

ARC-GIS

EXCERCISE: 3



ArcGIS

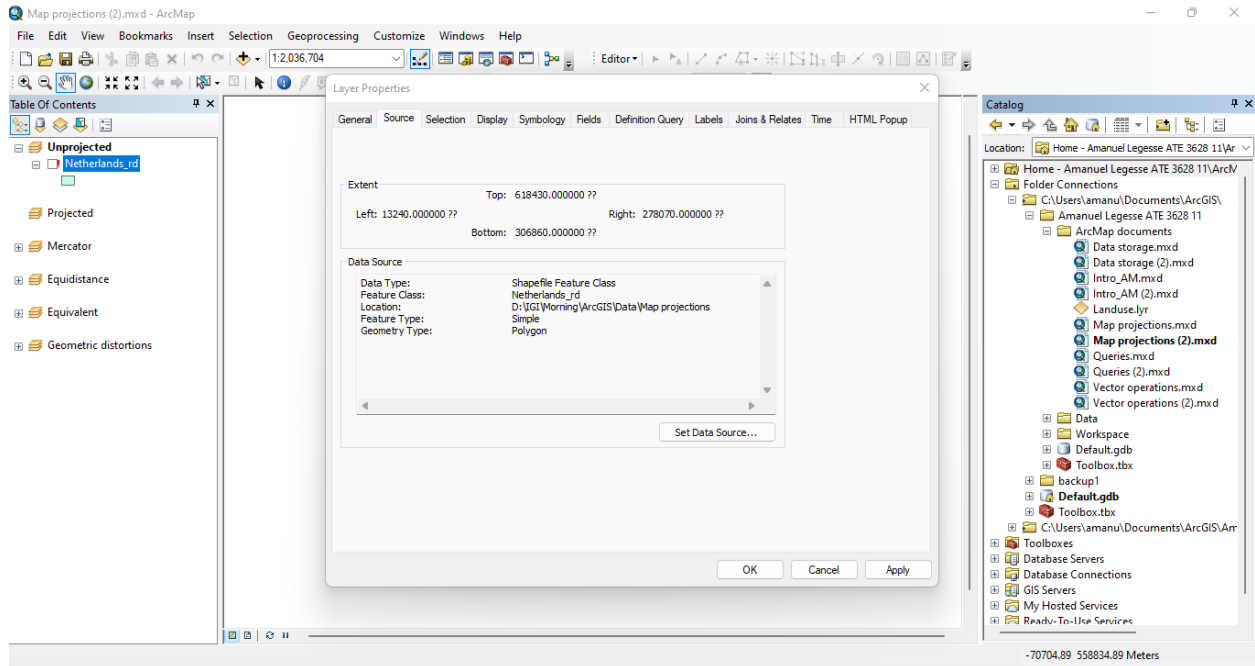
BY – AMANUEL LEGESSE

SOFTWARE ENG. EXT

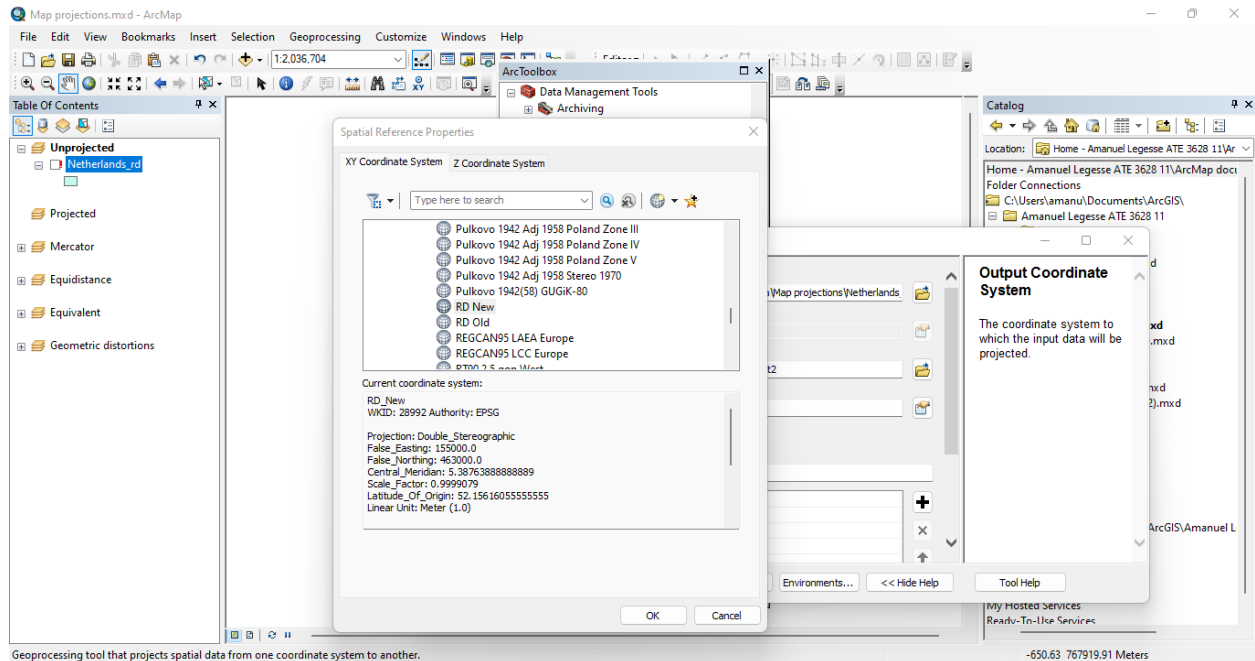
ID – ATE/3628/11

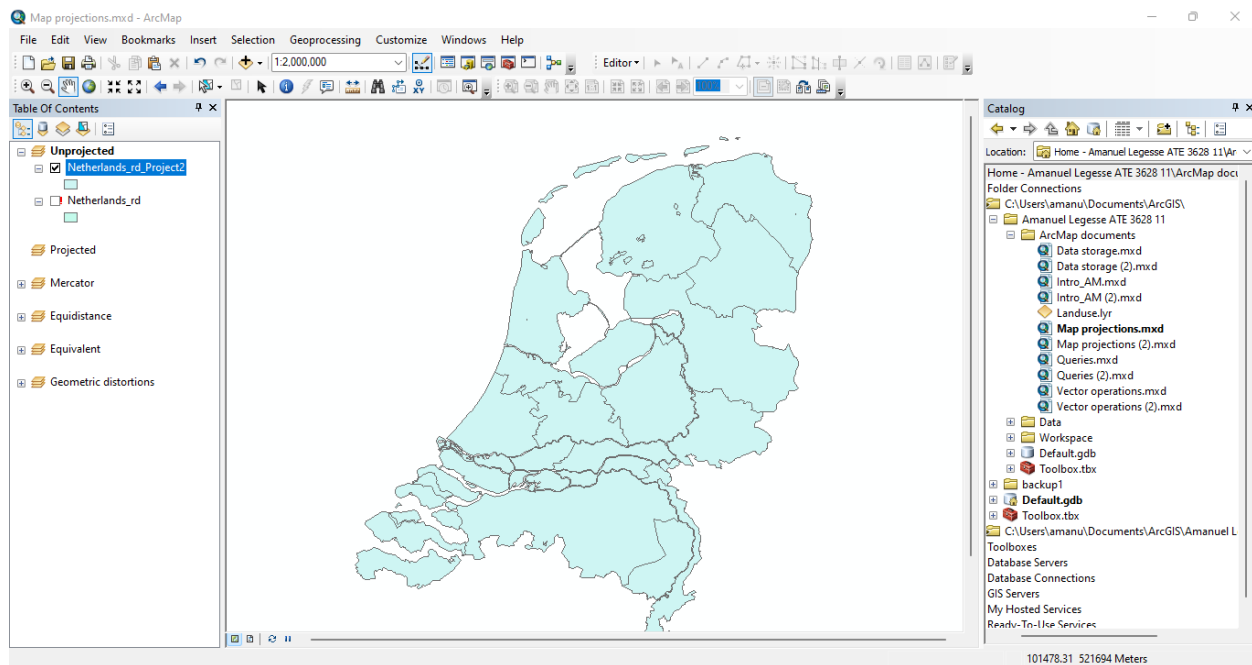
Projecting spatial datasets

1.A:

