m5231153 Yuta Nemoto

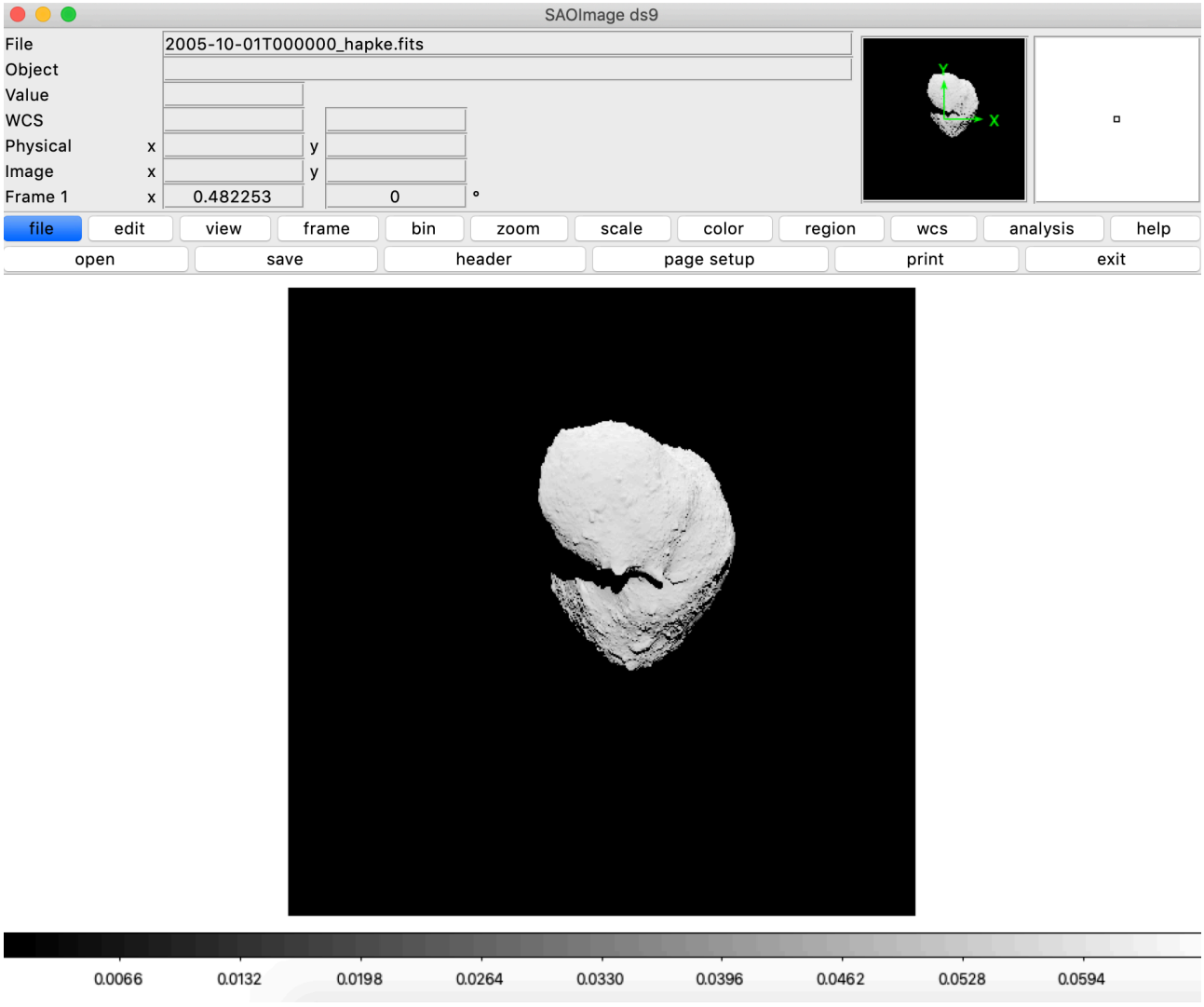
ITC09 Fundamental Data Analysis in Lunar and Planetary Explorations

