

WORLD METEOROLOGICAL ORGANIZATION

IPET-SUP-1/Doc. 11.2
(6.III.2015)

COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

INTER-PROGRAMME EXPERT TEAM ON SATELLITE UTILIZATION AND
PRODUCTS

ITEM: 11.2

FIRST SESSION

Original: ENGLISH

GENEVA, SWITZERLAND, 16-19 MARCH 2015

Data continuity and performance management at ECMWF

(Submitted by S. English)

Summary and Purpose of Document

ECMWF makes available automatically generated warnings from the data assimilation system for over 70 different satellite products. This provides a very useful way to identify quickly anomalies that may need action, both at ECMWF and at other operational centres (both space agencies, and other users).

ACTION PROPOSED

The session is invited to note the automated data quality warning system at ECMWF.

DISCUSSION

ECMWF makes available automatically generated warnings from the data assimilation system for over 70 different satellite products. This provides a very useful way to identify quickly anomalies that may need action, both at ECMWF and at other operational centres (both space agencies, and other users).

Warnings of anomalies are sent by email to space agencies and ECMWF member state met services, but all warnings are also placed on the ECMWF website and are freely accessible there to all users worldwide.

The system is based on analysis of the difference between observations and expected observations calculated using an observation operator from the ECMWF short range forecast. The statistics of differences (mean, standard deviation, observation count) are compared to normal day to day variability over the recent past. Also fixed (“hard”) limits are applied. The stronger the statistical anomaly, the higher the category of warning (from slight to severe).

Figure 1 shows an example of monitoring.

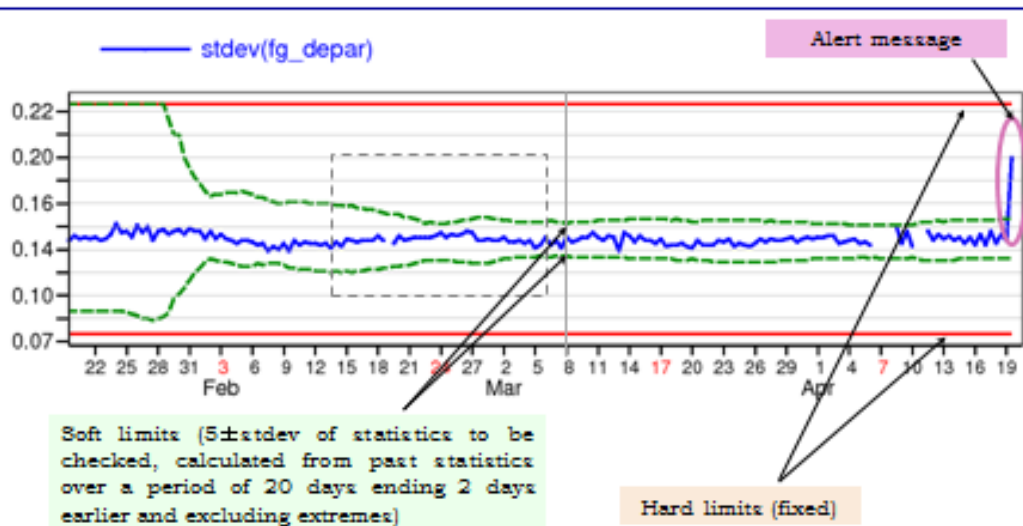


Figure 1

Figure 1 shows how the “soft limits” change with time, because they are used to show if the statistics are consistent with the recent past. The hard limits do not change automatically with time (they can be manually changed if needed). The soft limits are good for detecting sudden changes in quality. The hard limits are good for detecting long term drift.

Figure 2 shows the construction of the automated warning system.

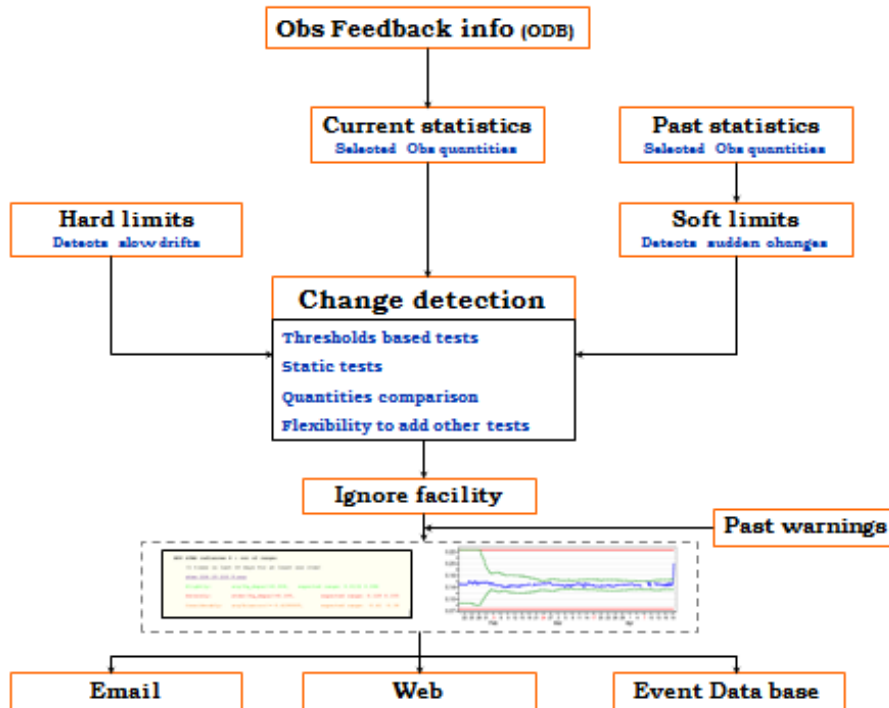


Figure 2

Once an anomaly is detected, a large number of plots are available on the ECMWF website to further investigate. Also many regions and quantities monitored are the same as in other NWP centres, so that results can be readily compared between centres. This is important as changes at ECMWF can sometimes trigger false alarms, because it is the model that is changing, rather than the observations. However in general the number of false alarms is rather low. These false alarms can be readily spotted by comparison with other centres. It is unusual for the system to fail to detect a genuine anomaly.