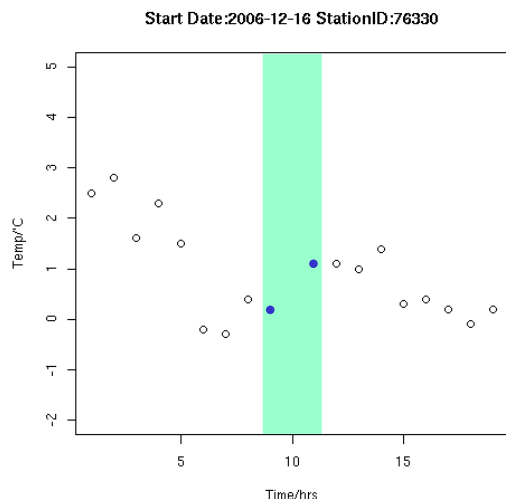


Automatic interpolation of missing temperature values



hour	TA	TAN	TAX
09	0.2	-0.6	0.5
10	-32767	-32767	-32767
11	1.1	0.9	1.2

This is a simple algorithm that constructs a corrected value for an original missing hourly temperature at some hour H that is bounded by two known original values (i.e. a single missing point), as the mean of the maximum and minimum temperatures measured for that hour interval, that are recorded at H+1.

i.e. for the example above

$$TA(\text{Hour}=10) = 0.5(\text{TAN}(\text{Hour}=11) + \text{TAX}(\text{Hour}=11)) = 0.5(1.2 + 0.9) = 1.05$$

If a corrected value (X) already exists (e.g. HQC intervention) and $\text{TAN}(T+1) < X < \text{TAX}(T+1)$ the value is not changed.

Given other checks a different interpolation method may also be applied to the missing data, but this is not the subject of this brief note.

Prior to the algorithm application, typical control flags for these data are:

1000601000000005

where

c(0)=1 =>

c(5)=6 =>

c(7)=1 =>

c(15)=5, indicates the control id of the HQC expert.

As illustrated by the following example:

```
stationid | obstime | original | paramid | tbtime | typeid | sensor | level | corrected | controlinfo | useinfo | cfailed
59680|2008-03-0103:00:00|7|211|2008-03-0102:54:07|311|0|0|7|11|1020000000001|2|30000000000000081|QC1-4-211:1,hqc
59680|2008-03-0104:00:00|-32767|211|2008-03-0104:31:26|311|0|0|6.9|1000601000000005|38929000000000081|QC1-4-211:1,hqc
59680|2008-03-0105:00:00|6.4|211|2008-03-0104:54:04|311|0|0|6.4|11|101000000000010|7000000000000000|
```

Where the control flag for the missing value is:
1000601000000005 and Cfailed = QC1-4-211:1,hqc

The algorithm is an automatic interpolation routine and on that basis the control flag to set is assumed to be ftime. Currently this has the settings:

Tidsserietilpasning (timeseries)

controlinfo(7), ftime

ftime=0 Ikke kontrollert

QC2d-2 **ftime=1 Interpolert/korrigert med godt resultat**

QC2d-2 **ftime=2 Interpolert/korrigert med usikkert resultat**

QC2d-2 ftime=3 Forsøkt interpolert/korrigert. Metode uegnet.

For forced testing the controlflag is set to ftime=7, e.g.

59680 | 2020-03-01 04:00:00 | -32767 | 211 | 2020-03-01 04:31:26 | 311 | 0 | 0 | 6.7 |
1000601700000005 | 3892900000000081 | QC1-4-211:1,hqc Qc2 UnitT corrected was:6.9

However, from the Controlinfo documentation the setting should probably be ftime=1, since the TAX,TAN average is a reliable method.

In practice, the interpolation algorithm used might be linear, spline, 4D (both space and time check), spatial interpolation, or <TAN,TAX>, etc.

For time interpolation:

use ftime=0,1,2,3 and add the method to cfailed as a keyword: linear, spline, (TAN,TAX)?

Or

define other ftime for different cases?

Note for ftime changes there is no update on Useinfo ... this needs to be checked.

QC2d-2 ftime=3	?
QC2d-2 ftime=4	?
QC2d-2 ftime=5	?
QC2d-2 ftime=6	?
QC2d-2 ftime=7	?
QC2d-2 ftime=8	?