13 Exposure Review and Cloud Names

Friday, October 6, 2023 5:08 PM

Today:

Exposure Conclusion

Cloud Names

Admin:

Reading assignment.

Up through Clouds 1, 2 and 3.

Clouds First post: Edit your post date and time = your cloud image date and time

M,W afternoon = BEST

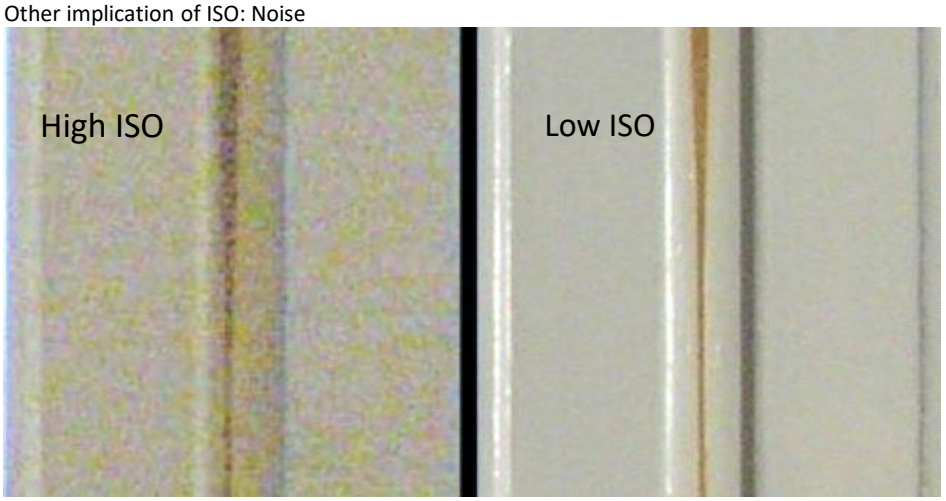
I will be gone next Friday afternoon Oct 13 until Monday Oct 23. No equipment checkout during that time

Shrey will give video tutorial on Davinci Resolve Oct 16 and 18. Regular attendance OK.

Guest Lecture October 20: Nicole Sharp, author of FYFD. Attendance required.

Exposure Conclusion

Other implication of ISO: Noise



http://en.wikipedia.org/wiki/Image_noise#Low_and_high-ISO_noise_examples

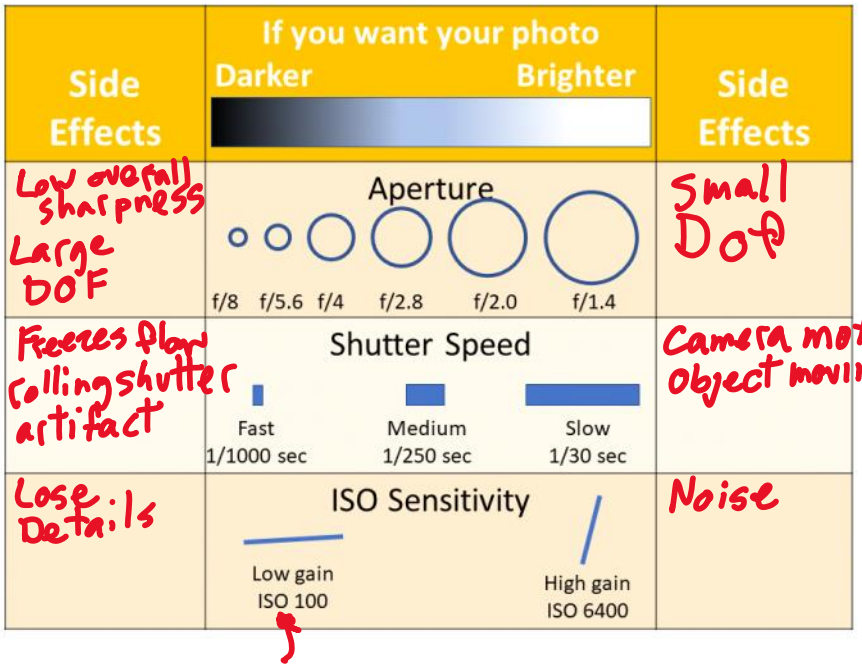
$$$$ in camera buys less noise at high ISO

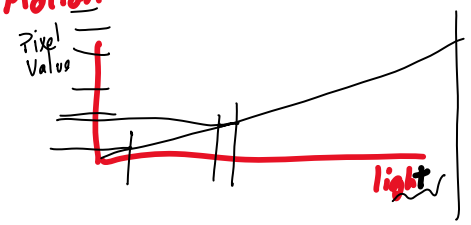
Proper exposure = middle value on an average pixel