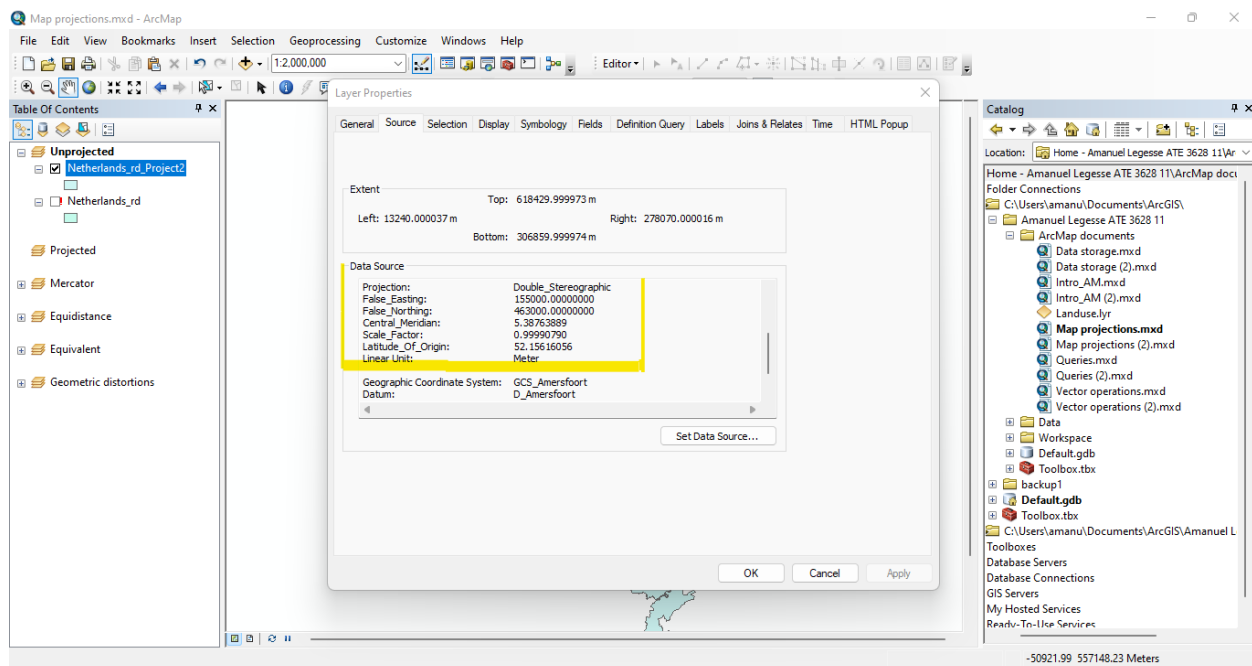


1.B:





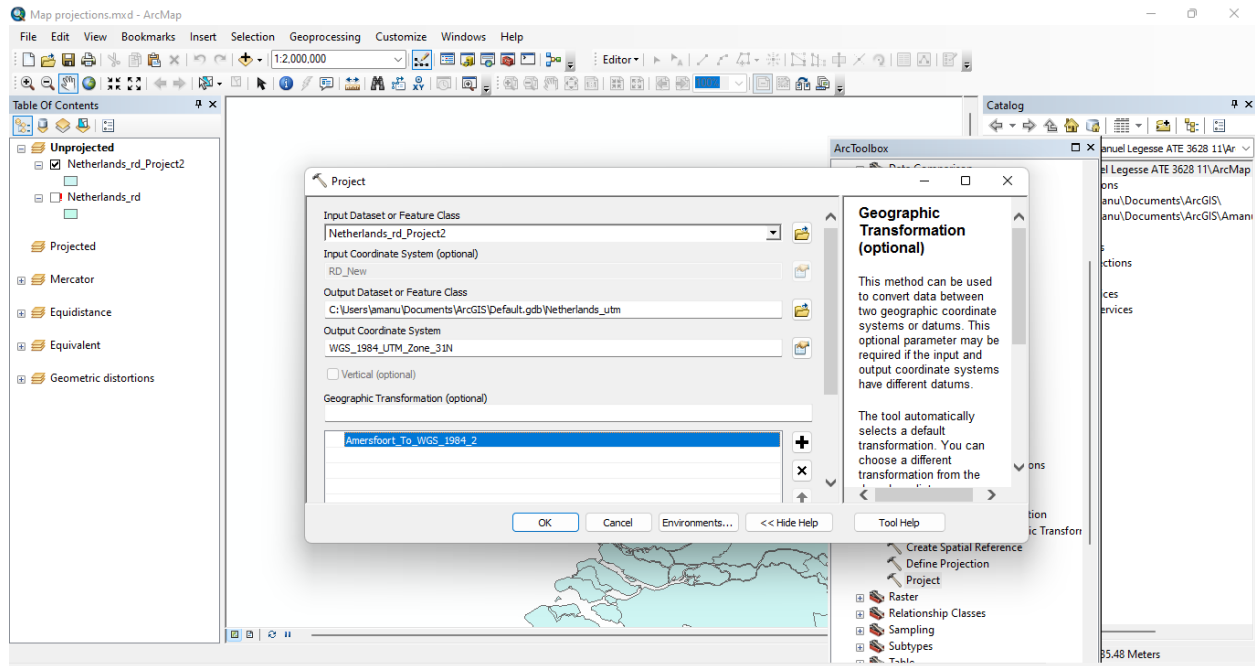
1.C: The projection is coordinate system based



