NAME

mbset – Sets values in **mbprocess** parameter files.

VERSION

Version 5.0

SYNOPSIS

mbset –I*infile* **[–E –L –P***PARAMETER:value* **–V –H***]*

DESCRIPTION

mbset is a utility for creating and modifying **mbprocess** parameter files.

The program **mbprocess** can perform a variety of swath data processing functions in a single step (producing a single output swath data file), including:
- Merge edited navigation generated by **mbnavedit**.
- Apply bathymetry edit flags from **mbedit** and **mbclean**
- Recalculate bathymetry from raw travel time and angle data by raytracing through water sound speed models from **mbvelocitytool** or **mbsvplist**.
- Apply changes to roll bias, pitch bias, heading bias, and draft values.
- Recalculate sidescan from raw backscatter samples (Simrad multibeam data only).
- Apply tides to bathymetry.
- Insert metadata.

The actions of **mbprocess** are controlled by text parameter files. Each **mbprocess** parameter file contains single line commands that set processing modes and parameters. The **–P** option of **mbset** is used to modify a single **mbprocess** parameter command. This option can be invoked as many times as desired on the command line, allowing **mbset** to set multiple **mbprocess** processing parameters and modes. If the swath data file specified by the **–I***infile* option of **mbset** has an existing **mbprocess** parameter file, then that parameter file will be read and the existing parameter values will be modified. If no **mbprocess** parameter file exists, then **mbset** starts with default processing parameters, modifies those, and then generates a new parameter file.

If the input file specified by the **–I** option is a single swath data file, **mbset** will act on that file and it's parameter file only. If the input file is a datalist, then **mbset** will act on all swath files extracted from the datalist (and any recursively parsed datalist files). This function allows users to easily set uniform processing parameters for large numbers of data files. The default input file is "datalist.mb-1".

The processing parameter file used by **mbprocess** has an ".par" suffix. In addition to **mbset**, these files are generated or modified by **mbedit**, **mbnavedit**, **mbvelocitytool**, **mbnavadjust**, and **mbclean**.

The processed output swath files produced by **mbprocess** are named using a convention based on the data format id. **MB-System** data formats are specified using two-digit or three-digit numbers (see the **MBIO** manual page). If an input swath data file is named "root.mbXX", where XX is the format id, then the default processed output file will be "rootp.mbXX" (e.g. mydata.mb71 –> mydatap.mb71). The "p" inserted before the ".mbXX" suffix indicates the output file has been created by **mbprocess**. If the input file does not follow the *.mbXX naming convention, then the output filename will just consist of the input name with "p.mbXX" added as a suffix (e.g. mydata –> mydatap.mb71)

MBPROCESS PARAMETER FILE COMMANDS

The **mbprocess** parameter file commands modified by **mbset** are:

```
GENERAL PARAMETERS:
 EXPLICIT
     causes mbprocess to set modes implicitely
     – e.g. the SVPFILE command will also set
       raytracing on even if the RAYTRACE command
       is not given [explicit mode commands required]
 FORMAT constant
     sets format id [no default]
 INFILE filename
     sets input file path [no default]
 OUTFILE filename
     sets output file path [no default]

NAVIGATION MERGING:
 NAVMODE boolean
     sets navigation merging [0]
       0: navigation merge off
       1: navigation merge on
 NAVFILE filename
     sets navigation file path [no default]
 NAVFORMAT constant
     sets navigation file format [9]
           see the mbprocess man page for
           documentation of the supported
           navigation formats.
 NAVHEADING boolean
     sets heading to be merged from navigation file
     – note: heading merged from navigation before
       heading correction applied
       0: heading not changed
       1: heading merged from navigation file
 NAVSPEED boolean
     sets speed to be merged from navigation file
       0: speed not changed
       1: speed merged from navigation file
 NAVDRAFT boolean
     sets draft to be merged from navigation file
     – note: draft merged from navigation before
       draft correction applied
       0: draft not changed
       1: draft merged from navigation file
 NAVATTITUDE boolean
     sets roll, pitch and heave to be merged from
     navigation file
     – note: roll, pitch, and heave merged from
       navigation before roll bias and pitch bias
       corrections applied
       0: roll, pitch, and heave not changed
       1: roll, pitch, and heave merged from
          navigation file
 NAVINTERP boolean
```

sets navigation interpolation algorithm [0]
0: linear interpolation (recommended)
1: spline interpolation
NAVTIMESHIFT constant
sets navigation time shift (seconds) [0.0]
– note: time shift added to timestamps of
navigation fixes read in from NAVFILE
prior to merging

