POMM GUI-INTERFACE ADDENDUM

Documentation:

1) Refer to the POMM_AFIDS User Guide for a description of the POMM (Planetary Orbital Mosaicking and Mapping) toolset.
   https://github.com/NASA-AMMOS/AFIDS-POMM/blob/main/documentation/POMM_AFIDS_User_Guide_v1a.pdf

POMM GUI Interface Update:

Depending upon the docker installation, some instances of the POMM GUI interface may not be fully functional. If this is the case, then the alternative Command-Line interface can be easily used. (The function of the GUI is to fill-out and submit UPF files.) This is discussed in the User Guide (above), but the UPF (.upf; User Parameter File) templates are provided with the POMM scripts and below with additional parameter description.

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1) POMM Co-Registration UPF file:

Fill-out the script below (or use the blank) and save it as:

```
my_stackjob_params.upf
```

then submit as:

```
vicarb "runtop_nest my_stackjob" >& xxlog.log &
```

Example Co-Reg Script with Example Parameter Details:

```
#Filename: exp_coreg_params.upf
#AFIDS Nest Co-Registration User Parameter File
#Calls POMM mars_nest software
#Requires 2 images (only): Map-Projected Reference Master & Secondary Image
#Second image is matched to Reference image

#Reference Map FULL Directory Path and Filename
#Maximum Path/filename length is 99 characters.
#example: /root/docker_tst/workdir/data/hrsc5270_nd4.tif
refimg=/<docker-access-location>/hrsc5270_nd4.tif

#Second Map FULL Directory Path and Filename
#Maximum path/filename length is 99 characters.
#Example: /root/docker_tst/workdir/coreg/data/ctx_F05_037752_2008.tif
secimg=/<docker-access-location>/ctx_F05_037752_2008.tif

#Output filename prefix (<30characters)
outpre=nest_coreg

#Output Working Directory. Specified DIR is Generated if not pre-existing.
pathout=finalmos

#Output matched to Full Reference image (def=1), or
#Output matched to Second image with extra border (parm=2)
match=1

#Maximum allowed Registration Error RMS (def=0.8pxl)
maxerr=1.0

#FFT Grid dimensions (32x32; 48x48; 64x64; def=48)
fftgrd=48

#FFT Magnification (parm=1,2,3,4,5,6; def=4x)
fftmag=4

#FFT Minimum Magnification Level (parm=1,2,3,4,5,6; def=2x)
magmin=2

#Debug (Delete temporary files def=0; keep temporary files = 1)
debug=0
#END*****************************************************************
```

Blank Co-Reg Script:

```
#Filename: blank_coreg_params.upf
refimg=/<docker-access-location>/h5270_0000.nd4.50.jp2
secimg=/<docker-access-location>/rectF05_037752_2008_XN_20N282W.tif
pathout=finalmos
outpre=nest_coreg
match=1
maxerr=1.0
fftgrd=48
fftmag=4
magmin=2
debug=1
```

2) POMM Mosaic UPF files:

Fill-out the script below (or use the blank) and save it as:

```
my_mosaic_params.upf
```

