Threshold quality control of surface pressure

Rejection of observation $y_{i_{obs}}$ at model time t, if : $\qquad y_{i_{obs}} - y(\underline{x}_{i_{obs}}, t) > y^{thresh}$

Threshold for all surface pressure observations:

$$p_s^{thresh} = 5 \,_{[hPa]} + \left| t_{i_{obs}} - t \right|_{[h]} \cdot 1 \,_{[hPa]}$$

Revised threshold for SYNOP surface pressure, if 3-hourly pressure tendency is also reported:

$$p_s^{thresh} = 5 \,_{[hPa]} + \frac{1}{2} \left. \frac{\partial p_s}{\partial t} \right|_{i_{obs}} \left[\tfrac{hPa}{3\,h} \right]$$

Extensions to quality control of multi-level observations

- *for temperature: height and thickness check*

  - *geopotential (height) observation increments by hydrostatic integration of upper-air temperature and surface pressure increments*

  - *threshold quality control of derived height (as in OI)*

  - *threshold quality control of derived thickness*

    --- >   in troposphere: mean temperature error threshold of ~ 3.5 K

    within layers of ~ 200 hPa thickness

- *for wind, temperature, humidity: multi-level check*

  rejection of :

  - *all data (of observed quantity), if 4 subsequent mandatory-level data rejected*

  - *all data within 3 subsequent mandatory levels, if > 50% rejected within this range*