

OBSTAT IN OLIVE

HISTORY

13/03/2006	P. Poli	0.0	First version.
15/03/2006	P. Poli	0.1	Enhanced section IV to enable use of text outputs from OBSTAT.
01/03/2007	P. Poli	0.2	Addition of observation and background error diagnostics
27/07/2007	P. Poli	0.21	Q&A: How to deal with inisoftstat problems, How to define new domains, How to compare two experiments using different cycles.
19/02/2008	P. Poli	0.3	Upgrade for cycle 33; support for IASI, SEVIRI and ASCAT
10/04/2008	P. Poli	0.4	Support for 3-hour cutoffs
17/04/2008	P. Poli	0.5	Support for radar winds
04/06/2008	P. Poli	0.6	Major change after phasing with CY33R2: list of items numbers changed

ABSTRACT

The OBSTAT software computes and plots statistics on observations assimilated in the ECMWF or Meteo France assimilation suite. One common application of OBSTAT is to produce statistics of observation minus background and observation minus analysis quantities. One assimilation time period is sufficient to run OBSTAT, but statistics over several assimilation time periods can be cumulated to produce statistics over an entire experiment, for example.

OBSTAT relies on the Observation Data Base (ODB) to extract the observation minus first guess, and can compare two experiments side-by-side on the same plot. The generation of plots relies on MAGICs. The OBSTAT software was originally written by François Bouttier in July 1998.

USER'S GUIDE

I. OBSTAT Diagnostic Generation

From OLIVE, an OBSTAT diagnostic can be generated by clicking on "Obstat" from the experiment you want to run OBSTAT on.

II. OBSTAT Diagnostic Setup

Several parameters can be setup in OBSTAT. These parameters are grouped in several sections when you hit "Edit" in OLIVE:

- **Select date and time**

The following fields must be filled: (*example in italics*)

Begin at date *20050622*

End date *20050623*

Begin at hour *00*

End at hour *12*

Step in hours *06*

With the example above, OBSTAT will run on the following synoptic time periods: 2005062200, 2005062206, 2005062212, 2005062218, 2005062300, 2005062306, and 2005062312.

- **Select an experiment**

The following fields must be filled:

Experiment: choose between “*Oper*”, “*Double*”, and “*Experiment*”.

Experiment ID: this field is only required if you select “*Experiment*”. Leave blank otherwise.

Experiment cut-off: choose between “*Assimilation*” and “*Production*”.

Experiment class: this field is typically “*forecast*”.

Experiment model: this field is either “*arpege*” or “*aladin*”.

Experiment area: this field is usually “*france*”. If you need to select a particular area for your statistics, do not change that field, but refer to the answer to “how can I define another domain for my OBSTAT run” in the section “Frequently Asked Questions”.

Experiment cycle: this field is either “*cy28*”, “*cy29*”, “*cy30*”, “*cy31*”, “*cy32*”, or “*cy33*” as of 19/02/2008.

- **Select a reference**

This section only needs to be filled if you want to compare your statistics with a reference experiment. Select “*none*” in Reference if you do not want to compare your statistics with any reference.

Reference: choose between “*none*”, “*Oper*”, “*Double*”, and “*Experiment*”.

Reference ID: this field is only required if you select “*Experiment*”. Leave blank otherwise.

Reference cut-off: choose between “*Assimilation*” and “*Production*”.

Reference class: this field is typically “*forecast*”.

Reference model: this field is either “*arpege*” or “*aladin*”.

Reference area: this field is usually “*france*”. If you need to select a particular area for your statistics, do not change that field, but refer to the answer to “how can I define another domain for my OBSTAT run” in the section “Frequently Asked Questions”.

Note that you cannot enter a Reference cycle because the cycle version has to be identical for the experiment and the reference.

- **Select observations inputs**

This section selects which parts of the ODB database you want to calculate your statistics on. The following fields are available:

ODB type: this field is either “ECMA” or “CCMA”. Usually, you choose ECMA if you want to access screening only, while CCMA is needed if you want to access anything in the first or second minimizations. Note that for “Oper” or “Double” (for which the ODB databases are archived in ECMA only), OBSTAT automatically adapts this option to “ECMA” while the option remains unchanged for the other experiment if you compare an experiment of your own with “Oper” or “Double”, for example.

