Set 4: Specialized VIMS processing

1- Start with 2 VIMS cubes of Sinlap Crater, one low incidence angle and one high incidence angle
v1525118253_1.qub and v1492363683_1.qub

2- Ingest, load SPICE kernels and calibrate
vims2isis from= v1525118253_1.qub vis= v1525118253_1_vis.cub ir= v1525118253_1_ir.cub
spiceinit from= v1525118253_1_ir.cub
vimscal from=v1525118253_1_ir.cub to=v1525118253_1_ir_iof.cub

vims2isis from= v1492363683_1.qub vis= v1492363683_1_vis.cub ir= v1492363683_1_ir.cub
spiceinit from= v1492363683_1_ir.cub
vimscal from=v1492363683_1_ir.cub to=v1492363683_1_ir_iof.cub

3- Evaluate image geometry with tools such as campt and camstats

camstats from=v1525118253_1_ir.cub
IncidenceMinimum= 0.28125191325474
IncidenceMaximum= 51.391231318674
ResolutionMinimum= 19053.824924283 <meters/pixel>
ResolutionMaximum= 20091.302263223 <meters/pixel>

camstats from=v1492363683_1_ir.cub
IncidenceMinimum= 45.857829746984
IncidenceMaximum= 78.257477423691
ResolutionMinimum= 34736.850649237 <meters/pixel>
ResolutionMaximum= 36025.140647579 <meters/pixel>

4- Generate averaged methane windows using included perl script: this script averages a series of bands (cubeavg) and computes phase angle, emission angle and incidence angle bands for every pixel (phocube)
Use vims_mwinavg.pl on the above two cubes; check out .prt and .log files for details of processing

./vims_mwinavg.pl -from=v1514302573_1_ir_iof.cub
./vims_mwinavg.pl –from=v1492363683_1_ir_iof.cub

This script will generate 11band output files: v1514302573_1_ir_iof_mwinavg.cub & v1492363683_1_ir_iof_mwinavg.cub

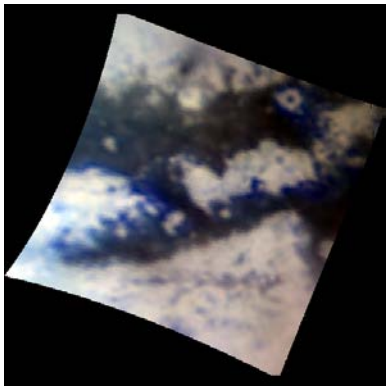
5- Map project v1514302573_1_ir_iof_mwinavg.cub to the default sinusoidal projection at 16 pixels/deg
cam2map from=v1514302573_1_ir_iof_mwinavg.cub to=v1514302573_1_ir_iof_mwinavg_sinu16.cub pixres=ppd resolution=16

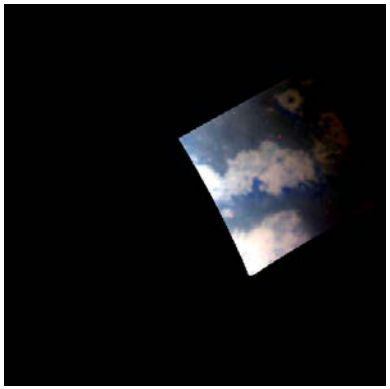
6- Project the 2nd frame to match exactly the cam2map output of step #5 above (v1514302573_1_ir_iof_mwinavg_sinu16.cub)
cam2map from=v1492363683_1_ir_iof_mwinavg.cub map=v1514302573_1_ir_iof_mwinavg_sinu16.cub
to=v1492363683_1_ir_cal_mwinavg_sinu16.cub **matchmap=yes**

Display results:

qview v1514302573_1_ir_iof_mwinavg_sinu16.cub v1492363683_1_ir_cal_mwinavg_sinu16.cub

For a nice RGB composite: Red=band5 Green=Band4 Blue=Band3





7- For this example, use fx to apply a function on the 5th band of the input cube (+5) and the incidence angle band (+11) to approximately normalize photometric differences between the two observations

fx f1=v1525118253_1_ir_iof_mwinavg_sinu16.cub+5 f2=v1525118253_1_ir_iof_mwinavg_sinu16.cub+11 to=v1525118253_B5fx.cub equation=[1.25/cos(rads(f2))]*(f1-0.007)

fx f1=v1492363683_1_ir_cal_mwinavg_sinu16.cub+5 f2=v1492363683_1_ir_cal_mwinavg_sinu16.cub+11 to=v1492363683_B5fx.cub equation=[1.25/cos(rads(f2))]*(f1-0.007)

8- Create mosaics of band5 before fx

a) cubeatt from=v1525118253_1_ir_iof_mwinavg_sinu16.cub+5 to=beforefx.cub

b) mapmos from=v1492363683_1_ir_cal_mwinavg_sinu16.cub+5 mosaic=beforefx.cub

9) Create mosaics of band5 after fx

a) cp v1525118253_B5fx.cub afterfx.cub

b) mapmos from=v1492363683_B5fx.cub mosaic=afterfx.cub

qview beforefx.cub afterfx.cub