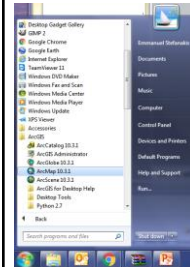**G**eographic **I**nformation **S**ystems

Lab 4: Georeferencing and Digitizing
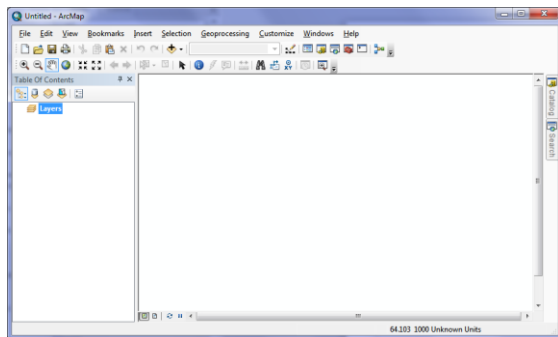
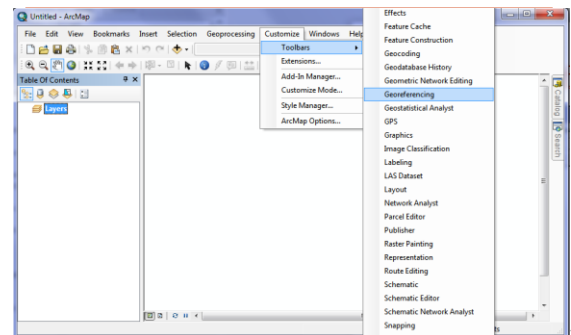Emmanuel Stefanakis
estef@unb.ca

Fall 2016

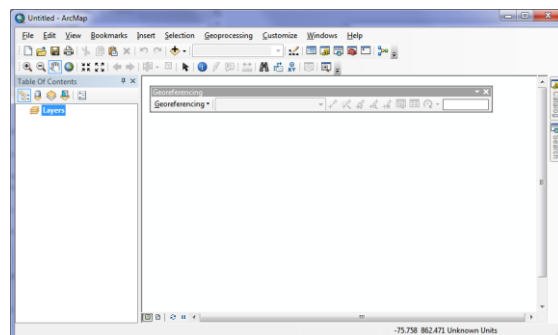## Start ArcMap

---

Add the Georeferencing Toolbar
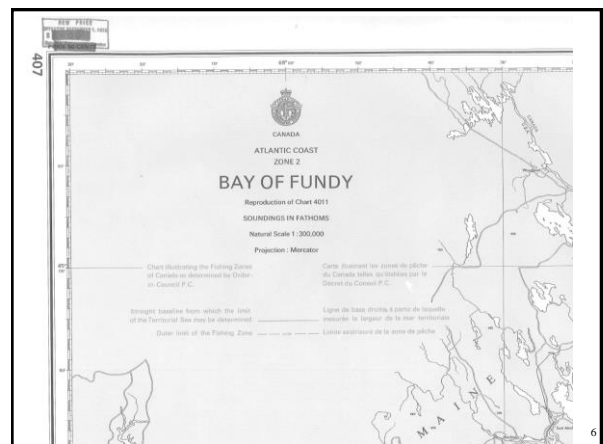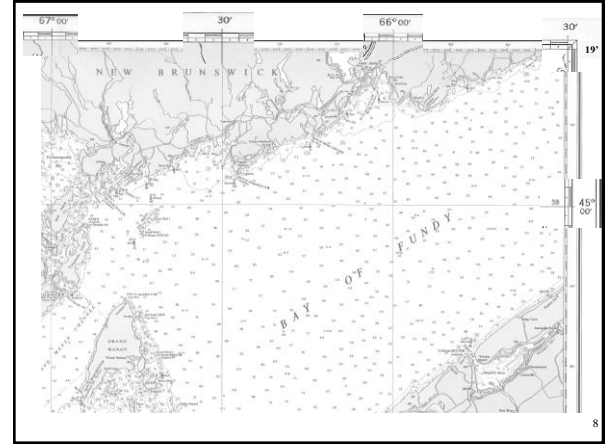

Add the Georeferencing Toolbar
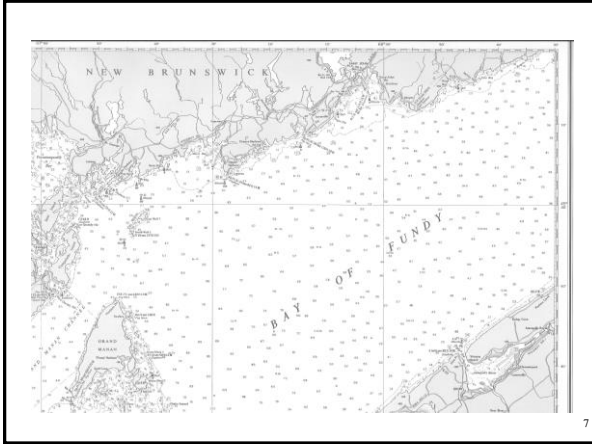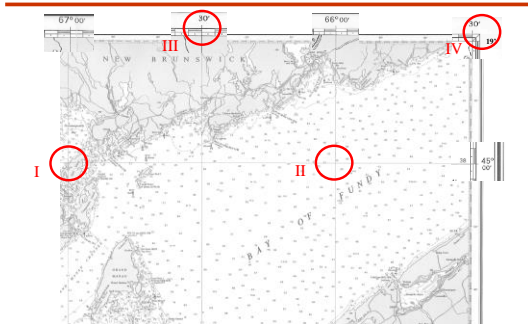

Add the Georeferencing Toolbar

1

Slide 7

Slide 8

Control Points

III   IV

I   II

67° 00'   30'   66° 00'   30'   19'

45° 00'