ODB production class: this field is either “screening”, “4dupd1”, “4dupd2”, or “minim” (“4dupd1” and “4dupd2” are only for Arpege, while “minim” is only for Aladin).

ODB stage: this field is either “screen”, “std”, “minim”, “traj”, or “complete”.

ODB partitioning: this field is either “full”, “mix”, “virtual”, “altitude”, or “ground”.

ODB types list: enter in this field the list of bases you want to open specifically. For example: “amsb, conv” to select only the AMSU-B and conventional observations.

This section is where you are the most likely to make a mistake, since the interpretation of the arguments you will enter is left to the OLIVE toolbox and the archiving methods for the “Oper” and “Double” suites keep changing. However, for accessing a particular ODB database from an experiment, you can easily predict the behaviour of the OLIVE toolbox so you should not have too much problem in that case.

For example, suppose you want to calculate your statistics on the observations minus analysis at the end of the first minimisation. You thus want to extract the following ODB database from cougar for a date 20050622H00A and an experiment named RG78:

RG78/20050622H00A/4dupd1/ccma_min_mix.tar

You will then be using the following configuration:

ODB type: “CCMA”

ODB production class: “4dupd1”

ODB stage: “minim”

ODB partitioning: “mix”

ODB types list: leave blank.

You will find below a list of the most common configurations:

To calculate statistics on observation minus first guess on all the observations (i.e. after screening but before the data selection):

ODB type: "ECMA"

ODB production class: "screening"

ODB stage: "screen"

ODB partitioning: "virtual"

ODB types list: leave blank.

Should you want to do the same but only for the observations that were actually selected by the screening procedure (data that actually were input to the minimisation), you will use the following configuration

ODB type: "CCMA"

ODB production class: "screening"

ODB stage: "screen"

ODB partitioning: "mix"

ODB types list: leave blank.

If you want to collect the observation minus analysis statistics at the end of the analysis (i.e. 4dupd2/ccma_traj_mix.tar), you will enter the following (for arpege):

ODB type: "CCMA"

ODB production class: "4dupd2"

ODB stage: "traj"

ODB partitioning: "mix"

ODB types list: leave blank.

- **Select action to perform**

Calculate obs – model: either "on" or "off". Default: "on". As of 13/03/2006, this field work best if left unchanged.

Use pre-calculated obs-model: either "on" or "off". Default: "on". When option is "on", OBSTAT looks for pre-calculated obs minus analysis and and minus first guess quantities that have been created by a previous run of the same OBSTAT diagnostics; if such quantities are not found (either because this is the first run of your OBSTAT diagnostic, or because you are added extra dates), these quantities are calculated. Note that you need to set this option to "off" if you changed anything in the section Select observations inputs.

Include pre-calc list: Default: leave field blank. As of 13/03/2006, this field work best if left unchanged.

Merge all files in one: either "on" or "off". Default: "on". As of 13/03/2006, this option is obsolete. OBSTAT always performs a merge of all the dates requested before plotting. If you just want to plot a particular date, simply restrict the time range in the section Select date and time.

Plotting layout: either “A4”, “A3,” or “EPS”. Default: “A4”. As of 13/03/2006, this field works best if left unchanged. Users are welcome to try out this option and report any problem but support is not guaranteed (this part relies on the MAGICS libraries).

- **Statistics definition**

This section enables to select exactly which observations you want to calculate your statistics on, and on which geographical domain you want to do so. This is done by choosing or specifying a particular statistics definition file (commonly called “statdef”).

Statdef selection: this field is either “Default” or “Custom”. Selecting Custom will calculate statistics on a default list of observations which includes conventional observations, SATOB, (A)TOVS, and Quikscat.

