Hands-On

Generation of Coral Reef map

Training Course on
'Marine GIS for Operational Oceanography'

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Introduction

- **Coral reefs are diverse underwater ecosystems held together by calcium carbonate structures secreted by corals.**
- **Protect coastlines from the damaging effects of wave action and tropical storms**
- **Provide habitats and shelter for many marine organisms**
- **They are source of nitrogen and other essential nutrients for marine food chains**
- **Assist in carbon and nitrogen fixing**
- They help with nutrient recycling.

Overview

I. Download Landsat satellite data from http://earthexplorer.usgs.gov/ at North Reef island, Andaman

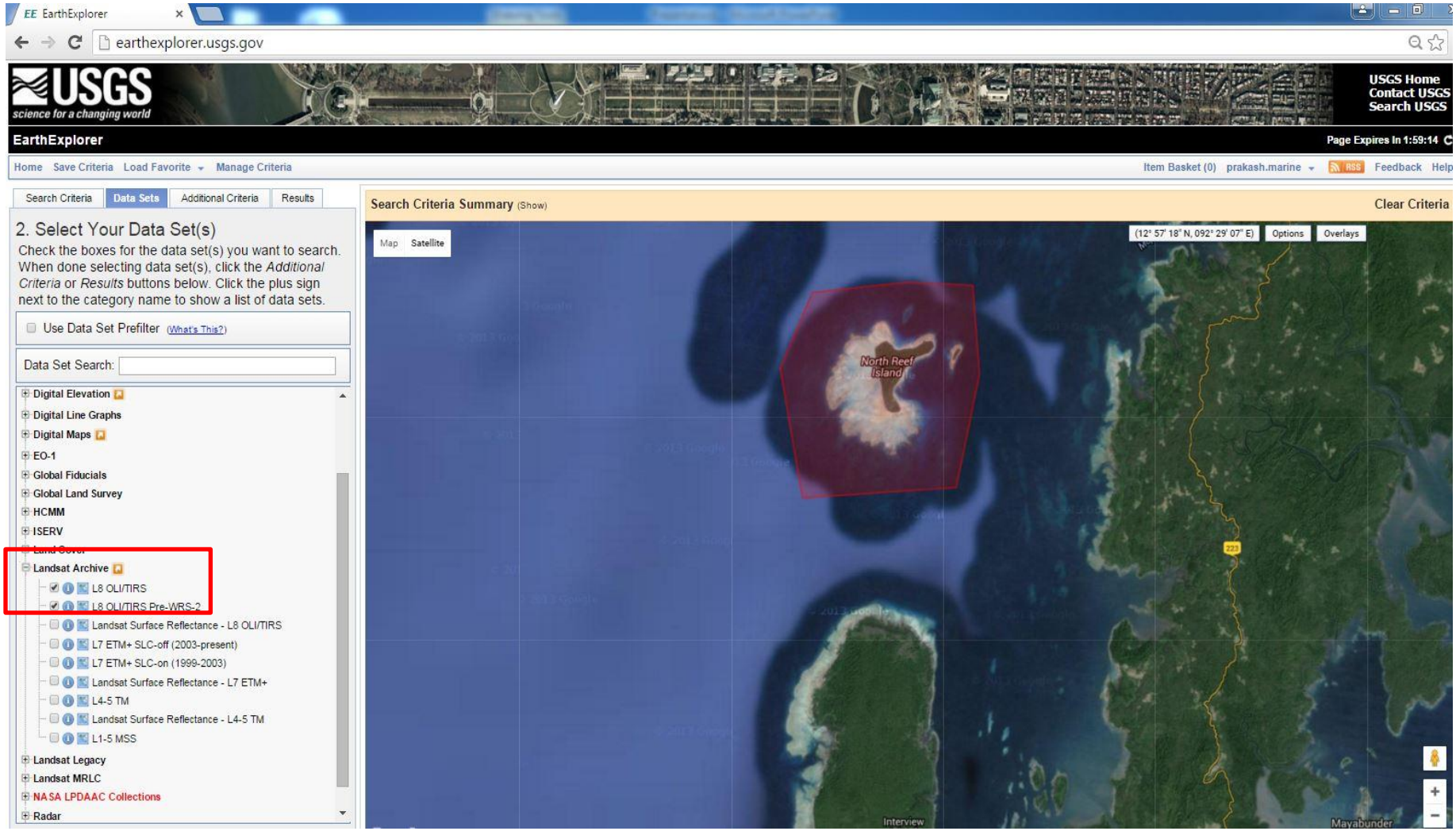
II. Composition of each band

III. Subset Coral reef regions

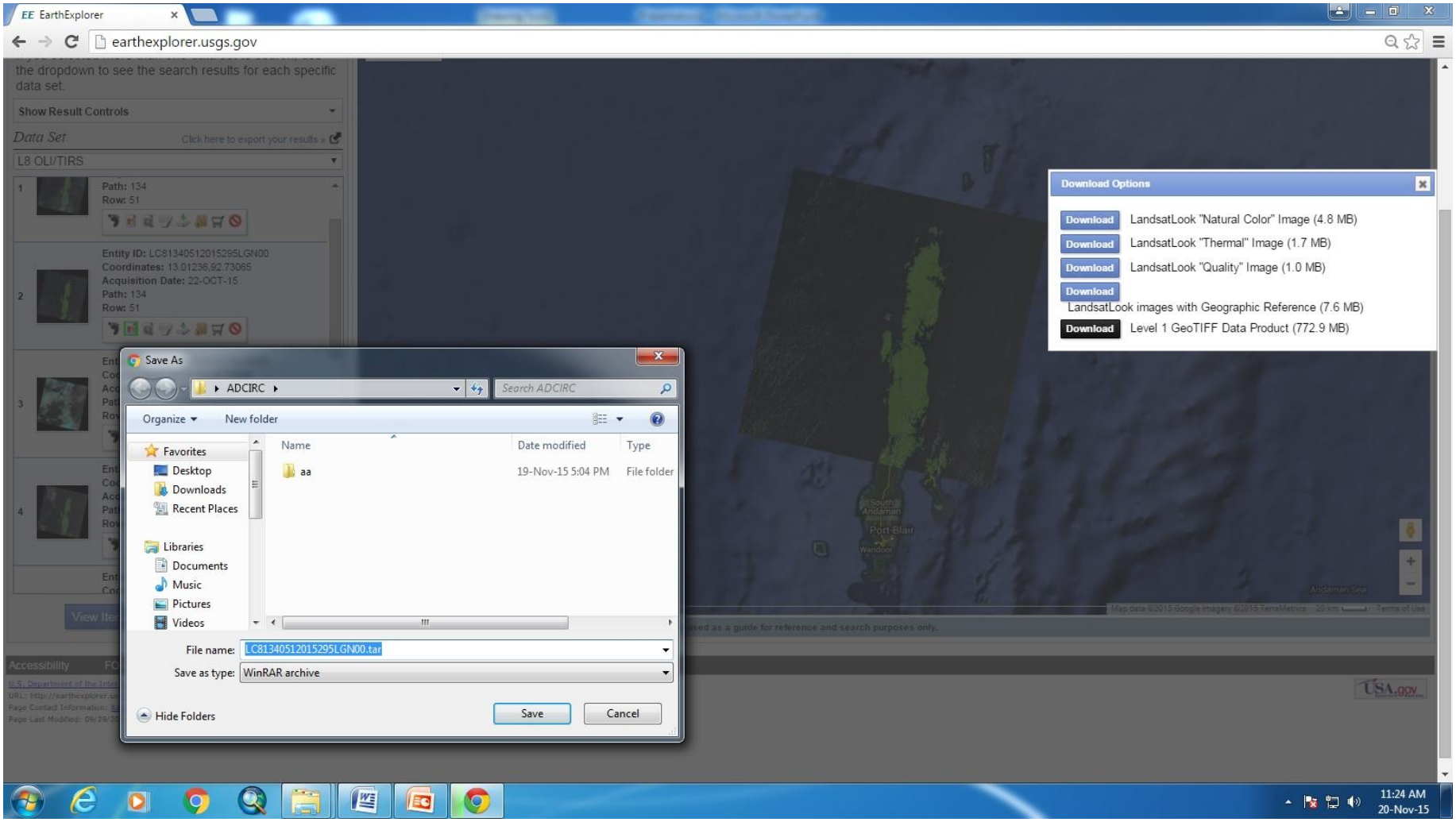
IV. Classify morphological zonation of Coral reef based on unsupervised method

V. Generation of Coral reef Maps

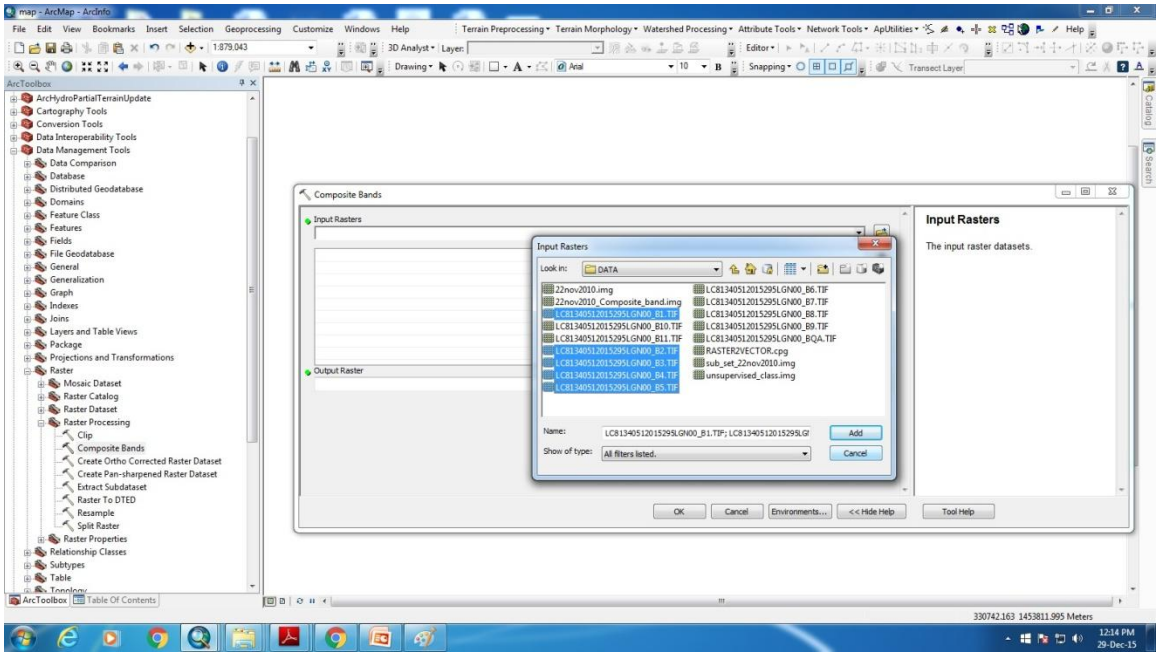
Download Landsat data from http://earthexplorer.usgs.gov/