Compute X,Y Coordinates

MERCATOR PRJECTION

φ	λ	X (m)	Y (m)	
45	-67	-7458487.037	5591021.004	1
45	-66	-7347166.335	5591021.004	2
45.31666667	-66.5	-7402826.686	5640843.936	3
45.31666667	-65.5	-7291505.984	5640843.936	4

a	6378206.4	NAD27
b	6356583.8	
e	0.082271854	

http://www.apsalin.com/convert-geodetic-to-mercator.aspx

Ellipsoidal Mercator Equations

$$E = a(\lambda - \lambda_0)$$ Easting

$$N = a \ln\left[\tan(\pi/4 + \phi/2)\left(\frac{1-e\sin\phi}{1+e\sin\phi}\right)^{e/2}\right]$$ Northing
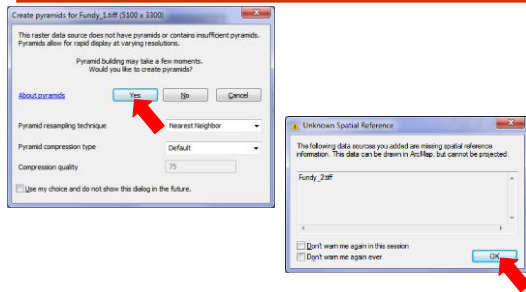
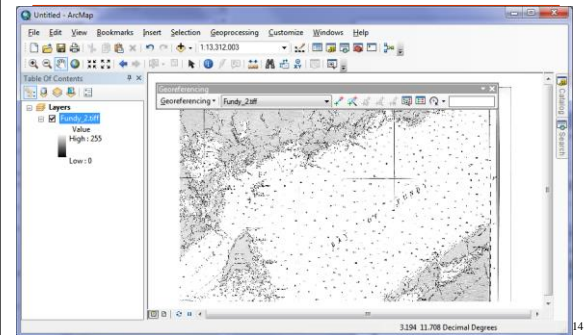## Add the Scanned Map
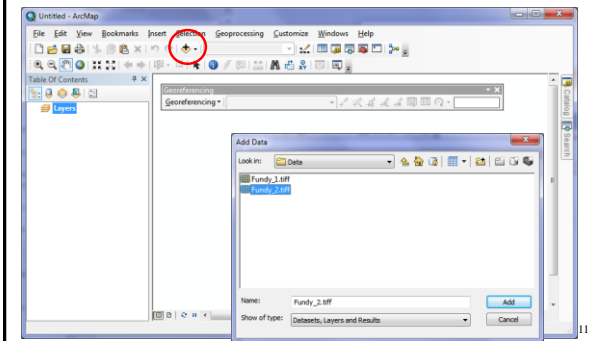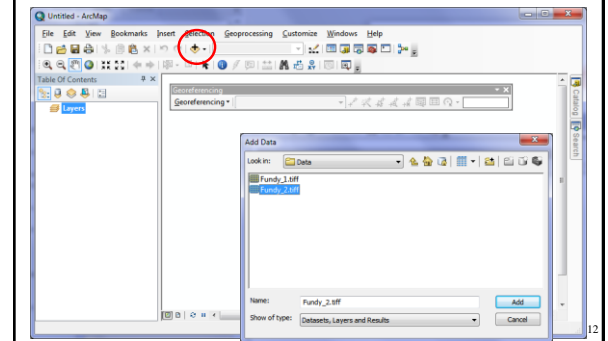
Add the Scanned Map

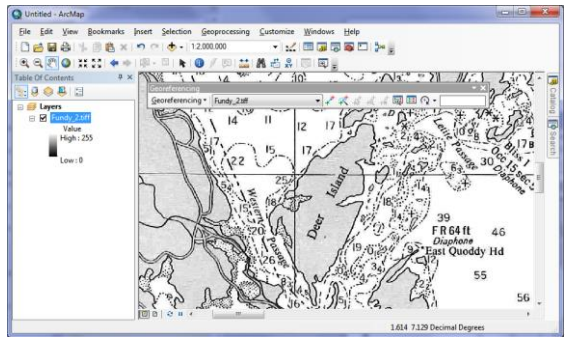## Add the Scanned Map

13

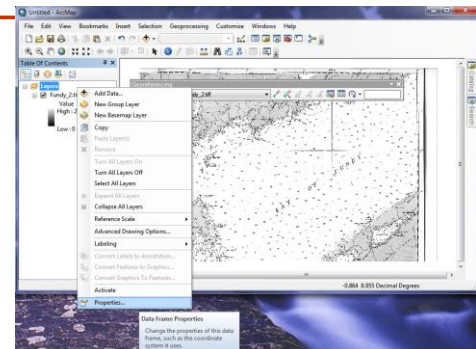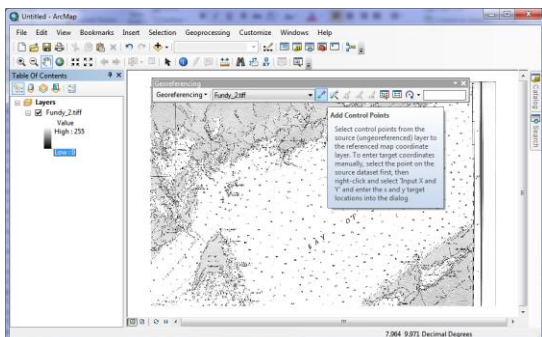## Scanned Map (Image) Added