then submit as:

```
vicarb "runtop_pom my_mosaic" >& xxlog.log &
```

Example Mosaic Script with Example Mars Parameter Details:

```
#Filename: exp_mosaic_hrsc_params.upf
#AFIDS Planetary Orbital Mapping and Mosaicking User Parameter File
#All specified fields MUST be filled in.
#Images must be BYTE or HALF, Not REAL

#Planet (Sets up projection parameters)
planet=mars

#FULL Directory PATH to Map Images ***Do Not use quotes***
#Acceptable GeoTiff-compatible image format types can be a mix of:
# .jp2 .tif .JP2 .TIF .vic .VIC (also vicar .img .IMG)
#example: /root/docker_tst/workdir/mosaic/data
pathraw=/<docker-access-location>/data

#Output filename prefix (<30characters)
outpre=hrsc_tst

#Output Pixel Size (meters/pixel).
#Examples: hrsc=12.0; ctx=6.0; hirise=1.0; nac=1.0; wac=100.0
mpix=12.5

#Mosaic Lat/Lon Bounding Box (Default=999=Use_Input_Image_Dimensions)
inpminlon=999
inpminlat=999
inpmaxlon=999
inpmaxlat=999

#Match Mosaic to provided Orthobase:
matchbase=no

#If yes: Provide "lsat=" Directory Path and Filename of pre-existing reference image.
#If no: Leave "lsat=" field blank
lsat=

#Match Mosaic to provided Reference Projection (Not co-reg):
#Re-project the output mosaic to the specified reference projection? yes or no.
coverref=no

#If yes: Provide Directory Path and Filename of pre-existing reference image.
#If no: A "ref_master" file will be generated to cover inputs, and Leave "refmap="
blank.
refmap=

#Override the "imgverify" 0 "stop" code and continue processing.
imgchk=0

#De#bug (Delete temporary files def=0; keep temporary files = 1)
debug=0

#***************The following Parameters can be defaulted**************

#Temporary directory filename Prefix.
unique=JOB1_

#"xy" Working Directory. Specified DIR is Generated if not pre-existing.
```

```
pathxy=xydir

#Output Working Directory. Specified DIR is Generated if not pre-existing.
pathout=finalmos

#Input Valid DEM range Mask
#On Earth, this is a land/water mask (1m to 30000m)
#On Mars/Luna, this is not used.
topo=

#Fixed Parameters:
deltazthresh2=100.0
edgexythr=70.0
minnumzval=4
waterthresh=5
watercount=12
getzvalwin=5
mooreopt=9.0
nah=1000
nav=1000

#Mars Parameters:
mars_gridspace=0.004
marslatlon="mars_geographic.prj"
#mars_meters_per_degree
#Options: 59274.88 (mola); 58335.43 @1m/pixel; 58772.04730 @1.0075m/pxl; 59525.0
mdeg=59275.0

#Earth Parameters:
earth_gridspace=0.004
earthlatlon="earth_geographic.prj"
edeg=108000

#Moon/Luna Parameters:
luna_gridspace=0.004
lunalatlon="luna_geographic.prj"
ldeg=30322.2
```

Example Mosaic Script with Example Luna/Moon Parameter Details:

```
#Filename: exp_mosaic_nac_moon_params.upf
cat exp_mosaic_nac_moon_params.upf
#AFIDS Planetary Orbital Mapping and Mosaicking User Parameter File
#All specified fields MUST be filled in.
#Images must be BYTE or HALF, Not REAL

#Planet (Sets up projection parameters)
planet=luna

#FULL Directory PATH to ALL Map Input Images ***Do Not use quotes***
#Acceptable GeoTiff-compatible image format types can be a mix of:
# .jp2 .tif .JP2 .TIF .vic .VIC (also vicar .img .IMG)
#example: /root/docker_tst/workdir/mosaic/data
pathraw=/<docker-access-location>/data

#Output filename prefix (<30characters)
outpre=luna_nacmos

#Output Pixel Size (meters/pixel).
#Examples: hrsc=12.0; ctx=6.0; hirise=1.0; nac=1.0; wac=100.0
mpix=1.0

#Mosaic Lat/Lon Bounding Box (Default=999=Use_Input_Image_Dimensions)
inpminlon=999
```

```
inpminlat=999
inpmaxlon=999
inpmaxlat=999

#Match Mosaic to provided Orthobase:
matchbase=no

#If yes: Provide "lsat=" Directory Path and Filename of pre-existing reference image.
#If no: Leave "lsat=" field blank
lsat=

#Match Mosaic to provided Reference Projection (Not co-reg):
#Re-project the output mosaic to the specified reference projection? yes or no.
coverref=no

#If yes: Provide Directory Path and Filename of pre-existing reference image.
#If no: A "ref_master" file will be generated to cover inputs, and Leave "refmap="
blank.
refmap=

#Override the "imgverify" 0 "stop" code and continue processing.
imgchk=0

#De#bug (Delete temporary files def=0; keep temporary files = 1)
debug=0

#***************The following Parameters can be defaulted**************

#Temporary directory filename Prefix.
unique=JOB1_

#"xy" Working Directory. Specified DIR is Generated if not pre-existing.
pathxy=xydir

#Output Working Directory. Specified DIR is Generated if not pre-existing.
pathout=finalmos

#Input Valid DEM range Mask
#On Earth, this is a land/water mask (1m to 30000m)
#On Mars/Luna, this is not used.
topo=

#Fixed Parameters:
deltazthresh2=100.0
edgexythr=70.0
minnumzval=4
waterthresh=5
watercount=12
getzvalwin=5
mooreopt=9.0
nah=1000
nav=1000

#Mars Parameters:
mars_gridspace=0.004
marslatlon="mars_geographic.prj"
#mars_meters_per_degree
#Options: 59274.88 (mola); 58335.43 @1m/pixel; 58772.04730 @1.0075m/pxl; 59525.0
mdeg=59275.0

#Earth Parameters:
earth_gridspace=0.004
earthlatlon="earth_geographic.prj"
```

```
edeg=108000

#Moon/Luna Parameters:
luna_gridspace=0.004
lunalatlon="luna_geographic.prj"
ldeg=30322.2
```

