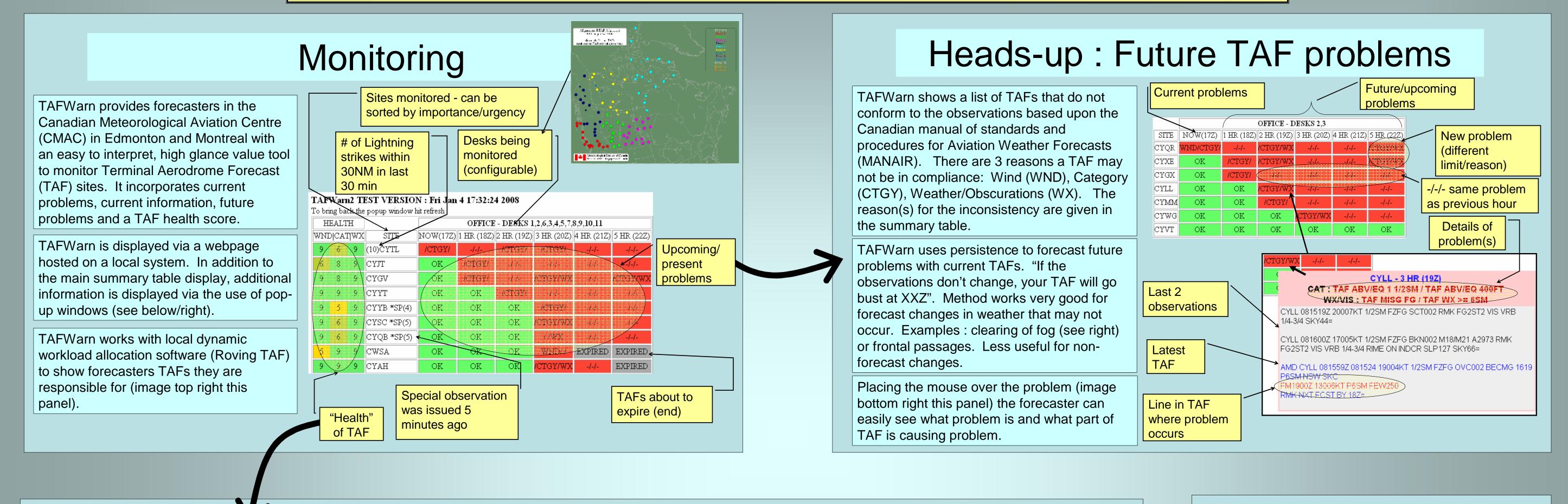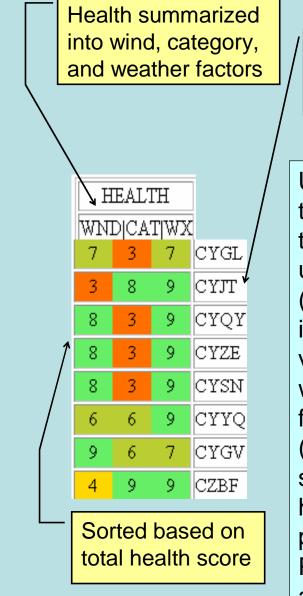# TAFWarn : A "Heads-up" Monitoring Tool

Erik de Groot – Canadian Meteorological Aviation Centre – Edmonton – Environment Canada

Erik.deGroot@ec.gc.ca

Monitoring

TAFWarn provides forecasters in the Canadian Meteorological Aviation Centre (CMAC) in Edmonton and Montreal with an easy to interpret, high glance value tool to monitor Terminal Aerodrome Forecast (TAF) sites. It incorporates current problems, current information, future problems and a TAF health score.

TAFWarn is displayed via a webpage hosted on a local system. In addition to the main summary table display, additional information is displayed via the use of pop-up windows (see below/right).

TAFWarn works with local dynamic workload allocation software (Roving TAF) to show forecasters TAFs they are responsible for (image top right this panel).

Sites monitored - can be sorted by importance/urgency

# of Lightning strikes within 30NM in last 30 min

Desks being monitored (configurable)

Upcoming/ present problems

"Health" of TAF

Special observation was issued 5 minutes ago

TAFs about to expire (end)

Heads-up : Future TAF problems

TAFWarn shows a list of TAFs that do not conform to the observations based upon the Canadian manual of standards and procedures for Aviation Weather Forecasts (MANAIR). There are 3 reasons a TAF may not be in compliance: Wind (WND), Category (CTGY), Weather/Obscurations (WX). The reason(s) for the inconsistency are given in the summary table.

