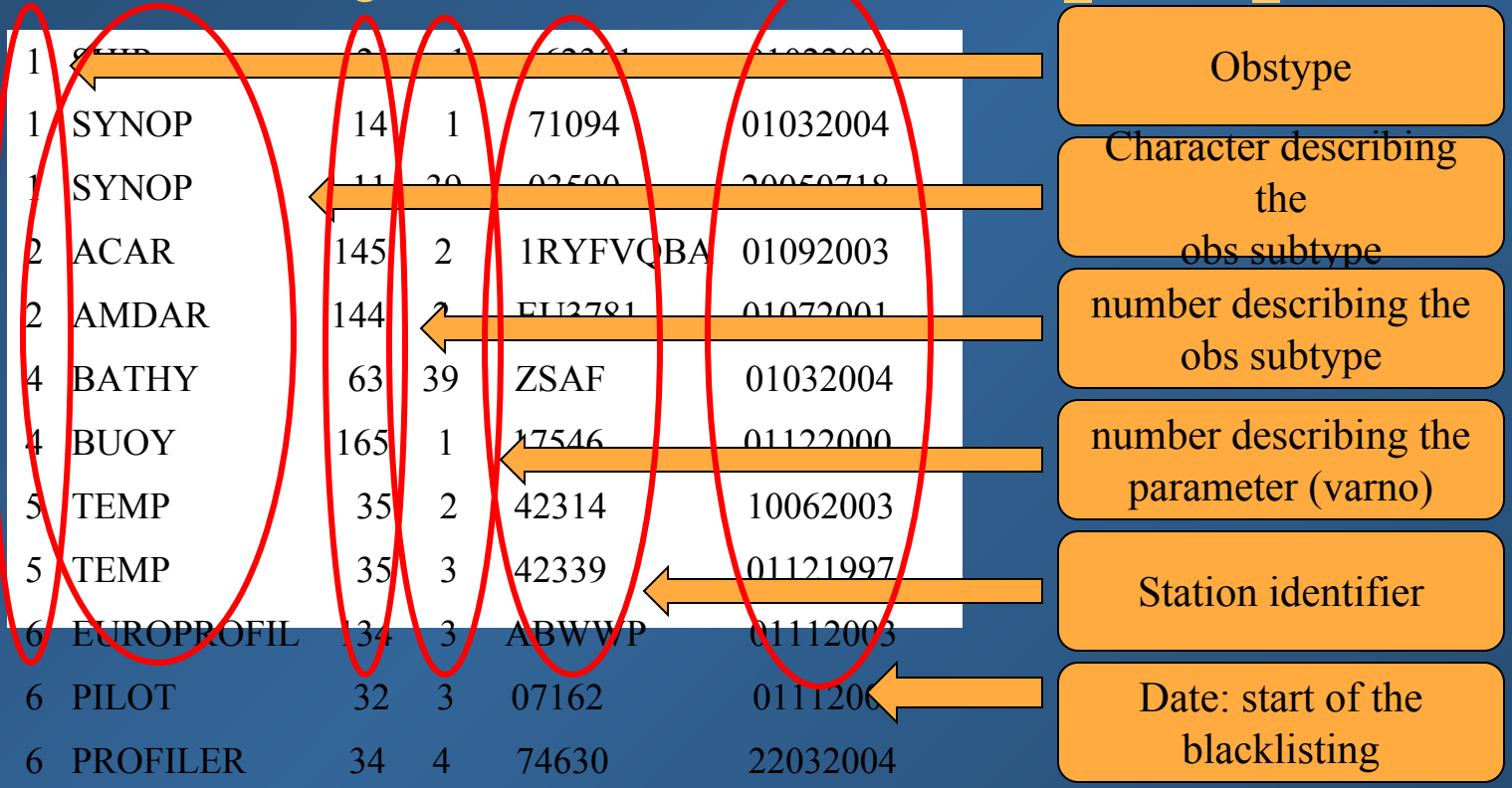
Screening & Monitoring exercises

Roger Randriamampianina & Trygve Aspelien & Paulo Madeiros

Blacklisting through Bator

→ Blacklisting of the observations: The LISTE_NOIRE_DIAP file



Blacklisting through Bator

→Blacklisting of the observations: The LISTE_LOC file

```
!-------------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste ] / ! commentaire
!   i1     i2         i3       a8      i3        i3   (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXx xxxxxxx xxxxxxx (1x,x7)
!-------------------------------------------------------------------------------------------------
N  1  16
N  2 141            29
N  2 144            29
N  2 145            29
N  3  88      052
N  3  8
N  3  9
N  3  90      054       ZONB4    -50     50    -50     50
N  3  88      253       ZONC4    -50     50   -155    105
N  3  88      254       ZONC4    -50     50    -85    175
N  3  88      256       ZONB4    -50     50   -125    -25
N  6  34             4 PROF2    700    400 0 0 1
N  6 134             3 PROF2    700    400 1 0 1
N  7 210      206    3 TOVS2      6     11
N  9 122              ! ERS
N  9 210              ! NSCAT
