

Atmospheric Sounding Visualization

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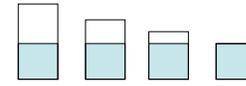
Soundings

- Pressure
- Altitude
- Temperature
- Moisture
- Wind Speed
- Wind Direction



Meteorology 101

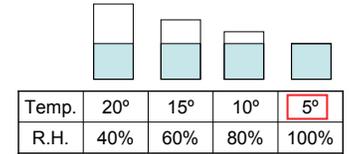
$$\text{Relative Humidity} = \frac{\text{Actual Vapour Pressure}}{\text{Saturation Vapour Pressure}}$$



Temp.	20°	15°	10°	5°
R.H.	40%	60%	80%	100%

Meteorology 101

- At 100% humidity, the temperature has reached the **dewpoint**



Temp.	20°	15°	10°	5°
R.H.	40%	60%	80%	100%

Meteorology 101

- Lifting causes cooling at 9.8°C per 1000m



Meteorology 101

- Inside a cloud, the temperature decreases much more slowly ~ 6° per 1000m

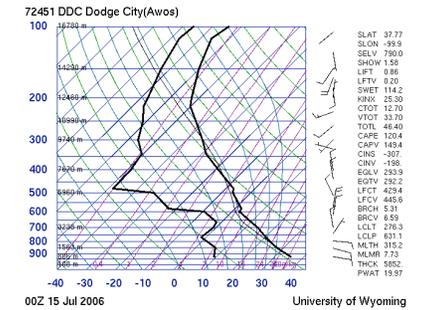


Sample Sounding Data

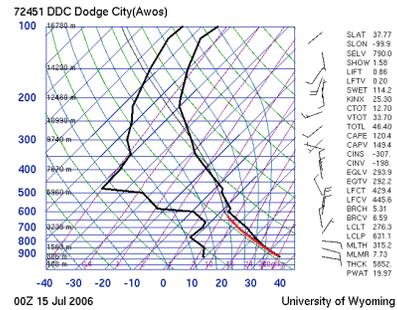
72694 SLB Salem Observations at 12Z 08 Oct 2006

PRES	HGHT	TEMP	DWPT	RELH	WIND	DIRCT	SKNT	WVA	WVE	WVP
hPa	m	C	C	%	g/sq	deg	knct	m/s	m/s	m/s
1020.0	61	6.0	3.8	86	4.95	0	0	277.6	291.2	278.4
1000.0	224	10.0	6.9	81	6.28	15	4	283.1	300.7	286.2
997.0	249	10.2	7.1	81	6.38	17	5	283.6	301.5	286.7
990.3	305	10.0	6.8	80	6.30	20	6	284.0	301.6	285.0
954.6	610	9.0	5.2	77	5.83	25	9	286.0	302.6	287.0
925.0	871	8.2	3.8	74	5.46	5	12	287.7	303.4	288.6
920.2	914	8.1	4.0	75	5.56	5	12	288.0	304.0	289.0
909.0	1015	7.8	4.4	79	5.80	2	14	288.7	305.4	289.7
902.0	1079	8.8	-11.2	23	1.81	360	15	290.4	296.0	290.7

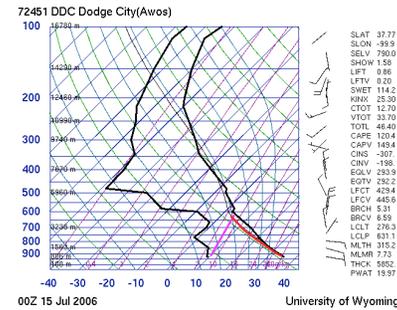
Skew-T Diagram



Skew-T Diagram



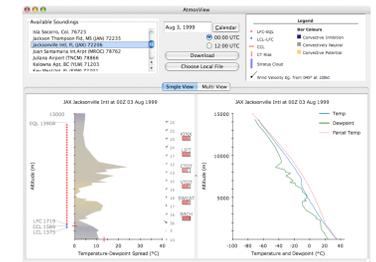
Skew-T Diagram



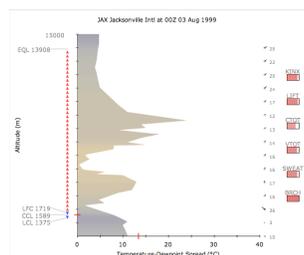
Problems

- Easy to forget
- Easy to make mistakes
- Difficult to compare
- Information doesn't pop out

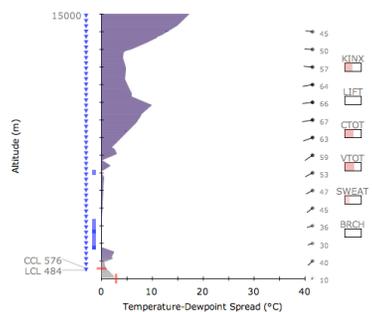
AtmosView



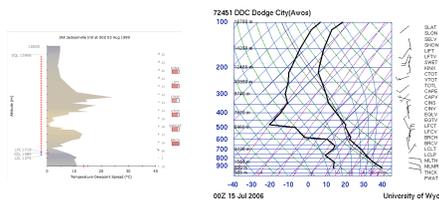
- Legend
- LCL-DBL
- LCL-LFC
- LCL-C
- CT-Hat
- Status Cloud
- Wind Velocity Eq. from IOP at 0800
- Barobase
- Convective Initiation
- Convective Moisture
- Convective Anvil



YYR Goose Bay at 00Z 15 Nov 2006



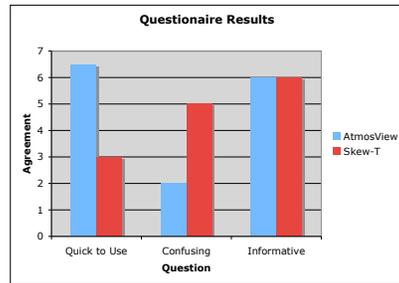
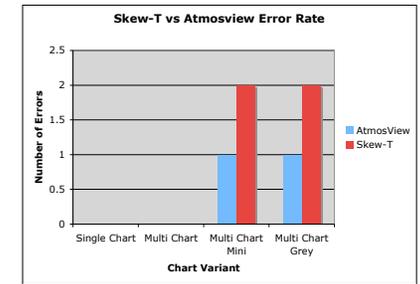
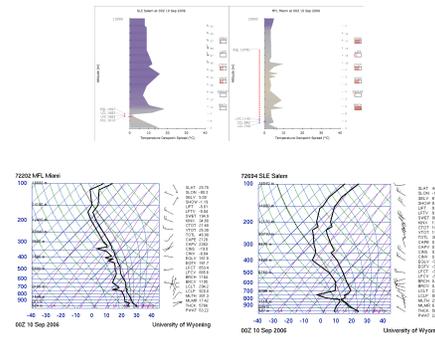
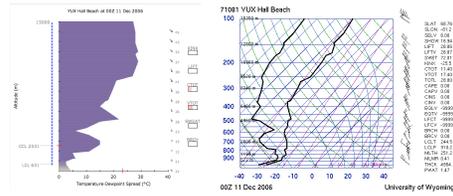
Use Scenarios



DEMO

Informal Evaluation

- 2 Students
- Given instruction on the AtmosView
- Given a set of questions to answer
- Given instruction on the Skew-T
- Given a set of questions to answer



Strengths

- Successful improvement to Skew-T
- Data pops out
- Quick comparisons
- Useable in miniature
- Not reliant on colour

Areas for Improvement

- Temperature not displayed

Future Work

- Improve usability of system
- Target audience: amateur meteorologists (glider pilots, students, storm-chasers)