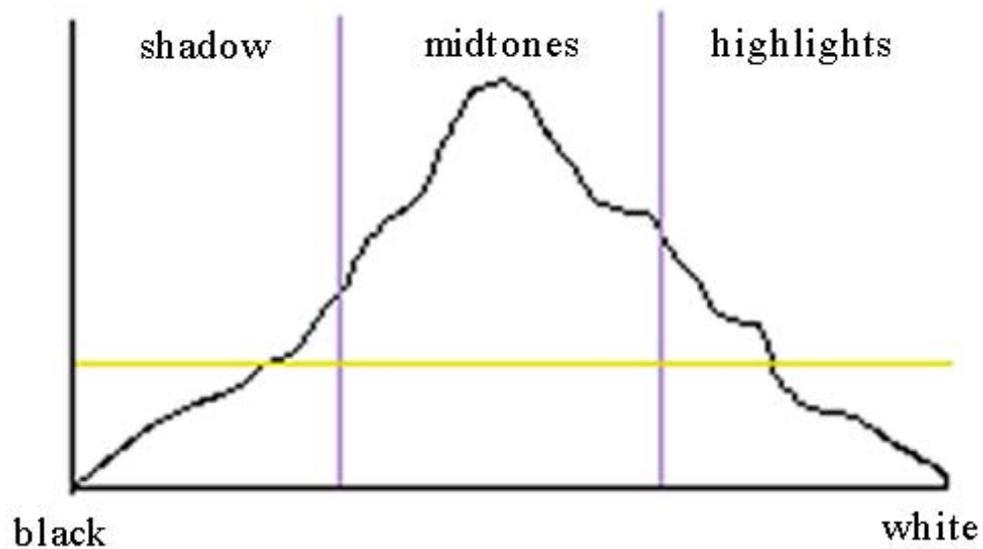




How to correct a contrast rejection

or

how to understand a histogram

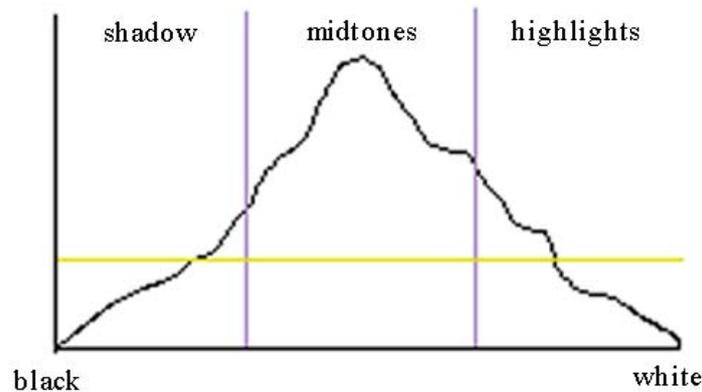




Contrast Rejection – or how to understand the histogram

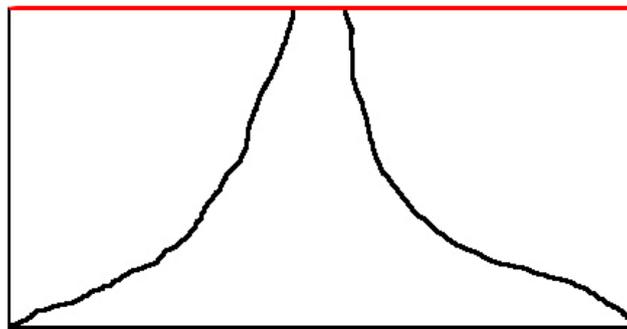
1. What is a histogram ?

A histogram is a graphical representation of the different frequencies of light recorded in a photo. You can display the histogram directly in most cameras or in practically every of the more used photo editing programs. The function to edit the histogram can be called “levels” or “histogram adjust” for example.



The yellow line is the average of all frequencies recorded in the photo. The peak is called “mode”. The Y axis shows the amount of light of a certain intensity was recorded, the X axis shows the intensity of the light recorded.

When trying to read the histogram the actual values are not important, the shape of the curve is what counts. Sometimes a peak is cut-off, this is normal as values of over 4.5 amounts of the average are cut.off for conserving the information n the histogram, as the zero values are very important as we will find out in the next chapter.