Download Landsat data

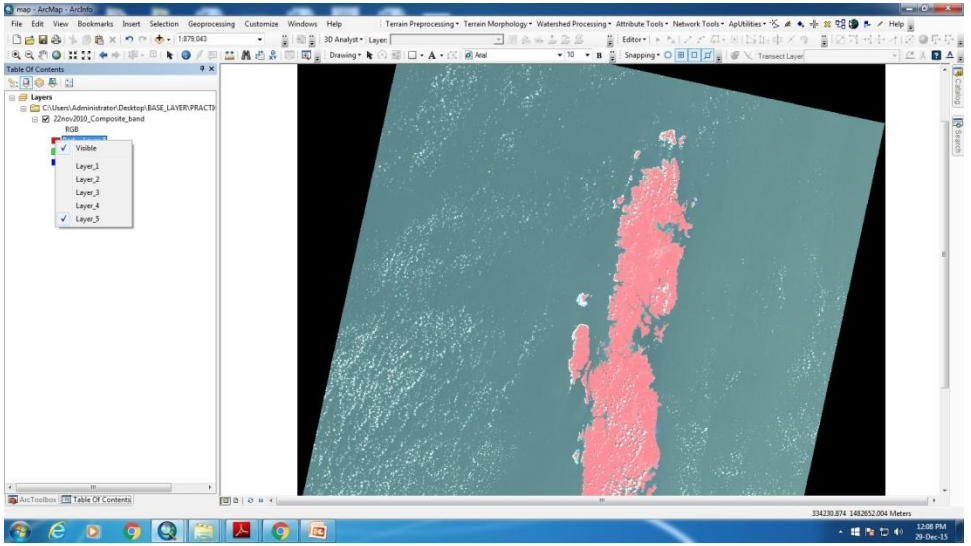


Band Composite

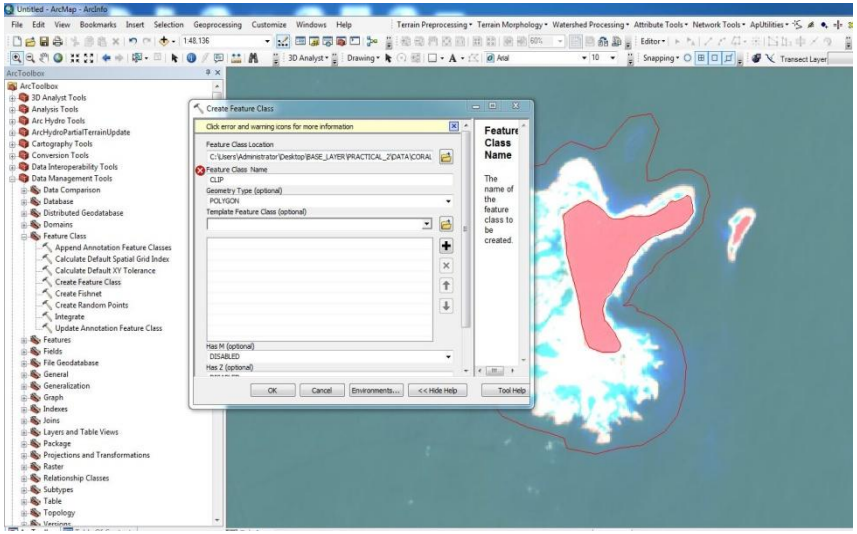


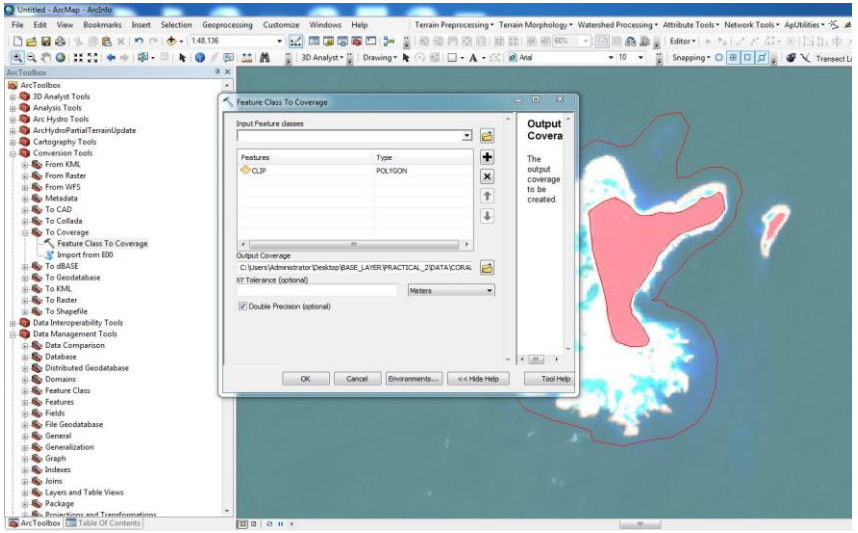
Go to Data Management Tool→ Raster → Raster Processing → Composite Bands then select band1,2,3,4 and 5