Statdef file: leave blank unless you selected “Custom” for “statdef selection”. If so, enter the location of the file which contains the OBSTAT statistics definition file; that file has to be located on the sx machine you are running OBSTAT on, for example: /home/your-username/statdef.custom ; you can make a copy of the file /home/verolive/diagnostic/obstat/cy28/config/stat.ref (or cy29, cy30, cy31, cy32, cy33 as appropriate) as a basis for adding/removing entries in the OBSTAT statistics definition file. The line “items= ...” controls which quantities are to be computed and plotted. Typically, “items = 9 10” indicates that the default quantities retained for computation and plot are 9: the observation minus background departure and 10: the observation minus analysis departure. The Table 1 below lists the numbers that are available for the field “items”. Note:

- Depending on the observation type, not all of these values may be relevant. You may want to check your ODB beforehand.
- Any combination of numbers of possible as long as they are separated by spaces.
- The observation, background, and analysis error standard deviations (in observation space) as estimated by the method of Desroziers *et al.* (QJRMS, 2005) are only available from cycle 30 on.
- The item 2nd vertical datum is only available from OBSTAT cycle 32 on.
- See the source code obt/src/updsoft.F90 if you want to find out more on how the computations are carried out.
- * Items 81 and 82 are only available from cycle 33 on, and provided that the field Sql in **Build parameters** contains “radwd” instead of “default”.
- Some numbers changed for cycle 33 following phasing with ECMWF CY33R2 (marked in **red** below).

Item	Tag in OBSTAT Plots	Comment
<i>REAL NUMBERS, FROM ODB</i>		
2	datum parameter code	varno@body
4	report latitude	lat@hdr, converted to degrees
5	report longitude	lon@hdr, converted to degrees
6	datum vertical coordinate	press@body
8	datum observed value	obsvalue@body
9	background departure o-b	fg_depar@body
10	analysis departure o-a	an_depar@body
11	observation standard error	obs_error@errstat

12	background standard error	fg_error@errstat
13	lo-res departure update 1	lores[1]@update
14	hi-res departure update 1	hires[1]@update
15	lo-res departure update 2	lores[2]@update
16	probability of gross error	fg_check_1@update
17	range of possible values	fg_check_2@update
18	bias correction of obs	biascorr@body
20	integer station ID	statid@hdr
21	variational bias correction of obs	biasctrl@body
83 (43 up to cy32)	datum 2nd vertical coordinate	press_rl@body
81 *	radar elevation	elevation@radar_body
82 *	radar azimuth	azimuth@radar_body
<i>INTEGER NUMBERS, FROM ODB</i>		
1	report type	obstype extracted below from codetype@hdr
3	report instrument/sensor type	codetype@hdr and sensor@hdr
7	report time (hours)	time@hdr
19	date yyyymmdd	date@hdr
22	datum status (bits 27-30)	status@body, shifted
23	report status (bits 27-30)	status@hdr
24	report/blk events (17+15bits)	event1@hdr, shifted
25	report-type specific events	rdbflag@hdr
26	datum flags (4+4+4+4bits 16-31)	anflag@body
27	datum events (bits 4-30)	event1@body, shifted
<i>REAL NUMBERS, COMPUTED BY OBSTAT</i>		
28	background dept (no bias cor.) o-b	(item 9) + (item 18)
29	wind speed	observed wind speed
30	incremental convergence	incremental convergence in 1st inner loop
31	Bennett's diagnostic	(item 9) / sqrt((item 11)^2 + (item 12)^2)
32	normalised analysis fit	(item 10) / (item 11)
33	sqrt(HBH+R)	sqrt((item 11)^2 + (item 12)^2)
35	normalised background fit	(item 9) / (item 11)
36	relative analysis fit (%)	100. * (item 10) / abs((item 10) - (item 8))
37	relative background fit (%)	100. * (item 9) / abs((item 9) - (item 8))
39 (38 up to cy32)	est obs std error	obs. error stdev. estimated by Desroziers' method
40 (39 up to cy32)	est bkg std error	bkg. error stdev. estimated by Desroziers' method
41 (40 up to cy32)	est ana std error	ana. error stdev. estimated by Desroziers' method
43	rel est obs std error	Relative obs. error stdev. estimated by

		Desroziers' method, as a fraction of the observation
44	rel est bkg std error	Relative bkg. error stdev. estimated by Desroziers' method, as a fraction of the background
45	rel est ana std error	Relative ana. error stdev. estimated by Desroziers' method, as a fraction of the analysis

Table 1: list of allowed numbers for the field "items" in the statistics definition file

The field "flagfilter=" selects the observations depending on their status and position within the time window. The Table 2 below lists the numbers that are available for the field "flagfilter". For more details regarding which flags are used for this selection, see the source code obt/src/updsoft.F90.

