



The Aurora Borealis

Viewing and Photographing the Northern Lights

What is the Aurora Borealis?

• The Aurora Borealis or Northern Lights are caused by high-energy particles from the sun interacting with atmospheric gases 50-300 miles above earth's surface. Reactions with different gases creates aurora of different colors. Purple aurora occurs when sunlight hitting the top of the aurora and interfering with visible light wavelengths.

• Northern lights are more common near the Magnetic North Pole than the Geographic North Pole. Visibility can be as far south as Cuba during rare occasions, approximately every 50 years.

• Southern Lights or Australis Borealis do exist! Although, they are not as bright due to the weaker strength of magnetic polarity at the South Pole. In fact, the aurora is simultaneous in both northern and southern hemispheres, and they are an exact mirror image of one another.

• You cannot hear the aurora since sound does not travel in the vacuum of space.



However, there may be static build-up near the earth's surface that will produce a slight buzzing or crackling noise, similar to "pre-lightning-strike" electrostatic charge. This noise may be heard or "felt" while watching the aurora.

Tips on Viewing the Aurora

• The most intense moments during a large solar storm may produce an auroral "corona," a rare and spectacular starburst-type pattern in the night sky. "Solar maximum" is when there should be lots of auroral activity, but sunspots impede visibility of solar eruptions and actually makes it more difficult to predict when the aurora will come out.

• Remember, the aurora is capricious and ever changing, but mostly visible around 11pm in the northeastern sky. September-October and February-March (fall and spring equinox) are the best times of the year to view the aurora.

• The sky needs to be dark and clear (best at new moon, worse at full moon); stay away from city lights, traffic driving by, etc. Alaskans in and around Fairbanks recommend going to outlying areas such as Ester, Fox, or the Aurora Lodge at Skiland as great places to watch the aurora. Aurora Lodge has an indoor-outdoor deck for all night viewing; there is a fee to use the deck.

Photographing the Aurora



Equipment

• A 35-mm SLR camera, preferably fully manual. If your camera runs on batteries, cold weather will diminish battery life, so try to keep your camera warm.

• Wide-angle to semi-wide-angle lens.

• Cable shutter-release (so you don't have to stand there and hold the shutter button, risking moving your camera, and so you can close the shutter immediately if needed).

• A good tripod, preferably one that allows you to aim your camera skyward and not have to crouch down or stand uncomfortably underneath.

• 400 or 800 speed (ISO) print film; Kodak Royal Gold 400 (good if you want to make enlargements), Kodak Supra 400 or 800, and Fuji Superior 800 (good for reds). Why not slides? There are more film choices for print film over slide film, and it's better to have negatives in case you want to reprint them with a different exposure. For example: if your print was slightly under-exposed, you can over-expose the print negative to increase brightness and balance your photo.

How to Shoot the Aurora Borealis

Method Tips

- It's good to have foreground perspective; include trees, mountains, cabins, etc. in the foreground to give some scale to your photos.
- Most photographers prefer shooting in "landscape orientation" (wide view) as opposed to "portrait orientation" (tall view).
- Exposure length depends on the character of the aurora: if aurora is very bright or moving very fast, exposure time should be shorter (2-4 seconds), otherwise you'll lose details. If aurora is dull or moving very slowly, your exposure time can be a bit longer. Generally, exposures should be between 8-20 seconds, most commonly between 12-15. Do not overexpose, as the aurora will move and you will lose detail.
- Remove all filters and special lenses, including UV and polarizing filters. They will interfere with the aurora's light entering your camera.
- Set your focus to infinity.
- Set f-stop wide open (f 1.4) or one stop down from the widest setting (f 2.0).
- Cold air will sap camera batteries; use an older camera with a mechanical shutter instead of one that is fully automatic. Cold also makes plastic cable releases brittle, so use a wire-mesh-covered or a cloth-covered cable release. At -40F, all cameras will freeze in less than 10 minutes; before taking it inside to warm, place it in a zip-lock plastic bag to reduce condensation.
- Low humidity may also affect film during winding; if film is wound too fast static electricity may be generated, creating sparks on your negatives.



Adapted From:

Shooting the Northern Lights
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For more information about
the aurora, call the Geophysical
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on to www.climate.gi.alaska.edu.

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