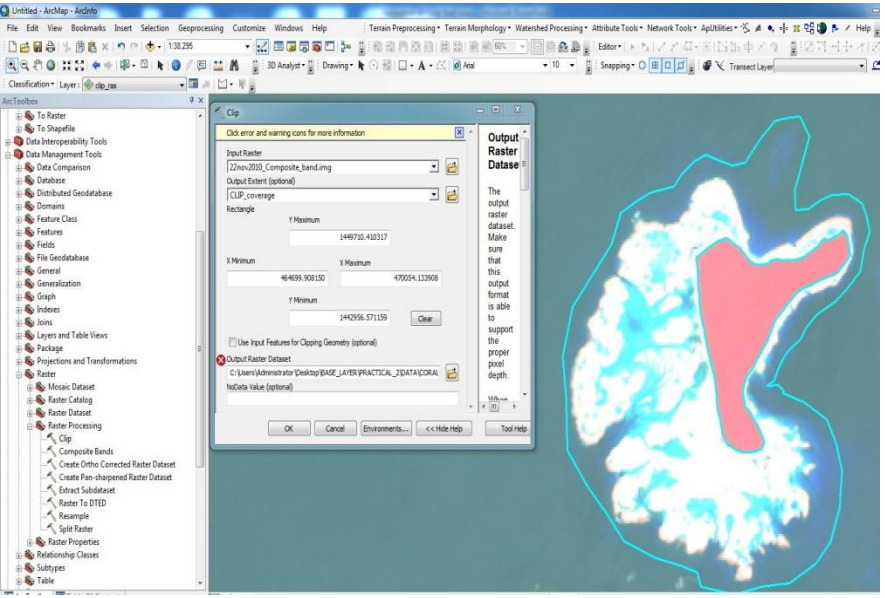
FCC Landsat Image

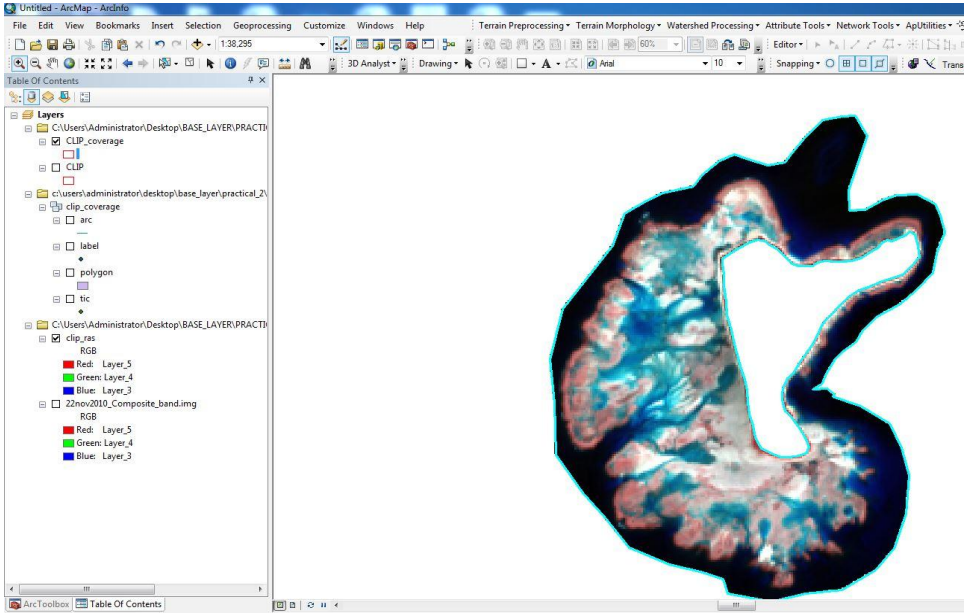


Clip Coral Reef Zone



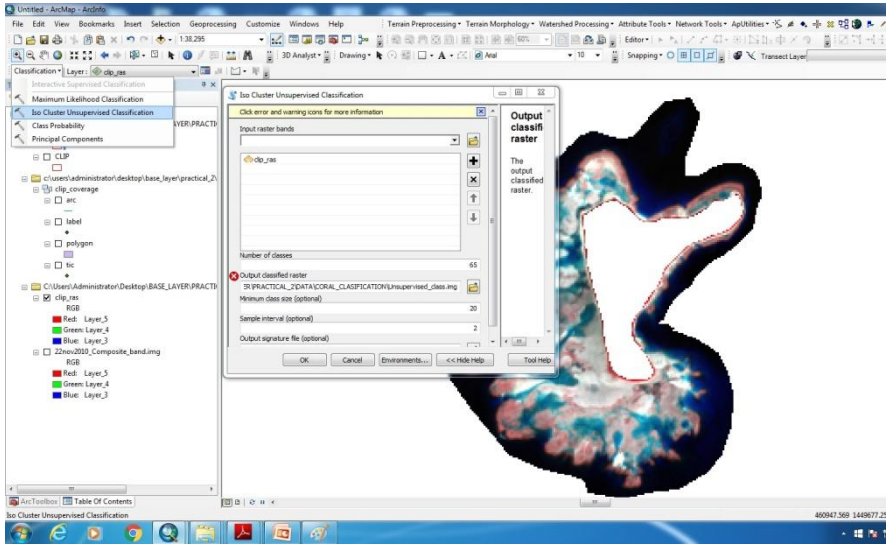


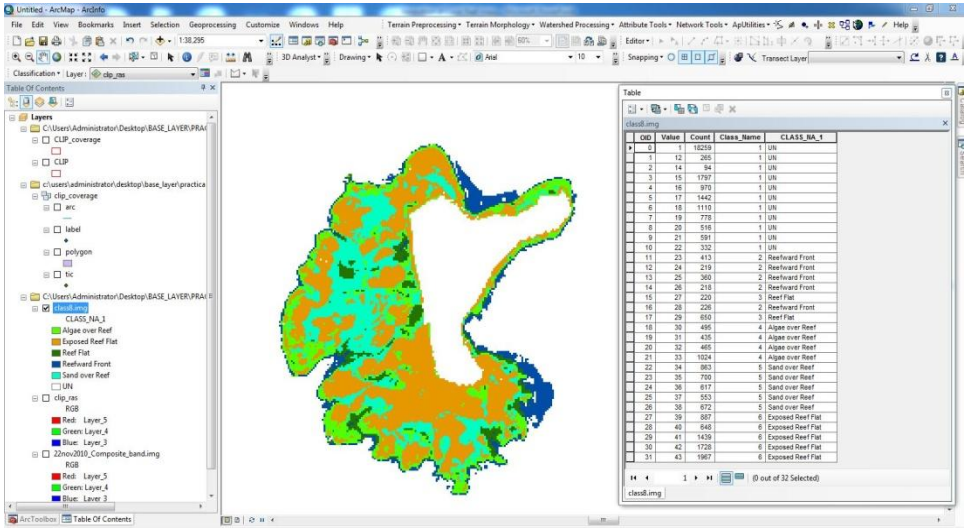




Create new polyline feature → digitized on interested area→ Converted to Coverage → Clip raster image

