Screen X Instrument

DATE TIME	TEMPERATURE			HUMIDITY Note wick state & instrument type in RH column				PRECIPITATION Note when precip is from melted rain gauge			SKY Condition & CLOUD							WIND				PRESSURE			COMMENTS
Entered from earliest to latest date & time	Max Temp. (°C)	Min Temp. (°C)	Present Air Temp. (°C)	Wet bulb Temp. (°C) F = wick is frozen	Dry bulb Temp. (°C)	e (hPa)	RH (%) A = Assmann B = Bacharach W = Weksler	Snow Depth (mm) Ruler measurement	Snow Water Equivalent (mm)	Rain gauge (mm) T = Trace M = from melted rain gauge	SKY CLR FEW SCT BKN OVC OBSCD MISG	Amount (8ths) low	Amount (8ths) mid	Amount (8ths) high	Cloud type: Use 2-letter cloud abbreviations & double dashes for layers you cannot see. low	mid	high	Visual Observation Direction Bearing as an 8 point compass	Visual Observation Beaufort number	UNBC Weather Station Direction Azimuth as degrees (°) from north	UNBC Weather Station Speed (m/s)	Barometer (mm Hg)	Barometer Temp. (°C)	Corrected Pressure (hPa)	
↑ Report data, 1 row each reading time																									

Each student will calculate their own e (hPa) & RH (%) values from recorded observations.

Each student will calculate their own SWE values from recorded observations.

Each student will calculate their own pressures from recorded observations.

The WxProj data collection sheet remains on the roof top clipboard at all times!

Weather Observation & Analysis Project (WxProj) **Screen X Instrument #** Example Data Collection Sheet

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Each student will calculate their own e (hPa) & RH (%) values from recorded observations.

Each student will calculate their own SWE values from recorded observations.

Report sky condition code & 8ths of cloud here

Each student will calculate their own pressures from recorded observations.

