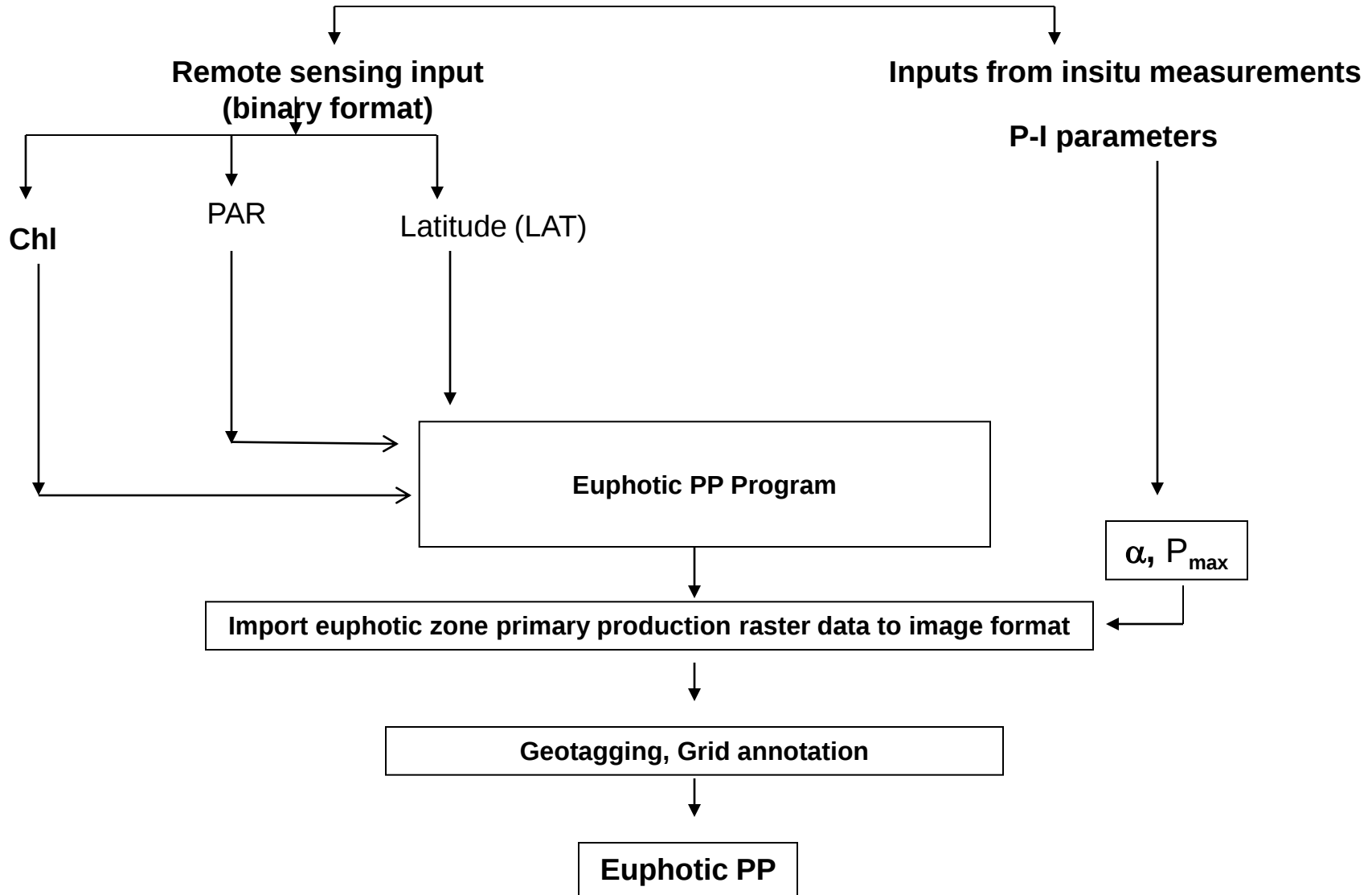


Estimating Ocean Primary Production from Ocean Color

PP Generation



Inputs For Euphotic Zone Primary (EuPP) Production

Remote Sensing Inputs (geocorrected)

1. Chlorophyll a concentration (Chl)
2. Daily averaged (24 hours) Photosynthetically available radiation (PAR).
3. Latitude