NAVIGATION OFFSETS AND SHIFTS:
NAVSHIFT boolean
sets navigation offset [0]
– note: offsets and shifts are applied to navigation
values from both survey and navigation records, and
are applied to navigation read in from
NAVFILE prior to merging
– note: offsets and shifts are NOT applied to adjusted
navigation values from NAVADJFILE
NAVOFFSETX constant
sets navigation athwartship offset (meters) [0.0]
– note: the effective navigation shift is
(NAVOFFSETX – SONAROFFSETX), and the
navigation is corrected by subtracting
this effective shift.
– note: athwartship shift is positive to
starboard.
NAVOFFSETY constant
sets navigation fore-aft offset (meters) [0.0]
– note: the effective navigation shift is
(NAVOFFSETY – SONAROFFSETY), and the
navigation is corrected by subtracting
this effective shift.
– note: fore-aft shift is positive forward.
NAVOFFSETZ constant
sets navigation vertical offset (meters) [0.0]
– note: this value is not yet used for
anything.
– note: vertical shift is positive down.
NAVSHIFTLON constant
sets navigation longitude shift (degrees) [0.0]
NAVSHIFTLAT constant
sets navigation latitude shift (degrees) [0.0]

ADJUSTED NAVIGATION MERGING:
NAVADJMODE mode
sets navigation merging from mbnavadjust [0]
– can apply to longitude and latitude only
or longitude, latitude, and depth offset
0: adjusted navigation merge off
1: adjusted navigation merge on
2: adjusted navigation and depth offset merge on
NAVADJFILE filename
sets adjusted navigation file path
– this file supercedes navigation file for

lon and lat only
– uses mbnavadjust output
NAVADJINTERP boolean
sets adjusted navigation interpolation algorithm [0]
0: linear interpolation (recommended)
1: spline interpolation

ATTITUDE MERGING:
ATTITUDEMODE mode
sets attitude (roll, pitch, and heave) merging [0]
– roll, pitch, and heave merged before
roll bias and pitch bias corrections applied
– attitude merging from a separate file supersedes
attitude merging from a navigation file
0: attitude merging off
1: attitude merging on
ATTITUDEFILE filename
sets attitude file path
ATTITUDEFORMAT constant
sets attitude file format [1]
– attitude files can be in one of four ASCII
table formats
1: format is <time_d roll pitch heave>
2: format is <yr mon day hour min sec roll pitch heave>
3: format is <yr jday hour min sec roll pitch heave>
4: format is <yr jday daymin sec roll pitch heave>
– time_d = decimal seconds since 1/1/1970
– daymin = decimal minutes start of day
– roll = positive starboard up, degrees
– pitch = positive forward up, degrees
– heave = positive up, meters

SONARDEPTH MERGING:
SONARDEPTHMODE mode
sets sonardepth merging [0]
– sonardepth merged before
draft corrections applied
– sonardepth merging from a separate file supersedes
draft merging from a navigation file
0: sonardepth merging off
1: sonardepth merging on
SONARDEPTHFILE filename
sets sonardepth file path
SONARDEPTHFORMAT constant
sets sonardepth file format [1]
– sonardepth files can be in one of four ASCII
table formats
1: format is <time_d sonardepth>
2: format is <yr mon day hour min sec sonardepth>
3: format is <yr jday hour min sec sonardepth>
4: format is <yr jday daymin sec sonardepth>
– time_d = decimal seconds since 1/1/1970
– daymin = decimal minutes start of day
– sonardepth = sonar depth positive down, meters

DATA CUTTING:
DATACUTCLEAR
removes all existing data cutting commands
DATACUT kind mode min max
adds new data cutting command, where:
kind = 0 : cut applied to bathymetry data
kind = 1 : cut applied to amplitude data
kind = 2 : cut applied to sidescan data
mode = 0 : min and max indicate start and end
beam/pixel numbers between which data
are flagged or zeroed
mode = 1 : min and max indicate start and end
acrosstrack distance (m) between which
data are flagged or zeroed
BATHCUTNUMBER min max
adds new bathymetry data cutting command where
min and max are the start and end beam numbers
between which data are flagged (note that
flagging bathymetry also flags amplitude data)
BATHCUTDISTANCE min max
adds new bathymetry data cutting command where
min and max are the start and end acrosstrack
distance (m) between which data are flagged
(note that flagging bathymetry also flags
amplitude data)
BATHCUTSPEED min max
adds new bathymetry data cutting command where
all beams are flagged for pings with a ship
or vehicle speed less than min or greater than
max (note that flagging bathymetry also flags
amplitude data)
AMPCUTNUMBER min max
adds new amplitude data cutting command where
min and max are the start and end beam numbers
between which amplitude data are zeroed (note
that zeroing amplitude data has no impact on
bathymetry data)
AMPCUTDISTANCE min max
adds new amplitude data cutting command where
min and max are the start and end acrosstrack
distance (m) between which amplitude data are
zeroed (note that zeroing amplitude data has
no impact on bathymetry data)
AMPCUTSPEED min max
adds new amplitude data cutting command where
all amplitude values are zeroed for pings with
a ship or vehicle speed less than min or greater
than max (note that zeroing amplitude data has
no impact on bathymetry data)
SSCUTNUMBER min max
adds new sidescan data cutting command where
min and max are the start and end pixel numbers
between which sidescan data are zeroed (note
that zeroing sidescan data has no impact on

