



WinHaze Updates

Dustin Schmidt (CIRA)

Frank Schreiner, John Molenaar, Wendy Miner,
Scott Cismoski, Mark Tigges, and Joe Adlhoch
(ARS)



WinHaze

- Make WinHaze an online tool.
- Create a new masking technique that uses GIS data to quickly create the mask.

The screenshot displays the WinHaze 3.0.8 software interface. The main window is titled "Level 1 Visual Air Quality Imaging Modeler: WinHaze 3.0.8". It features two side-by-side image panels. The top panel, labeled "Rocky Mountain National Park, Colorado 10.0 Mm-1", shows a clear view of a mountain range. The bottom panel, labeled "Rocky Mountain National Park, Colorado 122 Mm-1", shows the same scene with a significant haze overlay. To the right of the images is a control panel with several sections:

- Rocky Mountain National Park, Colorado**: A section with a "Select New Location To Model" button.
- Select How To Input Extinction**: A section with two buttons: "Directly Enter: extinction, visual range or deciview" and "Calculate bext From Aerosol Species".
- Model Parameters**: A table with columns for "Base Imag" and "New Imag".

	Base Imag	New Imag
bext (Mm-1)	10.0	122
deciView	.00	25.0
Visual Range (km)	391	32.1
Aerosol Mass (ug/m3)	-	-
RH %	-	-
- Model Images / Split Images**: A section with buttons for "Save Base (Top) Image", "Save New (Bottom) Image", "Save Top Split Image", and "Save Bottom Split Image".
- Elapsed Time (Secs)**: A section with a value of "1" and an "Exit" button.



WinHaze as an Online Tool

Browser address bar: <http://air-reso...et/winhazeweb/>

Browser search bar: Search

WinHaze

Level 1 Visual Air Quality Modeler

Select location to model:

- ALL
 - National Parks and Monuments
 - AZ
 - Chiricahua National Monument
 - Grand Canyon National Park: Mt. Trumbull from Desert View
 - Grand Canyon National Park: Mt. Trumbull from Yavapai Point
 - Grand Canyon National Park: Desert View from Hopi Point AM
 - Grand Canyon National Park: Desert View from Hopi Point PM
 - Grand Canyon National Park: Tuweep East 1500hrs
 - Grand Canyon National Park: Tuweep West
 - Lake Mead National Recreation Area
 - CA
 - CO
 - KY
 - ME
 - MI
 - MT
 - NV
 - TN
 - TX
 - UT
 - VA
 - OK
 - SC
 - National Wildlife Refuges
 - US Forest Service Wilderness Areas
 - Urban



WinHaze as an Online Tool

http://air-reso...et/win hazeweb/ X +

air-resource.net/win hazeweb/ Search

WinHaze
Level 1 Visual Air Quality Modeler

Select location to model:

- ALL
 - National Parks and Monuments
 - National Wildlife Refuges
 - US Forest Service Wilderness Areas
 - Urban

Model Data Type:

- Extinction
- Visual Range
- declView

Extinction:

- Increment
- Percent

Base Image Extinction (Mm-1):
10

Delta in bext (Mm-1):
50

Base Image: [Download Base Image](#)

Model Image



WinHaze as an Online Tool

http://air-reso...et/win hazeweb/ X +

air-resource.net/win hazeweb/ Search

WinHaze

Level 1 Visual Air Quality Modeler

Select location to model:

- ALL
- National Parks and Monuments
- National Wildlife Refuges
- US Forest Service Wilderness Areas
- Urban

Model Data Type:

- Extinction
- Visual Range
- decView

Extinction:

- Increment
- Percent

Base Image Extinction (Mm-1): 10

Delta in bext (Mm-1): 50

Model Image

Base Image:
Grand Canyon National Park: Mt. Trumbull from Yavapai Point 10.0 Mm-1 [Download Base Image](#)

Grand Canyon National Park: Mt. Trumbull from Yavapai Point

	Base Image	Modeled Image
bext (Mm-1)	10	60
Visual Range (km)	391.2	65.2
decView	0	17.92

Modeled Image:
Grand Canyon National Park: Mt. Trumbull from Yavapai Point: 60.0 Mm-1 [Download Modeled Image](#)

Opening GRCA2ModeledImage60.jpg

You have chosen to open:

- GRCA2ModeledImage60.jpg

which is: JPG file
from: http://air-resource.net

What should Firefox do with this file?

- Open with TWINUI (default)
- Save File
- Do this automatically for files like this from now on.