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Observing the sky

This is how we normally see the sky

But we need to consider the entire sky

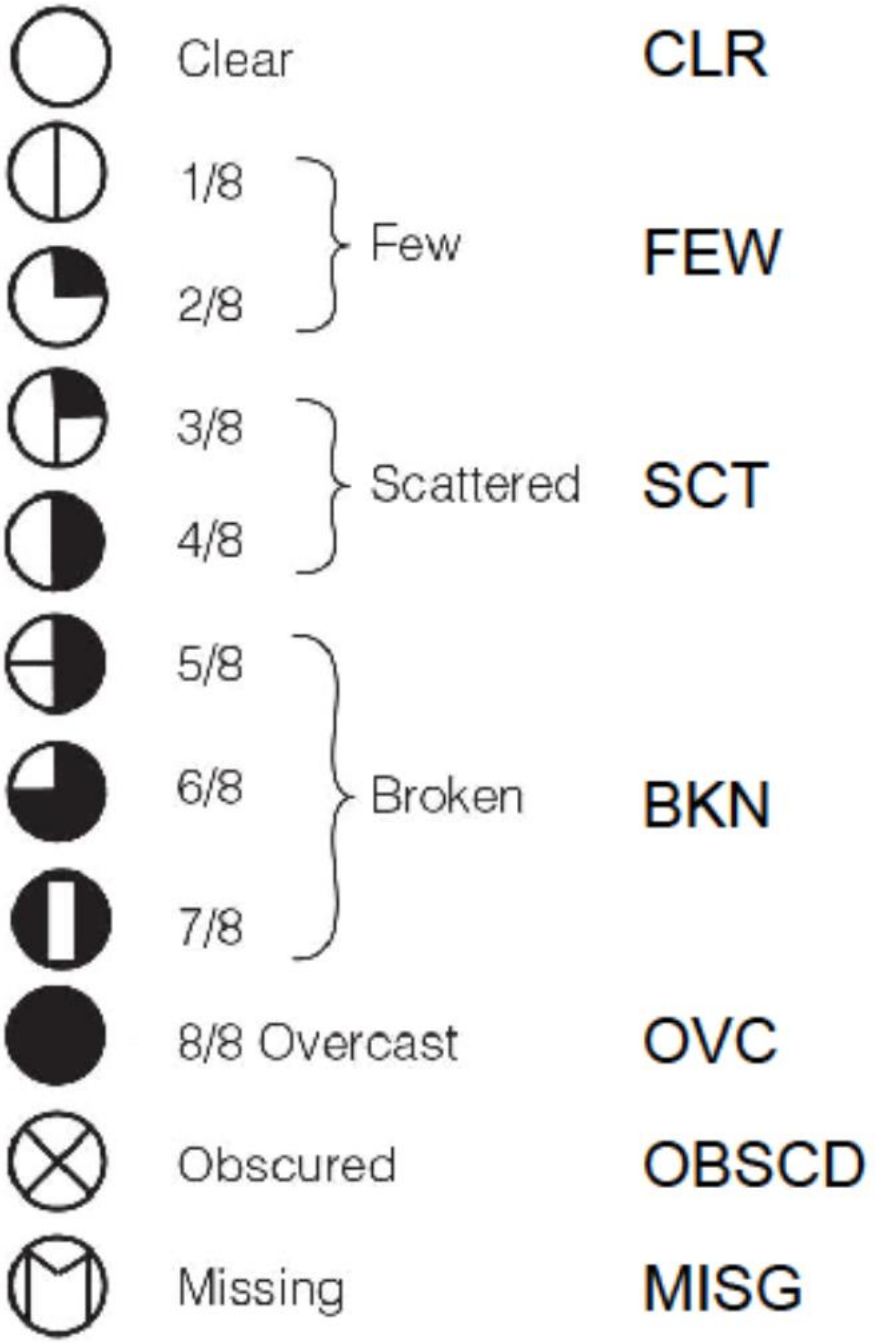
or
the
concept
of sky
view

Sky view imagines the sky as a crushed dome (looks like a disk).

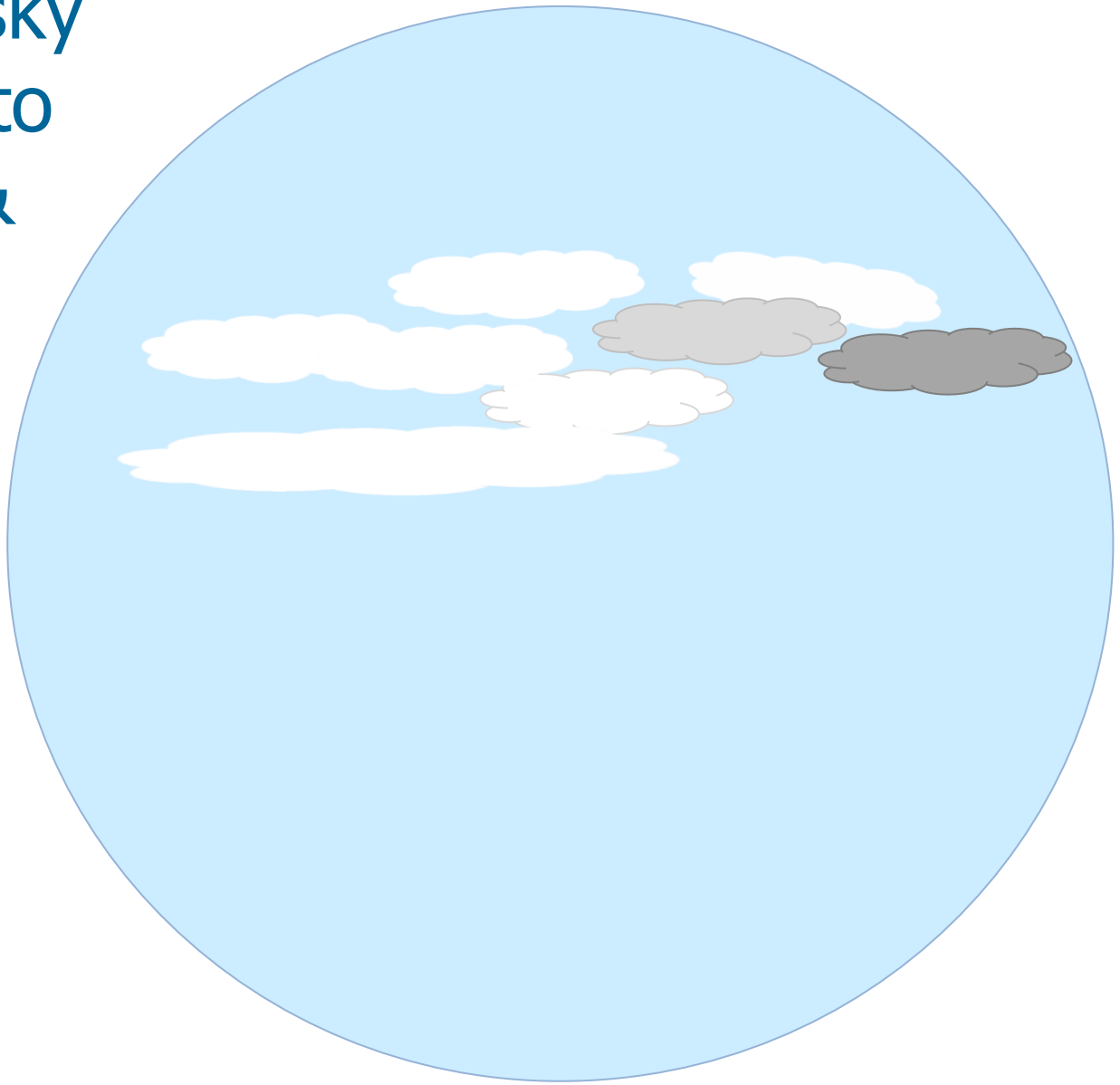
We use sky view to determine cloud amounts & *sky condition*.