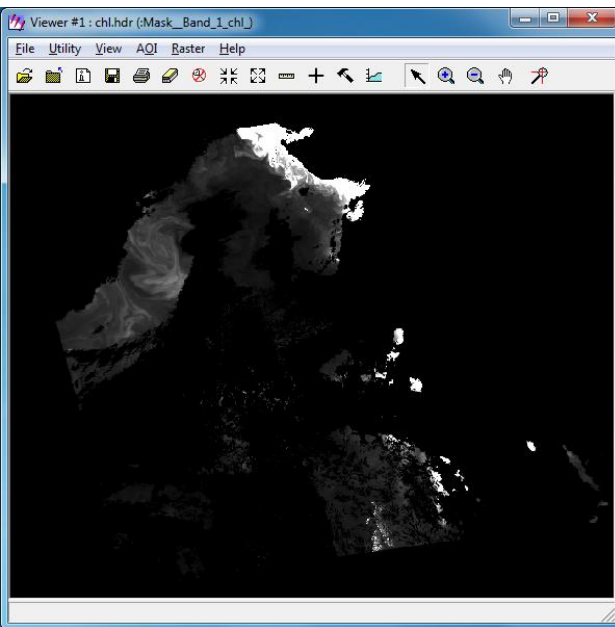
Non-remote Sensing Inputs

1. P-I parameters

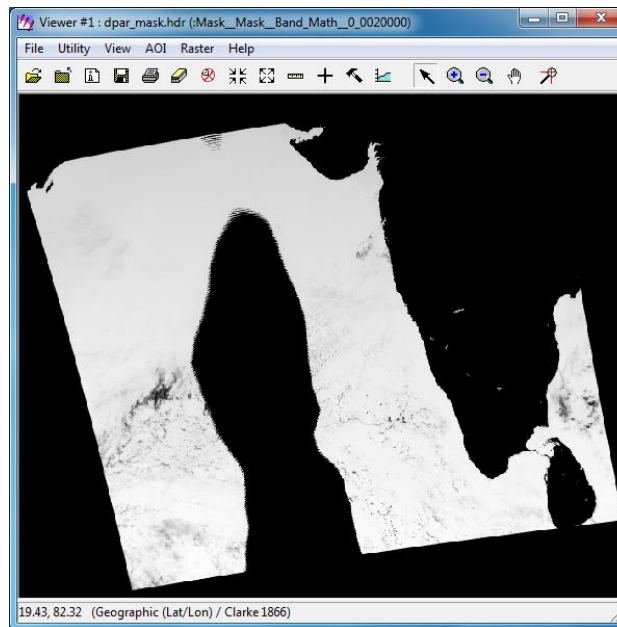
Steps for EuPP generation

- Step 1: Load and display the geo-corrected chl-a, daily averaged PAR and latitude image
Reading image geo-location information from any one file
- Step 2:Exporting all image files to raster format (generic binary)in ERDAS, to be used as inputs in PP Program.
- Step 3:Execution of Euphotic PP Program to generate PP files
- Step 4:Importing Euphotic PP into Image format in ERDAS.
- Step 5:Geotagging of Euphotic PP using ERDAS image info utility.

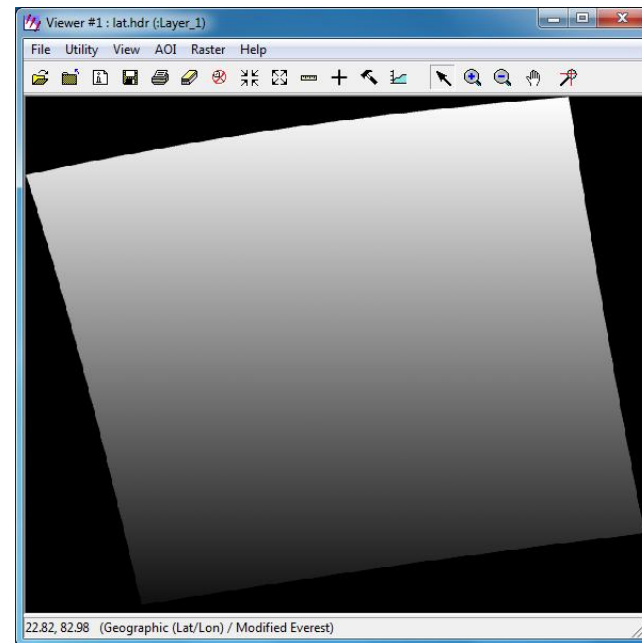
Remote Sensing Input (geo-corrected chl-a image)