OK Cancel

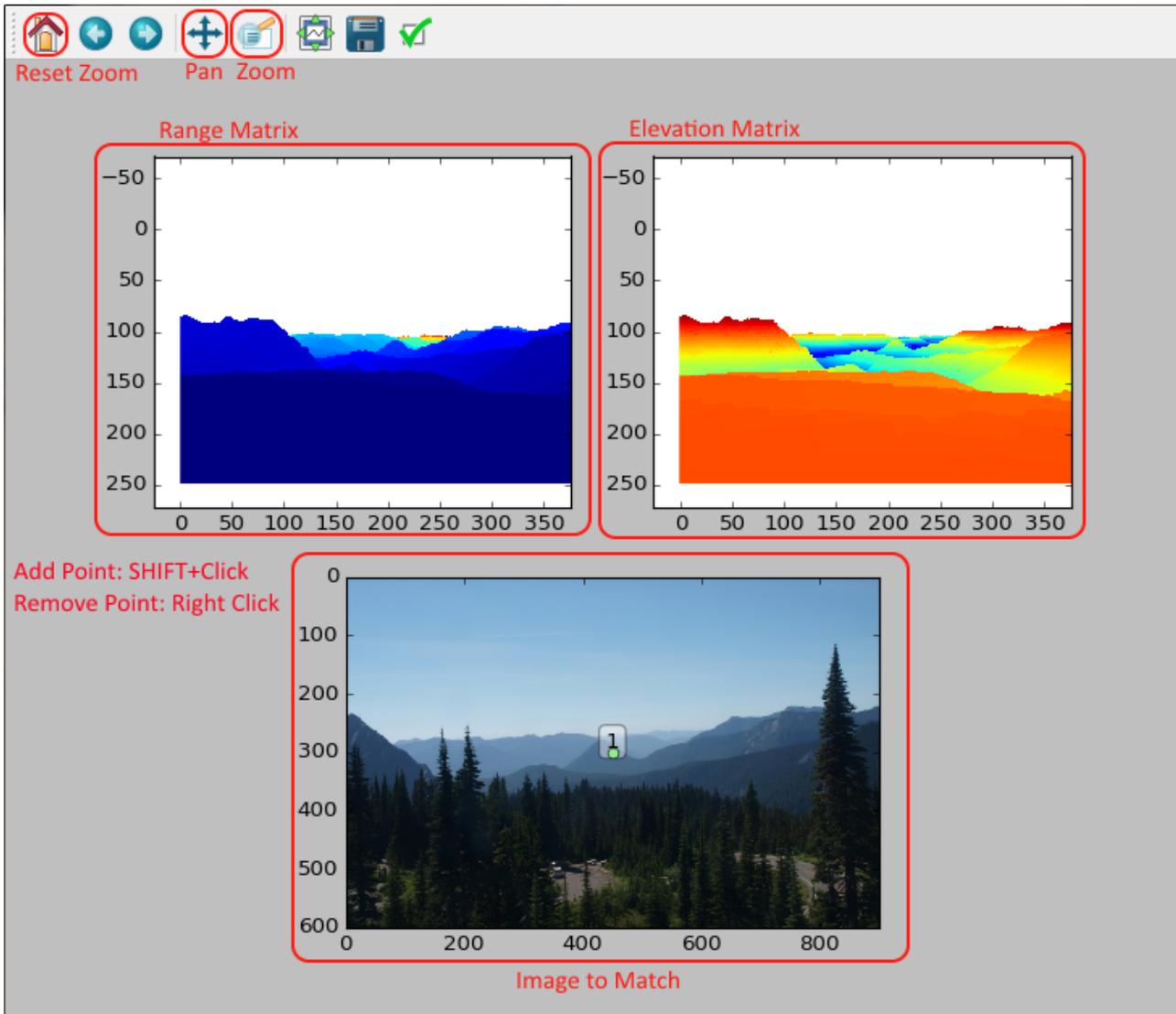


Masking Technique

- Given a landscape photo and estimated camera position generate a matrix of per-pixel visible distances.
 - Automated as much as possible
 - User intervention still required
- Entire Process is ~30 min for a new image.