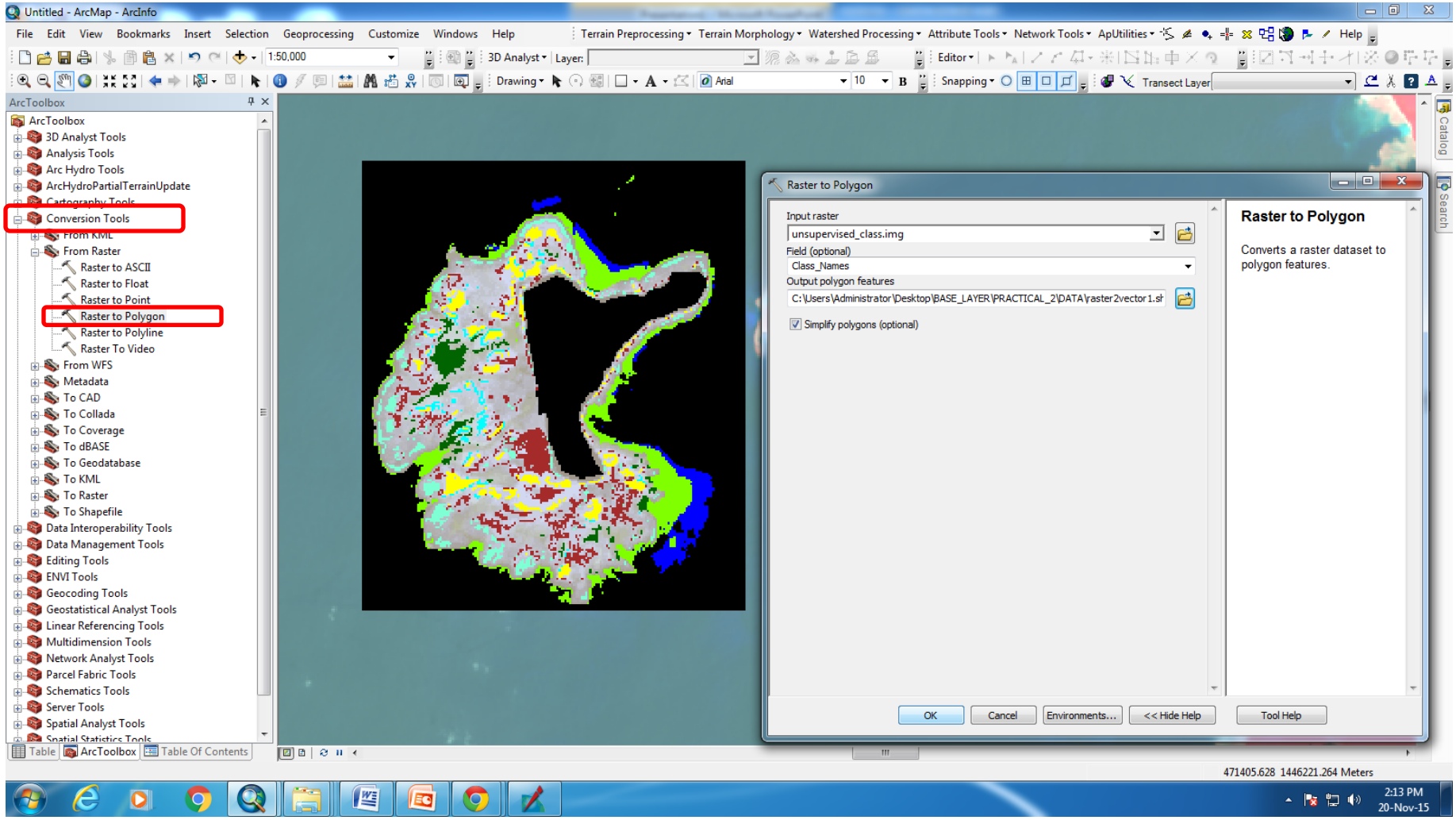
Unsupervised classification to extract coral reef zone