14

Scanned Map (Image) Added

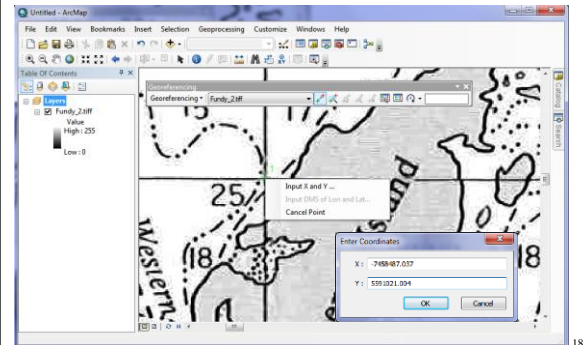15

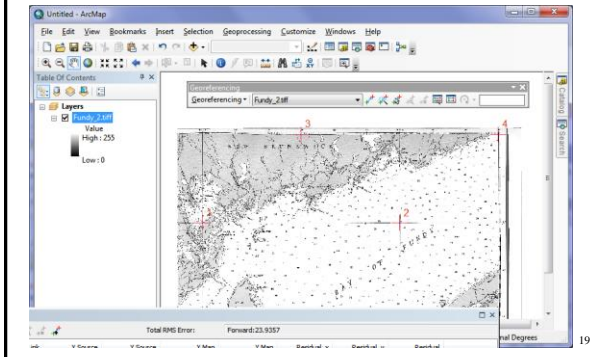## Change Display Units to Meters

16

Add Control Points
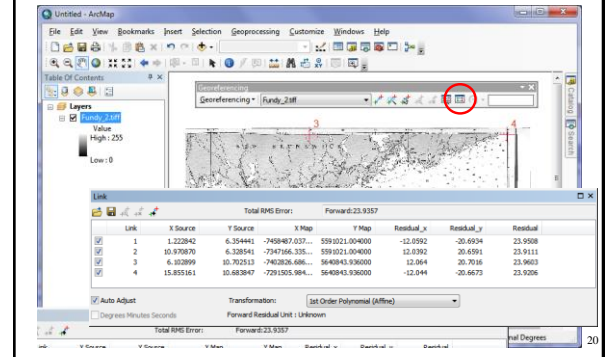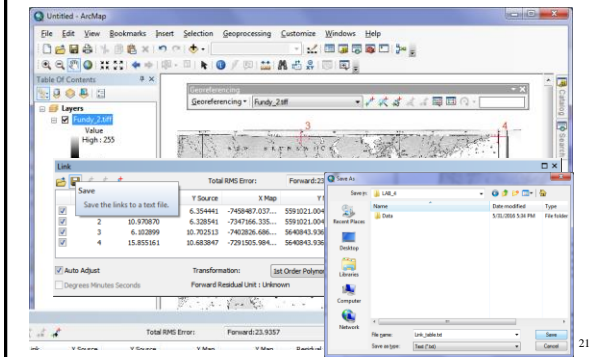

17

Add Control Points
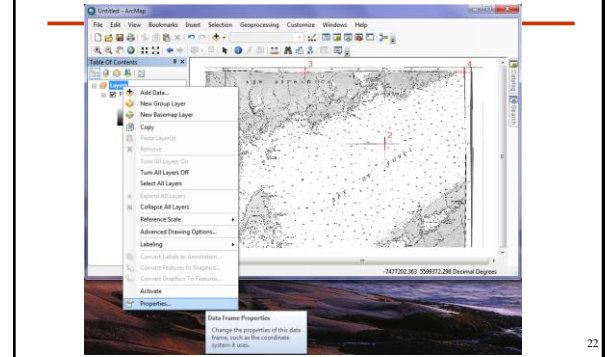

18

Add Control Points (4 points added)
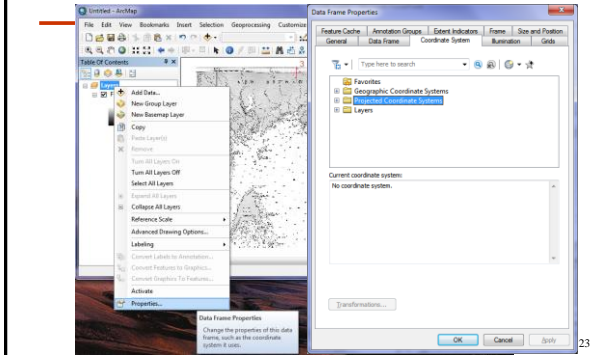

Add Control Points (4 points added)

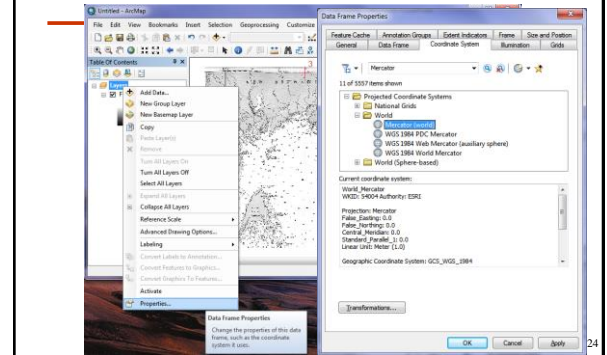Save Link Table (4 points added)

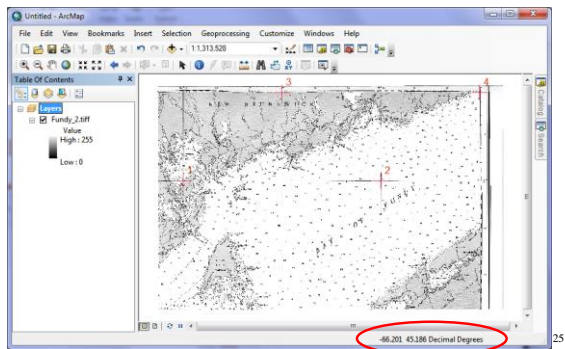Assign Map Projection (Mercator)

Assign Map Projection (Mercator)
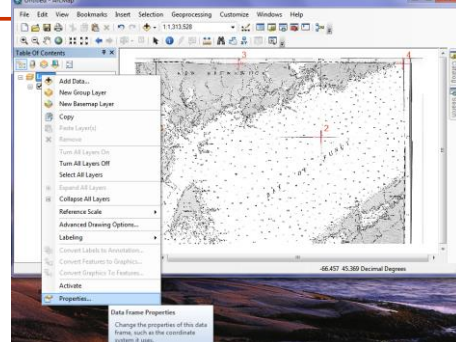

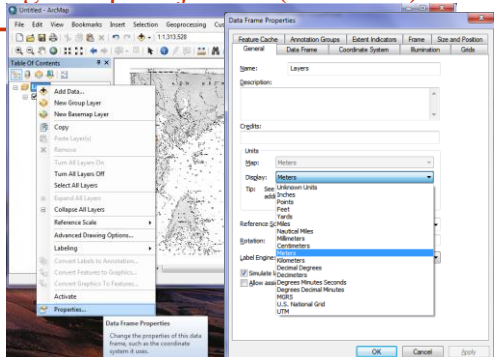Assign Map Projection (Mercator)

