

SkyScope: An Aviation Weather Visualization System

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Motivation

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ABBOTSFORD/BC
METAR CYXX 260100Z 0000KT 25SM -RA FEW025 BKN040 OVC060 07/04 A2945 RMX SF1SC6C2 SLP973=
METAR CYXX 260200Z 3600KT 26SM SCT040 BKN070 OVC100 07/03 A2941 RMX SCTA2C2 OCNL LDT RA SLP962=
METAR CYXX 260300Z 0200KT 15SM -RA BKN040 OVC070 07/03 A2941 RMX SCTA2C2 SLP959=

TAF CYXX 252343Z 260024 03010KT P6SM -RA SCT030 BKN050 OVC070 TEMPO 0007 5SM -RA BR BKN025
FM0700Z 0300KT P6SM SCT030 BKN050 TEMPO 0704 P6SM -SHRA BKN030 BKN050 1416 07010KT
RMK NXT FCST BY 04Z=

VANCOUVER/VANCOUVER INTL/BC
METAR CYVR 260100Z 09014G19KT 12SM -SHRA SCT025 OVC040 07/04 A2944 RMX SF2SC3 SLP969=
METAR CYVR 260200Z 08013G18KT 15SM -SHRA SCT025 OVC040 07/04 A2943 RMX SCT0C3 SLP969=
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SPEC CYVR 260112Z 0500KT 15SM FEW025 BKN040 OVC055 RMX SF2SC3C2=

TAF CYVR 260300Z 260024 09012G22KT P6SM -RA SCT025 BKN040 OVC070 TEMPO 0306 5SM -RA BR BKN025 OVC040
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TEMPO 0612 6SM -SHRA BR BKN025
FM1000Z 09010KT P6SM SCT020 BKN040 OVC060
TEMPO 1220 4SM -SHRA BR BKN025 OVC040
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RMK NXT FCST BY 04Z=

NANAIMO/BC
METAR CYND 260100Z 0000KT 5SM -RA FEW025 BKN025 OVC030 06/05 A2944 RMX SF1SC6C1 SLP970=
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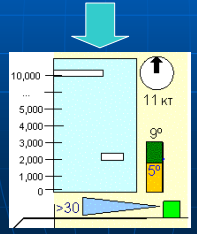
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BKN025
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Motivation

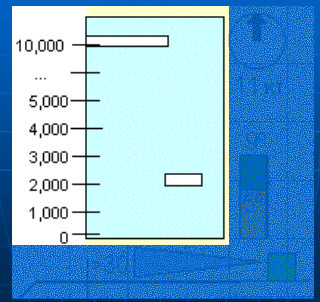
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OVC060 07/04 A2945 RMX SF1SC6C2 SLP973=

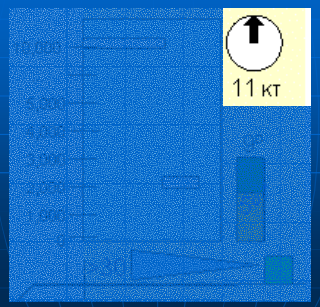
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OVC070 TEMPO 0007 5SM -RA BR BKN025
    
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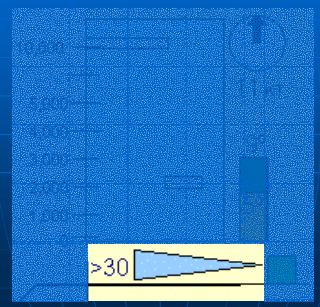
Cloud Layer