bathymetry data)
SSCUTDISTANCE min max
adds new sidescan data cutting command where min and max are the start and end acrosstrack distance (m) between which sidescan data are zeroed (note that zeroing sidescan data has no impact on bathymetry data)
SSCUTSPEED min max
adds new sidescan data cutting command where all sidescan values are zeroed for pings with a ship or vehicle speed less than min or greater than max (note that zeroing sidescan data has no impact on bathymetry data)

BATHYMETRY EDITING:
EDITSAVEMODE boolean
turns on reading edit save file (from mbedit) [0]
EDITSAVEFILE filename
sets edit save file path (from mbedit) [none]

BATHYMETRY RECALCULATION:
SVPMODE mode
sets usage of a water sound speed model (sound velocity profile, or SVP) [0]
0: bathymetry recalculation by raytracing off
1: bathymetry recalculation by raytracing on
2: translate depths from corrected to uncorrected or vice versa depending on SOUNDSPEEDREF command
SVPFILE filename
sets SVP file path [no default]
SSVMODE boolean
sets surface sound velocity (SSV) mode [0]
0: use SSV from file
1: offset SSV from file (set by SSV command)
2: use constant SSV (set by SSV command)
SSV constant/offset
sets SSV value or offset (m/s) [1500.0]
ANGLEMODE mode
sets handling of beam angles during raytracing [1]
0: angles not changed before raytracing
1: angles adjusted using Snell's Law for the difference between the surface sound velocity (SSV) and the sound speed at the sonar depth in the SVP.
2: angles adjusted using Snell's Law and the sonar array geometry for the difference between the surface sound velocity (SSV) and the sound speed at the sonar depth in the SVP.
TTMULTIPLY multiplier
sets value multiplied by travel times [1.0]
SOUNDSPEEDREF boolean

determines the handling of the sound
speed reference for bathymetry [1]
– note: if raytracing is turned off then
this command implies correcting or
uncorrecting using the SVP specified
with the SVPFILE command
0: produce "uncorrected" bathymetry
referenced to a uniform 1500 m/s
water sound speed model.
1: produce "corrected" bathymetry
referenced to a realistic water
sound speed model.

STATIC BEAM BATHYMETRY OFFSETS:
STATICMODE mode
sets offsetting of bathymetry by
per-beam statics [0]
0: static correction off
1: static correction by beam number
2: static correction by acrosstrack beam angle
STATICFILE filename
sets static per-beam file path [no default]
– static files are two-column ascii tables
– if correction is by beam number then
the beam # is in column 1 and
the depth offset is in m in column 2
– if correction is by beam angle then
the beam angle (starboard positive)
is in column 1 and
the depth offset is in m in column 2

DRAFT CORRECTION:
DRAFTMODE mode
sets draft correction [0]
– note: draft merged from navigation before
draft correction applied
0: no draft correction
1: draft correction by offset
2: draft correction by multiply
3: draft correction by offset and multiply
4: draft set to constant
DRAFT constant
sets draft value (m) [0.0]
DRAFTOFFSET offset
sets value added to draft (m) [0.0]
DRAFTMULTIPLY multiplier
sets value multiplied by draft [1.0]

HEAVE CORRECTION:
HEAVEMODE mode
sets heave correction [0]
– note: heave correction by offset and/or
multiplication is added to any lever
heave correction, and then either used in

bathymetry recalculation or added to
existing bathymetry
0: no heave correction
1: heave correction by offset
2: heave correction by multiply
3: heave correction by offset and multiply
HEAVEOFFSET offset
sets value added to heave (m)
HEAVEMULTIPLY multiplier
sets value multiplied by heave

LEVER CORRECTION:
LEVERMODE mode
sets heave correction by lever calculation [0]
– note: lever heave correction is added to
any heave correction by offset and/or
multiplication, and then either used in
bathymetry recalculation or added to
existing bathymetry
0: no lever calculation
1: heave correction by lever calculation
VRUOFFSETX constant
sets athwartships offset of attitude sensor (m)
– note: positive to starboard
VRUOFFSETY constant
sets fore-aft offset of attitude sensor (m)
– note: positive forward
VRUOFFSETZ constant
sets vertical offset of attitude sensor (m)
– note: positive down
SONAROFFSETX constant
sets athwartships offset of sonar receive array (m)
– note: positive to starboard
SONAROFFSETY constant
sets fore-aft offset of sonar receive array (m)
– note: positive forward
SONAROFFSETZ constant
sets vertical offset of sonar receive array (m)
– note: positive down