N  9 300              ! Quikscat before 02/2000
```

Action:

N: blacklist
E: force to use

Blacklisting through Bator

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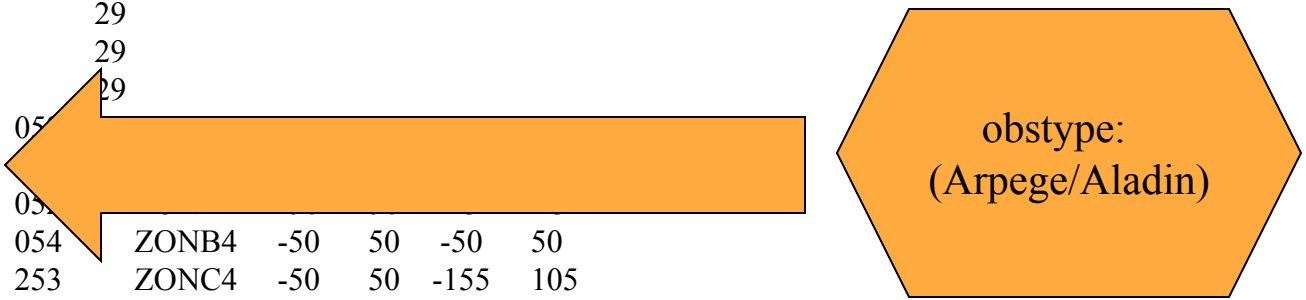
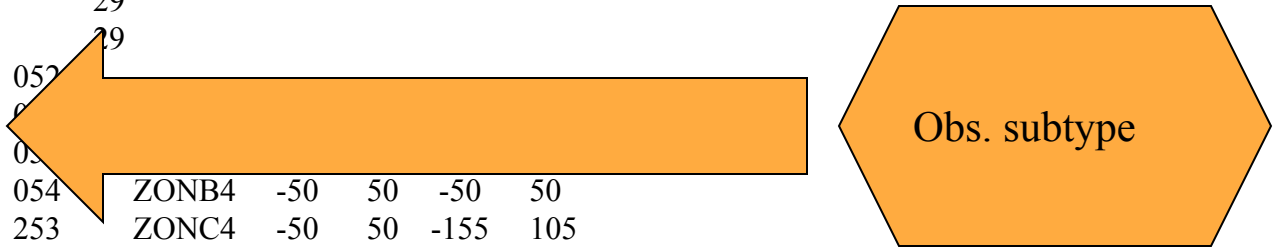
```
!-----------------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste ] / ! commentaire
!   a1     i2          i3        a8       i3         i3   (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXx xxxxxxx xxxxxxx (1x,x7)
!-----------------------------------------------------------------------------------------------------
N  1  16
N  2  41            29
N  2  44            29
N  2  45            29
N  3  88     05
N  3  88
N  3  90     05
N  3  90     054      ZONB4    -50     50     -50     50
N  3  88     253      ZONC4    -50     50    -155    105
N  3  88     254      ZONC4    -50     50     -85    175
N  3  88     256      ZONB4    -50     50    -125    -25
N  6  34             4 PROF2    700    400 0 0 1
N  6  134            3 PROF2    700    400 1 0 1
N  7  210    206     3 TOVS2      6     11
N  9  122              ! ERS
N  9  210              ! NSCAT
N  9  300              ! Quikscat before 02/2000
```