Map Projection Assigned
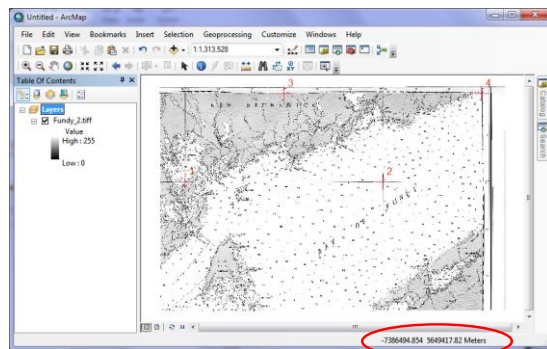

Display Mercator Coordinates (meters)
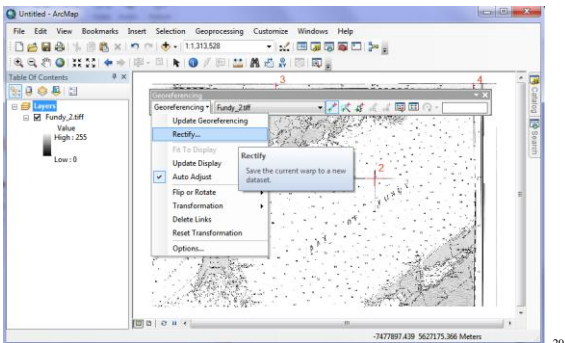

Assign Map Projection (Mercator)
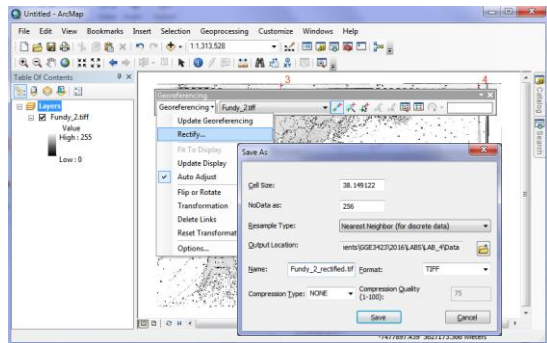

Assign Map Projection (Mercator)
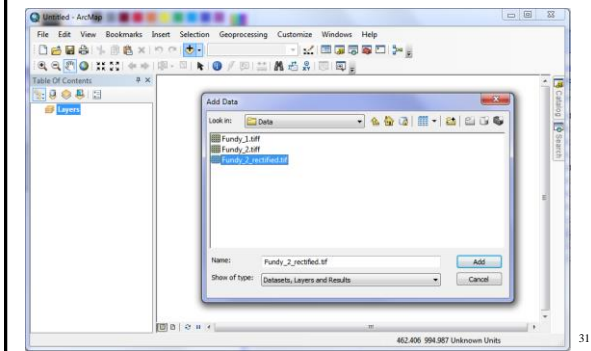

Save the Rectified Image
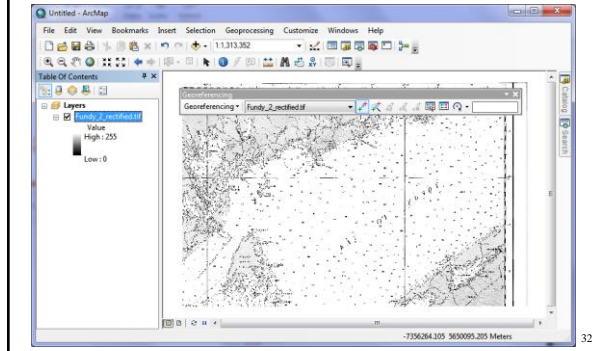

Save the Rectified Image

Load the Rectified Image on ArcMap
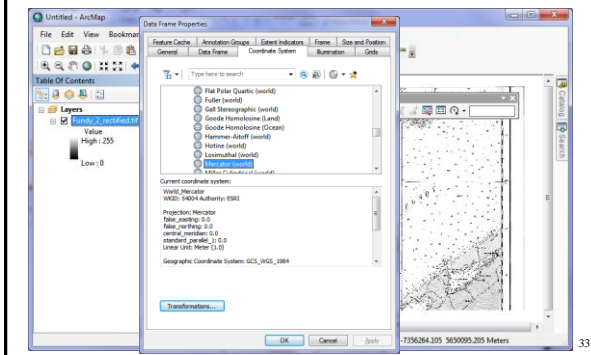

31

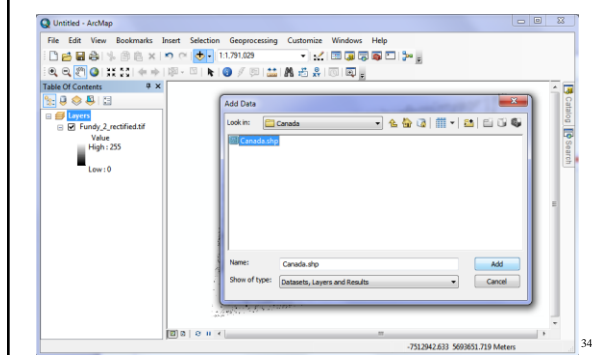## Load the Rectified Image on ArcMap

32

Rectified Image has Projection Info