ROLL CORRECTION:
ROLLBIASMODE mode
sets roll correction [0]
0: no roll correction
1: roll correction by single roll bias
2: roll correction by separate port and
starboard roll bias
ROLLBIAS offset
sets roll bias (degrees)
ROLLBIASPORT offset
sets port roll bias (degrees)
ROLLBIASSTBD offset
sets starboard roll bias (degrees)

```
PITCH CORRECTION:
 PITCHBIASMODE mode
      sets pitch correction [0]
        0: no pitch correction
        1: pitch correction by pitch bias
 PITCHBIAS offset
      sets pitch bias (degrees)

HEADING CORRECTION:
 HEADINGMODE mode
      sets heading correction [no heading correction]
      – note: heading merged from navigation before
        heading correction applied
        0: no heading correction
        1: heading correction using course
           made good
        2: heading correction by offset
        3: heading correction using course
           made good and offset
 HEADINGOFFSET offset
      sets value added to heading (degrees)

TIDE CORRECTION:
 TIDEMODE mode
      sets tide correction [0]
      – note: tide added to bathymetry after
        all other calculations and corrections
        0: tide correction off
        1: tide correction on
 TIDEFILE filename
      sets tide file path
 TIDEFORMAT constan
      sets tide file format [1]
      – tide files can be in one of four ASCII
        table formats
        1: format is <time_d tide>
        2: format is <yr mon day hour min sec tide>
        3: format is <yr jday hour min sec tide>
        4: format is <yr jday daymin sec tide>
      – time_d = decimal seconds since 1/1/1970
      – daymin = decimal minutes start of day

AMPLITUDE CORRECTION:
 AMPCORRMODE  boolean
      sets correction of amplitude for
      amplitude vs grazing angle function
        0: amplitude correction off
        1: amplitude correction on
 AMPCORRFILE filename
      sets amplitude correction file path
      [no default]
 AMPCORRTYPE mode
      sets sidescan correction type [0]
        0: correction by subtraction (dB scale)
```

1: correction by division (linear scale)
AMPCORRSYMMETRY boolean
forces correction function to be symmetric [1]
AMPCORRANGLE constant
sets amplitude correction reference angle
(deg) [30.0]
AMPCORRSLOPE mode
sets amplitude correction slope mode [0]
0: local slope ignored in calculating correction
1: local slope used in calculating correction
2: topography grid used in calculating correction
but slope ignored
3: local slope from topography grid used in
calculating correction

SIDESCAN CORRECTION:
SSCORRMODE boolean
sets correction of sidescan for
amplitude vs grazing angle function
0: sidescan correction off
1: sidescan correction on
SSCORRFILE filename
sets sidescan correction file path
[no default]
SSCORRTYPE mode
sets sidescan correction type [0]
0: correction by subtraction (dB scale)
1: correction by division (linear scale)
SSCORRSYMMETRY boolean
forces correction function to be symmetric [1]
SSCORRANGLE constant
sets sidescan correction reference angle
(deg) [30.0]
SSCORRSLOPE mode
sets sidescan correction slope mode [0]
0: local slope ignored in calculating correction
1: local slope used in calculating correction
2: topography grid used in calculating correction
but slope ignored
3: local slope from topography grid used in
calculating correction
AMPSSCORRTOPOFILE
Sets topography grid used for correcting amplitude
and sidescan

SIDESCAN RECALCULATION:
SSRECALCMODE boolean
sets recalculation of sidescan for
Simrad multibeam data
0: sidescan recalculation off
1: sidescan recalculation on
SSPIXELSIZE constant
sets recalculated sidescan pixel size (m) [0.0]
– a zero value causes the pixel size to

be recalculated for every data record
SSSWATHWIDTH constant
sets sidescan swath width (degrees) [0.0]
– a zero value causes the swath width
to be recalculated for every data record
SSINTERPOLATE constant
sets sidescan interpolation distance
(number of pixels)