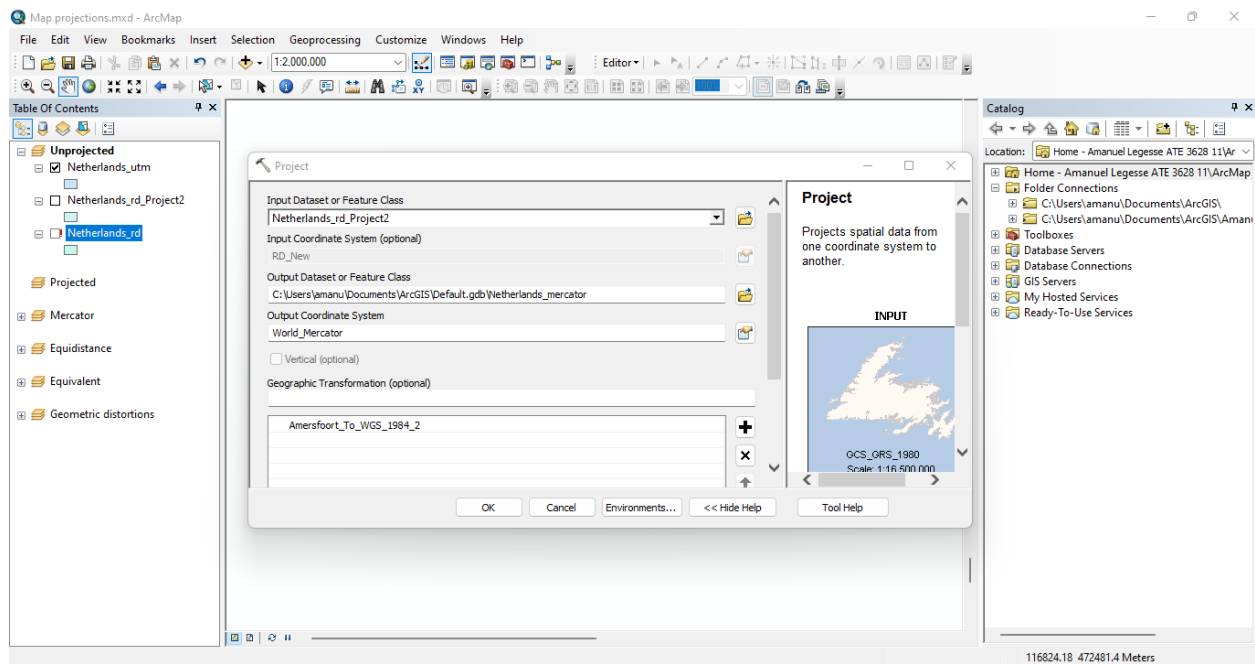
1.D: The Linear unit is in Meter.

Reprojecting spatial datasets

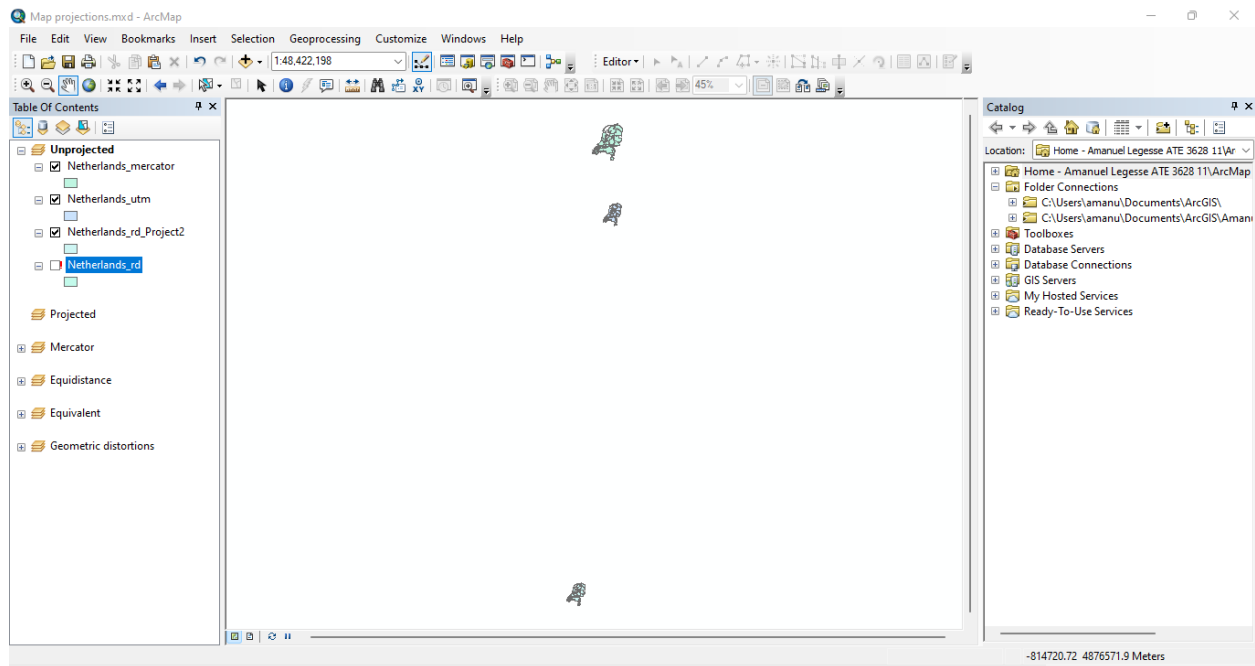
2.A:



2.B:

