OMMENTS

The <u>WxProj</u> data collection sheet remains on the roof top clipboard at all times!

Example Data Collection Sheet

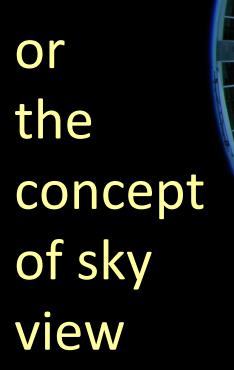
DATE	TIME	TEM	PERAT	TURE		wick	JMI state	& in:	strumen	F fro	PRECI Note who m melte	PITA en <u>poe</u> d rain	TION cip is gauge	S	SKY	Со	ndi	itior	א ר	CLC	DUD	}	WI	ND		PRE	ESSU	JRE	Ξ	COMMENTS
Entered earliest tr date &	o latest	Max Temp. (💭	Min Temp. (👷	Present Air Temp. 🙁	Wet bulb Temp. (C)	F = wick is frozen	Dry bulb Temp. 👷	e (Ma)	RH (%) A = Assmann B = Bacharach W = Weksler	Snow Denth (mm.)	Ruler measurement	Snow Water Equivalent (mm)	Rain gauge ( <u>mm.)</u> I = Irace M - form method vain carine		SKY LR EW CT KN VC BSCD 1ISG		E Amount (8 <sup>ths</sup> )	high	Cloud type: Use 2-		difference of the second secon			UN Wea Stat Directio Azimuti as degrees (°) from north	ther ion (s/w) pa	Barometer (mm Hg)	Barometer Temp. ( <sup>o</sup> C)	Corrected Pressure (hDa)		
									ons.			,		ſ														Ē		
									observations.			observations																ations.		
									ded ob:			obser			Re			rt										recorded observations.		
									RH (%) values from recorded			recorded				sk												orded o		
									sfrom			om rec			СС	h	d	<b>i</b> -										m rec		
									value			values from			t	io	n											res fro		
									RH (%)	L		WE va			C	00	16	<b>&gt;</b>										calculate their own pressures from		
									(pCa) &			own SWE				8												- UNO		
									own e (		_	calculate their			Å													thei		
									their or	1		lculate				0												alculat		
									ulate t						C	0	u	ł										t will o		
									Each student will calculate their			student will			ł	le	re											student will		
									dent w			Each st																Eachs		
									ch stuc																					

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



This is how we normally see the sky

## But we need to consider the entire sky



Sky View continued....

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

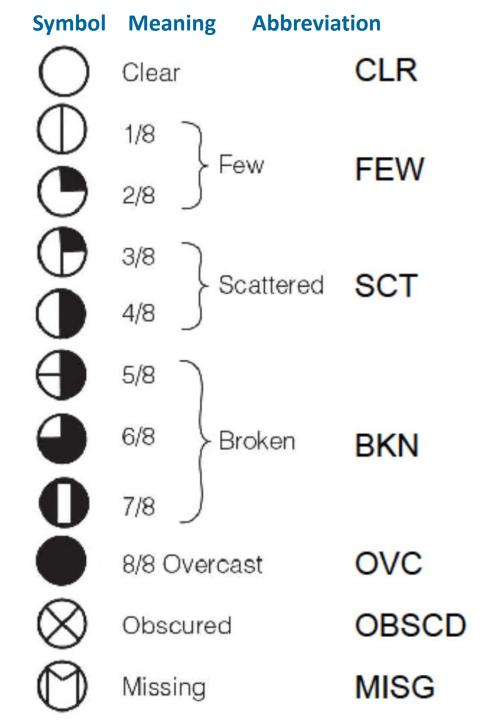
We use sky view to determine cloud amounts & sky condition.

Today we will focus on *sky condition*.



Sky Condition, Cloud Amounts ...

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



Sky Condition, Cloud Amounts...

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

> View the whole sky as a disk

Sky Condition, Cloud Amounts...

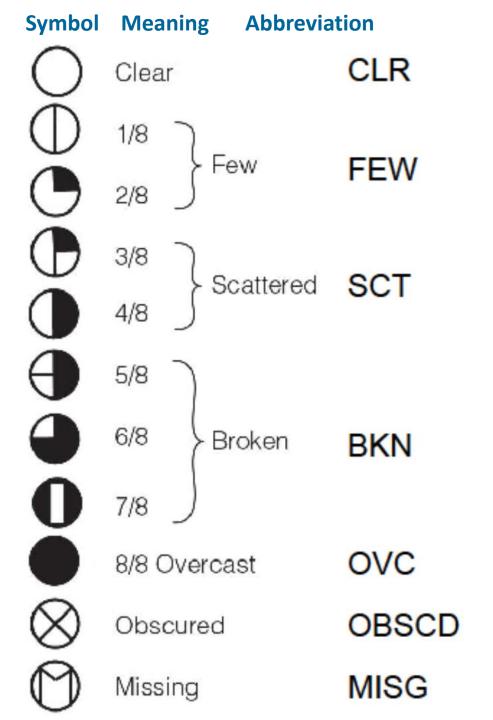
- divide the sky into quadrants (¼'s)
- 2. gather all the clouds together
- 3. divide the quadrants into 1/8's
- 4. estimate sky coverage /cloud amount
- 5. report sky condition using code terms in eighths of cloud

Answer: FEW

Sky Condition continued...

