

# APEC/MRCWG SAKE Project

## Deriving Depths of Coral Reefs from Formosat-2 image

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Link for Detail paper : [Determination of Coral Depth with Formosat-2 Multispectral Image](#)

# Files

- Formosat-2 image files and data file (.dim file)

- Matlab .m files

(QBread.m, img\_band.m)

(FS2\_sea\_area.m)

(DN2radiance.m)

(radian2depth\_input.m, scangle.m, astrounit.m)

(coral\_find.m)

For simplicity, Formosat-2 will be substituted by F-2, here forth.

<b>Input files</b>	<b>processing step Matlab files</b>	<b>Output files</b>
F-2 files <u>(*MS.tif)</u>	Split image to 4 bandsQBread.m, img_band.m	<u>tif image of each band</u> FS2_100383002_1A_0001_MS_com_ band*.tif <u>true color image</u>
<u>tif image of each band</u>	Use NIR image to separate land and ocean, include 5*5 median filter FS2_sea_area.m	DN (Digital number) of each band (band*.mat)
band*.mat & dim data file	Convert DN to radiance DN2radiance.m	Radiance data file of every band band*_radiance.mat
Radiance data file of Blue, Green and near IR radiance.mat	Derive water depths from radiance distribution radian2depth_input.m, scangle.m, astrounit.m <sup>1</sup>	<u>Depth distribution in specified regions</u>

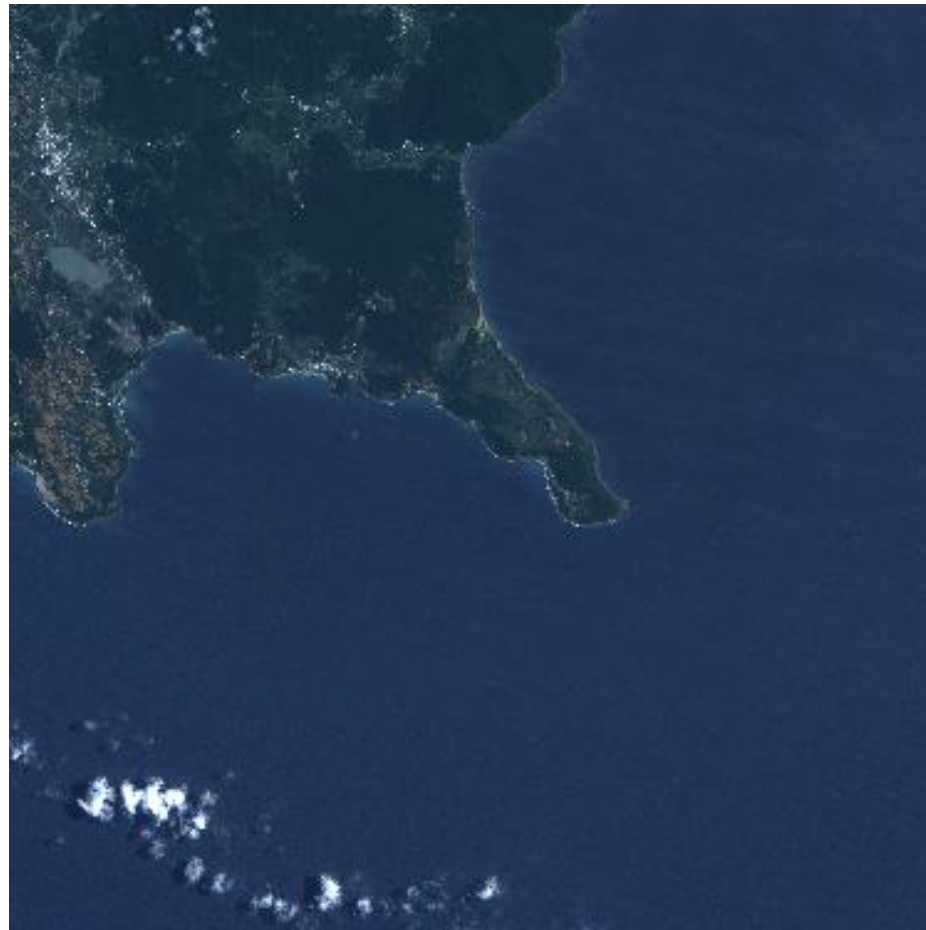
# notes

`img_band.m`, `scangle.m` & `astrounit.m` should be placed in the 'work' folder of matlab