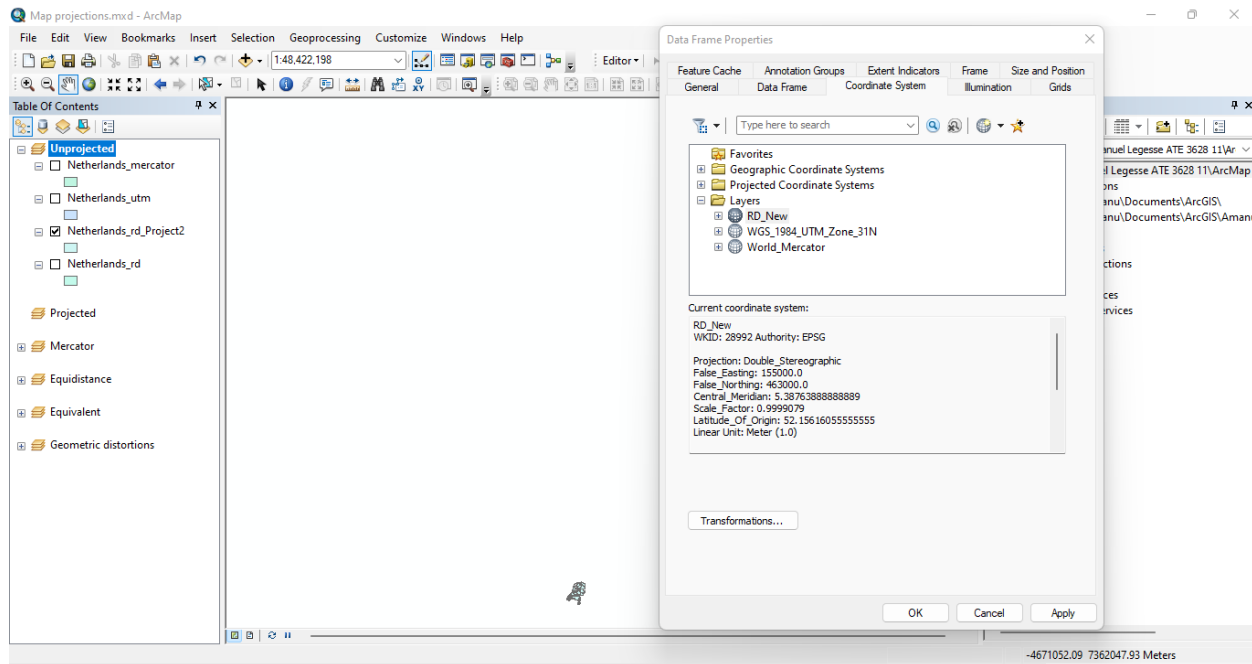


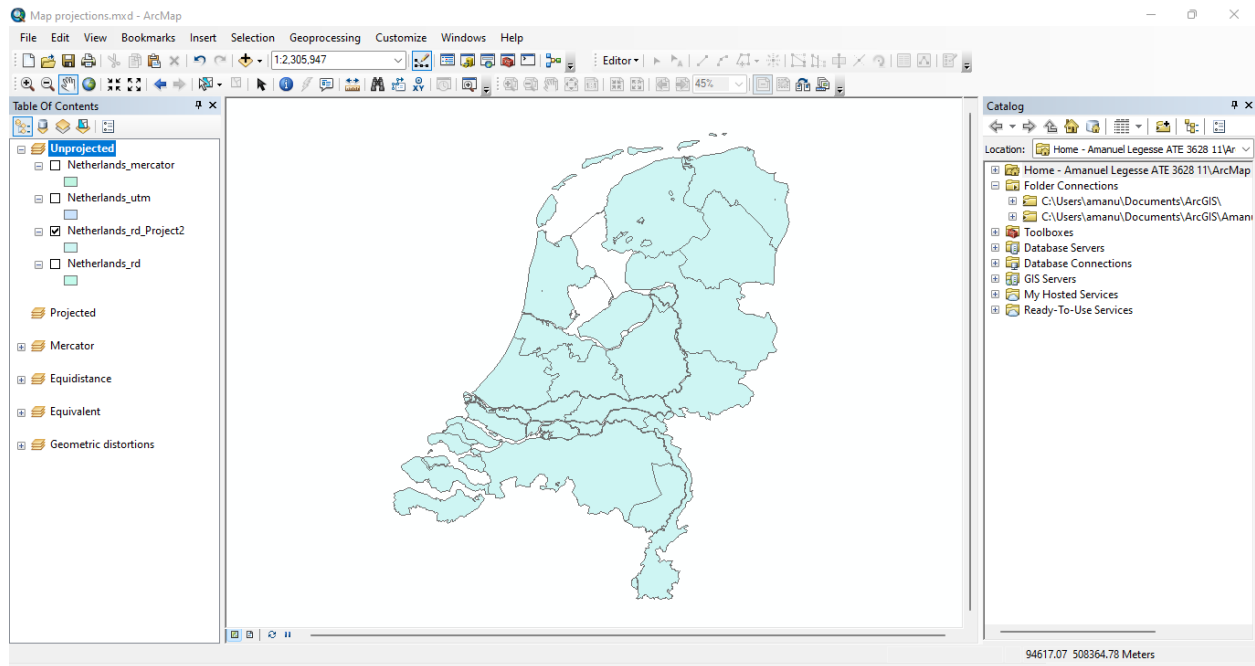
2.C: The three datasets don't overlap because of their map projection towards the coordinate system placing each dataset in different parts of the world
(Example map projection UTM was placed in the Northern Hemisphere).



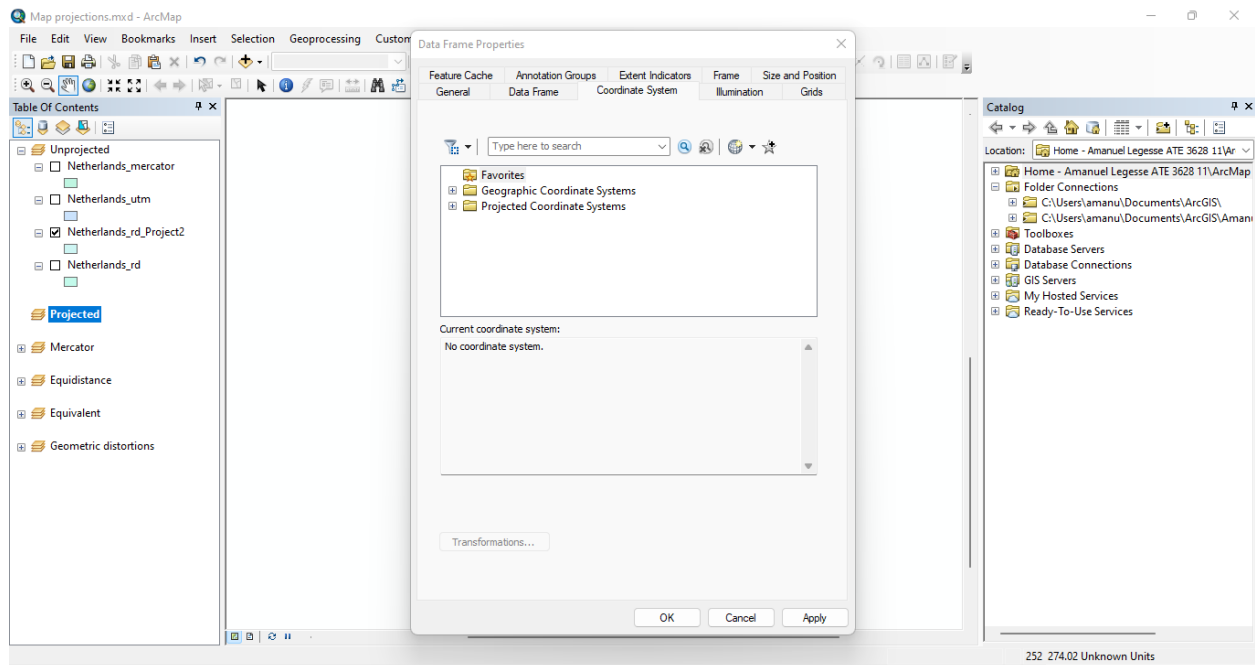
Projection of the Data Frame

3.A: As seen below after the projection of the Data Frame was changed to 'RD New' the map becomes in full view and clear.



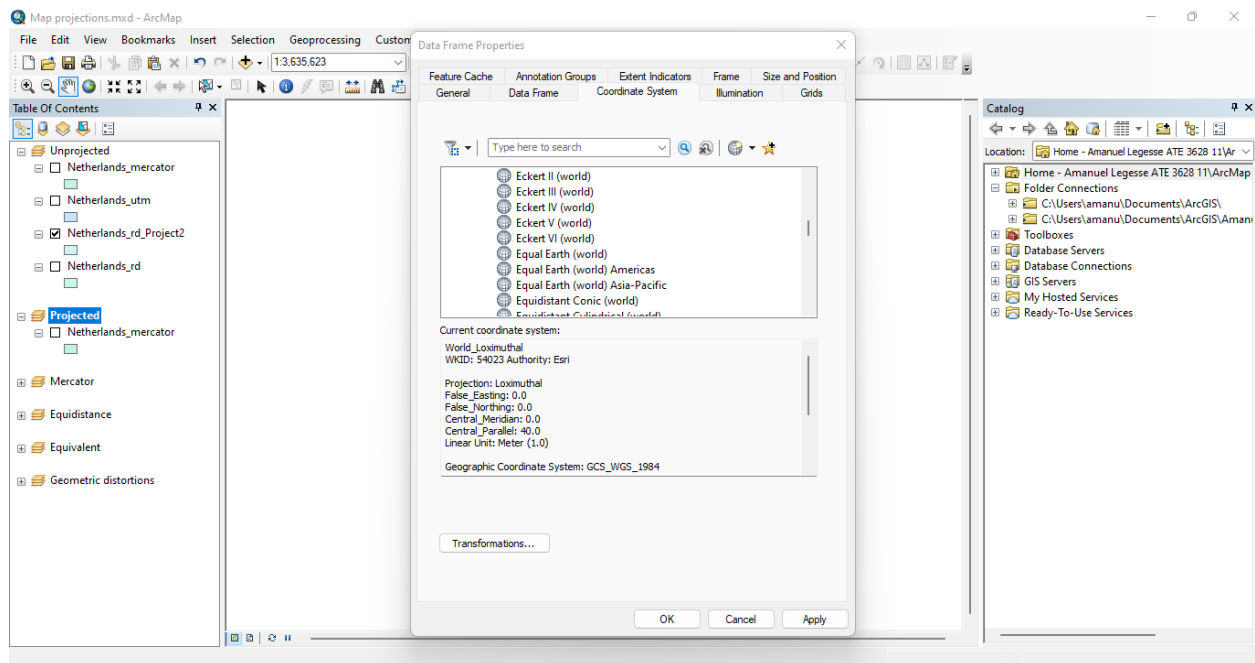


3.B: The is no coordinate system.