Flagfilter	Retains
1	active data only
2	all data
3	not active data only
4	best active data only
5	used data only
6	varqc-rejected data
7	blacklisted data
8	failed data only
9	data passed fg check)
10	not rejected data
11	active and passive
number above + 20	same as above, retains only data within a 3-hour window (feature only available from cycle 33 on)

Table 2: list of allowed numbers for the field "flagfilter" in the statistics definition file

Statdef area: suggest to keep "default".

Area coordinates: leave blank unless you selected "custom" for Statdef area.

general_file: if you want to define a new geographical domain for your statistics, specify a file location on the sx machine obstat will run on; the file you have to put at that location has to be a copy of the file /home/verolive/diagnostic/obstat/cy28/config/general.cfg (or cy29, cy30 as appropriate) and contain extra line(s) with the specific domain(s) you want to define. Leave blank otherwise.

odbcodes_file: if you want to access observations which are new and hence not yet incorporated in the default list of ODB codes, make a copy of the file /home/verolive/diagnostic/obstat/cy28/config/odbcodes.cfg (or cy29, cy30 as appropriate) and add extra line(s) as appropriate. Leave blank otherwise.

- **Build parameters**

Verbosity level: default is “*std*”. “high” or “low” verbosity will output more (or less) details during the runs. These outputs are stored inside files on the sx machine you run OBSTAT and named

/data1/swapp/sto/\${YOUR-USERGROUP}/

 \${YOUR-USERNAME}/diagnostic/obstat/\${OBSTAT_ID}/\${OUTPUTFILE}.txt

where, for example:

YOUR-USERGROUP= *mrpa*

YOUR-USERNAME= *mrpa679*

OBSTAT_ID= the OLIVE ID of the OBSTAT diagnostic you created

OUTPUTFILE= *stdeo_calc.txt* for the calc part, *stdeo_plot.txt* for the plot part

Rebuild the obstat libraries: keep “*off*”.

Rebuild the obstat binary: keep “*off*”.

Plot binary: leave blank. (You can indicate here a new binary on the sx machine you run OBSTAT – this is useful for trying out new binaries)

Calc binary: leave blank. (You can indicate here a new binary on the sx machine you run OBSTAT – this is useful for trying out new binaries)

Sql: Default: “*default*”. This is the name of the ODB SQL request used by obstat. The *default* is to use odb/dll/obstat.sql. If you want to use instead of that request, for example, odb/dll/obstat_reo3.sql you then need to enter “*reo3*”. Likewise, for Doppler wind radars, the field must be set to “*radwd*”. Note that the ODB request for Doppler wind radars exclude all other observations that are not Doppler wind radar observables (you should then specify the radar wind dedicated statistics definition file, see Q&A below).

- **Advanced parameters**

Check for duplicates: keep “*off*”.

Plot STDEV instead of RMS: select either “*off*” or “*on*”. Default: “*off*”.

Use standard rmsplot axes: select either “*on*” or “*off*”. Default: “*on*”.

Circumvent an old MAGICS symbol plot bug: keep “*on*”.

Plot empty data sets: keep “*off*”.

Minimum number of observations for rmsplot: Default: 5. This is the minimum population size considered when plotting results. If the population size or smaller than that number, the corresponding mean and RMS (or STDEV) data is treated as a missing value (i.e. no symbol is plotted for that particular height).

III. Running the OBSTAT diagnostics job

Once you have finished your configuration, you can click on “Finish”. After selecting “Play” from OLIVE, the newly-created OBSTAT diagnostic should appear on your xcdp window.

Note that if you have never run OBSTAT or any other diagnostic on sx before, you need to install a special SSH key on the sx machine you are running your diagnostics. This may require assistance from the SWAPP team.