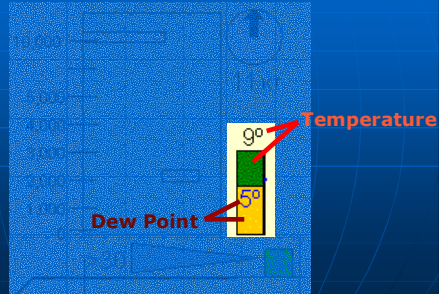
Wind Speed & Direction



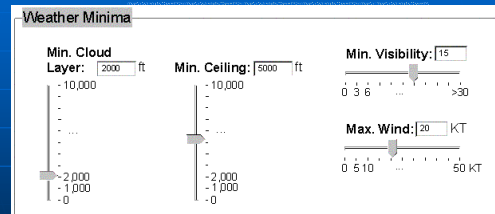
Visibility



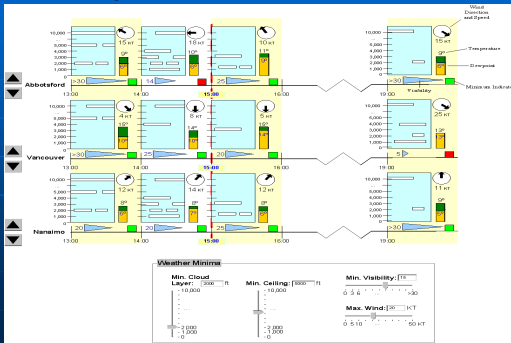
Temperature & Dew Point



Minimum Indicator



Layout – Timeline Stack



Implementation

- Major Components
 - Weather data parser
 - Java 2D visualization drawing engine
 - Java Swing graphical user interface
- Available online as an applet

User Walkthroughs

- We performed paper prototype walkthroughs with two licensed pilots
- This led to several changes and additions to the visualization design
- Both participants believed this visualization would be helpful

Walkthrough Feedback

- Preset values for minimum weather conditions would be helpful
- Users should be able to drill down to see raw data corresponding to a glyph
- Temperature/dew point bar
 - Absolute scale vs. dynamic scale
 - spread is more important than temperature

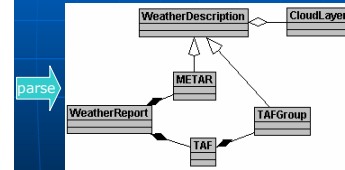
Walkthrough Feedback

- Visibility in forecasts: The difference between 6 and 6+ should be more prominent
- A legend should be available for first time users
- Some information is missing
 - Should show local time *and* UTC
 - The time when a forecast was issued
 - Actual wind direction in degrees
- Alternative weather conditions may be a challenge to display

Implementation Progress

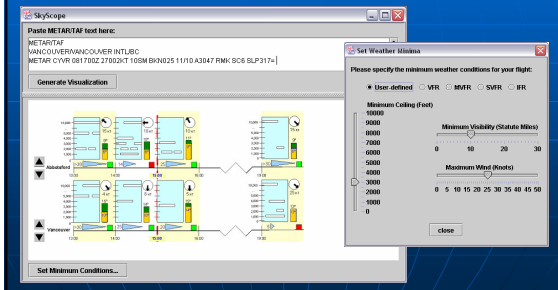
- Weather Data Parser

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VANCOUVER/VANCOUVER
INTL/BCMETAR CYVR
260100Z 09014G19KT 12SM
-SHRA SCT025 OVC040
07/04 A2944 RMK SF3SC5
SLP969= METAR CYVR
260200Z 08011G16KT 15SM
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07/04 A2942 RMK SC3SC5
SLP963= METAR CYVR
260300Z 06005KT 15SM -
SHRA FEW025 BKN040
OVC055 07/04 A2941 RMK
SF2SC5SC2 PCPN VRY LGT
SLP959= SPECI CYVR
260312Z 05007KT 15SM
```



Implementation Progress

- Early GUI Design



Project Milestones

- March 1 - Proposal Submitted.
- March 5 - Paper sketch walkthrough with user completed. Feedback collected for re-design.
- March 15 - Weather data parser complete.
- April 7 - Early display functionality complete (timelines, clouds, min condition indicator).
- April 15 - High fidelity prototype complete (first iteration).
- April 21 - User evaluation and revised design complete. Final presentation.