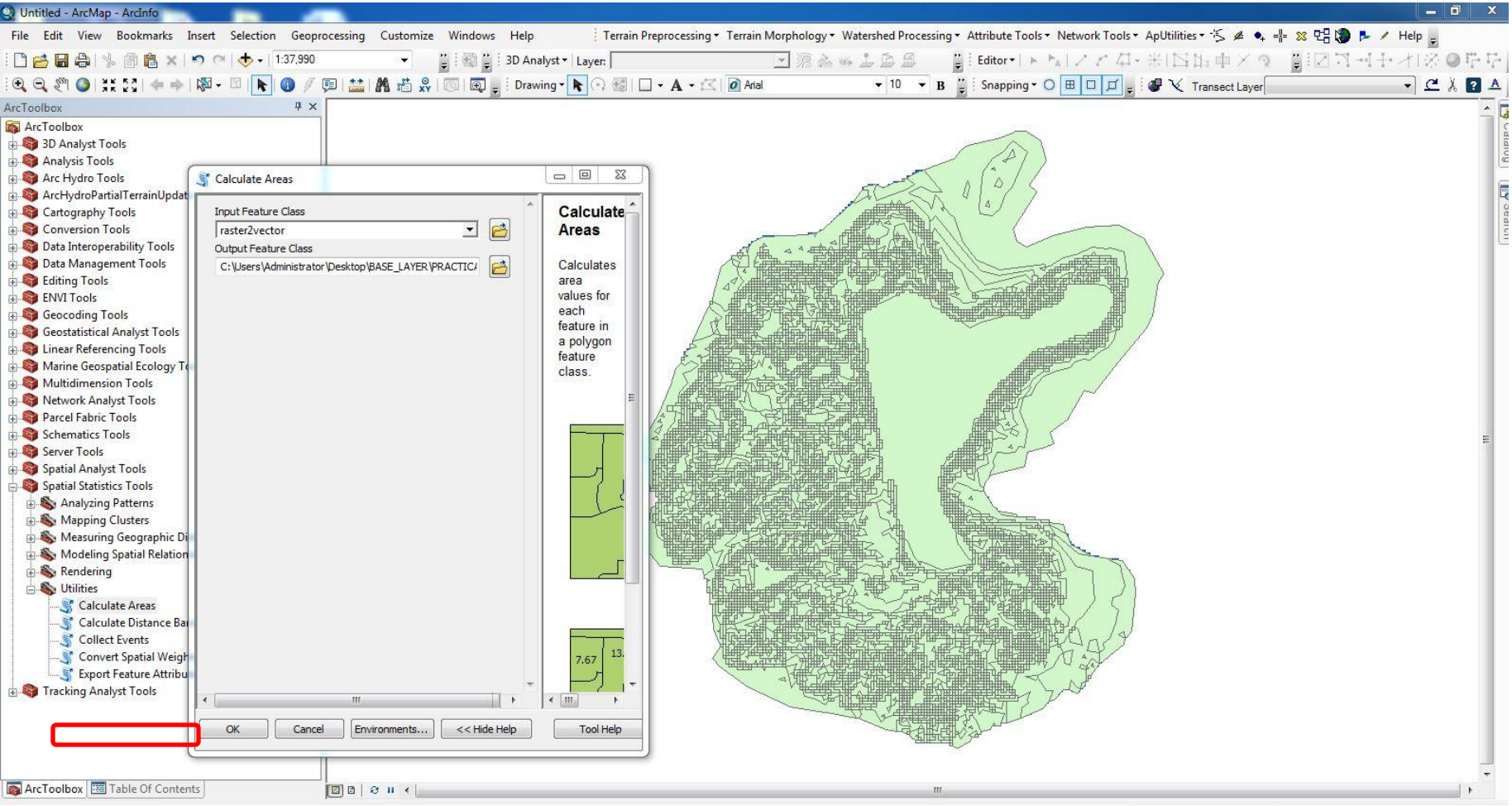


Add image Classification tool → Classify image using Iso Cluster Unsupervised classification method → Extract coral reef features based on visual interpretation