Example Mosaic Script with Example Earth Parameter Details:

```
#Filename: exp_mosaic_earth_params.upf
#AFIDS Planetary Orbital Mapping and Mosaicking User Parameter File
#All specified fields MUST be filled in.
#Images must be BYTE or HALF, Not REAL

#Planet (Sets up projection parameters)
planet=earth

#FULL Directory PATH to Map Images ***Do Not use quotes***
#Acceptable GeoTiff-compatible image format types can be a mix of:
# .jp2 .tif .JP2 .TIF .vic .VIC (also vicar .img .IMG)
#example: /root/docker_tst/workdir/mosaic/data
pathraw=/<docker-access-location>/data

#Output filename prefix (<30characters)
outpre=landsat_mos

#Output Pixel Size (meters/pixel).
#Examples: hrsc=12.0; ctx=6.0; hirise=1.0; nac=1.0; wac=100.0
mpix=30.0

#Mosaic Lat/Lon Bounding Box (Default=999=Use_Input_Image_Dimensions)
inpminlon=999
inpminlat=999
inpmaxlon=999
inpmaxlat=999

#Match Mosaic to provided Orthobase:
matchbase=no

#If yes: Provide "lsat=" Directory Path and Filename of pre-existing reference image.
#If no: Leave "lsat=" field blank
lsat=

#Match Mosaic to provided Reference Projection (Not co-reg):
#Re-project the output mosaic to the specified reference projection? yes or no.
coverref=no

#If yes: Provide Directory Path and Filename of pre-existing reference image.
#If no: A "ref_master" file will be generated to cover inputs, and Leave "refmap="
blank.
refmap=

#Override the "imgverify" 0 "stop" code and continue processing.
imgchk=0

#De#bug (Delete temporary files def=0; keep temporary files = 1)
debug=0

#***************The following Parameters can be defaulted**************

#Temporary directory filename Prefix.
unique=JOB1_

#"xy" Working Directory. Specified DIR is Generated if not pre-existing.
```

```
pathxy=xydir

#Output Working Directory. Specified DIR is Generated if not pre-existing.
pathout=finalmos

#Input Valid DEM range Mask
#On Earth, this is a land/water mask (1m to 30000m)
#On Mars/Luna, this is not used.
topo=/opt/afids/data/vdev/etop02nobath.hlf

#Fixed Parameters:
deltazthresh2=100.0
edgexythr=70.0
minnumzval=4
waterthresh=5
watercount=12
getzvalwin=5
mooreopt=9.0
nah=1000
nav=1000

#Mars Parameters:
mars_gridspace=0.004
marslatlon="mars_geographic.prj"
#mars_meters_per_degree
#Options: 59274.88 (mola); 58335.43 @1m/pixel; 58772.04730 @1.0075m/pxl; 59525.0
mdeg=59275.0

#Earth Parameters:
earth_gridspace=0.004
earthlatlon="earth_geographic.prj"
edeg=108000

#Moon/Luna Parameters:
luna_gridspace=0.004
lunalatlon="luna_geographic.prj"
ldeg=30322.2
```