MODIS Chlorophyll-a

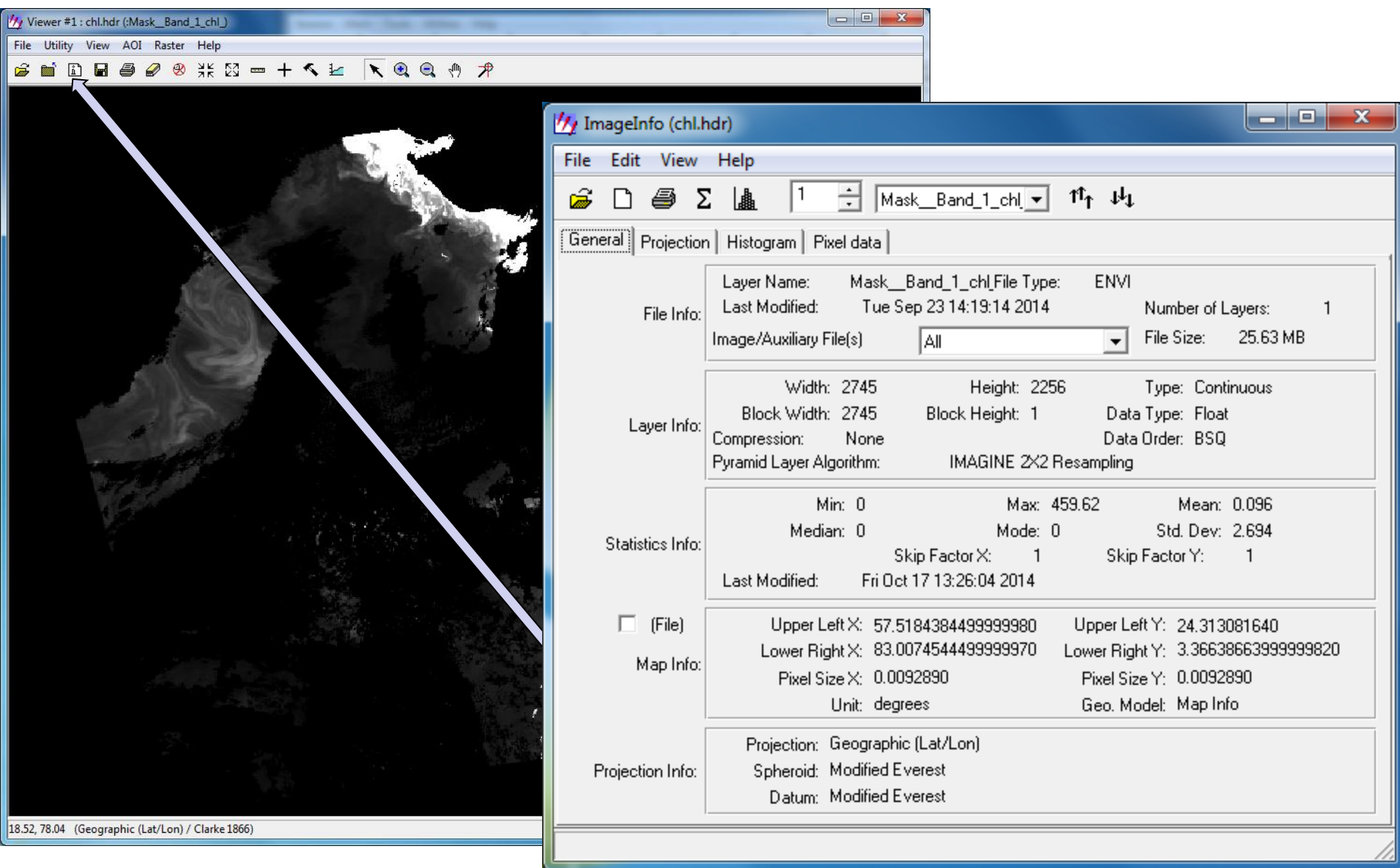


MODIS daily averaged PAR



Latitude

Step 1: Reading image geo-location information of chl-a image.