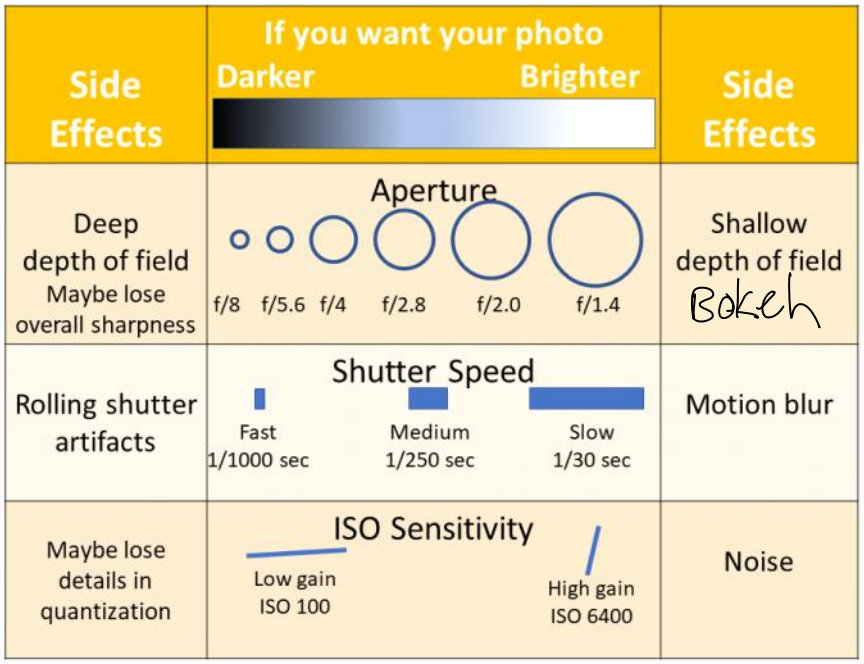
Same image brightness
f/5.6, 1/100 sec, ISO 200
f/8, 1/100 sec, ISO 400
f/4, 1/200 sec, ISO 400

OK, many combinations lead to the same overall brightness. How to choose?

In groups, what are the side effects of each choice?







Last topic in photography: Resolution - Temporal and Spatial. Will come back after Clouds

CLOUDS

Learning Objectives:

1. Be able to identify cloud types
2. Describe air motion and atmospheric stability that govern the appearance of basic cloud types.
3. Interpret weather data with respect to likely clouds, including Skew-T plots and wind soundings.

- Cloud first image due Friday Oct 20. Try to ID your cloud. Experts will assist during critique
- ***Required: be able to state stable vs unstable atmosphere during critique.***

Name Race: in one minute, in your group of 3-4 students, how many separate cloud names can you recall?
No internet allowed!

Cumulonimbus - thunderstorm
Cirrus
Stratus
Nimbostratus - layer of rain cloud
Cumulus - Simpson cloud
Stratocumulus
Cirrostraus
Cirrocumulus
Pyrocumulus
Mammatus
Altostratus
Lenticular
Altocumulus

Great list!
A more complete list, from the Cloudspotter's Guide:

CLOUD CLASSIFICATION TABLE

Clouds are classified according to a Latin 'Linnean' system (similar to the one used for plants and animals), which is based on their heights and appearance. Most clouds fall into one of ten basic groups, known as 'genera'. They can further be defined as one of the possible 'species' for that genus, and any combination of the possible 'varieties'. There are also various accessory clouds and supplementary features that sometimes appear in conjunction with the main cloud types. (If all this Latin freaks you out, don't worry – it freaks me out too.)

GENUS	SPECIES (CAN ONLY BE ONE)	VARIETIES (CAN BE MORE THAN ONE)	ACCESSORY CLOUDS AND SUPPLEMENTARY FEATURES	
Cumulus	humilis		pileus	arcus
	mediocris	radiatus	velum	pannus
	congestus		virga	tuba
	fractus		praecipitatio	
Cumulonimbus *(extends through all three levels)*			praecipitatio	pileus
	calvus		virga	velum
	capillatus	(none)	pannus	arcus
			incus	tuba
			mamma	
Stratus	nebulosus	opacus		
	fractus	translucidus	praecipitatio	
		undulatus		
Stratocumulus		translucidus		
		perlucidus		
	stratiformis	opacus	mamma	
	lenticularis	duplicatus	virga	
	castellanus	undulatus	praecipitatio	
		radiatus		