演習課題6

・plate_rendererをコンパイルし，模擬画像を作成せよ

```
(base) wlan-napt-003:SPICE_tutorial shiranui$ ./plate_renderer kernels/Itokawa/dsk/hay_a_amica_5_itokawashape_v1_0_512q.bds $(cat kernel_list_rendezvous.txt)
kernels/Itokawa/dsk/hay_a_amica_5_itokawashape_v1_0_512q.bds is loaded.
./kernels/generic_kernels/spk/planets/de403s.bsp is loaded.
./kernels/generic_kernels/pck/pck00010.tpc is loaded.
./kernels/generic_kernels/lsk/naif0012.tls is loaded.
./kernels/Itokawa/pck/itokawa_gaskell_n3.tpc is loaded.
./kernels/Itokawa/spk/sb_25143_140.bsp is loaded.
./kernels/HAYABUSA/sclk/hayabusa.tsc is loaded.
./kernels/HAYABUSA/ik/amica31.ti is loaded.
./kernels/HAYABUSA/fk/hayabusa_hp.tf is loaded.
./kernels/HAYABUSA/spk/hay_jaxa_050916_051119_v1n.bsp is loaded.
./kernels/HAYABUSA/spk/hay_osbj_050911_051118_v1n.bsp is loaded.
./kernels/HAYABUSA/ck/hayabusa_itokawarendezvous_v02n.bc is loaded.
Use HAYABUSA_AMICA
Input epoch (UTC): 2005-10-01T00:00:00
2005-10-01T000000
S/C position (Body-Fixed):
    X   =          7.63712
    Y   =         -1.97583
    Z   =          0.05974
Solar position (Body-Fixed):
    X   =  161050864.48813
    Y   =  -14520949.19513
    Z   =    4732054.85776
The central LOS vector (body-fixed):
    X   =         -0.97037
    Y   =          0.24123
    Z   =         -0.01401
2005-10-01T00:00:00            7.63712              -1.97583              0.05974              -0.97037              0.24123              -0.01401
line: 1000
```

kernels/Itokawa/dsk/hay_a_amica_5_itokawashape_v1_0_512q.bds - 2005-10-01T00:00:00 (スライド中の使用例) から生成された画像 (2005-10-01T000000_hapke.fits)



・実データ参照モードで以下の画像（配布済み）を模擬

- ST_2423247750_v.fits
- ST_2482160259_v.fits
- FITSヘッダを見て撮像時刻を確認し，設定すること

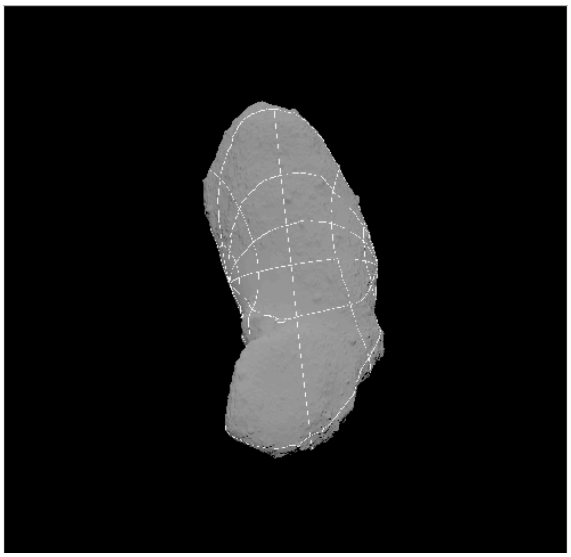
- 緯度経度グリッドを描画した場合としない場合を作成すること

<ST_2423247750_v.fits: 2005-10-01T09:51:51から生成されたデータ (2005-10-01T095151_hapke.fits)>

- ST_2423247750_v.fits (配布済み画像)

- 緯度経度グリッドを描画した場合

./plate_renderer -u 2005-10-01T09:51:51 -g 30 kernels/Itokawa/dsk/hay_a_amica_5_itokawashape_v1_0_512q.bds $(cat kernel_list_rendezvous.txt)