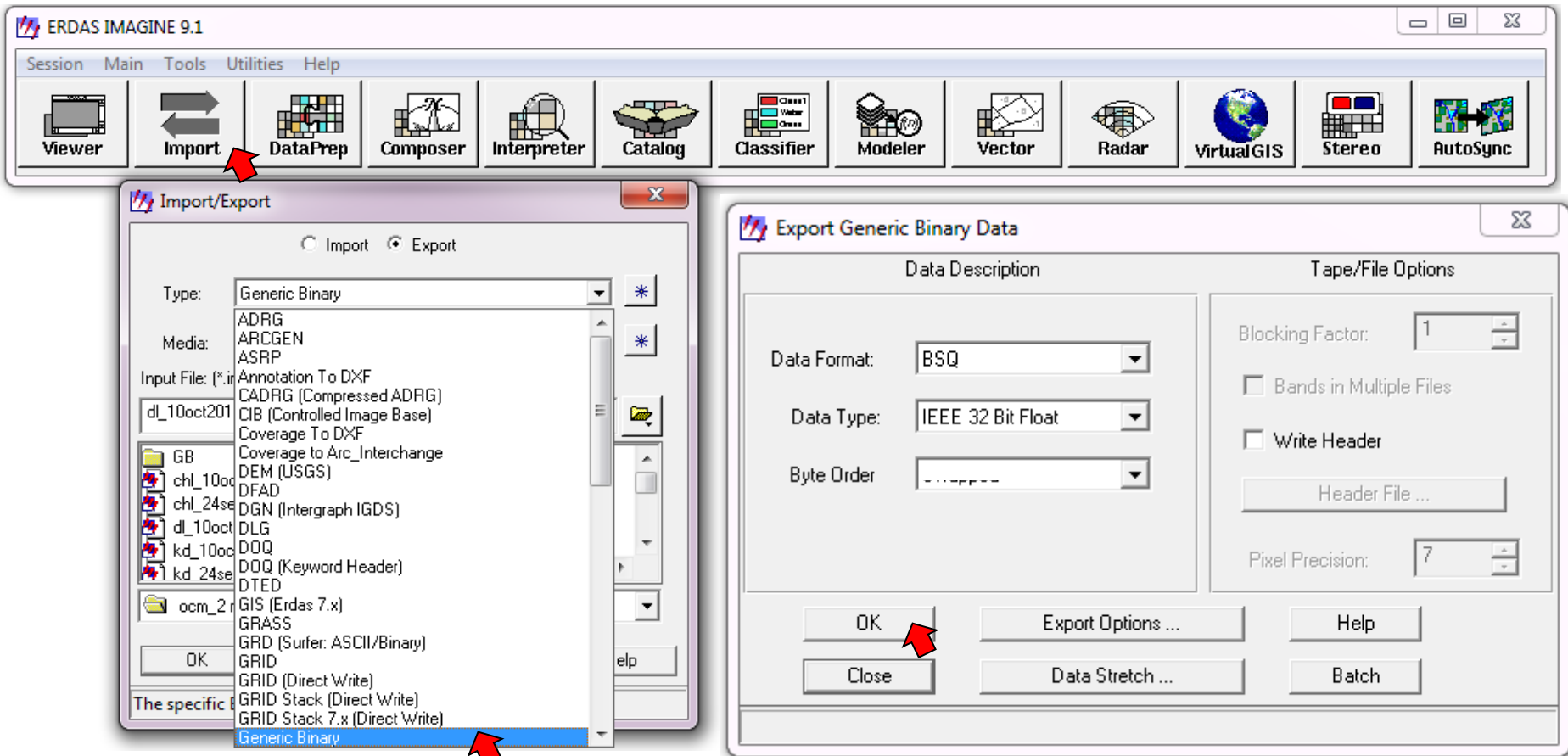
The screenshot displays two windows from the ENVI software interface. The 'Viewer #1: chl.hdr (Mask_Band_1_chl_)' window on the left shows a satellite image of a coastal area. A blue arrow points from the 'ImageInfo' window to the viewer's toolbar. The 'ImageInfo (chl.hdr)' window on the right provides detailed metadata for the file.

