

Photo-Point Standard Operating Procedures

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Purpose/Objective:

Each year, a set of panoramas is taken during mid- to late summer within a month of aerial photographs. Additional photo monitoring should be done before and after significant geomorphological changes caused by natural and human events.

Equipment Needed:

Digital camera (high resolution)
Tripod if possible
Compass
GPS
Set of previous images

List of photo-point UTM's and compass bearings
Aerial photo of site with photo-point locations
Field notebook
Tide chart

Field Methods:

1. Photopoints should always be taken at low tide (less than 2 ft.).
2. Locate photo-points in the field using previous year's images, UTM coordinates, and compass bearings.
3. Take a series of images at each photo-point which represent the same location and panoramic as created in the past (use previous photos and recorded compass bearings). If this is the first time photo-points have been taken, take the first photo in the series facing south.
4. Usually three to six photos are taken to capture a 180° panorama from a location. Depending on project need, 360° panoramic can also be taken. Set camera to landscape setting and try to get equal amount of land and sky in the photos so when building the panorama it won't cut off hilltops or important features closer to your feet. If you can get a much better view of the site by being raised a couple feet (e.g. standing on the back of truck bed) then please do this, otherwise just take from the ground.



Figure 1. When taking panoramic photos, try to capture equal amounts of land and sky.

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5. Record the date, site, point number, and number of photos taken for each panoramic during a session in the field, this data is important later when you are merging photos into panoramas.
6. Download images from the camera and place in appropriate location. Photos that make up panoramas should be re-named to reflect their location and date of origin
7. There are different programs to use to create the panoramic: Hugin, Adobe Photoshop v 7.0 or Adobe Photoshop v CS2.



Figure 2. Individual photographs (above) are stitched together to create a 180 or 360 degree panorama (below).

Methods for creating panoramas with Hugin (open source, free panoramic stitcher):

1. Open up the panoramic program Hugin.
2. Click on the **Load Images** button and browse to the location of all of the photos taken at one photopoint.
3. Click on align. Press **OK** to all of the error messages.
4. Click on the **Images** tab and delete any photos that are not part of the panoramic.
5. Look at the previous year's panoramic photo from the same site and photopoint. Check what the photo looks like on the left and right ends. Use hills and other features to approximate where the left and right edges of the new panoramic should be. Most of the time the photos will already be in the right order.
6. Click on the **Control Points** tab.
7. Pick items that you can see on both images for control points (e.g., posts, trees, rocks). Click on one photo to zoom in and put the control point in a particular spot.
8. Then click on the same general area of the position in the other photo and it should automatically zoom into the control point on the photo. Click the **Add** button.
9. Try to make three or four control points between each photo.
10. If it cannot find the control point on the other photo, retry with a different control point until you can get one that automatically finds the same point on the other photo.
11. Sometimes it finds the wrong position, so be sure to check that they are at the right position before adding. Another option is to delete the control point after you have added it.
12. Click the right arrow in the top right corner to continue to the next photo and add photo points.
13. When you have installed 3-5 control points for each photo, go back to the **Assistant** tab and click on the align button.
14. It will then produce a preview panoramic.

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15. If this looks ok then crop the top and bottom so that no black space is showing. You can also move the panoramic around left to right and straighten the picture.
16. Then exit the preview and click create panoramic.
17. Save the panoramic and create a folder with the panoramic tiff image and hugin project file for each photopoint. Name panoramas according to the location and date they were taken.

Methods for creating panoramas with Adobe® Photoshop® v.7.0:

1. Open first photo-point photo (farthest on the left 1st) with Adobe Photoshop. Multiple photos can also be opened at once.
2. This image will be too large to work with initially; on the menu bar under **Image**, click on **Image Size** and choose 8" x 6" or some other manageable size.
3. Then open a separate (new) canvas, click on canvas size and increase the width to 40" or more. This will allow you room to add all of your images from one photopoint to your canvas.
4. Move the first image all the way to the left of the canvas by using the arrow tool (top right icon in the Adobe tool box).
5. Go back to the photo file you are working with and open the next photo from the left.
6. Reduce the photo to 8" x 6" (**Image>Image Size**)
7. Drag and drop the second photo onto the original enlarged canvas; line up the photos using the arrow keys.
8. If the color, brightness, contrast, etc. needs changing, go to **Image>Adjust** to make the necessary adjustments. You can adjust each photo by clicking on the proper layer in the layer tool box, located in the bottom right corner. You can make fine adjustments to each layer before or after you put together the panoramic.
9. Repeat this process until all the necessary photos are lined up and adjusted to make the panoramic.
10. Then use the crop feature to cut off uneven edges. Use the perforated square to encompass the part of the photo you want. Then go to **Image>Crop** to even off the photo.
11. If the photo is done, you must "flatten" the image in order to save space. Go to **Layer>Flatten Image**. This turns all the images into one photo; therefore you can no longer work with the originals.
12. Now save the panoramic, as a JPEG, in the necessary file. Name panoramas according to the location and date they were taken.

Methods for creating panoramas with Adobe® Photoshop® v. CS2:

1. Open first photo-point photo (farthest on the left 1st) with Adobe Photoshop.
2. Right click on the header of the photo, select **Canvas Size**. Change the width of the canvas to allow for additional photos to be added: 120 inches is a good start. You can always expand this later. Do not increase the height.
3. Change the anchor location. Choose the left-most grid to allow for images to be added to the right. Select **OK**.
4. Go back to the photo file you are working with and open the next photo from the left. Press **Control-A** to select the image, then **Control-C** to copy the image. Select the canvas with the extended width and press **Control-V** to paste.
5. Right click on the newly pasted image and select **Free Transform**. New image can now be dragged to align with the edge of the first image with your mouse and fine tune adjustments can be made with the keyboard arrows. Press **Enter** when the images are aligned to turn off free transform.

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Note: You can place layers behind other layers by changing their order in the table of contents. This may be necessary to get the best alignment.

6. Repeat steps 6 and 7 until all images are on the canvas.
7. Adjust for differences between the layers. Select the layer you would like to adjust by clicking on the layer in the table of contents. You can be sure you have the right layer by clicking on the eye symbol. If the color, brightness, contrast, etc. needs changing, go to **Image>Adjust** to make the necessary adjustments.
8. Crop the image. Select the **Rectangular Marquee Tool** from the tool chest and make a rectangle that omits all the white edges around the new panorama. In the menu bar, select **Image**, then **Crop**.
9. Flatten the image. This step compiles all the layers together so individual adjustment are no longer possible. In the menu bar, select **Layer**, and then **Flatten**.
13. Save the panorama as a high quality JPEG while following the naming conventions Name panoramas according to the location and date they were taken.