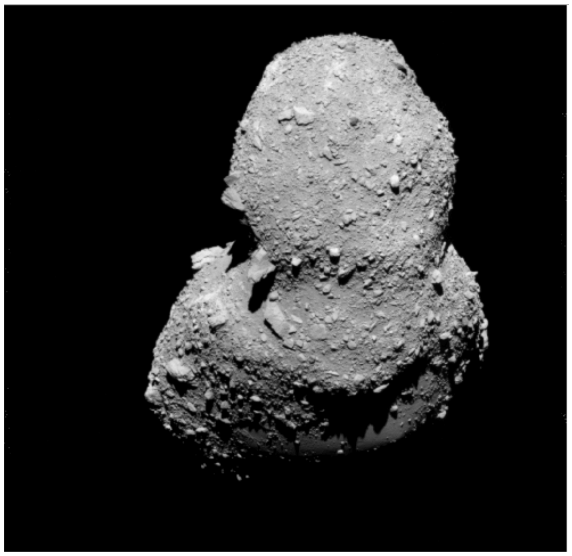


- 緯度経度グリッドを描画しない場合

```
./plate_renderer -u 2005-10-01T09:51:51 kernels/Itokawa/dsk/hay_a_amica_5_itokawashape_v1_0_512q.bds $(cat kernel_list_rendezvous.txt)
```

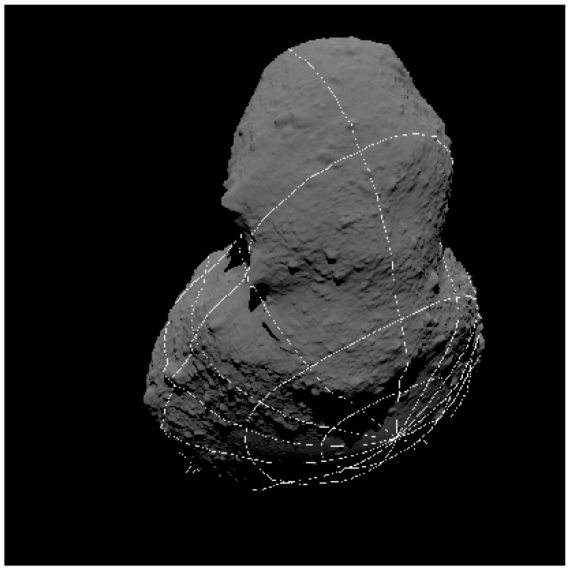
< ST_2482160259_v.fits: 2005-10-22T17:01:25から生成されたデータ (2005-10-22T170125_hapke.fits)>

- ST_2482160259_v.fit (配布済み画像)



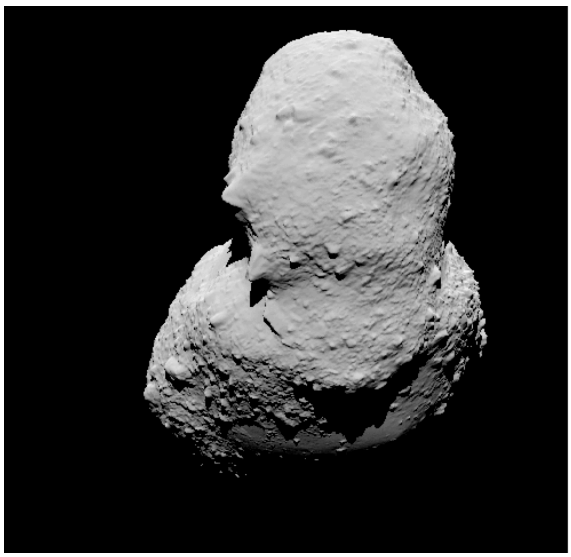
- 緯度経度グリッドを描画した場合

./plate_renderer -u 2005-10-22T17:01:25 -g 30 kernels/Itokawa/dsk/hay_a_amica_5_itokawashape_v1_0_512q.bds $(cat kernel_list_rendezvous.txt)



