retrieval
<b>D</b> = Dust	<b>L</b> = Line	<b>N</b> = No wind provided ("cloud")	<b>R</b> = Red
<b>S</b> = Smoke	<b>P</b> = Polygon	<b>W</b> = Wind provided ("plume")	<b>B</b> = Blue
<b>V</b> = Volcanic ash			<b>C</b> = Red/Blue combination
<b>W</b> = Water			
<b>J</b> = Contrails			
<b>O</b> = other aerosol			

**NOTE** - In MINX V4.0 the plume naming convention has changed so all orbit numbers have 6 digits, all block numbers have 3 digits and all region numbers have 2 digits.