IV. Understanding fails (and making nicer plots for publications)

In order to understand fails, some background is required. OBSTAT is controlled by one script called `~/verolive/diagnostic/obstat/obstat.sh` and located on the sx machine you are running OBSTAT. This script performs the sequential list of actions:

- Calculate the observation minus first guess and observation minus analysis for the experiment (and the reference, if any) and the dates selected.
 - If you declined the option Use pre-calculated obs-model in the section Select action to perform, these quantities are always calculated by running an executable `obstat.calc.x` which relies on ODB to perform the extraction; this executable depends on the cycle version as ODB changes from one cycle to the next.
 - Otherwise, if these quantities are available, they will simply be copied out from cougar or from the directory below.
 - The result is a series of text files stored on the sx machine you run OBSTAT and named


```
/data1/swapp/sto/${YOUR-USERGROUP}/
  ${YOUR-USERNAME}/diagnostic/obstat/${OBSTAT_ID}/
  OBSCALC${YYYYMMDDHH}_${EXPID}_${CUTOFF}.txt
```

 where, for example:
 YOUR-USERGROUP= *mrpa*
 YOUR-USERNAME= *mrpa679*
 OBSTAT_ID= the OLIVE ID of the OBSTAT diagnostic you created
 YYYYMMDDHH= *2005062200*
 EXPID= *RG78* (the ID of the experiment you want to run OBSTAT on). If you selected either “Oper” or “Double”, this field is then either “OPER” or “DBLE”
 CUTOFF= *assim*
- Merge the files over the range date selected.
 - The same executable `obstat.calc.x` is ran to read the series of text files above.
 - The result is a text file located in the same directory as above and named `OBSMERGE_${EXPID}_${CUTOFF}.txt`
- Plot the results
 - An executable `obstat.plot.x` relying on the MAGICCS libraries is called to perform this task. The underlying source code is written in Fortran and hence not ideal for interactive modification.
 - Should you want to make nicer plots (*e.g.* for a publication), you need to make a copy of the files `OBSMERGE*` indicated above, edit them, and use your own

PV-WAVE or MATLAB routines. With this approach you can select only those curves that are of interest for the reader or choose to overlay more results. Check with the editorial office of the journal in which you are submitting your paper what are the requirements for figures. Remember that you may have to regenerate your figures shortly before publication in order to meet special requirements (e.g., no hairline rule, or size=7x7 cm, encapsulated postscript with no preview, etc...). Consequently, it is recommended that you keep a copy of the OBSMERGE* numerical results on archive until your paper is in press.

Should your OBSTAT diagnostics job fail, there is a strong probability that the run stopped in the first step above, and that observations database that you selected could not be found. This could happen either because the dates you selected are out of range for the experiments you are trying to access, or more likely because the observations you asked for in the section Select observations input could not be found.

Solution: Open a manual FTP session and find for yourself where the observations are located on cougar. Compare this with the result of the ftget command launched by OBSTAT in the output listing you get from xcdp and correct accordingly the section Select observations inputs.

V. FAQ

This section is awaiting for requests from users to direct their questions to paul.poli@meteo.fr and the questions and their answers will be added.

Q. I first ran OBSTAT on 4dupd2/ccma_min_mix for a series of dates and then ran it again for the same dates on 4dupd1/ccma_traj_mix but the results have not changed. Do I need to create another OBSTAT diagnostic ?

A. No, you do not need to create another OBSTAT diagnostic, but you have to make sure the option Use pre-calculated obs-model in the section Select action to perform is set to “off”.

Q. I am getting a fail when the command obstat.calc.x is run.

A. Make sure the Experiment cycle in section Select an experiment is correct by doing a MANDALAY on the ODB database OBSTAT is accessing (ask for “Contenu general de la base”). If the MANDALAY program does work on the database and you still get a fail, refer the problem to the contact above.

Q. “Geez! I heard you had this super cool feature in Obstat that diagnosed sigmaO & sigmaB a posteriori? It sounds great! How do I activate it? Thanks!”

A. This feature can be activated by modifying the statistics definition file. See Statdef file in section Statistics definition.

Q. “Of course PVWAVE can do better plots than OBSTAT! Do you have a collection of PVWAVE programs that would do such work? Can they be made available to the user community from a standard OBSMERGE file? Thanks!”