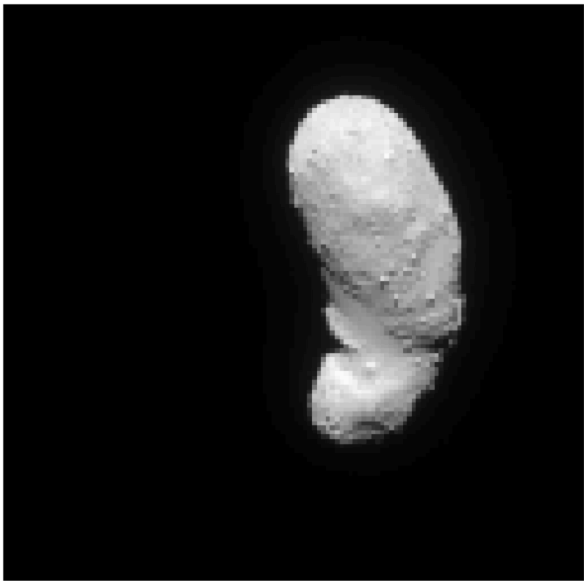
- 緯度経度グリッドを描画しない場合

./plate_renderer -u 2005-10-22T17:01:25 kernels/Itokawa/dsk/hay_a_amica_5_itokawashape_v1_0_512q.bds $(cat kernel_list_rendezvous.txt)



- Hayabusa data archiveから任意の画像1枚を選び，これに関する模擬画像を全てのデータ種を書き出すオプションで作成せよ
  - 緯度経度マップ，日照条件マップ，幾何条件マップ，距離マップ(p.20参照)

選択した画像: ST_2450867894_p.fits (UTC_0='2005-10-11T09:32:24')



入力コマンド:

(緯度経度グリッドを描画する場合)

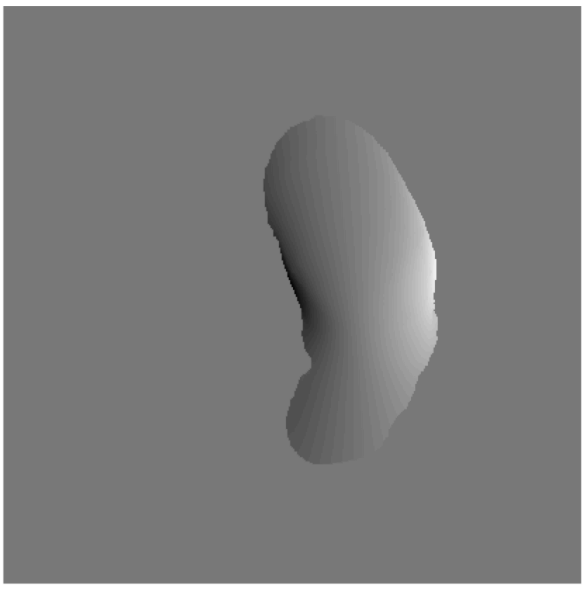
```
./plate_renderer -u 2005-10-11T09:32:24 -g 30 -All kernels/Itokawa/dsk/
hay_a_amica_5_itokawashape_v1_0_512q.bds $(cat kernel_list_rendezvous.txt)
```

(緯度経度グリッドを描画しない場合)

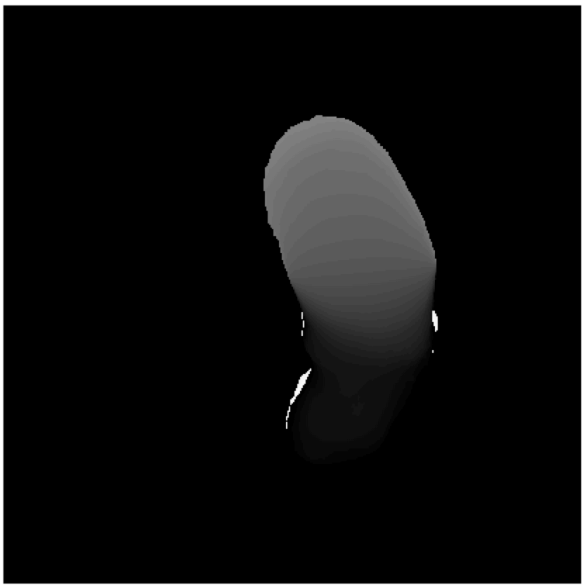
```
./plate_renderer -u 2005-10-11T09:32:24 -All kernels/Itokawa/dsk/
hay_a_amica_5_itokawashape_v1_0_512q.bds $(cat kernel_list_rendezvous.txt)
```

<緯度経度マップ>

- 緯度マップ (2005-10-11T093224_lat.fits)