'specified regions': the program will ask for their range of line and pixel numbers

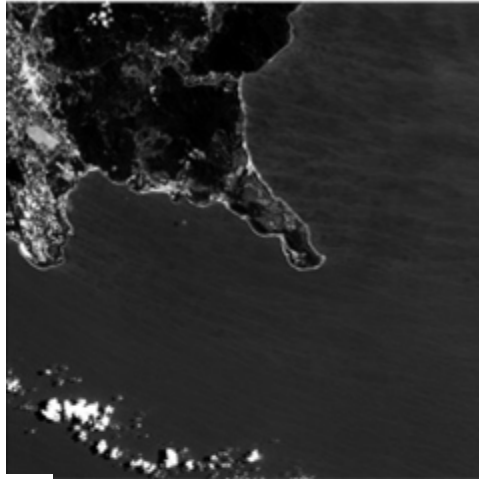
GCP (ground control points are needed for placing the image on geographic coordinates

# Multispectral Image of Formosat-2 satellite

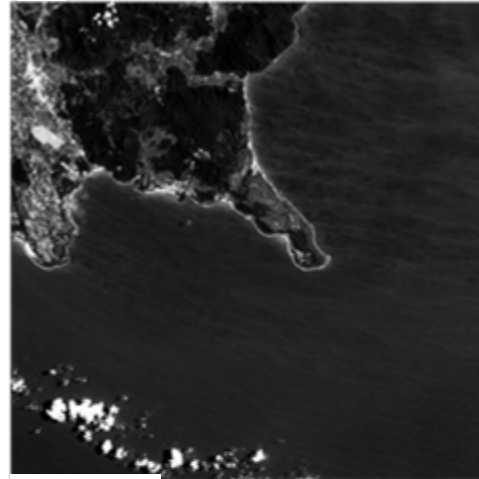


# Images of 4 bands (B/G/R/NIR)

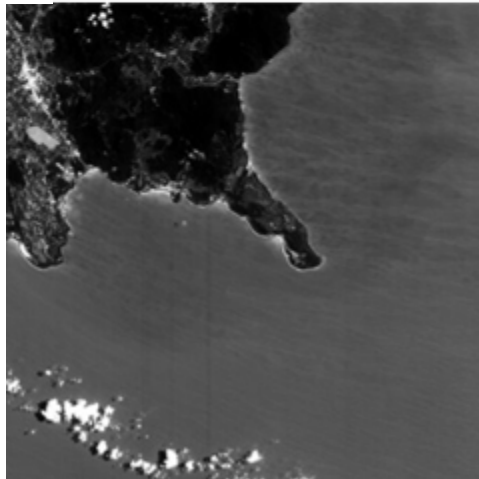
R



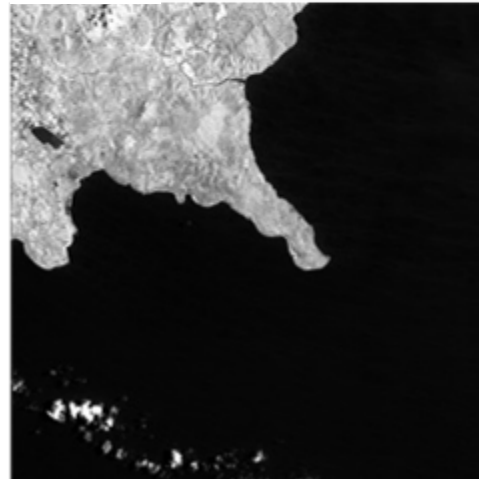