A. The location of the text files returned by OBSTAT are indicated in section IV above. Using any text editor to select only those numerical lines that you are interested in, you can then load them easily in PV-WAVE, using the instruction DC_READ_FREE. Then it’s a matter of deciding on the scale that you want to use, the colors, the legend, the layout etc...

Q. “I am getting the following error message:

ABORT! I inisoftstat:problem when parsing the statitem block
What can I do?”

A. Log on the sx machine on which you are running OBSTAT, change directory to
/data1/swapp/sto/\${YOUR-USERGROUP}/
and search for all occurrences of ‘**’ in the following files
OBSCALC\${YYYYMMDDHH}_\${EXPID}_\${CUTOFF}.txt
using for example the command:
grep "*\"" OBSCALC*
and comment out the lines if they belong to some histogram results (adding ‘#’ at the
beginning of each line) or replace by, e.g., series of ‘9’ if the lines belong to profile results.

Q. “How can I run OBSTAT on two experiments which use different IFS ODB cycles? (e.g. cy30 and cy31)”

A. Assuming the ODB observation types have not changed between the two cycles, (1) you simply have to come up with a common statistics definition file for the two experiments. In particular you have to exclude from the statistics definition file all the observation types which are *only* defined in one of the two IFS ODB cycles. Once you have done that, (2) you configure OBSTAT in OLIVE to use that statistics definition file. (3) You then proceed to run OBSTAT on the older cycle (cy30 in this example), setting Experiment cycle to the older cycle value (cy30 here) and with no reference experiment. At this point you should have in output a plot showing the results for only one experiment. (4) You then run OBSTAT again but on the other experiment, setting Experiment cycle to the more recent cycle value (cy31 in this example). You also want to indicate as (reference) experiment the experiment which was run on the older cycle (cy30 here). Make sure you activate the option Use pre-calculated obs-model when you do this second run of OBSTAT. The result of the second run should be a plot including both experiments.

Q. “How can I define another domain for my OBSTAT runs?”

A.

- (1) You need to make a local copy (on the sx machine on which you run OBSTAT) of the file /home/verolive/diagnostic/obstat/cyxx/config/general.cfg (where cyxx=cy28, ... cy33 as appropriate).
- (2) Specify in that file a new geographical domain (and give a name, say “mydomain”).
- (3) Change the field general file to point your local general.cfg file (for example /home/\$USER/general.cfg on the sx machine on which you are running OBSTAT)
- (4) Make a local copy (on the sx machine on which you run OBSTAT) of the file /home/verolive/diagnostic/obstat/cyxx/config/stat.ref and modify in that file the “areaNSEW=” fields to point to your domain.
- (5) Change the field Statef selection to “Custom”
- (6) Change the field Statdef file to point your local stat.ref file (for example /home/\$USER/stat.ref on the sx machine on which you are running OBSTAT).

Q. How can I compare two experiments which use different spatial domains and different cut-offs, one being 6 hours, the other 3 hours?

A. First you need to figure out what is the intersection of the two spatial domains. You can then use that domain using the answer to the question above “How can I define another domain for my OBSTAT runs?”. This will make sure that only those observations within the geographical domains of both experiments will be taken into account.

Second, you need to specify in the statistics definition file that you want to restrict the observations to only those that fall within +/- 3 hours. See Table 2 for that purpose; you basically need to add 20 to all the “flagsel=” values in the statistics definition file. This is in fact not really important for the experiment run with 3-hour cutoffs; however, this will filter the data of the experiment with 6-hour cutoffs in order to retain only those within a time window of +/- 3 hours.

Third, you need to specify a Step in hours equal to 6 (and not 3) when you run OBSTAT in OLIVE.

The combination of the three points above ensure that OBSTAT runs only on those analyses that were common to both experiments, and takes only into account observations found in similar space and time domains.