Blank Mosaic Script:

```
#Filename: blank_mosaic_params.upf
planet=mars
pathraw=/<docker-access-location>/data_ctx
outpre=ctxmos
mpix=6.0
inpminlon=999
inpminlat=999
inpmaxlon=999
inpmaxlat=999
matchbase=no
lsat=
coverref=no
refmap=
imgchk=0
debug=1
unique=JOB1_
pathxy=xydir
pathout=finalmos
topo=/opt/afids/data/vdev/etop02nobath.hlf
deltazthresh2=100.0
edgexythr=70.0
minnumzval=4
waterthresh=5
watercount=12
```

```
getzvalwin=5
mooreopt=9.0
nah=1000
nav=1000
mars_gridspace=0.004
marslatlon="mars_geographic.prj"
mdeg=59275.0
earth_gridspace=0.004
earthlatlon="earth_geographic.prj"
edeg=108000
luna_gridspace=0.004
lunalatlon="luna_geographic.prj"
ldeg=30322.2
```

3) POMM Map-Projection UPF files:

Fill-out the script below (or use the blank) and save it as:

```
my_mapjob_params.upf
```

then submit as:

```
vicarb "runtop_map my_mapjob" >& xxlog.log &
```

Example Map-Projection Script with Example Mars/CTX/Moon Parameter Details:

```
#Filename: exp_mapproj_ctx_params.upf
#raw2map-proj User Parameter File
#AFIDS raw image to Map Projection using GLAS Camera Models
#Calls AFIDS/Geocal software
#Requires 3 images: Raw Image, Map Projection Reference image, DEM.
#Maximum path/filename length is 250 characters.
#UPFfile_prefix=raw2map   (Not Used; this is the prefix of this file's name).
#Images must be BYTE or HALF, Not REAL

#Planet (planet, moon or other hard-bodied object. No asteroids or Gas bodies)
planet=mars

#Sensor (Mars ctx, hrsc, hirise; No Earth/Moon sensors)
sensor=ctx

#FULL Directory Path/filename of PDS Raw Image (excluding HiRISE)
rawimg=/<docker-access-location>/B04_011266_2065_XN_26N065W.IMG

#FULL Directory Path to HiRISE PDS Raw Imagery (otherwise blank)
pathraw=

#Input HiRISE PDS ROOT/Filename (otherwise blank)
#HiRISE_Example=PSP_002387_1985_RED  (Exclude 0/1 focal plane suffix)
hiroot=

#HiRISE band: 1=RED; 2=BG; 3=IR (You must have downloaded them!)
#HiRISE BG and IR options are not currently operational
hiband=1

#Output filename prefix
outpre=ctx_B04_011266_2065

#Output Map Projection choices. Use latlon/geographic for Mosaicking
#All are Planetocentric; RasterIsPoint; PrimeMeridian=0; IAU2000
mapref=mars_proj_latlon.vic

#Output Pixel Size (meters/pixel).
#HiRISE_Example=0.25 (use 1.0 to significantly reduce processing time)
mpix=1.0

#Digital Elevation Model (DEM) Covering input image
demimg=/pommosdata/planet_dem/Mars_HRSC_MOLA_BlendDEM_Global_200mp_v2.hlf

#Output Working Directory. MUST BE SPECIFIED.
#Example=./
pathout=finalmos

#Debug (Delete temporary files def=0; keep temporary files=1)
debug=0

#******************USE These Defaults*****************************
#Camera Model is hardwired (Not Used: ctx/hirise=1; hrsc=2)

#Minimum DEM Height
#Mars DEM range is +21266 to -8528
```

```
minh=-8528

#Maximum DEM Height
#Mars DEM range is +21266 to -8528
maxh=21266

#Mars_meters_per_degree
#Options: 59274.88 (mola); 59274.6975 (isis); 58335.43 @1m/pixel; 59525.0 common
mdeg=59275.0

#Luna_meters_per_degree
ldeg=30322.2
#END*****************************************************************
```