A histogram like this does not mean,, that there is something wrong with the exposure or the contrast of your picture.



2. What does the histogram tell me ?

The histogram is a great way to check the exposure and the contrast of the photo you are editing.

2.1 Overexposed



This shows a typical histogram of a clearly overexposed picture. The curve is cut-off at the white point, which means that a large part of the photo is 100% white. So many bright parts of the photo will be blown-out. This error can not be fixed in post processing, as you can not retrieve colour information from pixels that have been recorded as pure white in camera.

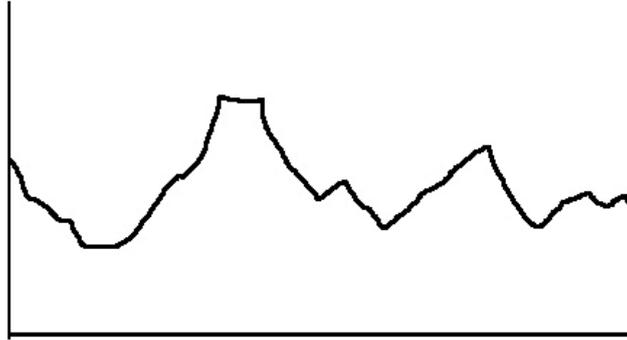
2.2 Underexposed



This is an extreme example of an clearly underexposed photo. Instead of having brighter parts become 100% white, like in the overexposed example, here darker parts have been recorded as 100% black. Such photos are also hard to be saved. In night shots however such a histogram could be correct.



2.3 too much contrast



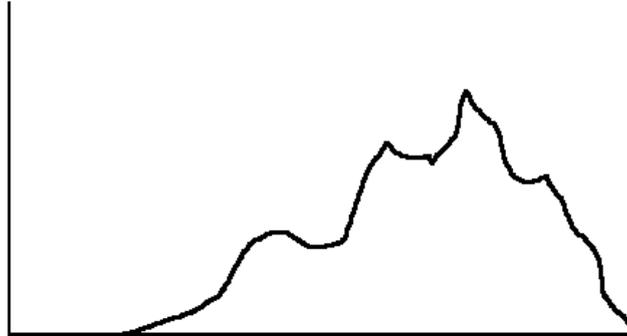
The typical histogram for a photo that has too much contrast looks roughly that way. We can see that the curve is cut-off on the black point and on the white point. This means that a lot of the available spectrum of light intensity has been lost. The contrast in the photo becomes too hard.

2.4 too little contrast

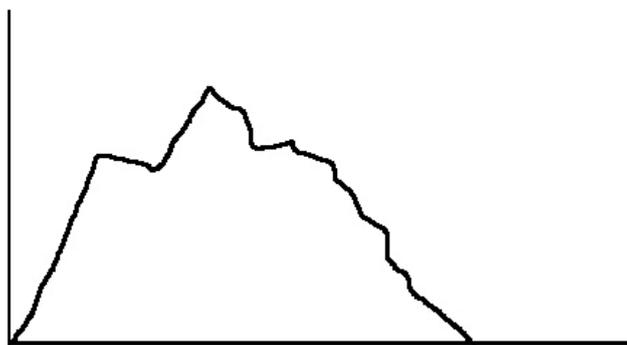


This is a typical histogram for a photo that has too little contrast. The histogram shows us that there is no black and no white in the photo.

But this is not the only histogram that could show us this. Below you see a histogram that looks perfect on the bright side of the curve but clearly lacks any recording on the dark side. This means there is no black in this picture. The picture would look washed out and a bit overexposed.



The same can happen with a photo that has no bright parts recorded. The histogram looks roughly like this then.



The photo would look dark and also lack contrast. It would most likely be rejected for dark/under.

3. What do I want when I am out shooting ?

Obviously it is impossible to always set up a shot in a way that you will get the perfect histogram, as you will have to cope with fog, haze, low light and other things that make it impossible to get a perfect histogram. And as you will learn later, most problems can be solved in editing. But that are a few things that can't be fixed. The worst thing is overexposure. White is white and there is no way in editing to give a white pixel back its former colour, if it has been recorded as pure white because of an over exposure. So if in doubt it is better to slightly underexpose then to overexpose. But when underexposing you also want to be careful not to underexpose too much.



