

How To Create a Scale Bar — Using Image Editing Programs

Materials/Resources:

- Access to the ISS EarthKAM Datasystem, image editing program such as NIH Image, Scion Image, Illustrator, Fireworks, and so forth, calculator, and (optional) ruler

Recommended Procedures:

1. Download an ISS EarthKAM image from the Datasystem and open it with an image editing program.
2. Note the image's size in pixels. *
3. Find the Image Width and Height from the image's Metadata table.
4. Divide the long-side length of the digital image by the Image Width.
5. Select the measurement that the scale bar will show.
6. Multiply this distance by the result of Step 4 to find the length of the scale bar.
7. Using the program's line drawing tool, draw a line of the length just calculated. A good place to draw this line is just below the image.
8. Subdivide the scale bar line into equal segments and label.
 - Divide the length of the line by the number of segments.
 - Use this distance to subdivide the scale bar line.
 - Label the distances.
9. Save the image with its scale bar.
10. Use this scale bar to measure features in the image.

Example

765 x 509 pixels

224.0 km x 147.4 km

$$\frac{765 \text{ pixels}}{224.0 \text{ km}} = \frac{3.42 \text{ pixels}}{\text{km}}$$

20 km is a good length for a scale bar

$$\frac{3.42 \text{ pixels}}{\text{km}} \times 20 \text{ km} = 68 \text{ pixels}$$



This 68 pixel long line represents 20 kilometers.

$$\frac{68 \text{ pixels}}{4 \text{ segments}} = \frac{17 \text{ pixels}}{\text{segment}}$$



* Alternative Method: Measure the size of the image (in millimeters) on your computer screen with a ruler and use these numbers instead of pixels.

ISS EarthKAM

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STANDARDS

Technology

Technology productivity tools

- Students use technology tools to enhance learning, increase productivity, and promote creativity.

Technology research tools

- Students use technology tools to process data and report results.

Mathematics

Measurement

- Apply appropriate techniques, tools, and formulas to determine measurements

DATASYSTEM

<http://datasystem.earthkam.ucsd.edu>

The Image Viewer pages include scale bars that automatically adjust to match the scale of the image being viewed.

IMAGE EDITING PROGRAM FREE DOWNLOADS

NIH Image <http://rsb.info.nih.gov/nih-image/>

Scion Image http://www.scioncorp.com/frames/fr_scion_products.htm