METADATA INSERTION:
METAVESSEL string
sets mbinfo metadata string for vessel
METAINSTITUTION string
sets mbinfo metadata string for vessel
operator institution or company
METAPLATFORM string
sets mbinfo metadata string for sonar
platform (ship or vehicle)
METASONAR string
sets mbinfo metadata string for sonar
model name
METASONARVERSION string
sets mbinfo metadata string for sonar
version (usually software version)
METACRUISEID string
sets mbinfo metadata string for institutional
cruise id
METACRUISENAME string
sets mbinfo metadata string for descriptive
cruise name
METAPI string
sets mbinfo metadata string for principal
investigator
METAPIINSTITUTION string
sets mbinfo metadata string for principal
investigator
METACLIENT string
sets mbinfo metadata string fo data owner
(usually PI institution)
METASVCORRECTED boolean
sets mbinfo metadata boolean for sound
velocity corrected depths
METATIDECORRECTED boolean
sets mbinfo metadata boolean for tide
corrected bathymetry
METABATHEDITMANUAL boolean
sets mbinfo metadata boolean for manually
edited bathymetry
METABATHEDITAUTO boolean
sets mbinfo metadata boolean for automatically
edited bathymetry
METAROLLBIAS constant
sets mbinfo metadata constant for roll bias
(degrees + to starboard)

METAPITCHBIAS constant
  sets mbinfo metadata constant for pitch bias
  (degrees + forward)
METAHEADINGBIAS constant
  sets mbinfo metadata constant for heading bias
METADRAFT constant
  sets mbinfo metadata constant for vessel draft (m)

PROCESSING KLUGES:
KLUGE001 boolean
  enables correction of travel times in
  Hydrosweep DS2 data from the R/V Maurice
  Ewing in 2001 and 2002.
KLUGE002 boolean
  enables correction of draft values in
  Simrad data
  – some Simrad multibeam data has had an
    error in which the heave has bee added
    to the sonar depth (draft for hull
    mounted sonars)
  – this correction subtracts the heave
    value from the sonar depth
KLUGE003 boolean
  enables correction of beam angles in
  SeaBeam 2112 data
  – a data sample from the SeaBeam 2112 on
    the USCG Icebreaker Healy (collected on
    23 July 2003) was found to have an error
    in which the beam angles had 0.25 times
    the roll added
  – this correction subtracts 0.25 * roll
    from the beam angles before the bathymetry
    is recalculated by raytracing through a
    water sound velocity profile
  – the mbprocess parameter files must be
    set to enable bathymetry recalculation
    by raytracing in order to apply this
    correction
KLUGE004 boolean
  deletes survey data associated with duplicate
  or reversed time tags
  – if survey data records are encountered
    with time tags less than or equal to the
    last good time tag, an error is set and
    the data record is not output to the
    processed data file.
KLUGE005 boolean
  replaces survey record timestamps with
  timestamps of corresponding merged navigation
  records
  – this feature allows users to fix
    timestamp errors using MBnavedit and
    then insert the corrected timestamps
    into processed data

KLUGE006 boolean
changes sonar depth / draft values without
changing bathymetry values
KLUGE007 boolean
processing kluge 007 (not yet defined)
– occasionaly odd processing problems will
occur that are specific to a particular
survey or sonar version
– mbprocess will allow one-time fixes to
be defined as "kluges" that can be turned
on through the parameter files.

ANCILLARY DATA FILES

MB-System also uses a number of ancillary data files, most of which relate to **mbprocess** in some way. By default, these ancillary data files are named by adding a short suffix to the primary data file name (e.g. ".par", ".svp", ".esf", ".nve")

The common ancillary files are listed below. The example names given here follow from an input swath data file name of mydata.mb71.

The processing parameter file used by **mbprocess** has an ".par" suffix. These files are generated or modified by **mbset**, **mbedit**, **mbnavedit**, **mbvelocitytool**, **mbnavadjust**, and **mbclean**.
mydata.mb71.par

The most prominent ancillary files are metadata or "inf" files (created from the output of **mbinfo**). Programs such as **mbgrid** and **mbm_plot** try to check "inf" files to see if the corresponding data files include data within desired areas. The program **mbprocess** automatically generates an "inf" file for any processed output swath file. Also, the program **mbdatalist** is often used to create or update "inf" files for large groups of swath data files.
mydata.mb71.inf
mydata.mb71.inf

The "fast bath" or "fbt" files are generated by copying the swath bathymetry to a sparse, quickly read format (format 71). Programs such as **mbgrid**, **mbswath**, and **mbcontour** will try to read "fbt" files instead of the full data files whenever only bathymetry information are required. The program **mbprocess** automatically generates an "fbt" file for any processed output swath file. Also, the program **mbdatalist** is often used to create or update "fbt" files for large groups of swath data files. These files are not generated or used when the original swath data is already in a compact bathymetry-only data format.
mydata.mb71.fbt

The "fast nav" or "fnv" files are just ASCII lists of navigation generated using **mblist** with a **–O***tMXYHSc* option. Programs such as **mbgrid**, **mbswath**, and **mbcontour** will try to read "fnv" files instead of the full data files whenever only navigation information are required. These files are not generated or used when the original data is already in a single-beam or navigation data format.
mydata.mb71.fnv