ImageInfo (chl.hdr) Metadata:

- General:** Layer Name: Mask_Band_1_chl, File Type: ENVI, Number of Layers: 1, File Size: 25.63 MB
- Layer Info:** Width: 2745, Height: 2256, Type: Continuous, Block Width: 2745, Block Height: 1, Data Type: Float, Compression: None, Data Order: BSQ, Pyramid Layer Algorithm: IMAGINE 2X2 Resampling
- Statistics Info:** Min: 0, Max: 459.62, Mean: 0.096, Median: 0, Mode: 0, Std. Dev: 2.694, Skip Factor X: 1, Skip Factor Y: 1, Last Modified: Fri Oct 17 13:26:04 2014
- Map Info:** Upper Left X: 57.5184384499999980, Upper Left Y: 24.313081640, Lower Right X: 83.0074544499999970, Lower Right Y: 3.36638663999999820, Pixel Size X: 0.0092890, Pixel Size Y: 0.0092890, Unit: degrees, Geo. Model: Map Info
- Projection Info:** Projection: Geographic (Lat/Lon), Spheroid: Modified Everest, Datum: Modified Everest

Viewer #1: chl.hdr (Mask_Band_1_chl_) status bar: 18.52, 78.04 (Geographic (Lat/Lon) / Clarke 1866)