Blacklisting through Bator

→Blacklisting of the observations: The LISTE_LOC file

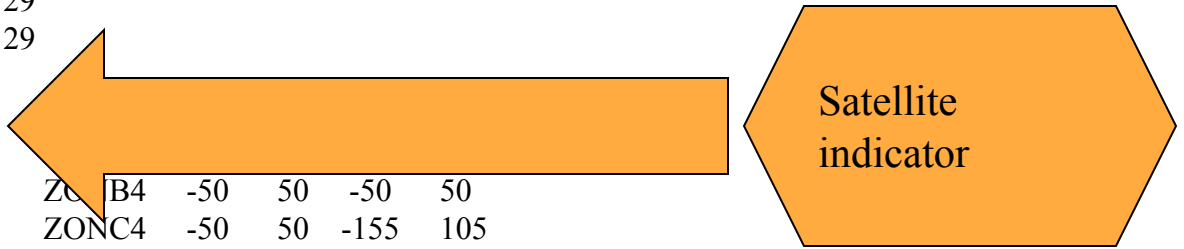
```
!-----------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste ] / ! commentaire
!   i1     i2          i3        a8       i3          i3   (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXx xxxxxxx xxxxxxx (1x,x7)
!-----------------------------------------------------------------------------------------------
N  1  16
N  2 141                29
N  2 144                29
N  2 145                29
N  3  88     052
N  3  88     0
N  3  90     0
N  3  90     054          ZONB4    -50     50    -50     50
N  3  88     253          ZONC4    -50     50   -155    105
N  3  88     254          ZONC4    -50     50    -85    175
N  3  88     256          ZONB4    -50     50   -125    -25
N  6  34                 4 PROF2    700    400 0 0 1
N  6 134                 3 PROF2    700    400 1 0 1
N  7 210     206         3 TOVS2      6     11
N  9 122                  ! ERS
N  9 210                  ! NSCAT
N  9 300                  ! Quikscat before 02/2000
```



Blacklisting through Bator

→Blacklisting of the observations: The LISTE_LOC file

```
!-------------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste ] / ! commentaire
!   i1     i2        i3       a8      i3        i3   (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXx xxxxxxx xxxxxxx (1x,x7)
!-------------------------------------------------------------------------------------------------
N  1  16
N  2 141          29
N  2 144          29
N  2 145          29
N  3  88     052
N  3  88     054
N  3  90     052
N  3  90     054      ZONB4    -50     50    -50     50
N  3  88     253      ZONC4    -50     50   -155    105
N  3  88     254      ZONC4    -50     50    -85    175
N  3  88     256      ZONB4    -50     50   -125    -25
N  6  34           4 PROF2    700    400 0 0 1
N  6 134           3 PROF2    700    400 1 0 1
N  7 210     206   3 TOVS2      6     11
N  9 122           ! ERS
N  9 210           ! NSCAT
N  9 300           ! Quikscat before 02/2000
```



Blacklisting through Bator

→Blacklisting of the observations: The LISTE_LOC file

```
!-------------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste ] / ! commentaire
!   i1      i2          i3        a8       i3         i3    (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXx xxxxxxx xxxxxxx (1x,x7)
!-------------------------------------------------------------------------------------------------
N  1  16
N  2 141                    29
N  2 144                    29
N  2 145                    29
N  3  88         052
N  3  88         054
N  3  90         052
N  3  90         054          Z   NB4    -50     50     -50      50
N  3  88         253          ZONC4     -50     50    -155     105
N  3  88         254          ZONC4     -50     50     -85     175
N  3  88         256          ZONB4     -50     50    -125     -25
N  6  34                   4  PROF2     700    400 0 0 1
N  6 134                   3  PROF2     700    400 1 0 1
N  7 210         206       3  TOVS2       6     11
N  9 122                    ! ERS
N  9 210                    ! NSCAT
N  9 300                    ! Quikscat before 02/2000
```

Center of production for Satellite data

Blacklisting through Bator

→Blacklisting of the observations: The LISTE_LOC file

```
!-------------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste ] / ! commentaire
!   i1     i2         i3        i8        i3        i3   (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXx xxxxxxx xxxxxxx (1x,x7)
!-------------------------------------------------------------------------------------------------
N  1  16
N  2 141                    29
N  2 144                    29
N  2 145                    29
N  3  88        052
N  3  88        054
N  3  90        052          ZO
N  3  90        054          ZONB     -50     50    -50     50
N  3  88        253          ZONC4    -50     50   -155    105
N  3  88        254          ZONC4    -50     50    -85    175
N  3  88        256          ZONB4    -50     50   -125    -25
N  6  34                      4  PROF2    700    400 0 0 1
N  6 134                      3  PROF2    700    400 1 0 1
N  7 210        206           3  TOVS2      6     11
N  9 122                ! ERS
N  9 210                ! NSCAT
N  9 300                ! Quikscat before 02/2000
```