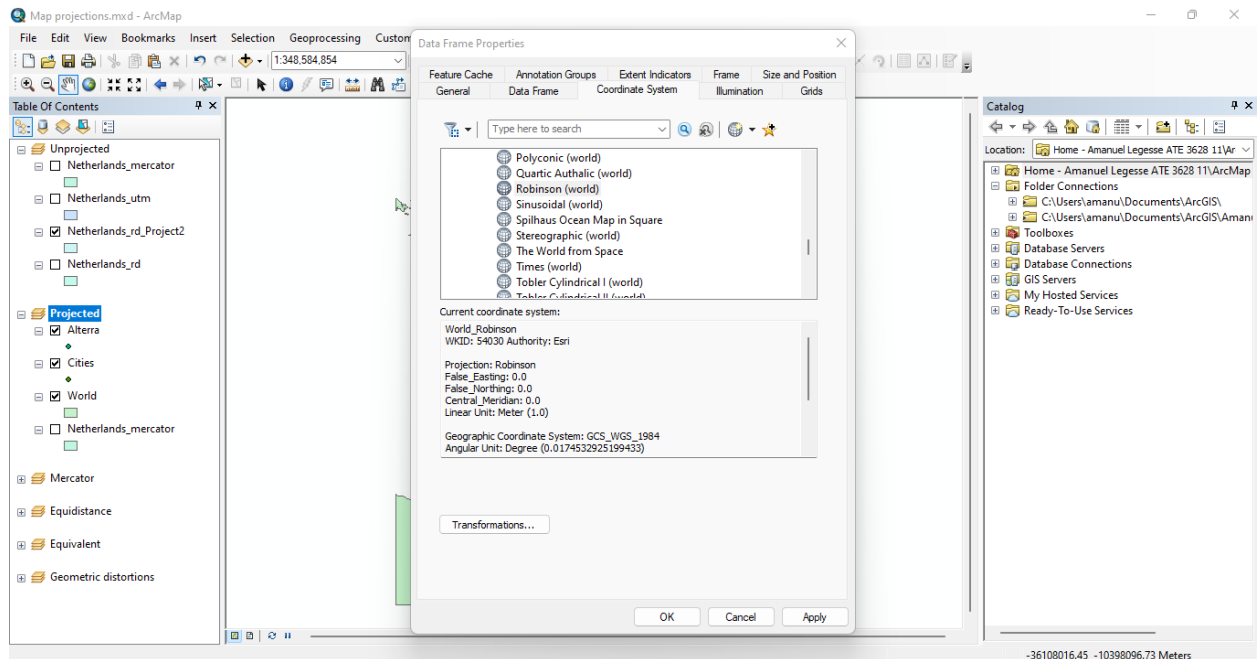
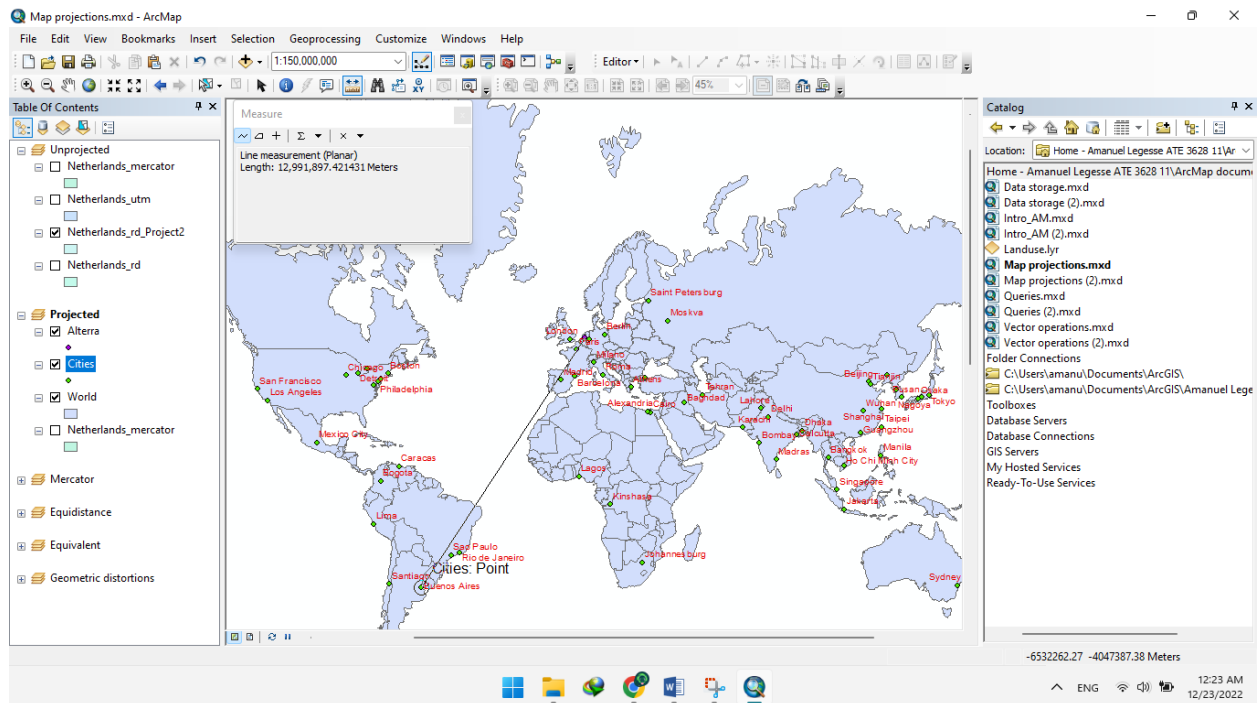


3.C:

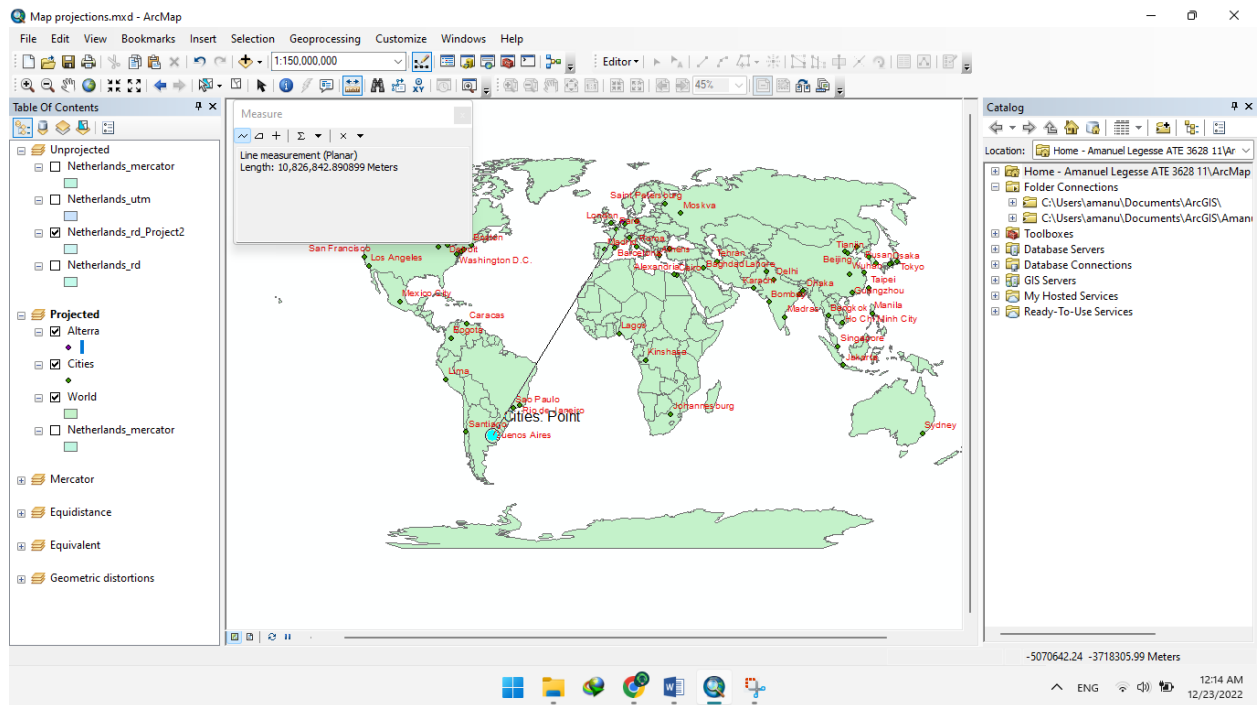
- Projected Coordinate System: World_Mercator
- Projection: Mercator
- Geographic Coordinate System: GCS_WGS_1984



3.D:



- Yes the distance differ from the previous measurement because the projected coordinate system was changed to Robinson.



Geometric distortions

4.A: Mercator

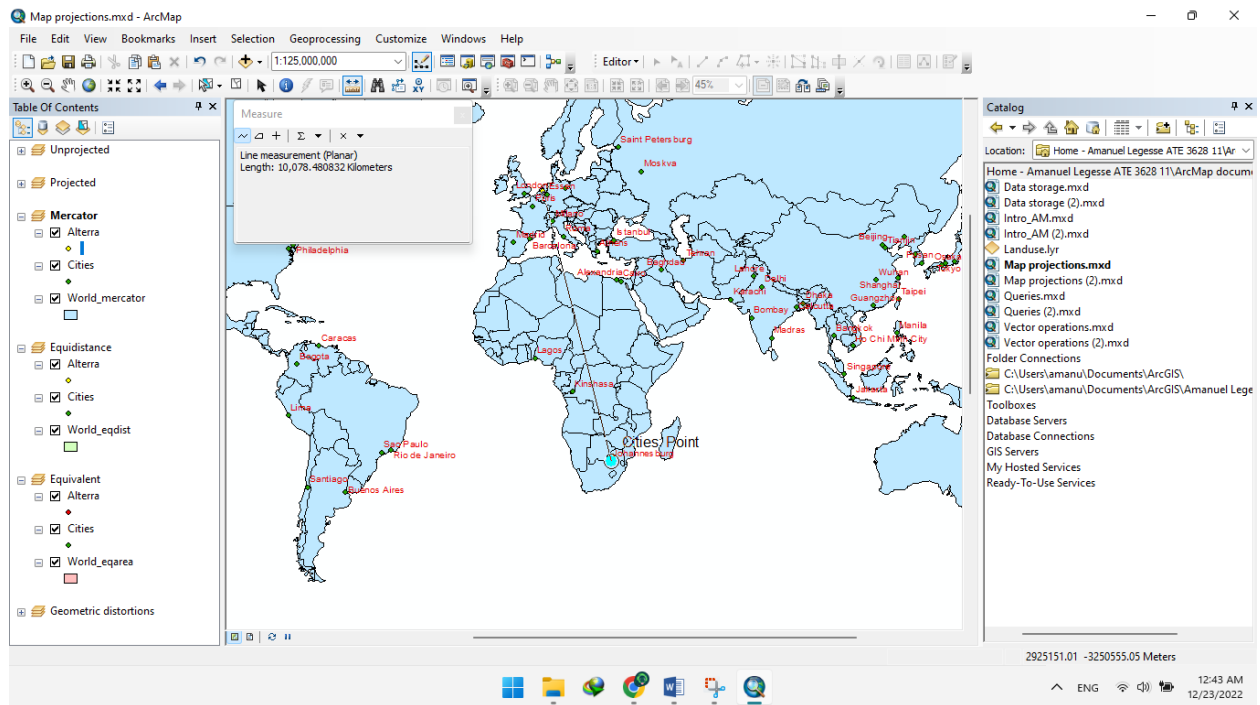


Figure: Alterra – Johannesburg (km)

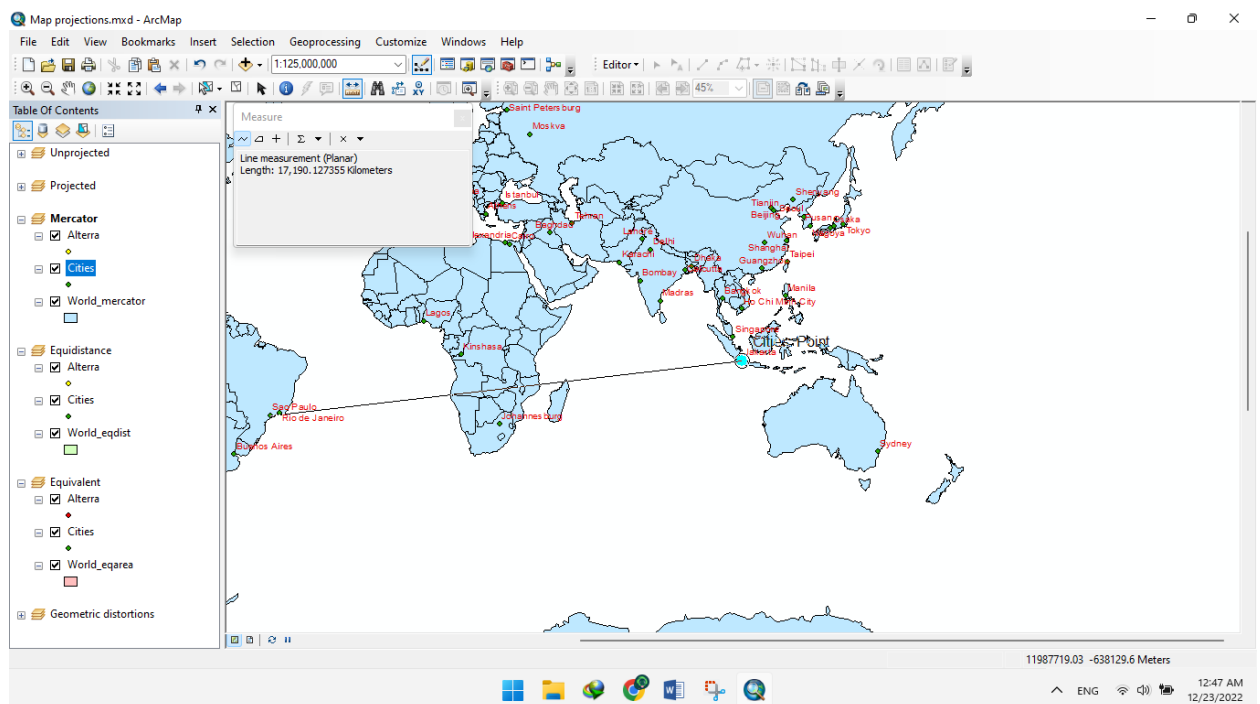


Figure: São Paulo – Jakarta (km)