Step 2: Exporting all image files to raster (generic binary format) in ERDAS



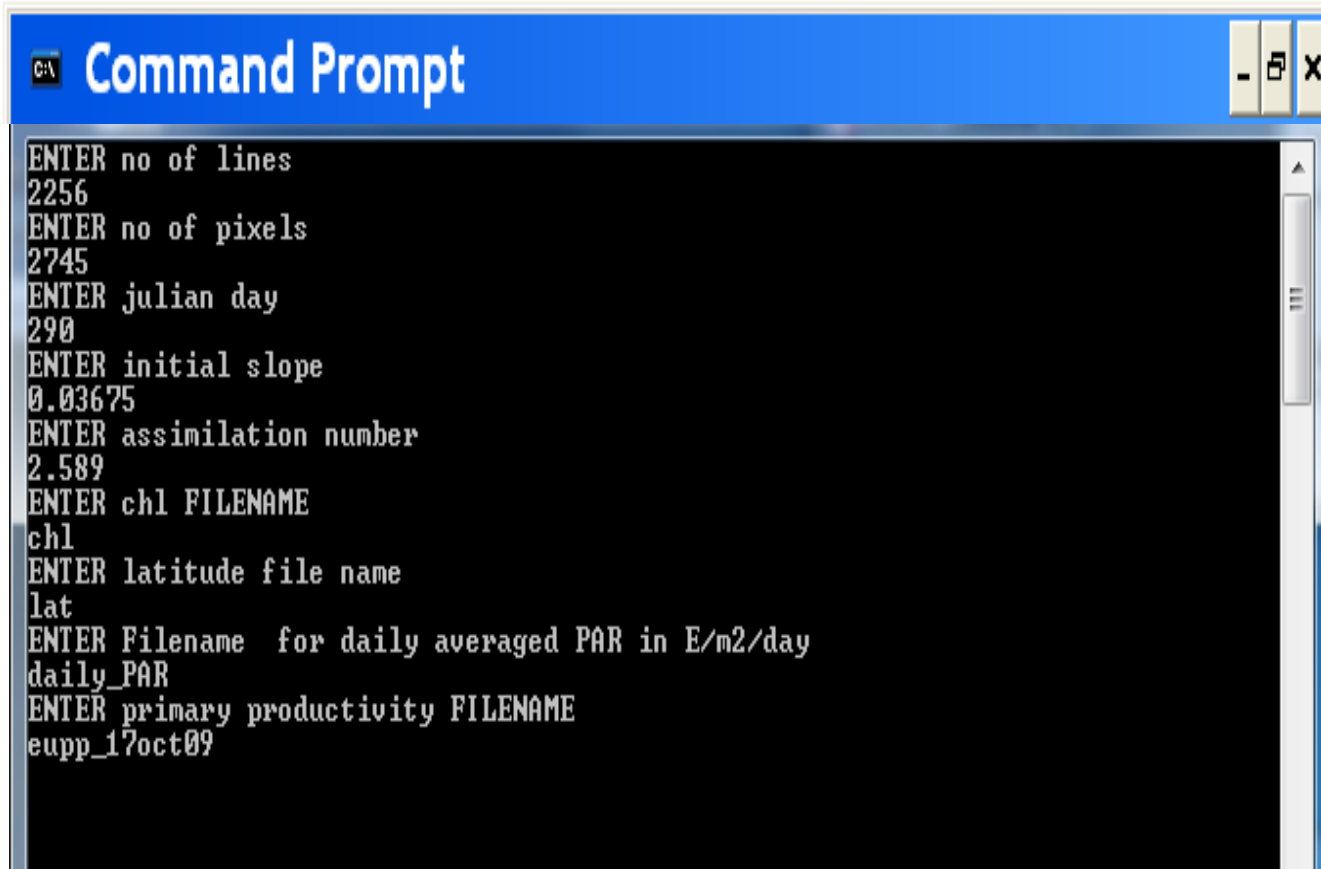
Inputs

- Data Format: BSQ
- Data Type: IEEE32 Bit Float
-

P-I parameters

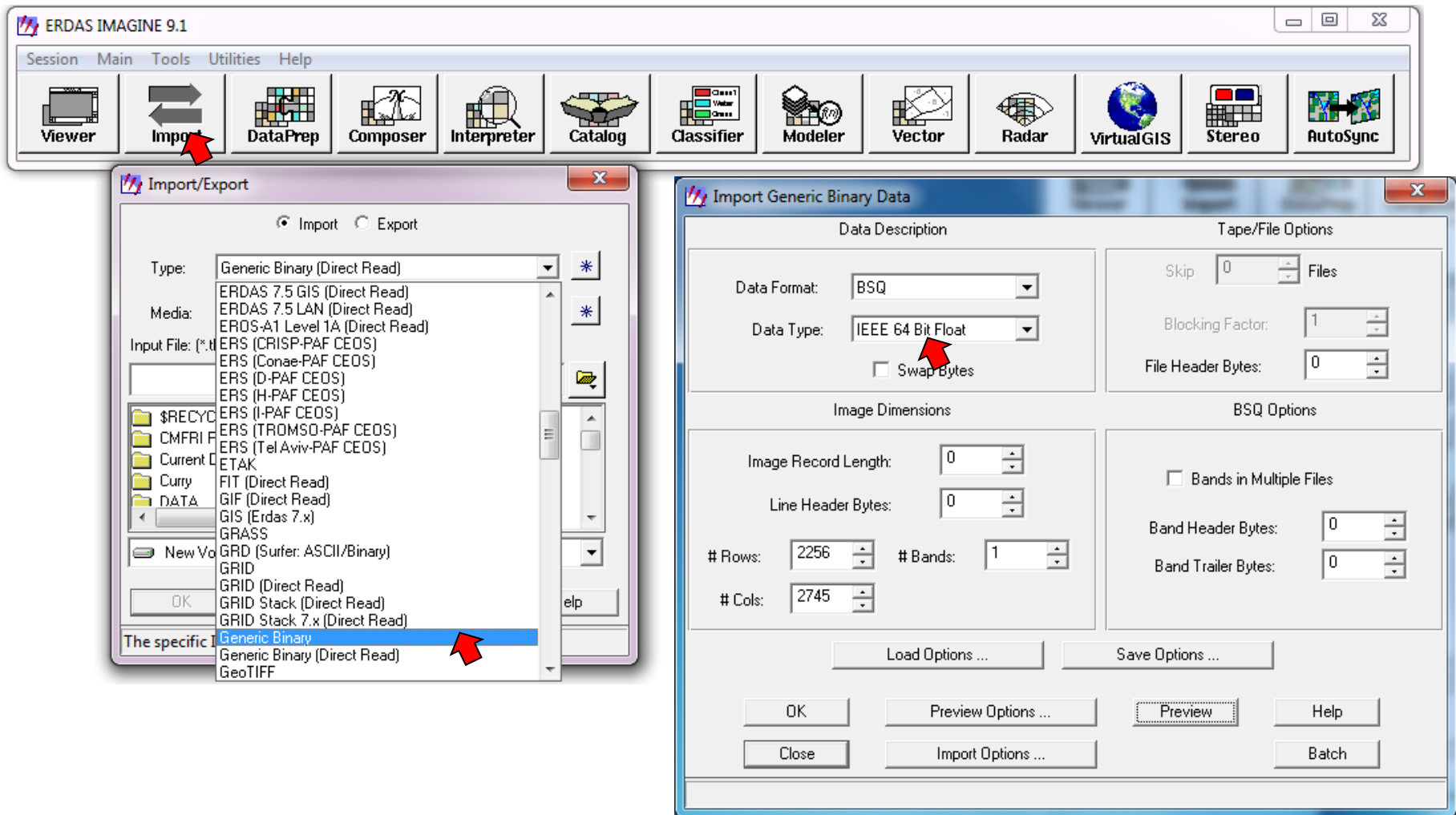
PI curves	initial slope (α^B)	maximum photosynthesis P_m^B
	0.014	8.196
	0.007	9.016
	0.0215	13.32
	0.0371	14.124
	0.606	31.710
	0.075	5.38
	0.0368	3.362
	0.075	4.39
	0.037	1.95
	0.0062	2.39
	0.0103	3.12