Q. “How can I use OBSTAT to generate 2D plots?”

A. For now you can only use OBSTAT to calculate 2D statistics, but not yet to generate 2D plots directly.

For example, say you do not want to calculate statistics as a function of the variable `press@body` (which is the default vertical coordinate), but for a given range of radar elevations (item 44) between 0 and 10 degrees with a spacing of 1 degree (total= 10 bins) and for a range of radar azimuths (item 45) between 0 and 360 degrees with a spacing of 10 degrees (total= 36 bins); you then need to add the following lines in the corresponding entry of your statistics definition file:

```
##### beginning of 2D request
```

```
...
sizebin= 1
refval= 0
nbbin= 10
coorditem= 44
sizebin2= 10
refval2= 0
nbbin2= 36
coorditem2= 45
```

```
##### end of 2D request
```

Using a similar approach, you can generate 2D statistics of any item (it does not necessarily have to be obs minus first-guess departure), by binning in two dimensions, where the two dimensions are virtually any of the items listed in Table 1.

The location of the text files returned by OBSTAT are indicated in section IV above. Using any text editor to select only those numerical lines that you are interested in, you can then load them easily in PV-WAVE using the instruction `DC_READ_FREE` or in Matlab/Scilab. Note that the ability to calculate 2D statistics only works from cycle 33 on.

Q. “How can I use OBSTAT to generate statistics for radar winds?”

A. The field Sql must be set to “*radwd*” and the statistics definition file must point to the following file:

```
/home/verolive/diagnostic/obstat/cyxx/config/stat.ref_radwd (where cyxx= cy33, ... as appropriate)
```

This feature only works from cycle 33 on.

Q. “How can I run OBSTAT off-line, i.e. outside OLIVE ?”

A. There are instances where it is useful to do so, for example for the purpose of debugging a new statistics definition file without having to FTP every time the observations input. The sample script below can be used as a template. Feel free to ask for a copy of that script if you need it.

```
#!/bin/ksh -a
#
# SIMPLE SCRIPT TO RUN OBSTAT
#
# Poli 14-04-2006 Original code.
# Poli 20-09-2006 Modified for cycle 32
# Poli 12-02-2008 Modified for cycle 33
# Poli 04-06-2008 Modified for cycle 33r2
#
# -----
# DOCUMENTATION
# This script enables running OBSTAT outside the OLIVE environment.
# The following files are required:
# directory $RUN containing:
#   airs_channels
#   iasi_channels
#   odbcodes.cfg
#   general.cfg
#   stat.def

CYCLE=33
ARCH=linux

rm -f IOASSIGN
cp -f $fbfile/IOASSIGN .
rm -f $OUTPUTCALC
$BIN_CALC > $OUTPUTCALC || { echo \
"ERROR $0: the obstat statistics computation has failed." ; exit 1;}
fi

if [ $FLAG_PLOT == "yes" ]; then
echo "===== OBSTAT_PLOT ====="
# copy statout.txt to statover.txt and set overlay to .true. if you want to overlay results
cat <<EONAM | cut -f1 -d#> _namelist
&NAMOBSTAT
  ctitle='XP=73EW REF=DBLE 20080105H00A'      # title for plots
  cstatinFname='statout.txt' # input ascii stat-file
  cstat2Fname='statover.txt' # input stat-file to overlay
  cgenecfgFname='general.cfg' # general definitions file
  ccodecfgFname='odbcodescfg' # obs codes def file
  ctovsornot='nd_tovs' # not_tovs for DEFAULT, radwd for RADAR WINDS
  lupdstat=.false. # to update the statistics
  lrecycle=.true. # to reuse existing stats
  lprthard=.false. # to print hard statistics
  lplot=.true. # to generate plots
  lplotisol=.true. # to plot isolated rmsplot levels
  lplotempty=.false. # to plot dataless plots
  loverlay=.false. # to superimpose another plot
  lstdev=.false. # to replace rms by stdev
  lfixaxes= # to keep plot axis defs constant
  lwhiskers=.true. # to plot box-and-whiskers over histograms
  clayout='A4' # plot layout (A4,A3 or EPS)
  minpop=5 # min pop for rms/bias plotting
  iverb=5 # verbosity level in printouts
/
EONAM
rm -f $OUTPUTPLOT
$BIN_PLOT > $OUTPUTPLOT || { echo \
"ERROR $0: the obstat statistics plot has failed." ; exit 1;}
fi
```