Today we will focus on *sky condition*.

Sky Condition is determined by cloud coverage which is reported in eighths for standard weather station observations.

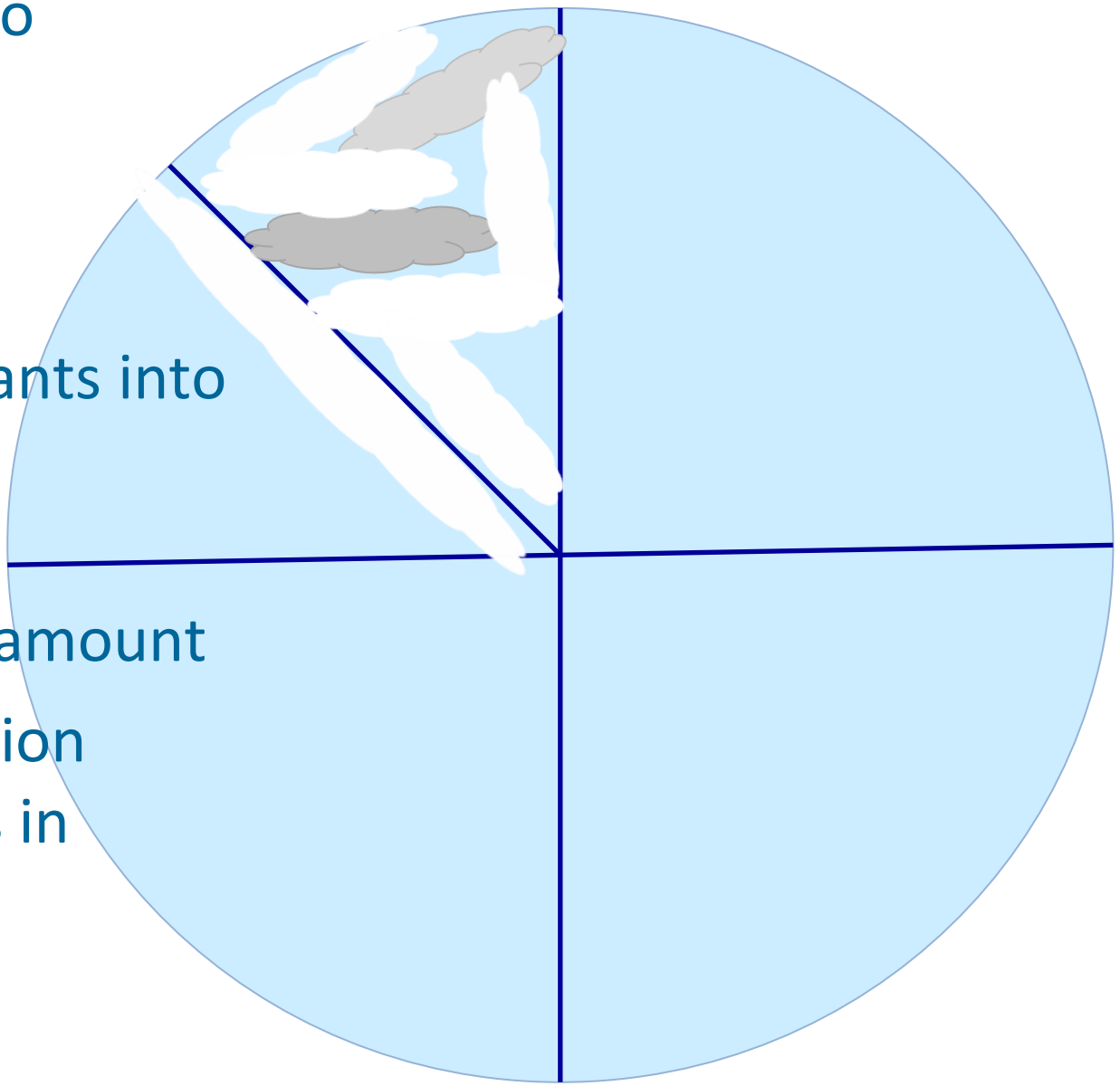


The concept of sky view as applied to cloud amounts & determining sky condition.



View the whole sky as a disk