G



B



NIR

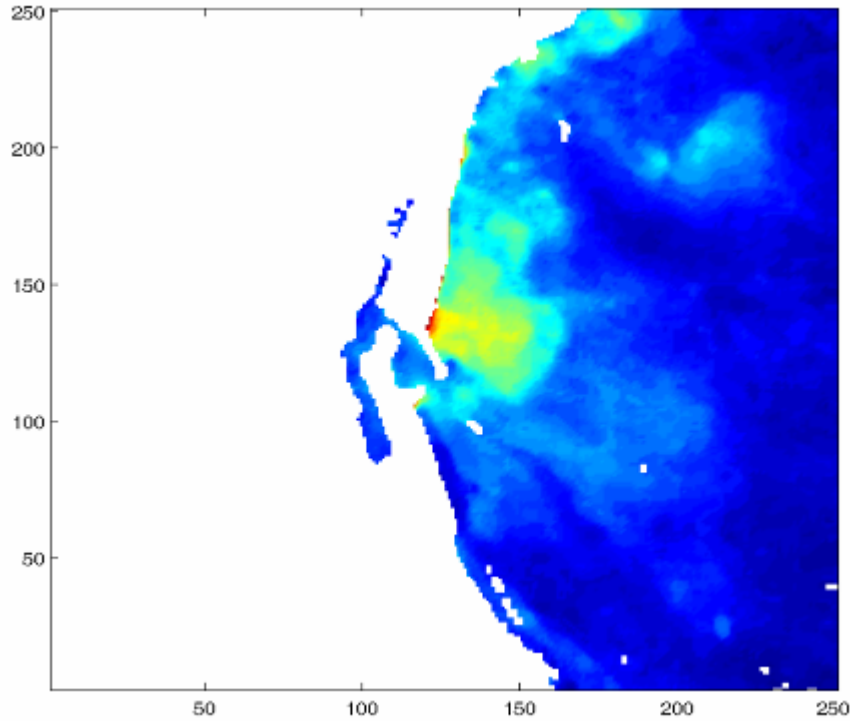


# True color image

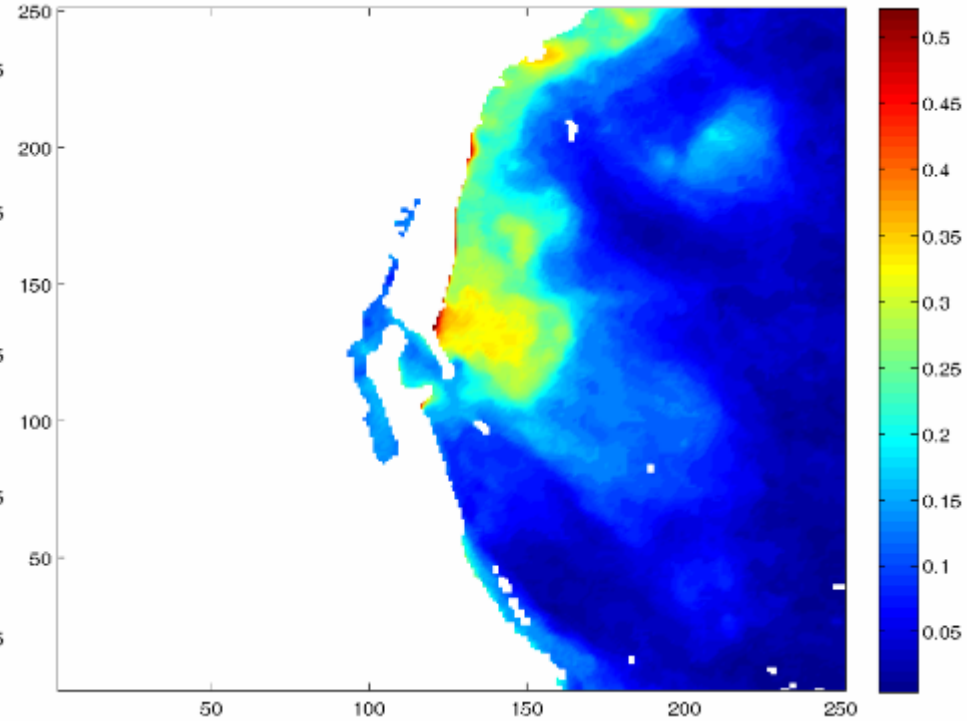


# Blue and Green Reflectance of Water Body off HouBiHu Harbor

water column reflectance-BLUE-HobiHu(column and bottom)



water column reflectance-GREEN-HobiHu(column and bottom)



# Water Depths on Geographic Coordinates

20070720-Formosat-2-CorrectDirection with grids(Hobihu area)