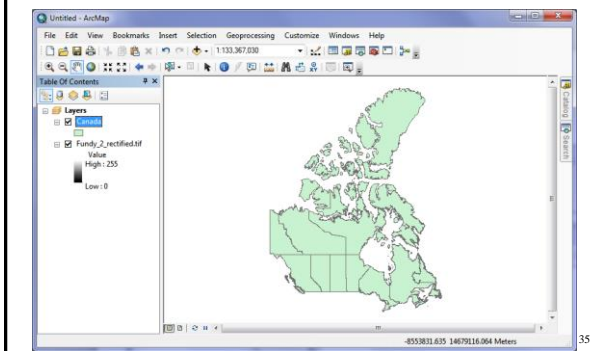

33

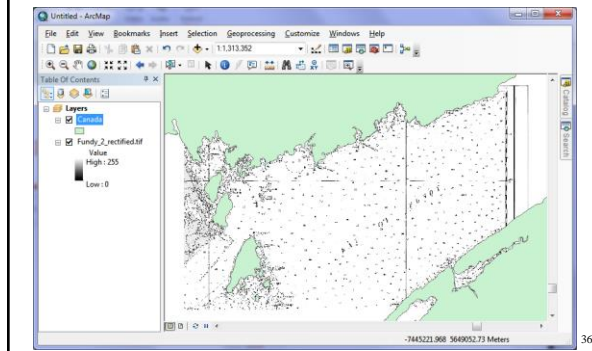## Add Map of Canada

34

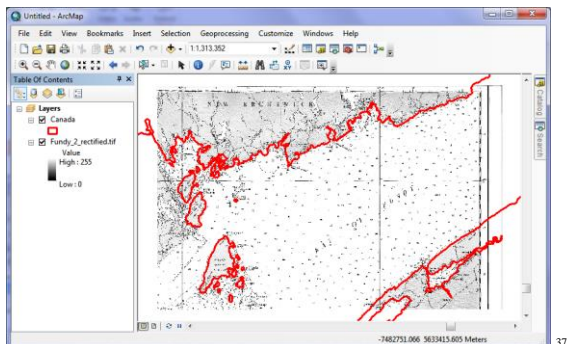## Canada → Mercator Projection

35
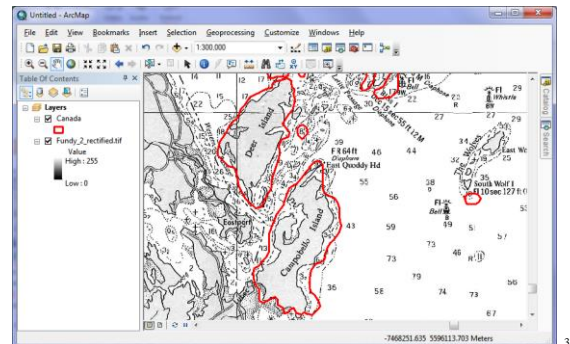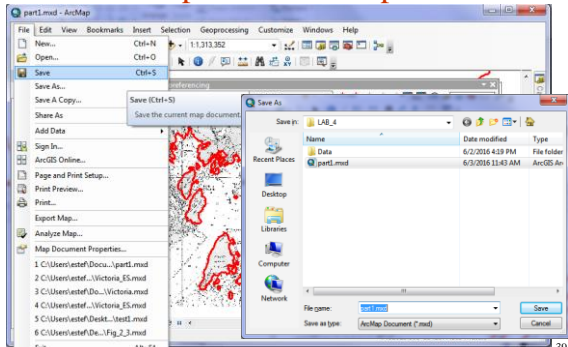
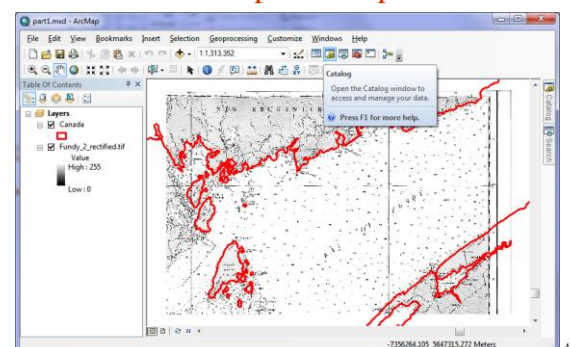## Canada + Rectified Image

36

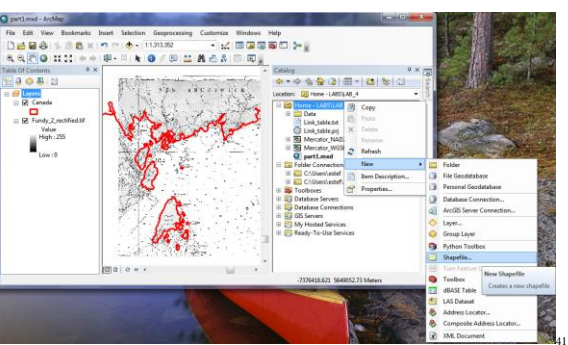Canada + Rectified Image

37

Canada + Rectified Image

38

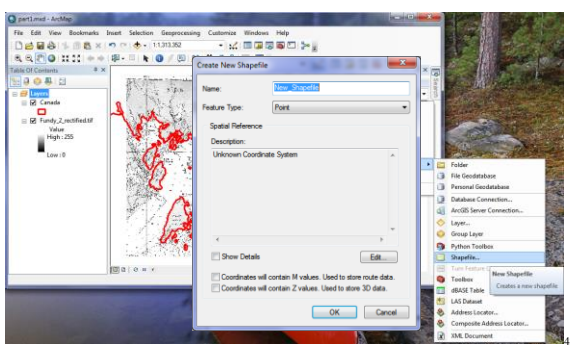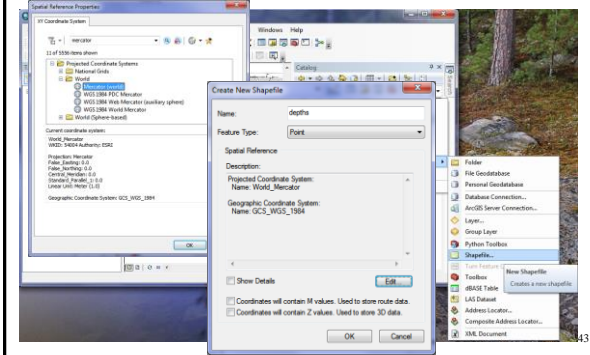Save the map document as part1.mxd