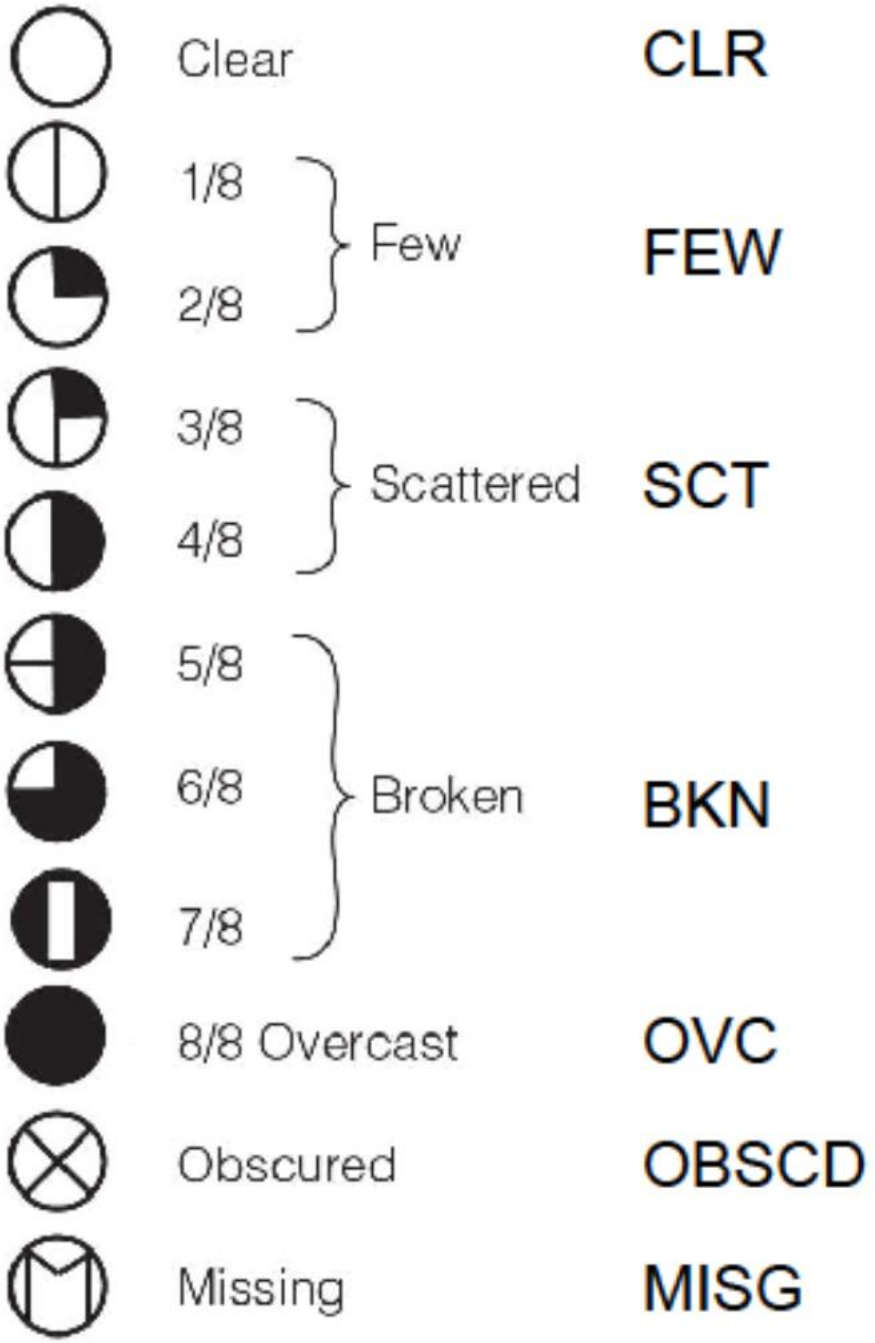
1. divide the sky into quadrants (¼'s)
2. gather all the clouds together
3. divide the quadrants into 1/8's
4. estimate sky coverage /cloud amount
5. report sky condition using code terms in eighths of cloud



Answer: FEW

When do you use:

- Obscured (OBSCD)
- Missing (MISG)?