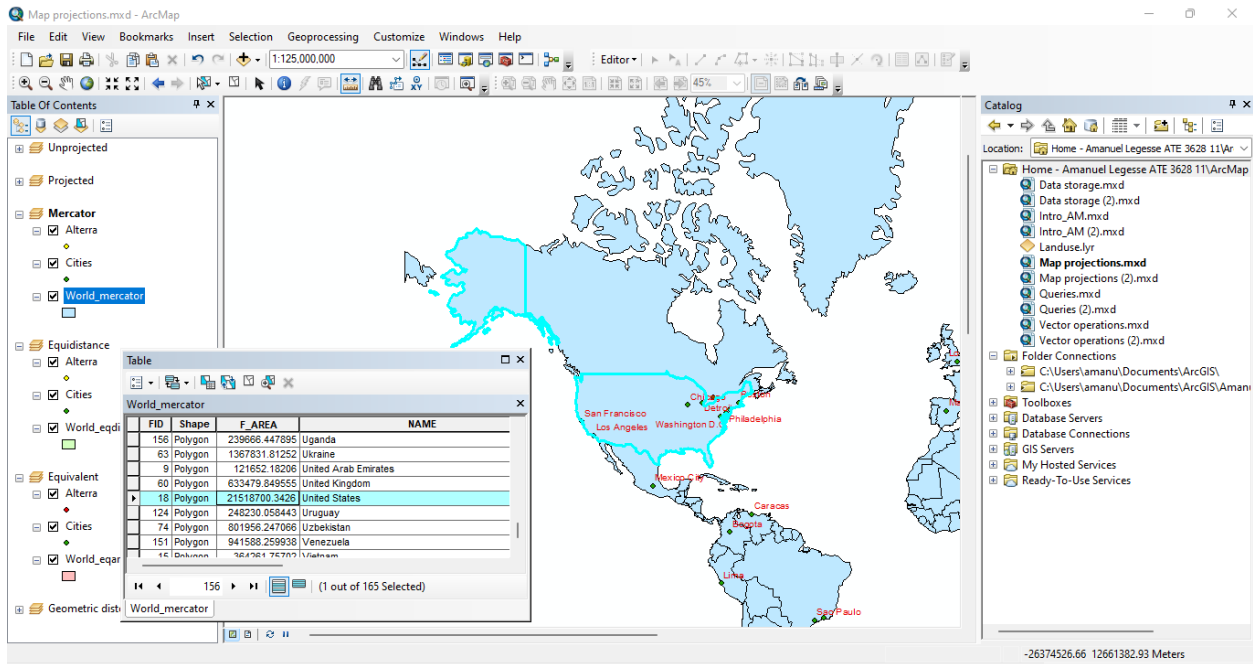


Figure: Area USA (km²)

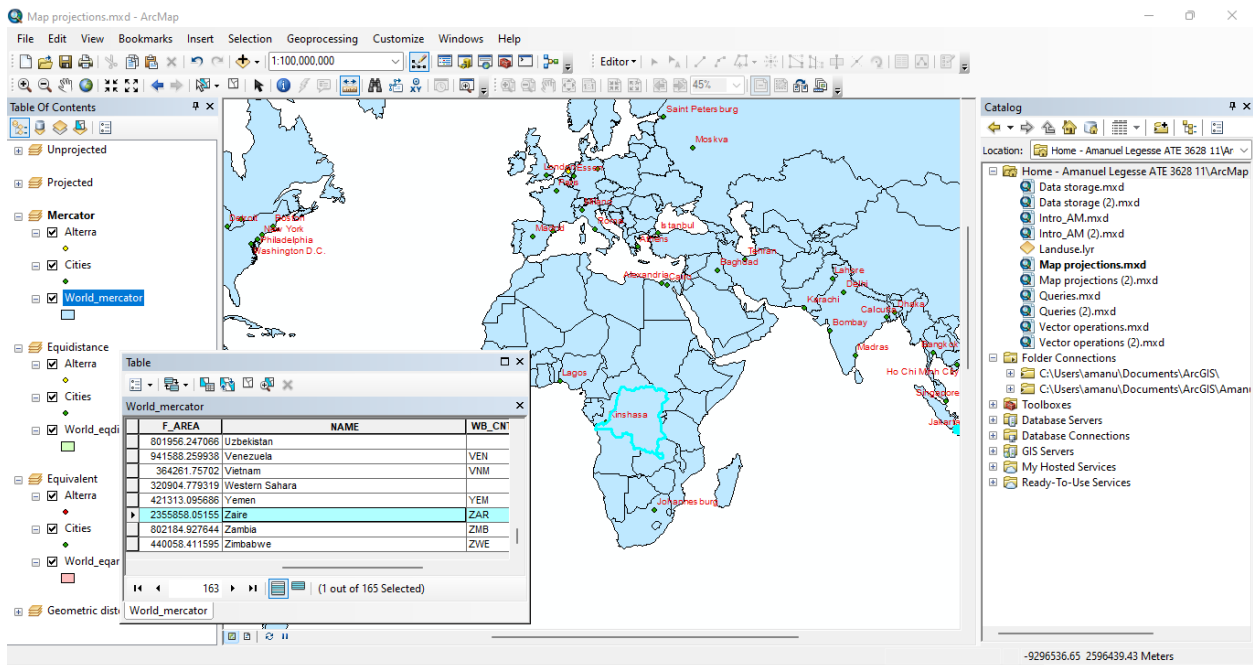


Figure: Area Dem. Rep. Congo (km²)