39

Create a new shapefile: depths

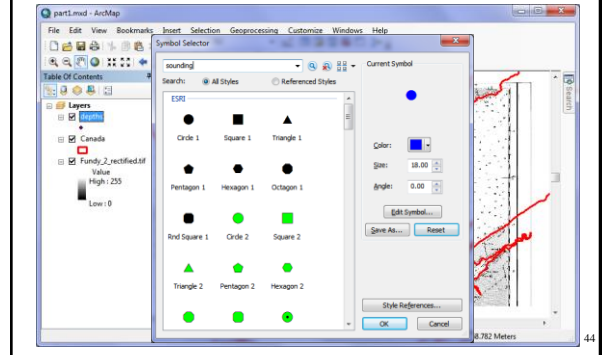40

Create a new shapefile: depths
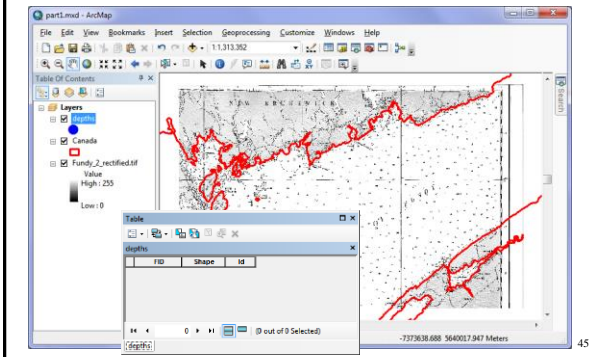

41

Create a new shapefile: depths
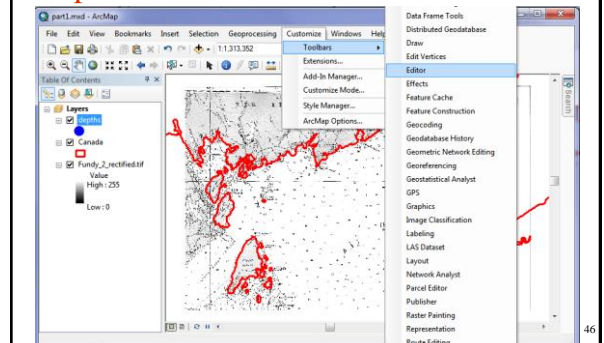

42

Create a new shapefile: depths

43

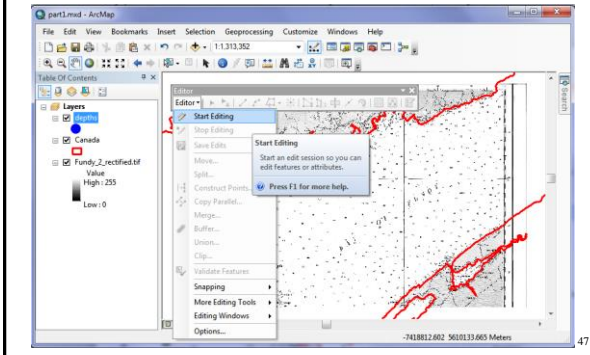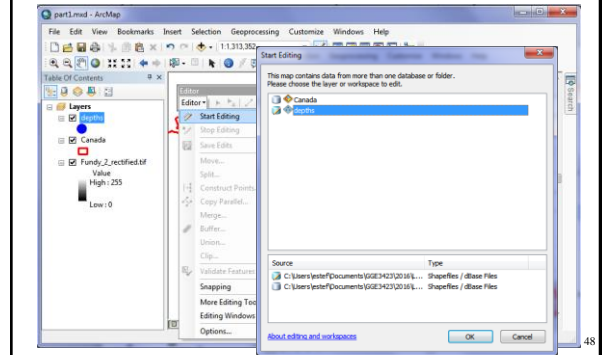Change the symbol (sounding)

44

Open Attribute Table

45

Start Editing (digitize depth points)
Open Editor toolbar

46

Start Editing (digitizing depths)

47

Start Editing (digitizing depths)
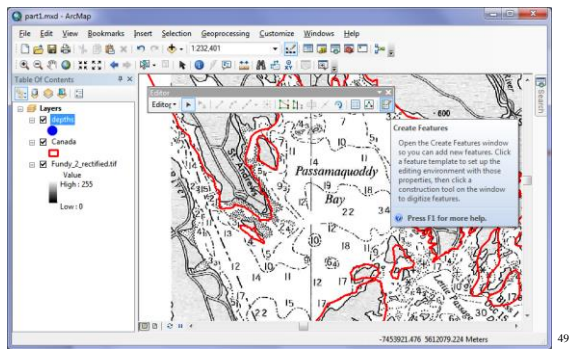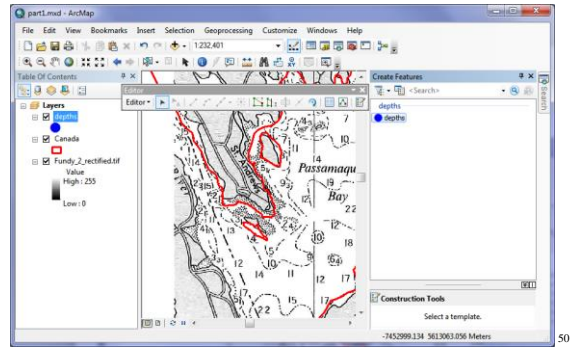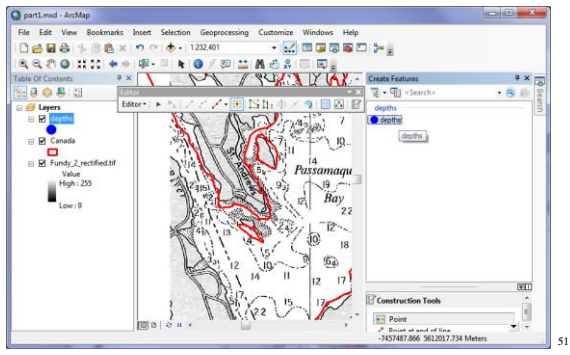