TAFWarn uses persistence to forecast future problems with current TAFs. "If the observations don't change, your TAF will go bust at XXZ". Method works very good for forecast changes in weather that may not occur. Examples : clearing of fog (see right) or frontal passages. Less useful for non-forecast changes.

Placing the mouse over the problem (image bottom right this panel) the forecaster can easily see what problem is and what part of TAF is causing problem.

Current problems

Future/upcoming problems

New problem (different limit/reason)

-/-/- same problem as previous hour

Details of problem(s)

Last 2 observations

Latest TAF

Line in TAF where problem occurs

TAF Health

Health summarized into wind, category, and weather factors

Summary table of health of TAFs being monitored

Sorted based on total health score

TAF Health – an attempt to quantify how closely the TAF matches the current observation on a scale from 0 to 100.

Using fuzzy logic methods the TAF is compared to the current observation. It uses 3 factors: Wind (WND), Category including ceiling and visibility (CAT), and weather (WX). Each factor is given a % (reduced to 0-9 for summary table). Overall health calculated as a product of all 3 factors. Pop-ups show TAF health and individual factors they give an explanation if a factor is below 80%.
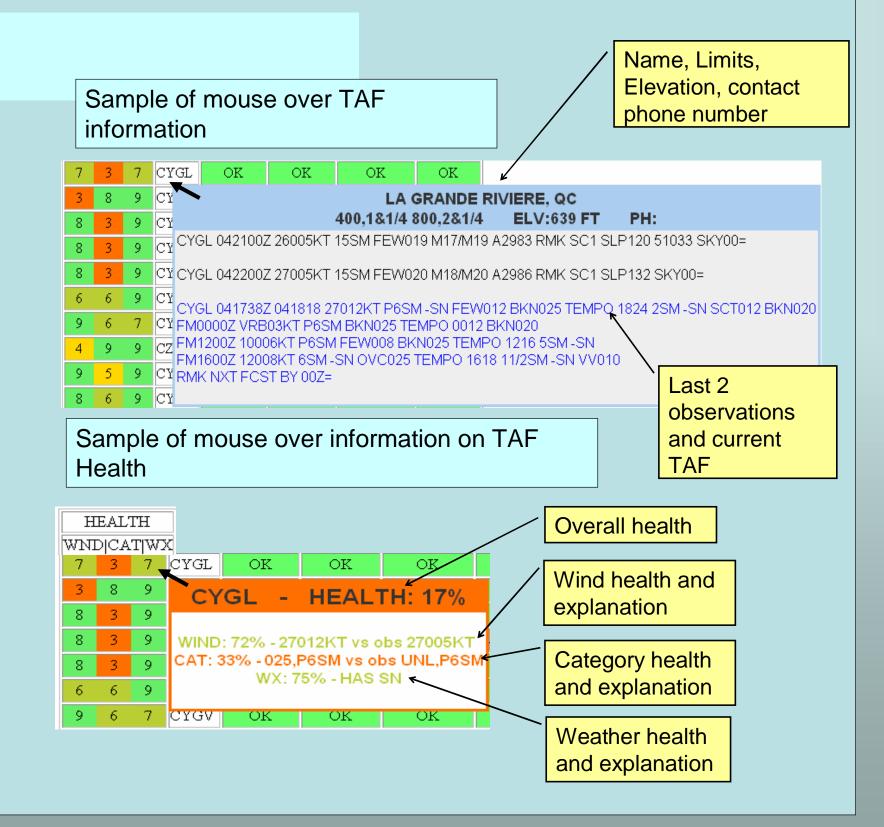
Wind health is based upon a vector difference between forecast and observed wind vectors. Adjusts wind speed to include gusts (average of sustained and gusts).

Category health is based on linear interpolation between main and tempo conditions (as well as max cig/vis and min cig/vis pairings). Uses weighting scheme to give more importance to low ceilings and visibilities.

Weather health is based upon occurring/not occurring logic. Uses a weighting scheme to give to more importance to significant weather types (FZRA, TSGR).

Sample of mouse over TAF information

Name, Limits, Elevation, contact phone number

Last 2 observations and current TAF

Sample of mouse over information on TAF Health

Overall health

Wind health and explanation

Category health and explanation

Weather health and explanation

Future Plans

Version 2.X

- Revise/update the health routines
- Include the influence of continuing problems
- Incorporate poor use of TEMPOs
- Show BECMGs that have already occurred
- Show graph of health for last 3 hours

Version 3.X

- Incorporate model/climatology guidance for projecting a future health based on an ensemble approach
- Incorporate alerting/warning directly into operational workstation and monitoring tools
- Incorporate Health into pre-transmission checks