Convert coral reef class from Raster to Vector



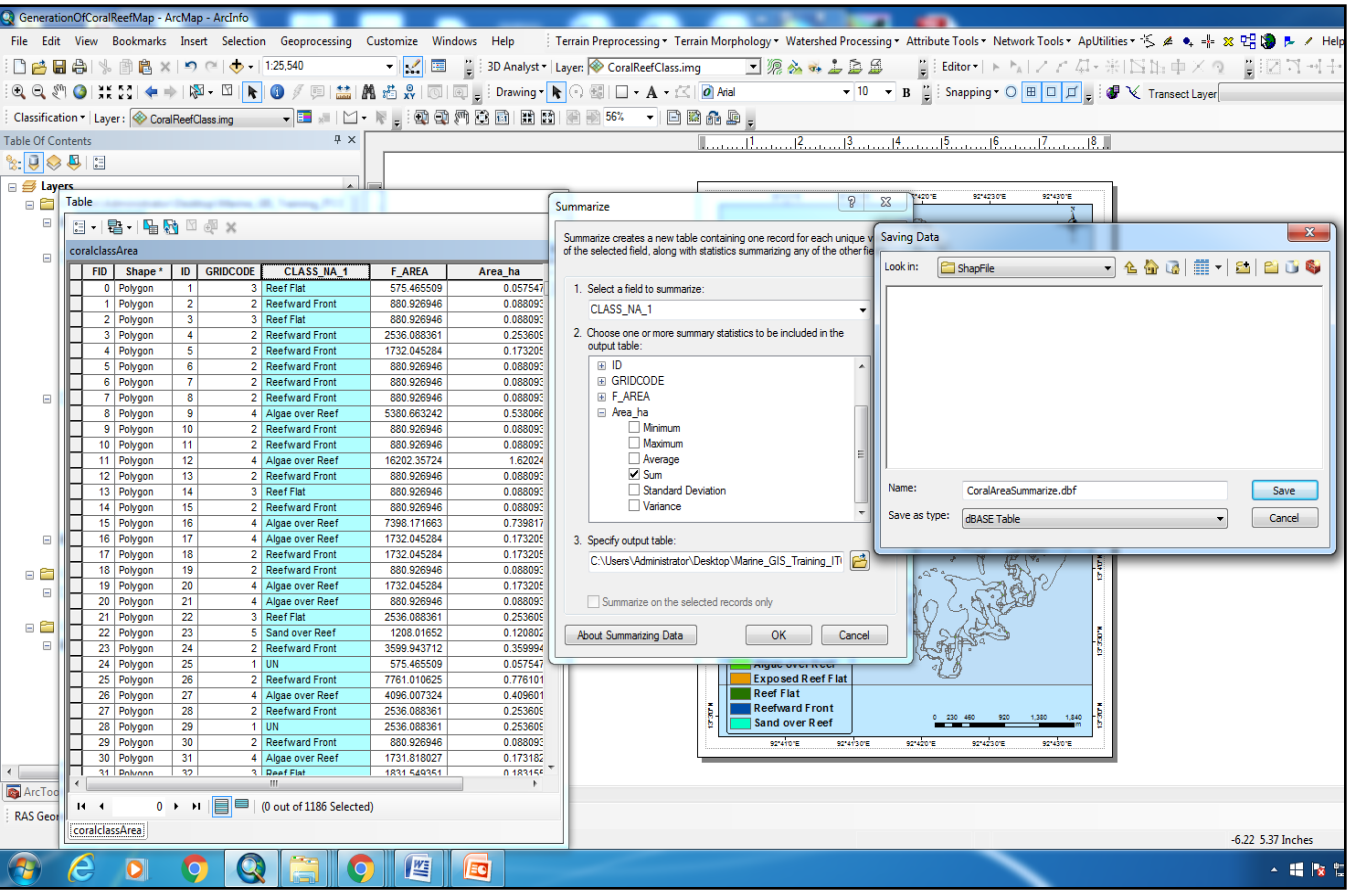
Calculate Area of each Coral Reef Class



Go to spatial analysis tool →Utility →Calculate area

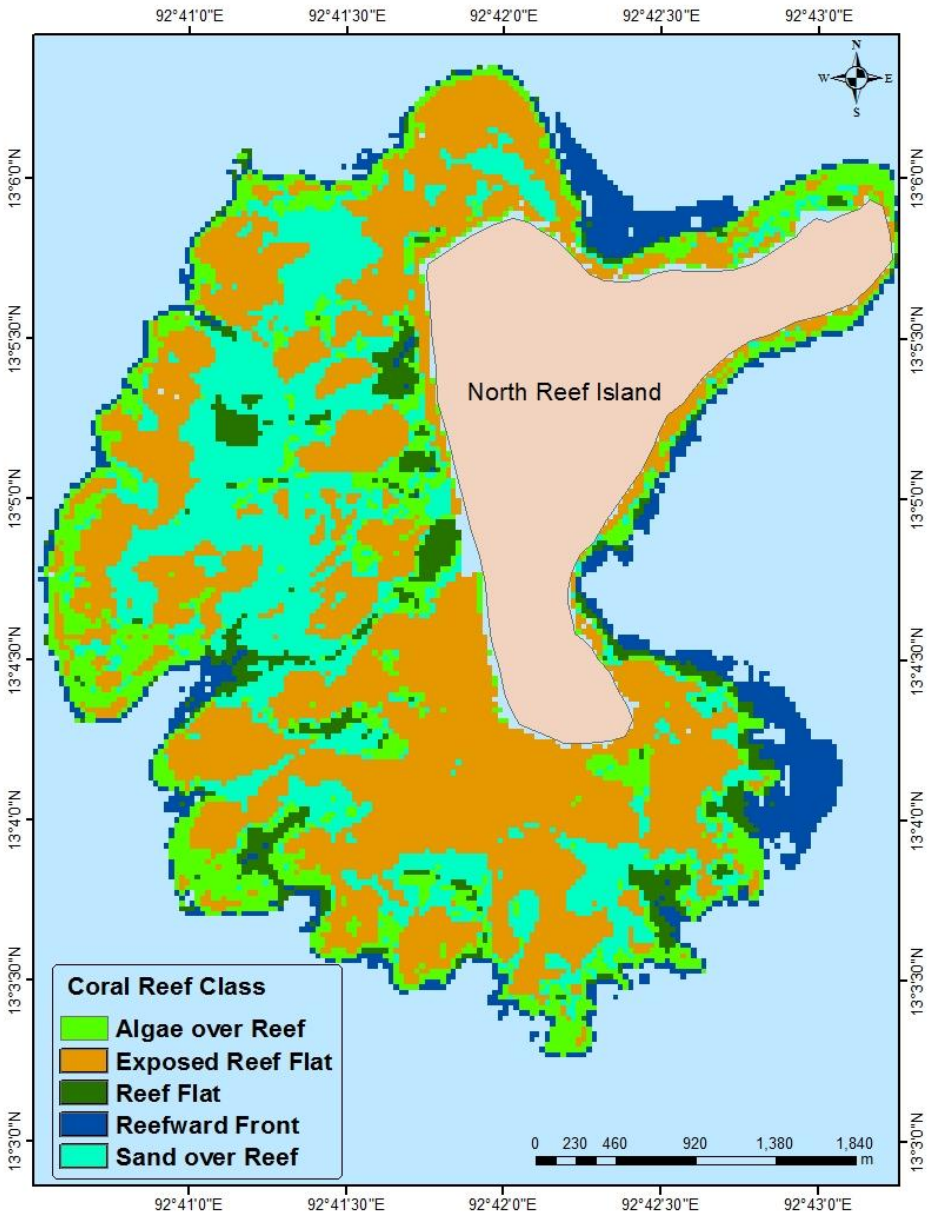
Open Table of the coral reef layer and find out the area of each class

Summarize Coral Reef Area



Coral Reef Class	Area (ha)
Algae over Reef	211.2115
Exposed Reef Flat	598.9693
Reef Flat	75.3090
Reefward Front	124.8697
Sand over Reef	302.4967

Coral reef Maps



Generation of Coral Reef Map:

- Click on Layout View → Right click on layout window→ go to properties and click on grid.
- Insert → click on legend, North Arrow and scale bar and other marginal details.
- File → export map to generate final Coral reef map

Thank You