Parameter or sensor for Sat data

Blacklisting through Bator

→Blacklisting of the observations: The LISTE_LOC file

```
!-------------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste_l ] / ! commentaire
!   i1      i2          i3        a8      i3        i3   (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXX xxxxxxx xxxxxxx (1x,x7)
!-------------------------------------------------------------------------------------------------
N  1  16
N  2 141                    29
N  2 144                    29
N  2 145                    29
N  3  88        052
N  3  88        054
N  3  90        052             ZONB4   -50
N  3  90        054             ZONB4   -50     50     -50     50
N  3  88        253             ZONC4   -50     50    -155    105
N  3  88        254             ZONC4   -50     50     -85    175
N  3  88        256             ZONB4   -50     50    -125    -25
N  6  34                   4    PROF2   700    400 0 0 1
N  6 134                   3    PROF2   700    400 1 0 1
N  7 210        206        3    TOVS2     6     11
N  9 122                ! ERS
N  9 210                ! NSCAT
N  9 300                ! Quikscat before 02/2000
```

y wo… klisting Satob
in different zones

ZONx4 Φmin Φmax λmin λmax

x=B: Φ< Φmin or Φ> Φmax
or λ < λmin or λ> λmax

x=C: Φ< Φmin or Φ> Φmax
or (λ > λmin and λ< λmax)

Blacklisting through Bator

→Blacklisting of the observations: The LISTE_LOC file

```
!-------------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste ] / ! commentaire
!   i1     i2        i3       a8      i3        i3   (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXx xxxxxxx xxxxxxx (1x,x7)
!-------------------------------------------------------------------------------------------------
N  1  16
N  2 141                  29
N  2 144                  29
N  2 145                  29
N  3  88        052
N  3  88        054
N  3  90        052             ZONB4   -5                    1
N  3  90        054             ZONB4   -50    50    -50     50
N  3  88        253             ZONC4   -50    50   -155    105
N  3  88        254             ZONC4   -50    50    -85    175
N  3  88        256             ZONB4   -50    50   -125    -25
N  6  34                   4    PROF2   700   400 0 0 1
N  6 134                   3    PROF2   700   400 1 0 1
N  7 210        206        3    TOVS2     6    11
N  9 122                ! ERS
N  9 210                ! NSCAT
N  9 300                ! Quikscat before 02/2000
```

Key word: blacklisting of Satellite channels

TOVSn C1, C2, … Cn

Where $1 \leq n \leq 9$

Hirs: 1,20

Amsua:1,15

Airs: 1,2377

Seviri: 1,8

Blacklisting through Bator

→Blacklisting of the observations: The LISTE_LOC file

```
!-------------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste ] / ! commentaire
!    i1      i2          i3        a8        i3         i3   (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXx xxxxxxx xxxxxxx (1x,x7)
!-------------------------------------------------------------------------------------------------
N  1  16
N  2 141                  29
N  2 144                  29
N  2 145                  29
N  3  88         052
N  3  88         054
N  3  90         052            ZONB4    -50
N  3  90         054            ZONB4    -50      50     -50      50
N  3  88         253            ZONC4    -50      50    -155     105
N  3  88         254            ZONC4    -50      50     -85     175
N  3  88         256            ZONB4    -50      50    -125     -25
N  6  34                    4   PROF2    700     400 0 0 1
N  6 134                    3   PPPP2    700     400
N  7 210         206        3   TOVS2      6      11
N  9 122                 ! ERS
N  9 210                 ! NSCAT
N  9 300                 ! Quikscat before 02/2000
```