The bathymetry edit save file generated by **mbedit** and **mbclean** has an ".esf" suffix.
mydata.mb71.esf

A water sound velocity profile (SVP) file generated by **mbvelocitytool** has an ".svp" suffix unless the user specifies otherwise.
mydata.mb71.svp

Water sound velocity profile (SVP) files generated by **mbsvplist** also use the ".svp" suffix. However,

multiple SVP files may be extracted from each input swath file, so the files are numbered using a "_YYY.svp" suffix, where YYY increments from 001.
mydata.mb71_001.svp
mydata.mb71_002.svp
mydata.mb71_003.svp

Edited navigation files generated by **mbnavedit** have an ".nve" suffix:
mydata.mb71.nve
These navigation files can be read independently using format 166.

Adjusted navigation files generated by **mbnavadjust** have an ".naY" suffix, where "Y" is a number between 0-9. The **mbnavadjust** package may be used multiple times for a survey; the adjustments are numbered sequentially from "0":
mydata.mb71.na0
mydata.mb71.na1
mydata.mb71.na2
and so on. These navigation files can be read independently using format 166.

AUTHORSHIP

David W. Caress (caress@mbari.org)
Monterey Bay Aquarium Research Institute
Dale N. Chayes (dale@ldeo.columbia.edu)
Lamont-Doherty Earth Observatory

OPTIONS

–E

This option causes **mbset** to require all processing modes to be explicitly set by **–P** calls. Normally, **mbset** will implicitly set some modes based on the parameters applied. For example, if a user applies **–P***SVPFILE:best.svp*, **mbset** would normally set the bathymetry recalculation mode on so that the SVP file specified actually gets used.

–I *infile*
Swath data file for which an **mbprocess** parameter file will be created or updated, or a datalist file containing a list of input swath data files and/or other datalist files. If *infile* is a datalist file, then **mbset** will attempt to update or create the parameter files for all swath data files identified by recursively reading *infile*. Default *infile*: datalist.mb-1

–L

If given once, this option causes **mbset** to look for any edit save files and navigation files with expected names and set the **mbprocess** parameters so that these files are used. If multiple navigation files are available (reflecting use of **mbnavedit** and one or more uses of **mbnavadjust**), then the latest (highest numbered) **mbnavadjust** solution is used. If **–L** is given twice, **mbset** will also look for any SVP files with expected names and set the **mbprocess** parameters so that these files are used for recalculating bathymetry by raytracing. If multiple SVP files are available (reflecting use of **mbsvplist** and **mbvelocitytool**), then the file derived from **mbvelocitytool** is used. If **–L** is given three times or more, then **mbset** will not look for any ancillary files, but instead reset the paths to all output files to be "local", meaning located in the same directory as the input file. This special option allows users to fix parameter files containing full paths for output files (as generated by early versions of this program).

–H This "help" flag causes the program to print out a description of its operation and then exit immediately.

–P *PARAMETER:value* The **–P** option of **mbset** is used to modify a single **mbprocess** parameter command. Here *PARAMETER* may be any of the processing parameter names listed above, and *value* is the corresponding value to be set. This option can be invoked as many times as desired on the command line, allowing **mbset** to set multiple **mbprocess** processing parameters and modes. The separater between *PARAMETER* and *value* can be either ':' or '='. Only the first ':' or '=' acts as a separater; later instances of these characters are taken as part of *value*.

–V Normally, **mbset** works "silently" without outputting anything to the stderr stream. If the **–V** flag is given, then **mbset** works in a "verbose" mode and outputs the program version being used and lists the processing parameters output to the **mbprocess** parameter file.

EXAMPLES

Suppose the user has a Simrad EM120 data file called "0051_20010829_223755.mb57" that requires processing.