If the histogram looks like that you are underexposing way too much. Equally bad is a histogram like shown in the example for too much contrast. Here you have a combination over overexposure and underexposure, you can't save this either.

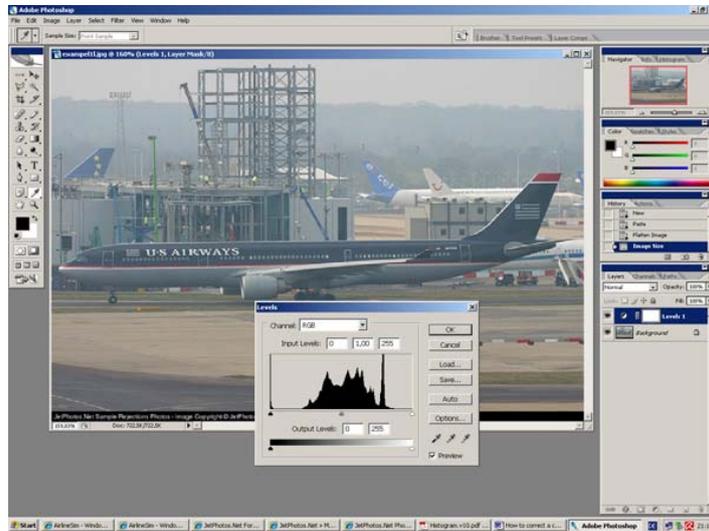
Most examples shown under "too little contrast" can be fixed quite often however. The best to work with is obviously the first example.

4. So how do I fix it ?

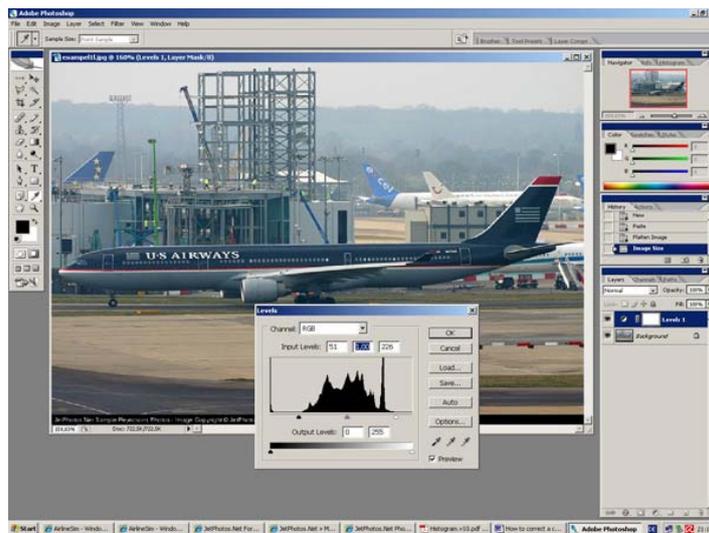
As explained you need a photo editing program for this. We will use Adobe Photoshop for the explanation.



As you see there is a clear visible grey "overcast" over the whole photo and below you see what the histogram looks like.



Now we will adjust the histogram by moving the sliders for black, 50% grey and white to make the photo look better.



And now take a look at the final result. The photo is not ready for upload, as it needs some more fine tuning, but you can clearly see that the grey overcast is gone.



5. Is this the ultimate truth for aviation photography ?

No, it isn't. Aircraft spotting often means shooting white or grey aircraft in front of a light blue or dark grey sky. So the "perfect" histogram is often not possible to achieve, as there might be no pure white or pure black in the photo. In the end you might find that a strange looking histogram like the example below might be perfect.



We hope that you have understood the basic of understanding the information hidden in the histogram and that you now have a better understanding why a photo has been rejected for bad contrast. We recommend to ask for help in our forums to get advice on a photo, if you have problems with the editing. The experience of the photographers that frequent the forum could be very helpful.