48

8

Start Editing (digitizing depths)
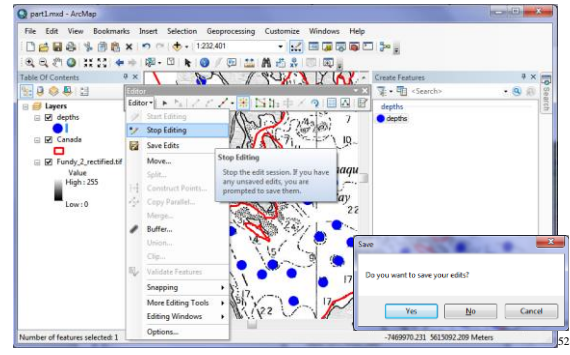

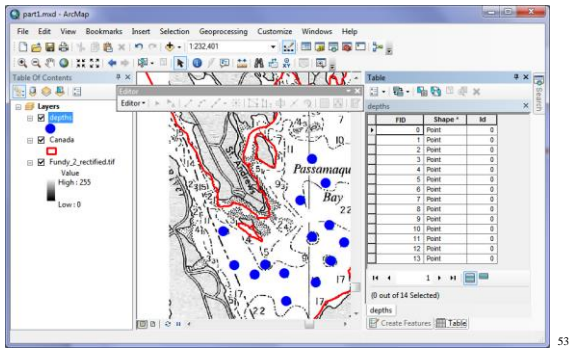## Start Editing (digitizing depths)

Start Editing (digitizing depths)
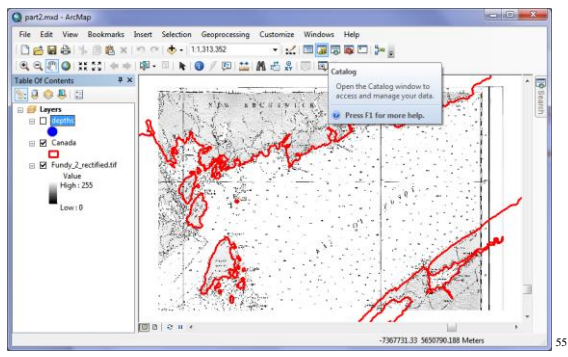

Stop Editing (digitizing depths)

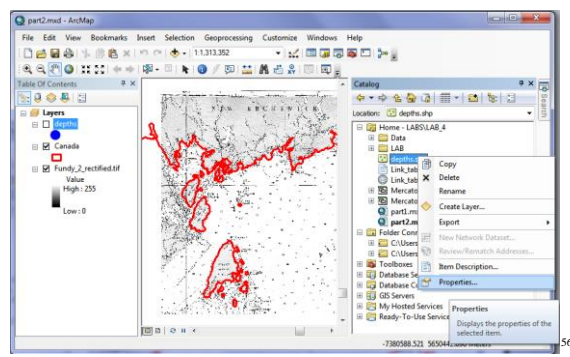## Open Attribute Table (type depth values)

Open Attribute Table (type depth values)

- To use **id** field to store the depth values
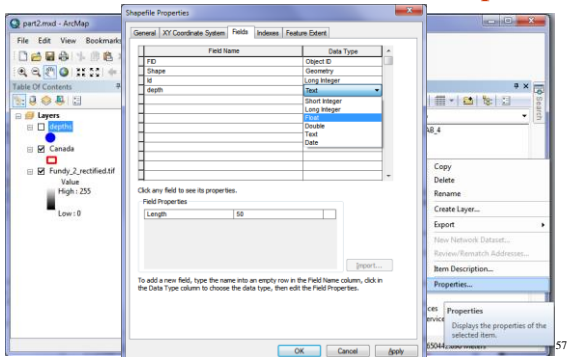
- Alternatively, create a new field using ArcCatalog

How to create a new field in the shp
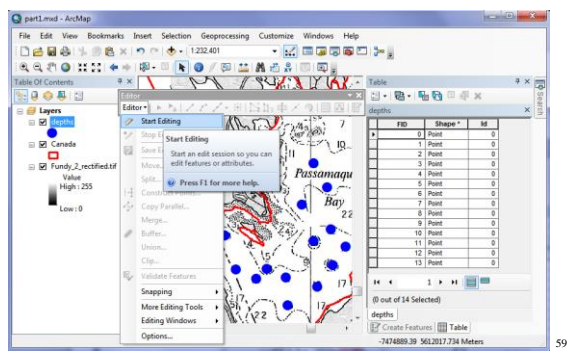

55

How to create a new field in the shp

56

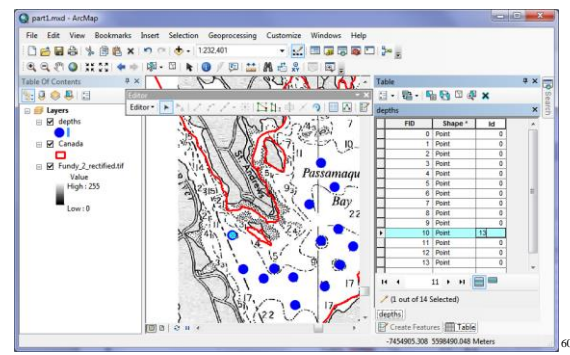# How to create a new field in the shp

57

Open Attribute Table (type depth values)
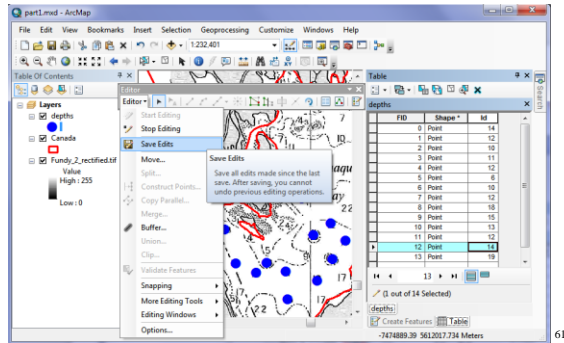
- To use **id** field to store the depth values