# When do you use:

- Obscured (OBSCD)
- Missing (MISG)?



Example Data Collection Sheet

DATE		TE 1 4					15.71	<u></u>		_	DDE	דוחוי		N	0107	~			0.4				14/14				-00:		-	
DATE	IIME	IFW	PERAT	IURE			JMI state		Y strume	ent	Note v from me	vhen g	A TIO		SKY	Co	ndi	tior	n & (	JLO	UD	P	WIN	ND		PRESSURE				COMMENTS
					1	type	in RH	l colu	mn		from me	ited ra																		
Entered earliest to date &	o latest	Max Temp. (🕵)	Min Temp. ( <mark>SC</mark> )	Present Air Temp. 🙁	Wet bulb Temp. (💢)	F = wick is frozen	Dry bulb Temp. 🙁	e (113)	RH (%) A = Assmann	= Bacharach W = Weksler	Snow Depth ( <u>mm.)</u> Ruler measurement	Snow Water Equivalent (mm)	Rain gauge ( <u>mm</u> ) T = Trace	= from melted rair	SKY CLR FEW SCT BKN OVC OBSCD		Amount (8 <sup>ths</sup> )		Cloud type: Use 2- letter cloud			Visi Observ Direction Bearing as an 8 point	ation uper	UN Weat Stat Direction Azimuth as degrees (°) from	ther ion (s/w) pa	Barometer (mm Hg)	Barometer Temp. ( <sup>D</sup> C)	Corrected Pressure (hDa)		
		Ň	Ξ	ď	Ň	Ű,	5	ø	둔 6	ä	Sn	Shick	Rai	Ň	MISG	low	nid	high	low	mid	high	compass	B D	(°) from north	Sp	Ba	Ba	ŝ	3	
								Γ	ls.		[	-																	]	
									vatio			ions.																ons.		
					-				obser	_		observations.		+		$\vdash$	<u> </u>											rvatio		
									ded			l obse								po								obse		
									recor			recorded							dor	nin	ant							rded		
									from			n rec							cl	ου	Id							Leco		
									alues			es fror																5 from		
									& RH (%) values from recorded observations.			calculate their own SWE values from							Ľ	ур	e							calculate their own pressures from recorded observations		
									& RH			1 SWE							h	er	e							n pre	-	
					┢				3			r owr		+		$\vdash$		-										ir ow		
									a nwo			e thei						_			-							te the		
									leir o			culate																Iculat		
									ate th																			vill ca		
									alcul			student will		1														ent v		
									Each student will calculate their			stude																Each student will		
									dent			Each						-										Eac		
									th stu																					
_									B																					

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

## The Four Major Cloud Groups & their Types



High Clouds

- Cirrus (*Ci*)<sup>µ</sup>
- 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

Wx Proj - Clouds

## The Four Major Cloud Groups & their Types

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

#### Middle Clouds

- Altostratus (As)
- Altocumulus (Ac)

#### Low Clouds

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

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

Alto: middle height 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)

Stratus /strato – layered clouds Nimbus /nimbo – rain clouds

# Infer cloud heights from their types

Wx Proj - Clouds

Clouds Types...

## **Cloud names indicate meaning...**

strato /stratus (flat /layered - stable) cumulo /cumulus

(fluffy /turbulent – convective)

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

verses

#### High Clouds

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

## Middle Clouds

- Altostratus (As)
- Alto**cumulus (<u>A</u>c**)