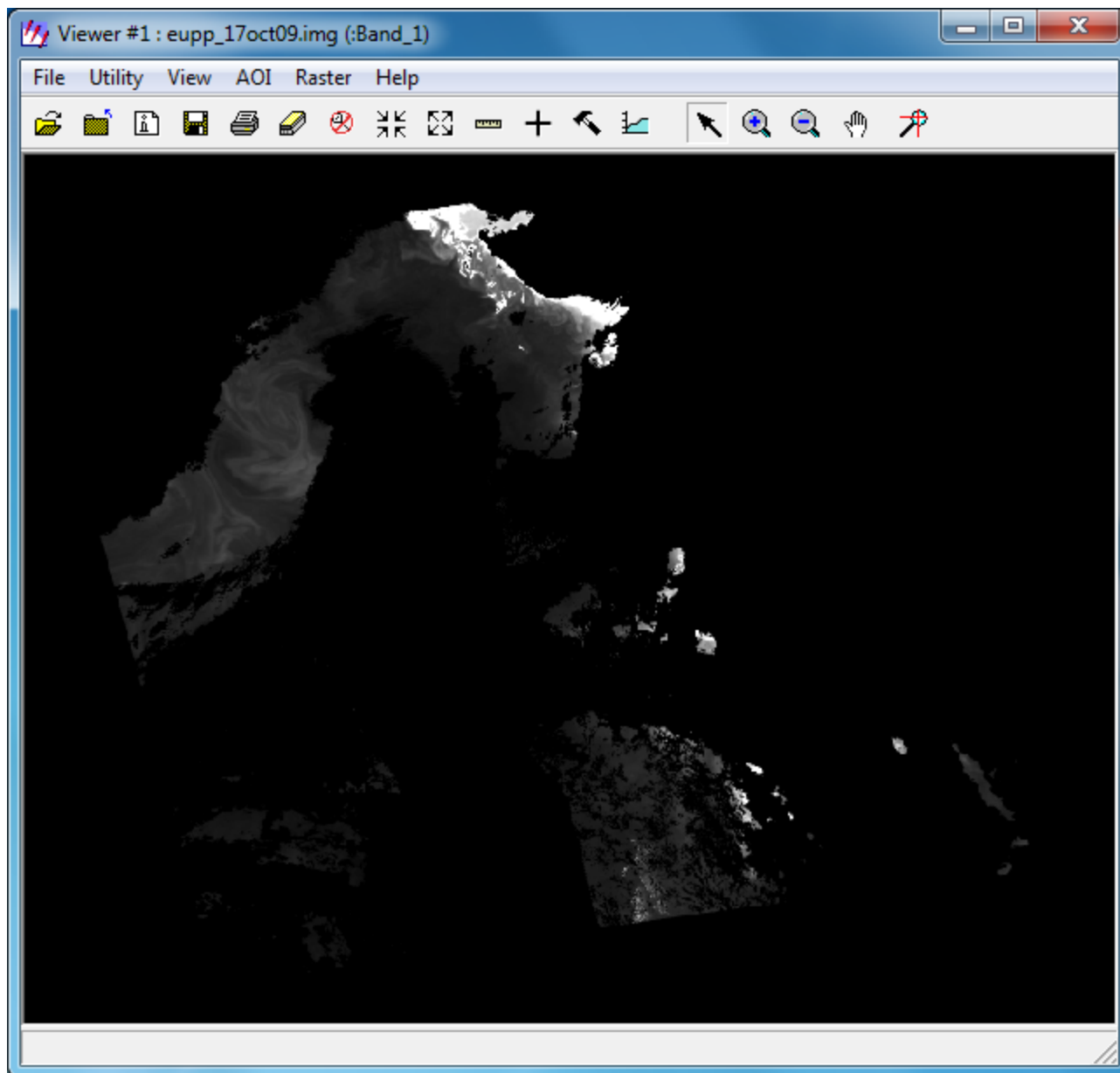
Step 3: Executing Euphotic PP Program



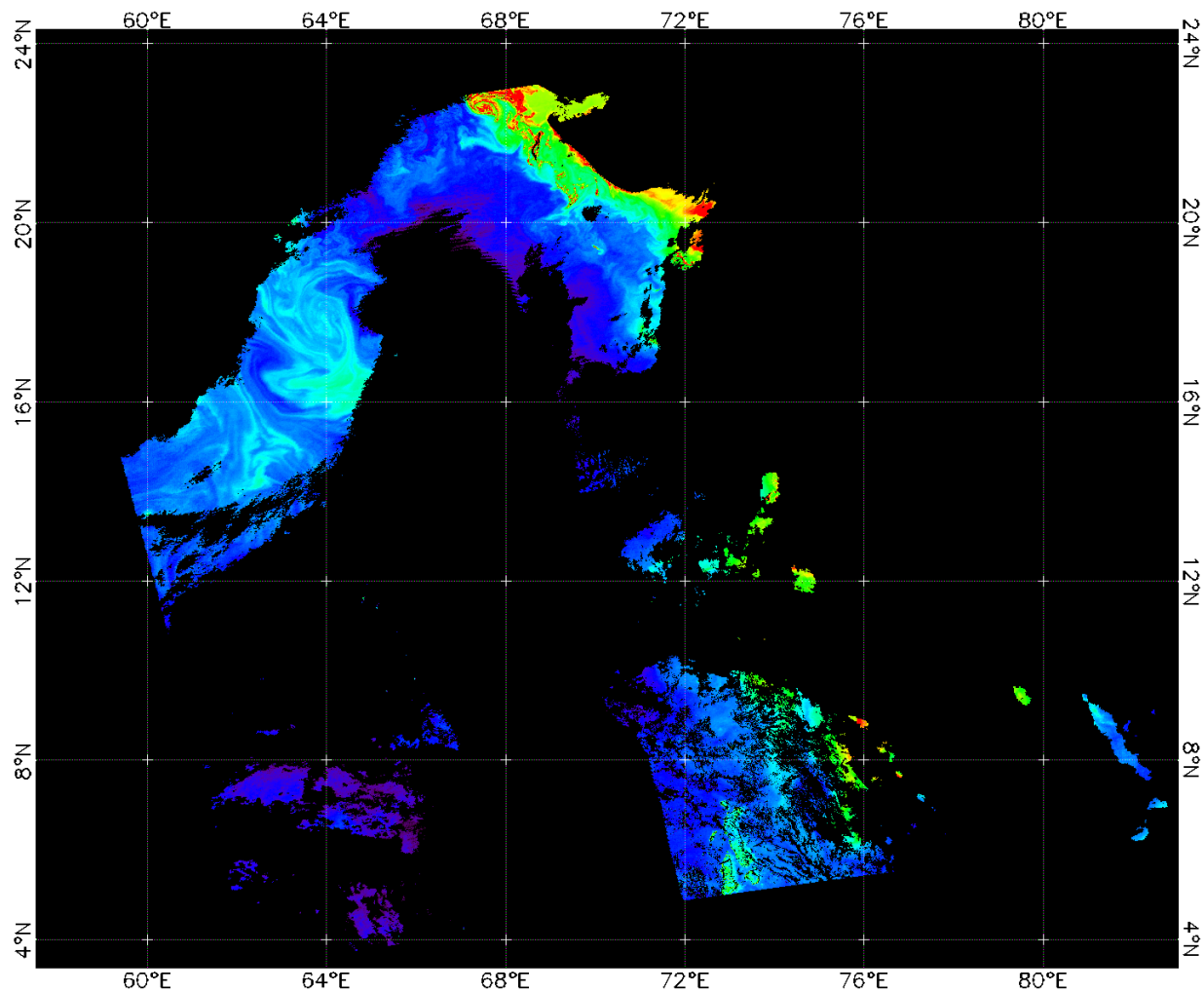
```
ENTER no of lines
2256
ENTER no of pixels
2745
ENTER julian day
290
ENTER initial slope
0.03675
ENTER assimilation number
2.589
ENTER chl FILENAME
chl
ENTER latitude file name
lat
ENTER Filename for daily averaged PAR in E/m2/day
daily_PAR
ENTER primary productivity FILENAME
eupp_17oct09
```

Step 4: Importing Euphotic PP into Image format in ERDAS





EUPP



EUPP

$\text{mgCm}^{-2}\text{-d}^{-1}$