58

Open Attribute Table (type depth values)
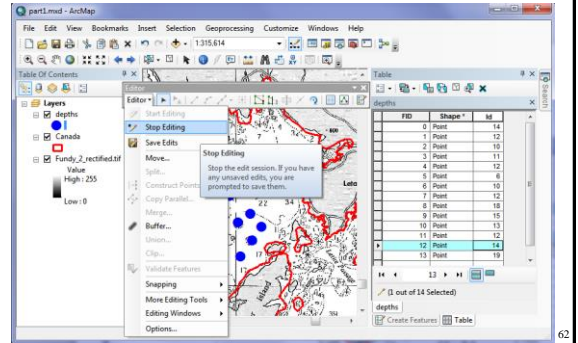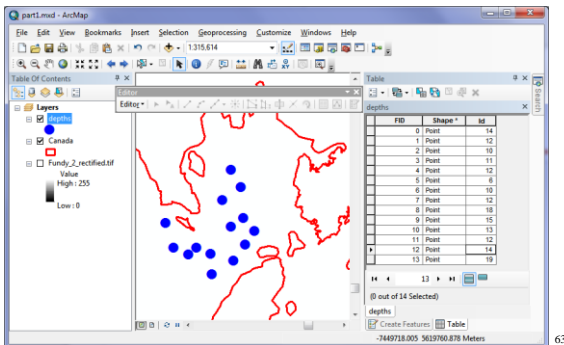

59

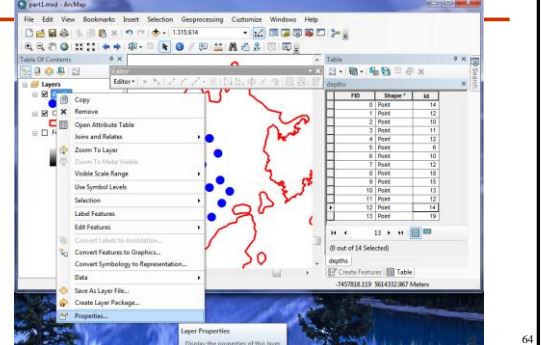# Open Attribute Table (type depth values)
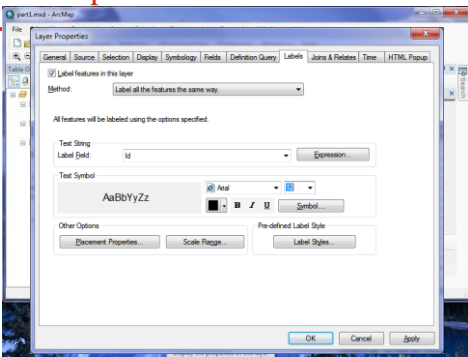

60

Save Edits

Stop Editing
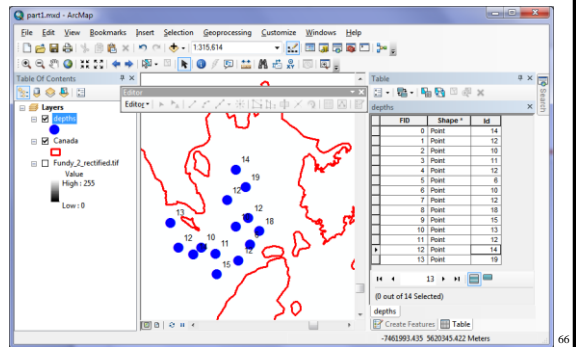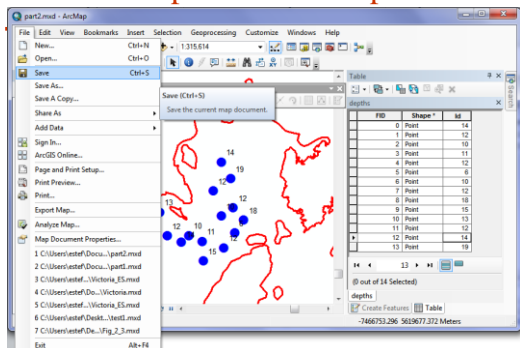

Show depth labels

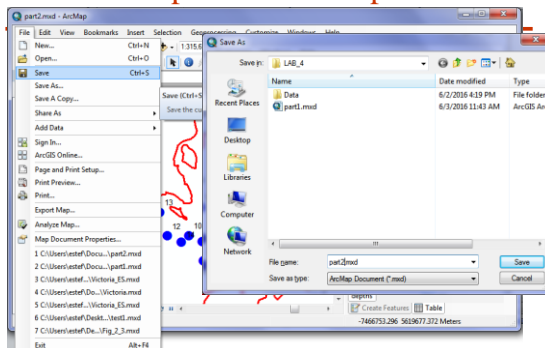Show depth labels

Show depth labels
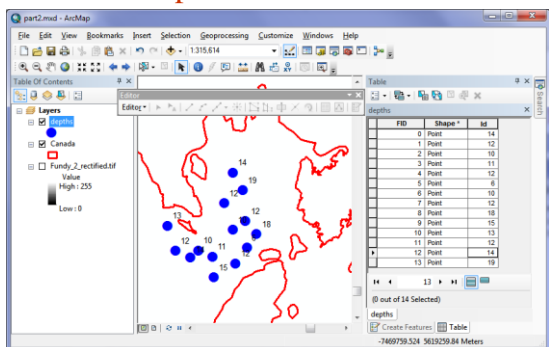

Show depth labels

Save the map document as part2.mxd

Save the map document as part2.mxd

Document: part2.mxd

References

- ESRI Tutorials
  - http://resources.arcgis.com/en/help/main/10.2/index.html#//009t000000mn000000