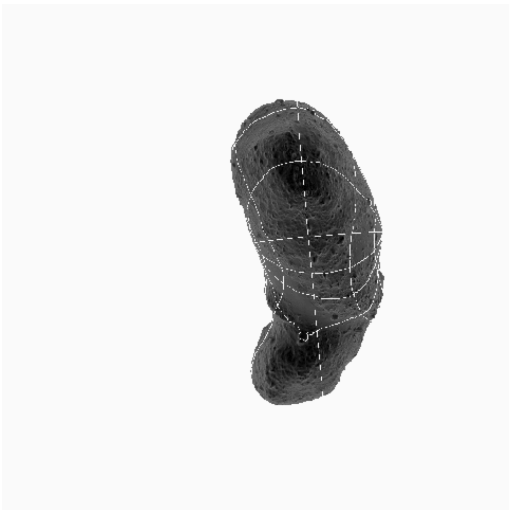
- 経度マップ (2005-10-11T093224_lon.fits)



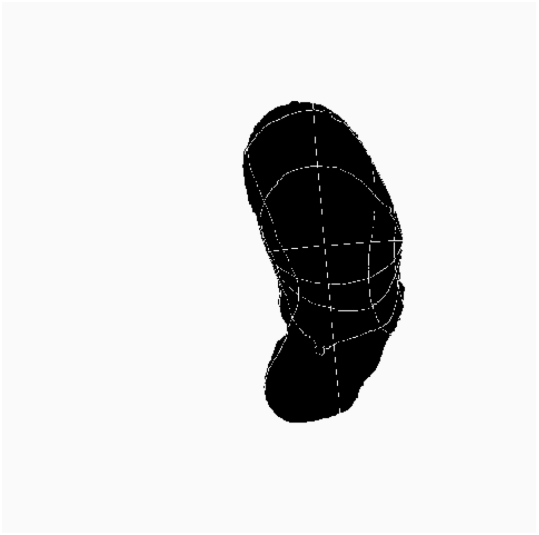
<日照条件マップ>

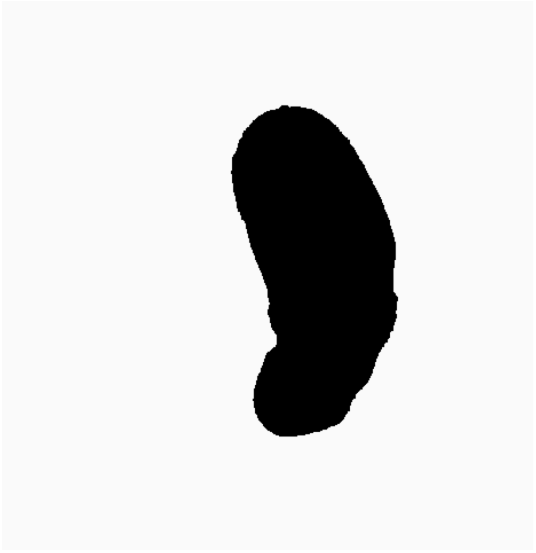
- 入射角 (2005-10-11T093224_i.fits)

- 出射角 (2005-10-11T093224_e.fits)



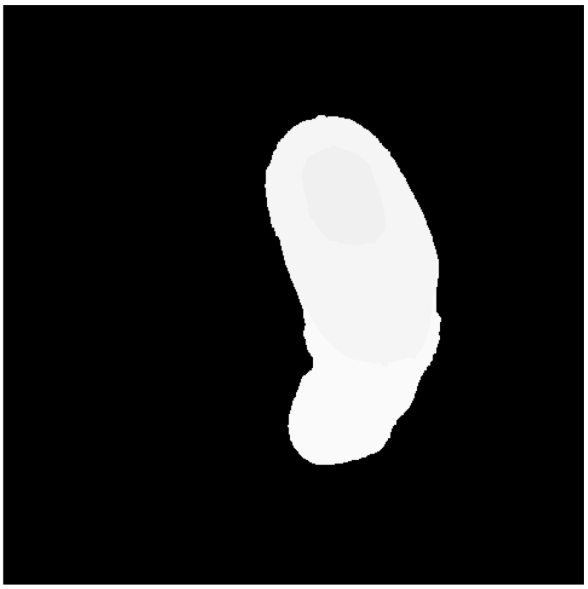
- 位相角 (2005-10-11T093224_g.fits)





<幾何条件マップ>

<距離マップ>



- **自由視点モードで4面図を作成**
  - 緯度経度グリッドは描画する