Key word: blacklisting of pressure levels

PPPPn P1, P2, …Pn

Where 1≤ n ≤ 9

Blacklisting through Bator

→Blacklisting of the observations: The LISTE_LOC file

```
!-------------------------------------------------------------------------------------------------
! action / obstype / [ codetype / ident / code prod. / varno / code / liste ] / ! commentaire
!   i1      i2          i3        a8      i3          i3   (a3i2)
x xx xxx xxxxxxxx xxx xxx XXXXx xxxxxxx xxxxxxx (1x,x7)
!-------------------------------------------------------------------------------------------------
N  1  16
N  2 141                    29
N  2 144                    29
N  2 145                    29
N  3  88        052
N  3  88        054
N  3  90        052             ZONB4   -50
N  3  90        054             ZONB4   -50     50     -50     50
N  3  88        253             ZONC4   -50     50    -155    105
N  3  88        254             ZONC4   -50     50     -85    175
N  3  88        256             ZONB4   -50     50    -125    -25
N  6  34                    4   PROF2   700    400 0 0 1
N  6 134                    3   PROF2   700    400 1 0 1
N  7 210        206         3   TOVS2     6     11
N  9 122                ! ERS
N  9 210                ! NSCAT
N  9 300                ! Quikscat before 02/2000
```

Key word: blacklisting of pressure thicknesses

PROFn P1, P2, …Pn I1,I2, …In+1

Where $1 \leq n \leq 9$ and I1,I2,…,In are the index of the blacklisting associated to thicknesses

$P \in [1000,P1[,\ldots\ [Pj-1,Pj[\ \ldots$

Blacklisting Ij = 1

Exercise 1
Change of thinning distance for aircraft data

Steps:
1- Perform the screening with default namelist settings.
   -- save the output NODE/log files.
2- Fetch/check out the namelist for screening.
   In Harmonie: HarmonieDA co nam/harmonie_namelists.pm; HarmonieDA co scr/Screening
2- Find the screening group called NAMSCC
3- Change the RFIND_AIREP to 70000;
4- compare the NODEs/Logs and find out that the number of active aircraft data should be different.

In Harmonie: the logs are under:
$PERM/hm_home/daScreening/archive/log

Check ODB:
cd $PERM/hm_home/daScreening/20180819_12/odb_ccma/CCMA
dcagen -F -n -N 1
odbsql -q "SELECT obstype, codetype, statid, varno, vertco_reference_1@body FROM hdr, body WHERE obstype == 5 ;" -o test.dat
Open the test.dat

Exercise 2

Activate use of TEMP radiosondes and blacklist all BUFR radiosondes (TEMP codetype=35) & (BUFR codetype=109) & (obstype=5)

Steps:

1- Perform the screening with default namelist settings.
   -- save the output NODE/log files.
2- Fetch/check out the LISTE_LOC file
   -- in Harmonie, we use MARS data, so check out LISTE_LOC.conv.mars
3- delete the line with “N 5 35”, if it’s present
4- add the following line: “N 5 109”.
   -- Pay attention to the length of each input by looking to the “xxx” on top of the file.
5- Perform new screening
   -- compare the NODEs/Logs or check the ODB CCMA

In Harmonie: the logs are under:
$PERM/hm_home/daScreening/archive/log

Check ODB:

```
cd $PERM/hm_home/daScreening/20180819_12/odb_ccma/CCMA
dcagen -F -n -N 1
odbsql -q "SELECT obstype, codetype, statid, varno, vertco_reference_1@body FROM hdr, body WHERE obstype
== 5 ;" -o test.dat
```

Open the test.dat

Exercise 3

Use BUFR radiosondes at “10238” only between 700 and 400 hPa (BUFR codetype=109) & (obstype=5)

Steps:
1- Perform the screening with default namelist settings.
   -- save the output NODE/log files.
2- Fetch/check out the LISTE_LOC file
   -- in Harmonie, we use MARS data, so check out LISTE_LOC.conv.mars
4- add the following line: “N 5 109   10238   2 PROF2   700   400 1 0 1”.
   -- Pay attention to the length of each input by looking to the “xxx” on top of the file.
5- Perform new screening
   -- compare the NODEs/Logs or check the ODB CCMA
In Harmonie: the logs are under:
$PERM/hm_home/daScreening/archive/log

Check ODB:
cd $PERM/hm_home/daScreening/20180819_12/odb_ccma/CCMA
dcagen -F -n -N 1
odbsql -q "SELECT obstype, codetype, statid, varno, vertco_reference_1@body FROM hdr, body WHERE obstype == 5 ;" -o test.dat
Open test.dat