#### Low Clouds

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

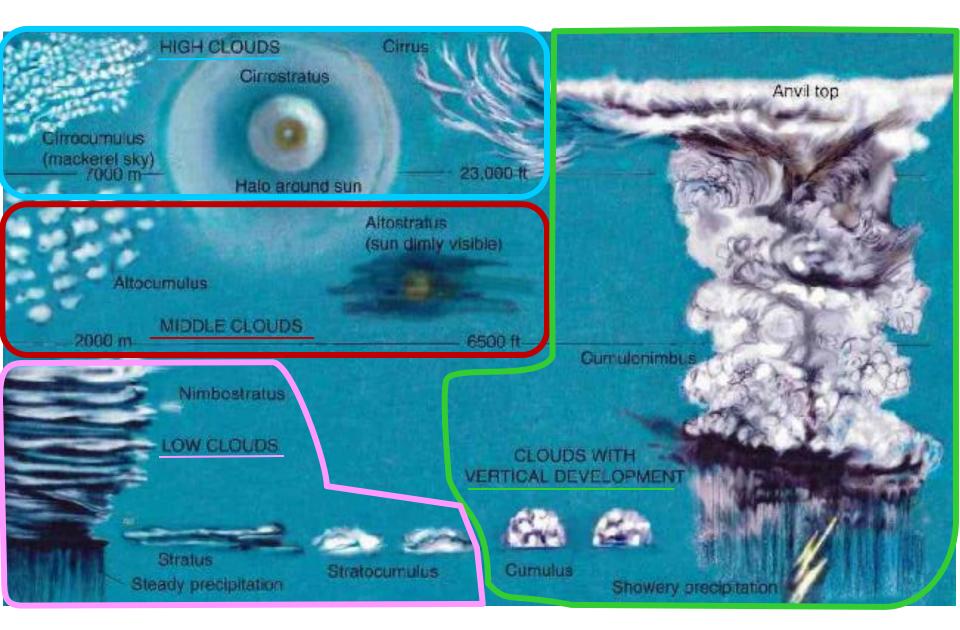
**Clouds with Vertical Development** 

•Cumulonimbus (Cb) (low to high cloud)

• Cumulus (Cu) (low to middle cloud)

Clouds Types...

## **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	6,000 to 18,000 meters	5,000 to 13,000 meters	3,000 to 8,000 meters
Ci, Cs, Cc	(20,000 to 60,000 ft)	(16,000 to 43,000 ft)	(10,000 to 26,000 ft)
Middle Clouds	2,000 to 8,000 m	2,000 to 7,000 m	2,000 to 4,000 m
As, Ac	(6,500 to 2,600 ft)	(6,500 to 23,000 ft)	(6,500 to 13,000 ft)
Low Clouds	Surface to 2,000 m	Surface to 2,000 m	Surface to 2,000 m
St, Sc, Ns	(0 to 6,500 ft)	(0 to 6,500 ft)	(0 to 6,500 ft)

Example Data Collection Sheet

																								<b>I</b>				
DATE	TIME	TEM	PERAT	TURE		wick	state	DIT & ins	trument	PRE( Note v from me	CIPIT when g sited ra	ATION recip is in gauge	ISK	ΥC	Condit	ior	n & (	CLO	UD	<b>P</b>	WIN	١D		PRE	ESSU	IRE		COMMENTS
						type	in RH	l colu	mn		1			_													$\downarrow$	
Entered earliest to date &	latest	Max Temp. (👷	Min Temp. 🕵	Present Air Temp. (💭	Wet bulb Temp. (💢)	F = wick is frozen	Dry bulb Temp. (👷	e (ha)	RH (%) A = Assmann B = Bacharach W = Weksler	Snow Depth ( <u>mm.</u> ) Ruler measurement	Snow Water Equivalent (mm)	Rain gauge ( <u>mm.)</u> T = Trace M = fimm melted vain naune	FEW SCT BKN OVC OBS		≅ ⊒Amount (8 <sup>ths</sup> )	igh	Cloud type: Use 2- letter cloud		iq layers you cannot see.	Visu Observ Direction Bearing as an 8 point compass	vation	UNI Weat Stati Direction Azimuth as degrees (°) from north	her on (s/w) pa	Barometer (mm Hg)	Barometer Temp. (°C)	Corrected Pressure (hPa)		
								Γ	S.		:			Τ														
									observations.		itions.					个										tions.		
									ed obse		observations.				Po											own pressures from recorded observations		
									RH (%) values from recorded		recorded o				Re											ded of		
									from r								SМ		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2							n recor		
									values		values from		Ē	a	ch	re	ea	dir	١g							es fron		
									(%) H2		SWE valu				ti	n	ne									ressun		
									(B30) & /		own SV															d uwo		
									e l		their o															their		
									Each student will calculate their own		calculate their															calculate their		
									late th																	will ca		
											student will															student will		
									ent wil		Each stu															Each stu		
									stude		Ea															<u> </u>		
			_				_		Each	ļ					_			_			_			_	_		I	

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

Reporting Sky & Clouds...

# **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<sup>ths</sup> of cloud summed for all cloud heights)

#### **Example data recording** (observations below):

50% cirrocumulus (Mackerel sky)  $\rightarrow$ 

1/8 stratocumulus, 2/8 altocumulus, 3/8 cirrus  $\rightarrow$ 

6/8 stratus, 2/8 altostratus, ?cirro...?  $\rightarrow$ 