Editing the bathymetry data in this file with mbedit will generate an edit save file "0051_20010829_223755.mb57.esf" and an mbprocess parameter file "0051_20010829_223755.mb57.par". The contents of the parameter file are:

```
## MB-System processing parameter file
## Written by mb_pr_writepar version $Id: mbset.ps 2234 2015-03-05 07:41:54Z caress $
## MB-system Version 5.0.beta22
## Generated by user <caress> on cpu <menard> at <Fri Sep  6 21:27:41 2002>
##
##
## Forces explicit reading of parameter modes.
EXPLICIT
##
## General Parameters:
FORMAT 57
INFILE /data/0051_20010829_223755.mb57
OUTFILE /data/0051_20010829_223755p.mb57
##
## Navigation Merging:
NAVMODE 0
NAVFILE /data/0051_20010829_223755.mb57.nve
NAVFORMAT 0
NAVHEADING 0
NAVSPEED 0
NAVDRAFT 0
NAVATTITUDE 0
NAVINTERP 0
NAVTIMESHIFT 0.000000
##
## Navigation Offsets and Shifts:
NAVSHIFT 0
NAVOFFSETX 0.000000
NAVOFFSETY 0.000000
NAVOFFSETZ 0.000000
NAVSHIFTLON 0.000000
NAVSHIFTLAT 0.000000
##
## Adjusted Navigation Merging:
NAVADJMODE 0
NAVADJFILE
NAVADJINTERP 0
##
## Attitude Merging:
```

```
ATTITUDEMODE 0
ATTITUDEFILE
ATTITUDEFORMAT 1
##
## Sonardepth Merging:
SONARDEPTHMODE 0
SONARDEPTHFILE
SONARDEPTHFORMAT 1
##
## Data cutting:
DATACUTCLEAR
##
## Bathymetry Flagging:
EDITSAVEMODE 1
EDITSAVEFILE /data/0051_20010829_223755.mb57.esf
##
## Bathymetry Recalculation:
SVPMODE 0
SVPFILE
SSVMODE 0
SSV 0.000000
TTMODE 0
TTMULTIPLY 1.000000
ANGLEMODE 0
SOUNDSPEEDREF 1
##
## Draft Correction:
DRAFTMODE 0
DRAFT 0.000000
DRAFTOFFSET 0.000000
DRAFTMULTIPLY 1.000000
##
## Heave Correction:
HEAVEMODE 0
HEAVEOFFSET 0.000000
HEAVEMULTIPLY 1.000000
##
## Lever Correction:
LEVERMODE 0
VRUOFFSETX 0.000000
VRUOFFSETY 0.000000
VRUOFFSETZ 0.000000
SONAROFFSETX 0.000000
SONAROFFSETY 0.000000
SONAROFFSETZ 0.000000
##
## Roll Correction:
ROLLBIASMODE 0
ROLLBIAS 0.000000
ROLLBIASPORT 0.000000
ROLLBIASSTBD 0.000000
##
## Pitch Correction:
PITCHBIASMODE 0
```

```
PITCHBIAS 0.000000
##
## Heading Correction:
HEADINGMODE 0
HEADINGOFFSET 0.000000
##
## Tide Correction:
TIDEMODE 0
TIDEFILE
TIDEFORMAT 1
##
## Amplitude Correction:
AMPCORRMODE 0
AMPCORRFILE
AMPCORRTYPE 0
AMPCORRSYMMETRY 1
AMPCORRANGLE 30.000000
AMPCORRSLOPE 0
##
## Sidescan Correction:
SSCORRMODE 0
SSCORRFILE
SSCORRTYPE 0
SSCORRSYMMETRY 1
SSCORRANGLE 30.000000
SSCORRSLOPE 0
##
## Sidescan Recalculation:
SSRECALCMODE 0
SSPIXELSIZE 0.000000
SSSWATHWIDTH 0.000000
SSINTERPOLATE 0
##
## Metadata Insertion:
METAVESSEL
METAINSTITUTION
METAPLATFORM
METASONAR
METASONARVERSION
METACRUISEID
METACRUISENAME
METAPI
METAPIINSTITUTION
METACLIENT
METASVCORRECTED -1
METATIDECORRECTED -1
METABATHEDITMANUAL -1
METABATHEDITAUTO -1
METAROLLBIAS 0.000000
METAPITCHBIAS 0.000000
METAHEADINGBIAS 0.000000
METADRAFT 0.000000
##
## Processing Kluges:
```

Editing the navigation with mbnavedit will generate a navigation file named "0051_20010829_223755.mb57.nve" and will modify the parameter file. The changed lines in "0051_20010829_223755.mb57.par" are:

```
## Navigation Merging:
NAVMODE 1
NAVFILE /data/0051_20010829_223755.mb57.nve
NAVFORMAT 9
NAVHEADING 1
NAVSPEED 1
NAVDRAFT 1
NAVATTITUDE 1
```

At this point, running **mbprocess** on "0051_20010829_223755.mb57" will apply the bathymetry flags from **mbedit** and merge the navigation from **mbnavedit**, but will not modify the data in any other way.