Stratocumulus	lenticularis	duplicatus	virga
	castellanus	undulatus	praecipitatio
		radiatus	
		lacunosus	
Altocumulus		translucidus	
	stratiformis	perlucidus	
	lenticularis	opacus	virga
	castellanus	duplicatus	mamma
	floccus	undulatus	
		radiatus	
		lacunosus	
Altostratus		translucidus	virga
		opacus	praecipitatio
	(none)	duplicatus	pannus
		undulatus	mamma
		radiatus	
Nimbostratus *(extends through more than one level)*			praecipitatio
	(none)	(none)	virga
			pannus
Cirrus	fibratus	intortus	
	uncinus	radiatus	
	spissatus	vertebratus	mamma
	castellanus	duplicatus	
	floccus		
Cirrocumulus	stratiformis		
	lenticularis	undulatus	virga
	castellanus	lacunosus	mamma
	floccus		
Cirrostratus	fibratus	duplicatus	(none)
	nebulosus	undulatus	

Most complete list, from the authority, the World Meteorological Organization:
https://cloudatlas.wmo.int/en/cloud-classification-summary.html

Fun book on how the clouds got these names, given by Luke Howard in mid 1800s :
Hamblyn, Richard. The Invention of Clouds: How an Amateur Meteorologist Forged the Language of the Skies. First Edition. New York: Picador, 2002.
Available for checkout

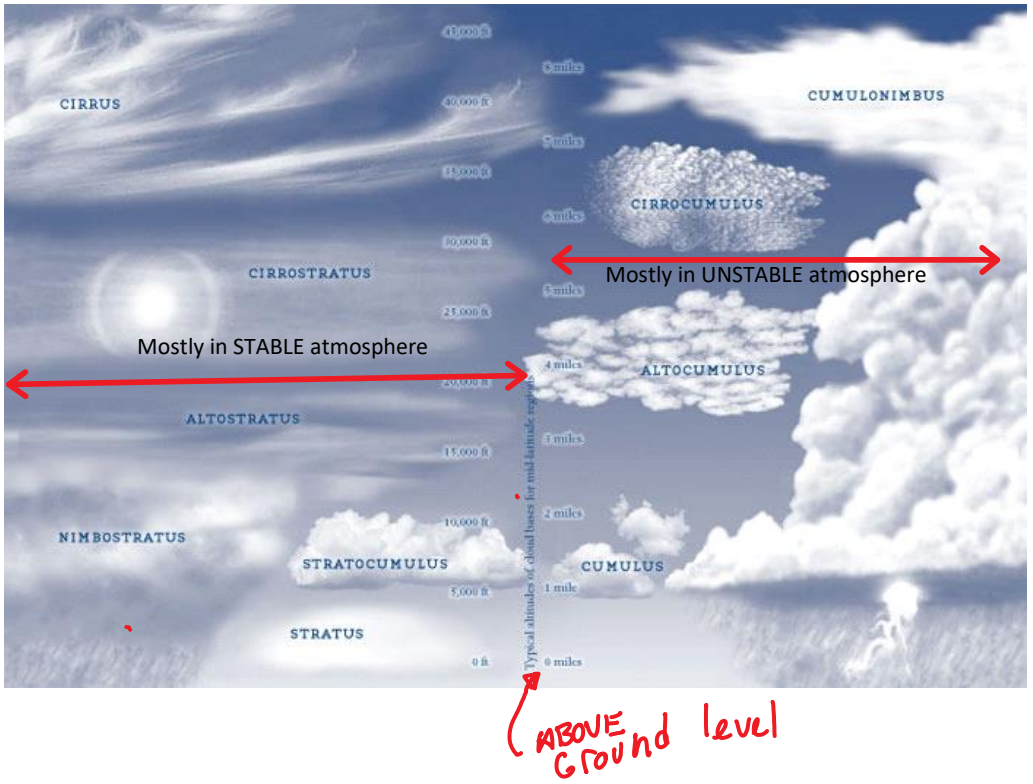
Best clouds physics book, easy read:

- Gavin Pretor-Pinney, *The Cloudspotter's Guide* (Perigee/Penguin, 2006). Next, (for free)
- Thomas Carney et al., *AC 00-57 Hazardous Mountain Winds and Their Visual Indicators* (Federal Aviation Administration, 1997), http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/780437D88CBDA FD086256A94006FD5B8?OpenDocument.
- https://www.metoffice.gov.uk/binaries/content/assets/mohippo/pdf/r/cloud_types_for_observers.pdf

Other cloud and atmospheric science books available for checkout; my office.
TONS of online info, most is OK.

Also, Cloud-a-Day phone app. Has AI assistance.

Following info partially adapted from Mike Baker, local NOAA Weather Service forecaster.



Pretor-Pinney, Gavin. *The Cloudspotter's Guide*. Perigee/Penguin, 2006.

Hold out three fingers at arm's length. Can you cover a cloud element (clump) with three fingers? No- then it's a low cloud, cumulus variety
If it's between one and three fingers in width, then it's a mid level, alto- type
Smaller than one finger = cirro- level, high cloud.

No cloud elements, just smooth layers = stratus types. If there is visible darkening on the bottom, then it's a low level or alto level layer. If it's all bright, then it's cirrostratus.