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Each student will calculate their own *e* (hPa) & *RH* (%) values from recorded observations.

Each student will calculate their own SWE values from recorded observations.

Report dominant cloud type here

Each student will calculate their own pressures from recorded observations.

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The Four Major Cloud Groups & their Types

Cloud type abbreviations

High Clouds
- Cirrus (***Ci***)
- Cirrostratus (***Cs***)
- Cirrocumulus (***Cc***)

Middle Clouds
- Altostratus (***As***)
- Altocumulus (***Ac***)

Low Clouds
- Stratus (***St***)
- Stratocumulus (***Sc***)
- Nimbostratus (***Ns***)

Clouds with Vertical Development
- Cumulonimbus (***Cb***) (low to high cloud)
- Cumulus (***Cu***) (low to middle cloud)

Infer cloud heights from their types

The Four Major Cloud Groups & their Types

High Clouds
- Cirrus (*Ci*)
- Cirrostratus (*Cs*)
- Cirrocumulus (*Cc*)

Cirrus /cirro: high, thin, wispy clouds of ice

Middle Clouds
- Altostratus (*As*)
- Altocumulus (*Ac*)

Alto: middle height clouds

Low Clouds
- Stratus (*St*)
- Stratocumulus (*Sc*)
- Nimbostratus (*Ns*)

Stratus /strato – layered clouds

Nimbus /nimbo – rain clouds

Clouds with Vertical Development
- Cumulonimbus (*Cb*) (low to high cloud)

Cumulus / cumulo: clouds with vertical development due to turbulence - puffy

- Cumulus (*Cu*) (low to middle cloud)

Infer cloud heights from their types

Cloud names indicate meaning…

strato /stratus verses **cumulo /cumulus**

(flat /layered - stable) *(fluffy /turbulent – convective)*

nimbo /nimbus *(currently precipitating or just about to start)*

High Clouds

- Cirrus (*Ci*)
- Cirro**stratus** (*Cs*)
- Cirro**cumulus** (*Cc*)

Middle Clouds

- Alto**stratus** (*As*)
- Alto**cumulus** (*Ac*)