Example Map-Projection Script with Example Mars/HiRISE Parameter Details:

```
#Filename: exp_mapproj_hirise_params.upf
#raw2map-proj User Parameter File
#AFIDS raw image to Map Projection using GLAS Camera Models
#Calls AFIDS/Geocal software
#Requires 3 images: Raw Image, Map Projection Reference image, DEM.
#Maximum path/filename length is 250 characters.
#UPFfile_prefix=raw2map   (Not Used; this is the prefix of this file's name).
#Images must be BYTE or HALF, Not REAL

#Planet (planet, moon or other hard-bodied object. No asteroids or Gas bodies)
planet=mars

#Sensor (Mars ctx, hrsc, hirise; No Earth/Moon sensors)
sensor=hirise

#FULL Directory Path/filename of PDS Raw Image (excluding HiRISE)
rawimg=

#FULL Directory Path to HiRISE PDS Raw Imagery
pathraw=/<docker-access-location>/data

#Input HiRISE PDS ROOT/Filename
#HiRISE_Example=PSP_002387_1985_RED  (Exclude 0/1 focal plane suffix)
hiroot=PSP_002387_1985_RED

#HiRISE band: 1=RED; 2=BG; 3=IR (You must have downloaded them!)
#HiRISE BG and IR options are not currently operational
hiband=1

#Output filename prefix
outpre=hirise_002387_1985_red

#Output Map Projection choices. Use latlon/geographic for Mosaicking
#All are Planetocentric; RasterIsPoint; PrimeMeridian=0; IAU2000
mapref=mars_proj_latlon.vic

#Output Pixel Size (meters/pixel).
#HiRISE_Example=0.25 (use 1.0 to significantly reduce processing time)
mpix=1.0

#Digital Elevation Model (DEM) Covering input image
demimg=/pommosdata/planet_dem/Mars_HRSC_MOLA_BlendDEM_Global_200mp_v2.hlf

#Output Working Directory. MUST BE SPECIFIED.
#Example=./
pathout=finalmos

#Debug (Delete temporary files def=0; keep temporary files=1)
```

```
debug=0

#******************USE These Defaults*****************************
#Camera Model is hardwired (Not Used: ctx/hirise=1; hrsc=2)

#Minimum DEM Height
#Mars DEM range is +21266 to -8528
minh=-8528

#Maximum DEM Height
#Mars DEM range is +21266 to -8528
maxh=21266

#Mars_meters_per_degree
#Options: 59274.88 (mola); 59274.6975 (isis); 58335.43 @1m/pixel; 59525.0 common
mdeg=59275.0

#Luna_meters_per_degree
ldeg=30322.2
#END*****************************************************************
```

Blank Map-Projection Script:

```
#Filename: blank_mapproj_params.upf
planet=mars
sensor=ctx
rawimg=/<docker-access-location>/B04_011266_2065_XN_26N065W.IMG
pathraw=
hiband=1
hiroot=
outpre=ctx_B04_011266_2065
mapref=mars_proj_latlon.vic
mpix=6.0
demimg=/pommosdata/planet_dem/Mars_HRSC_MOLA_BlendDEM_Global_200mp_v2.hlf
pathout=finalmos
debug=1
minh=-8528
maxh=21266
mdeg=59275.0
ldeg=30322.2
```