Exercise 4

Blacklist wind from BUFR radiosondes at “01400”
(BUFR codetype=109) & (obstype=5) & (varno=3)

Steps:
1- Perform the screening with default namelist settings.
   -- save the output NODE/log files.
2- Fetch/check out the LISTE_LOC file
   -- in Harmonie, we use MARS data, so check out LISTE_LOC.conv.mars
4- add the following line: “N 5 109   01400   3”.
   -- Pay attention to the length of each input by looking to the “xxx” on top of the file.
5- Perform new screening
   -- compare the NODEs/Logs or check the ODB CCMA
In Harmonie: the logs are under:
$PERM/hm_home/daScreening/archive/log

Check ODB:
cd $PERM/hm_home/daScreening/20180819_12/odb_ccma/CCMA
dcagen -F -n -N 1
odbsql -q "SELECT obstype, codetype, statid, varno, vertco_reference_1@body FROM hdr, body WHERE obstype == 5 ;" -o test.dat
Open test.dat

Exercise 5

Your choice

What you would like to do? See if you succeed… Otherwise, let me (Roger) know.

Exercise 5(1): Preparation for observation monitoring using obsmon

on cca/ccb
mkdir $TEMP/training
cd $TEMP/training
qsub /perm/ms/no/sbu/training/exercises/obsmon_training.job

 # Results end up in $TEMP/training/obsmon/archive;
tar czvf archive.tgz archive; move it to your <your_ecgb_scractch>/training; untar it;
Now you have the results under “<your_ecgb_scratch>/training/archive”

#Visualize ODB with Shiny on ecgate

1. Get obsmon from hirlam.org:

Be sure that you are under scratch or perm: “git clone https://git.hirlam.org/Obsmon obsmon”
Or take the tar file from /scratch/ms/no/sbt/DACOURS/obsmon.tar, then follow the instruction in /scratch/ms/no/sbt/DACOURS/obsmon_on_ecgb.README.md

2. Install obsmon:

cd obsmon
./install --local-install

3. Set up a valid config.toml file.

This file tells obsmon where to find the experiments. Please take a look at the example file "config.toml.example" included with obsmon. (See next slide)

4. Finally, run obsmon:

./obsmon --launch

Exercise 5 (2): Preparation for observation monitoring using obsmon

Set up a valid config.toml file

```
[general]
logLevel = "INFO"

[[experiments]]
displayName = "Training Experiment"
baseDir = "<your_ecgb_scratch>/training/archive"
experiment = ""

[[experiments]]
displayName = "More observations"
baseDir = "/scratch/ms/no/sbt/DACOURS/OSE40S1"
experiment = ""
```

You should have access to this one as well to check more non-conventional observations

You can save the results of your tests in different directories for comparison.

Exercise 6: Testing obsmon post-processor and visualization

Extra
Make a local copy of:
/perm/ms/no/sbu/training/exercises/obsmon_training.job
/perm/ms/no/sbu/training/exercises/include.ass-training

cp /perm/ms/no/sbu/training/exercises/obsmon_training.job $TEMP/training/.
cp /perm/ms/no/sbu/training/exercises/include.ass-training $TEMP/training/.

Modify the variable config in $TEMP/training/obsmon_training.job to $TEMP/training/include.ass-training
#Don’t forget to change the access mod to this file, by “chmod 755 include.ass-training”

Modify $TEMP/training/include.ass-training to only monitor e.g. AIRCRAFT

Move $TEMP/training/obsmon/ if you want to keep it
mv $TEMP/training/obsmon $TEMP/training/obsmon-orig

Submit modified job script
qsub $TEMP/training/obsmon_training.job

You should have only two files under: “obsmon/archive/ecma/2018081912/”, for example.

Visualize it if you want. (see previous slides)

Exercise 7: Combined screening and obsmon exercise

It turned out that the example odb data sets comprise only assimilation of humidity from radiosonde observations. The task is to add assimilation of temperature, and wind.

Tips:
-- Change the LISTE_LOC or LISTE_NOIRE_DIAP, so that it doesn't content any lines with "N 5".
-- You can also choose the type of radiosonde to keep in the assimilation (Codetype: 35, 36, 135, 109)

To do this please refer to exercise 2 or 3 or 4 and 6:
Fetch and modify /perm/ms/no/sbu/training/exercises/obsmon_training.sh

And visualize the modified screening results.