If the user wants to recalculate the bathymetry using an SVP file "0051_20010829_223755.mb57.svp" and a roll bias correction of +0.5 degrees, the following will suffice:

mbset −I 0051_20010829_223755.mb57 −PSVPFILE:0051_20010829_223755.mb57.svp −PROLLBIAS:0.5 −PDRAFT:1.95 −V

The affected lines in "0051_20010829_223755.mb57.par" are:

```
##
## Bathymetry Recalculation:
SVPMODE 1
SVPFILE 0051_20010829_223755.mb57.svp
SSVMODE 0
SSV 0.000000
TTMODE 0
TTMULTIPLY 1.000000
ANGLEMODE 0
SOUNDSPEEDREF 1
##
## Draft Correction:
DRAFTMODE 4
DRAFT 1.950000
DRAFTOFFSET 0.000000
DRAFTMULTIPLY 1.000000
##
## Roll Correction:
ROLLBIASMODE 1
ROLLBIAS 0.500000
ROLLBIASPORT 0.000000
ROLLBIASSTBD 0.000000
```

To process the data, run mbprocess:

mbprocess −I0051_20010829_223755.mb57 −V

```
The output to the terminal is:
Program mbprocess
Version $Id: mbset.ps 2234 2015-03-05 07:41:54Z caress $
```

```
MB-System Version 5.0.beta07

Program <mbprocess>
Version $Id: mbset.ps 2234 2015-03-05 07:41:54Z caress $
MB-system Version 5.0.beta07

Program Operation:
  Input file:      0051_20010829_223755.mb57
  Format:          57
  Files processed only if out of date.
  Comments embedded in output.

Data processed – out of date:
 Input:  0051_20010829_223755.mb57
 Output: 0051_20010829_223755p.mb57

Input and Output Files:
  Format:                  57
  Input file:              0051_20010829_223755.mb57
  Output file:             0051_20010829_223755p.mb57
  Comments in output: ON

Navigation Merging:
  Navigation merged from navigation file.
  Heading merged from navigation file.
  Speed merged from navigation file.
  Draft merged from navigation file.
  Navigation file:            0051_20010829_223755.mb57.nve
  Navigation algorithm:       linear interpolation
  Navigation time shift:      0.000000

Navigation Offsets and Shifts:
  Navigation positions not shifted.

Adjusted Navigation Merging:
  Navigation not merged from adjusted navigation file.
  Adjusted navigation file:
  Adjusted navigation algorithm: linear interpolation

Data Cutting:
  Data cutting disabled.

Bathymetry Editing:
  Bathymetry edits applied from file.
  Bathymetry edit file:       0051_20010829_223755.mb57.esf

Bathymetry Recalculation:
  Bathymetry recalculated by raytracing.
  SVP file:                0051_20010829_223755.mb57.svp
  SSV not modified.
  SSV offset/constant:        0.000000 m/s
  Travel time multiplier:     1.000000 m

Bathymetry Water Sound Speed Reference:
```

```
  Output bathymetry reference:   CORRECTED
  Depths recalculated as corrected

Draft Correction:
  Draft set to constant.
  Draft constant:              1.950000 m
  Draft offset:              0.000000 m
  Draft multiplier:            1.000000 m

Heave Correction:
  Heave not modified.
  Heave offset:              0.000000 m
  Heave multiplier:            1.000000 m

Lever Correction:
  Lever calculation off.

Tide Correction:
  Tide calculation off.

Roll Correction:
  Roll offset by bias.
  Roll bias:                 0.500000 deg
  Port roll bias:            0.000000 deg
  Starboard roll bias:         0.000000 deg

Pitch Correction:
  Pitch not modified.
  Pitch bias:                0.000000 deg

Heading Correction:
  Heading not modified.
  Heading offset:              0.000000 deg

Amplitude Corrections:
  Amplitude correction off.

Sidescan Corrections:
  Sidescan correction off.

Sidescan Recalculation:
  Sidescan not recalculated.
  Sidescan pixel size:         0.000000
  Sidescan swath width:          0.000000
  Sidescan interpolation:      0

Metadata Insertion:
  Metadata vessel:
  Metadata institution:
  Metadata platform:
  Metadata sonar:
  Metadata sonarversion:
  Metadata cruiseid:
  Metadata cruisename:
```

```
  Metadata pi:
  Metadata piinstitution:
  Metadata client:
  Metadata svcorrected:         −1
  Metadata tidecorrected        −1
  Metadata batheditmanual       −1
  Metadata batheditauto:        −1
  Metadata rollbias:            0.000000
  Metadata pitchbias:           0.000000
  Metadata headingbias:         0.000000
  Metadata draft:               0.000000

236 navigation records read
Nav start time: 2001 08 29 22:38:02.082999
Nav end time:   2001 08 29 23:37:22.322000

47 bathymetry edits read

236 input data records
3587 input nav records
17 input comment records
6617 input other records
236 output data records
3587 output nav records
64 output comment records
6617 output other records

Generating inf file for 0051_20010829_223755p.mb57
```

SEE ALSO

mbsystem(1), **mbprocess**(1), **mbedit**(1), **mbnavedit**(1), **mbvelocitytool**(1)

BUGS

Oh yeah...