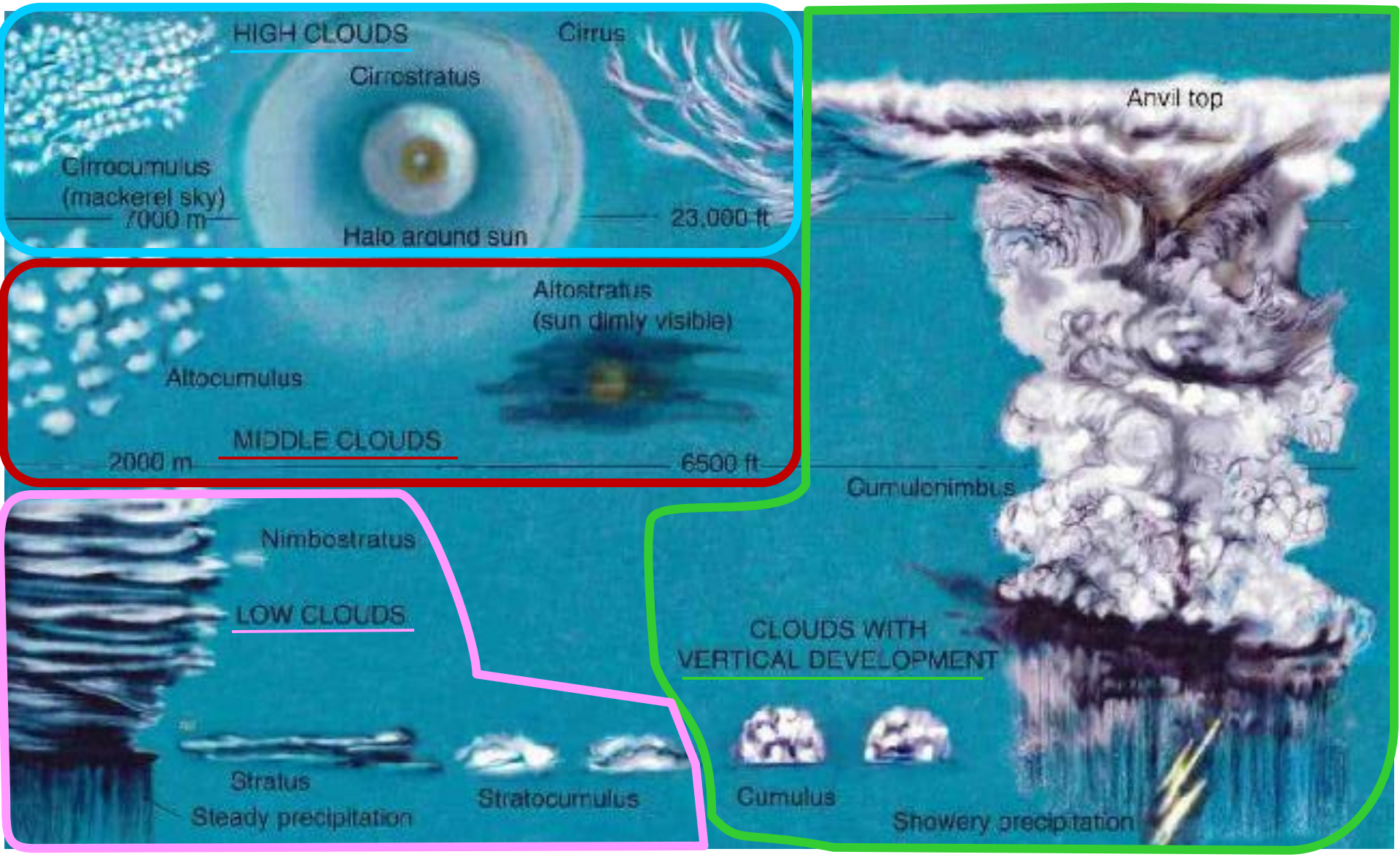
Low Clouds

- **Stratus** (*St*)
- **Stratocumulus** (*Sc*)
- **Nimbostratus** (*Ns*)

Clouds with Vertical Development

- **Cumulonimbus** (*Cb*) (low to high cloud)
- **Cumulus** (*Cu*) (low to middle cloud)

Cloud types and their heights



Cloud height ranges vary with latitude due to air temperature differences

Approximate Height of Cloud Bases above the Surface for Various Locations

Cloud Group	Tropical Regions	Mid-Latitudes	Polar Regions
High Clouds Ci, Cs, Cc	6,000 to 18,000 meters (20,000 to 60,000 ft)	5,000 to 13,000 meters (16,000 to 43,000 ft)	3,000 to 8,000 meters (10,000 to 26,000 ft)
Middle Clouds As, Ac	2,000 to 8,000 m (6,500 to 2,600 ft)	2,000 to 7,000 m (6,500 to 23,000 ft)	2,000 to 4,000 m (6,500 to 13,000 ft)
Low Clouds St, Sc, Ns	Surface to 2,000 m (0 to 6,500 ft)	Surface to 2,000 m (0 to 6,500 ft)	Surface to 2,000 m (0 to 6,500 ft)

Screen X Instrument

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↑ Report 1 row each reading time

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Sky Condition & Cloud Reporting:

- Report type & amount at each height
- Properly use abbreviations for types
- Report a double dash (--) for layers you can't see

- **Sky condition must match total cloud amount** (8^{ths} of cloud summed for all cloud heights)

Example data recording (observations below):

SKY Condition & CLOUD						
SKY	Amount (8^{ths})			Cloud type: Use abbreviations. For layers you cannot see report n/a		
CLR FEW SCT BKN OVC OBSCD MISG	low	mid	high	low	mid	high
50% cirrocumulus (Mackerel sky) → SCT	**0**	**0**	4	--	--	Cc
1/8 stratocumulus, 2/8 altocumulus, 3/8 cirrus → BKN	1	2	3	Sc	Ac	Ci
6/8 stratus, 2/8 altostratus, ?cirro…? → OVC	6	2	--	St	As	--