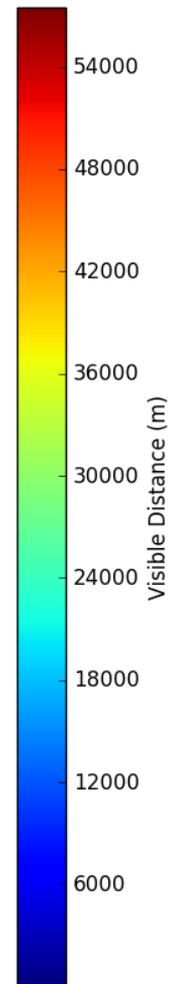
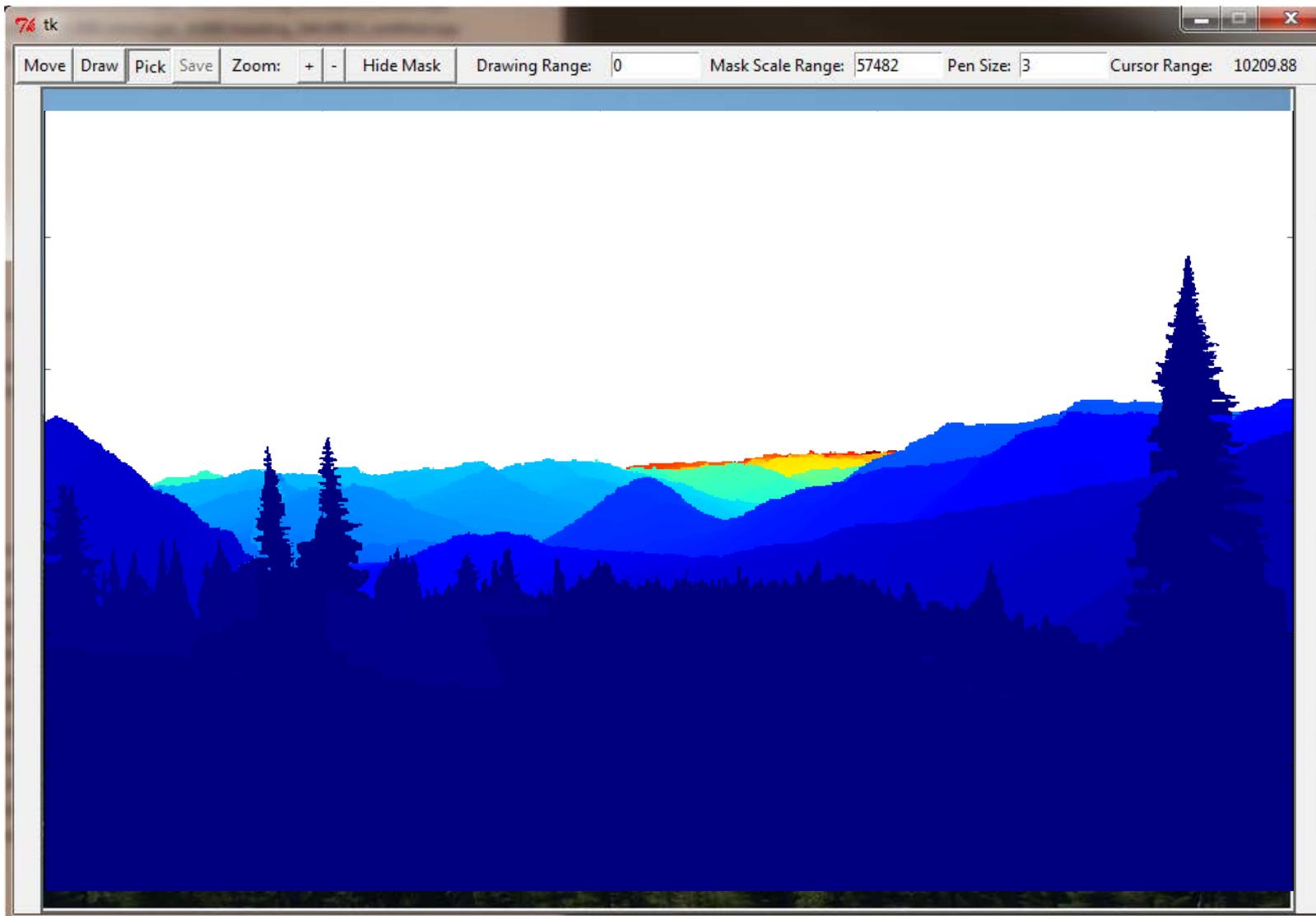
User Interface for creating mask



- DEM files automatically retrieved based on observation point, camera heading, and maximum visible distance
- Refine Camera Pose.
- Compute Ray Casting
- Perspective correction
- Artifact correction



Mount Rainier





Mount Rainier



$b_{sp} = 30 \text{ Mm}^{-1}$