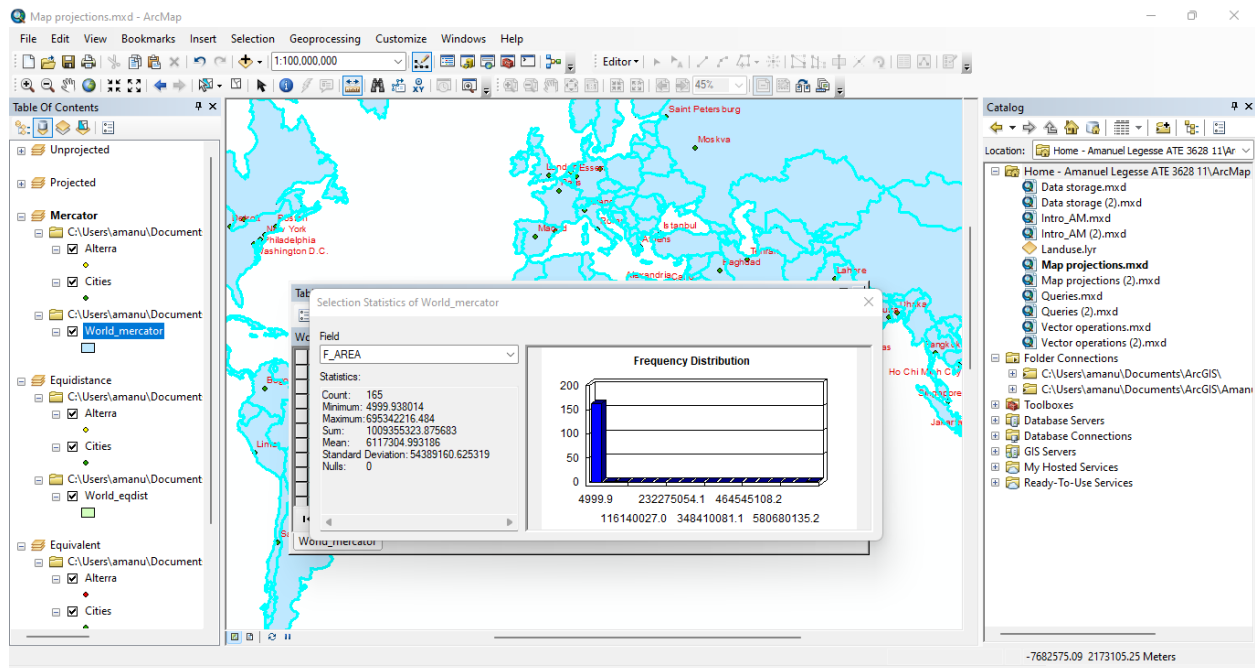


Figure: Area World (km²)

4.B: Equidistant

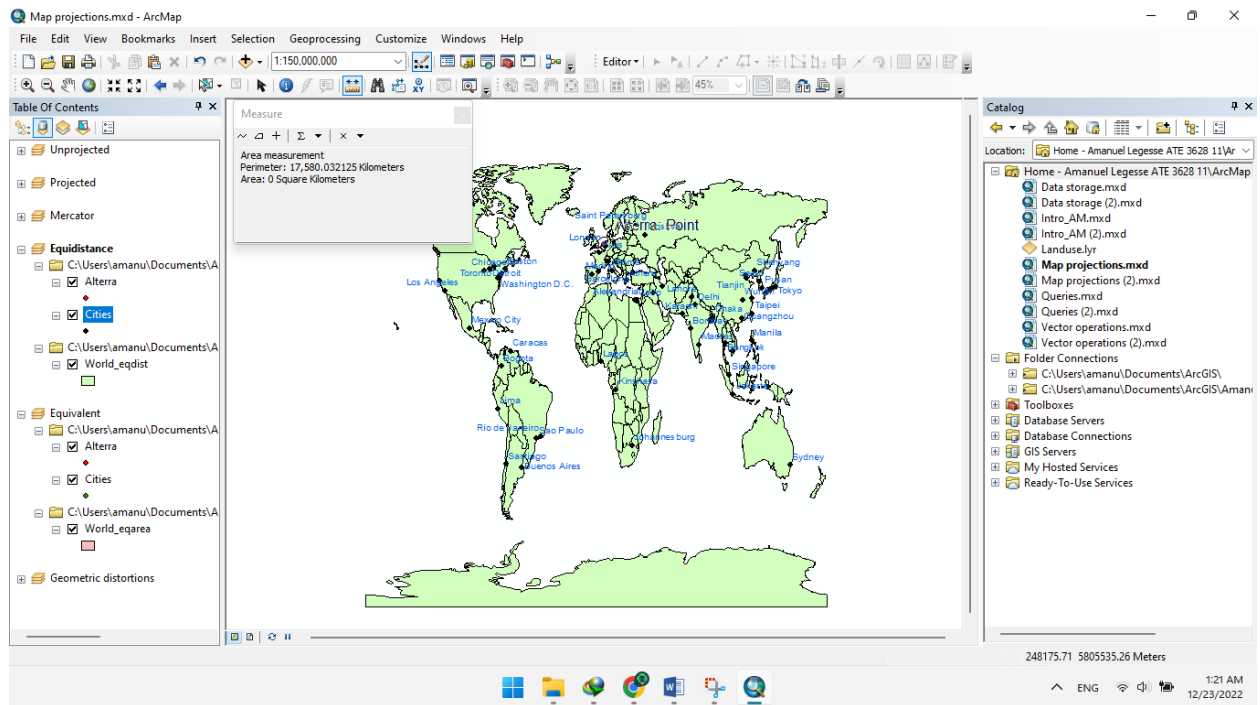


Figure: Alterra – Johannesburg (km)

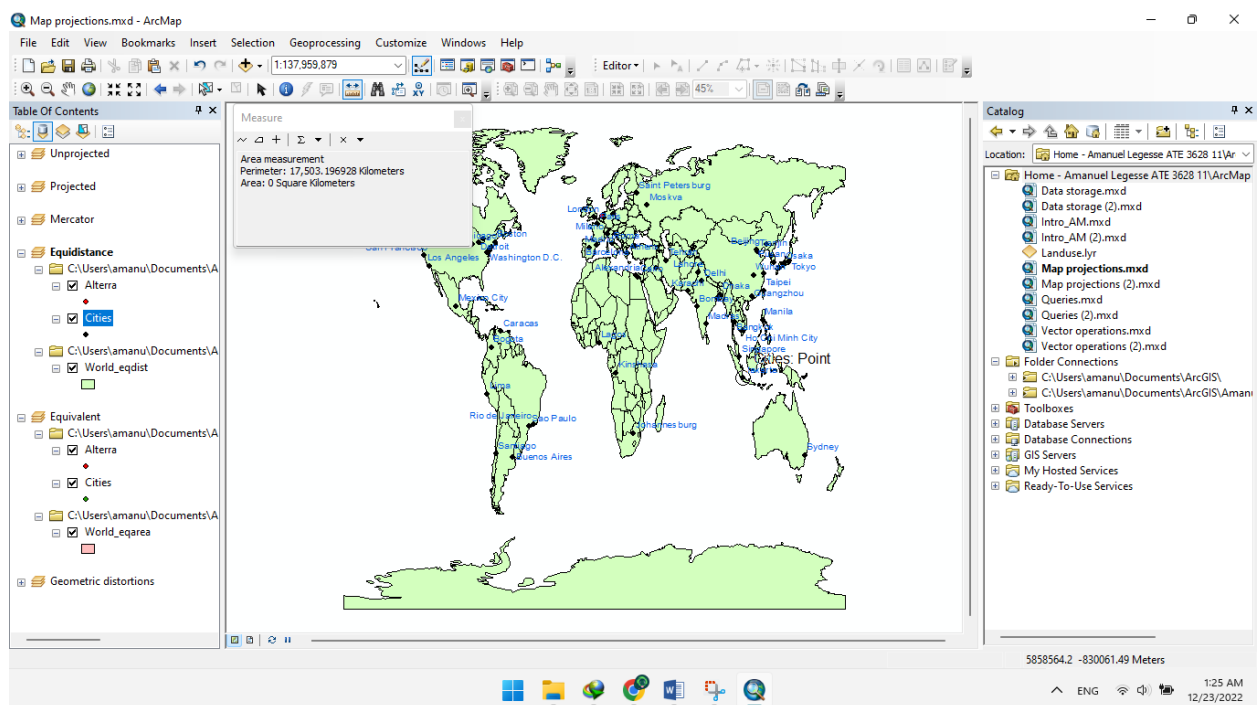


Figure: São Paulo – Jakarta (km)

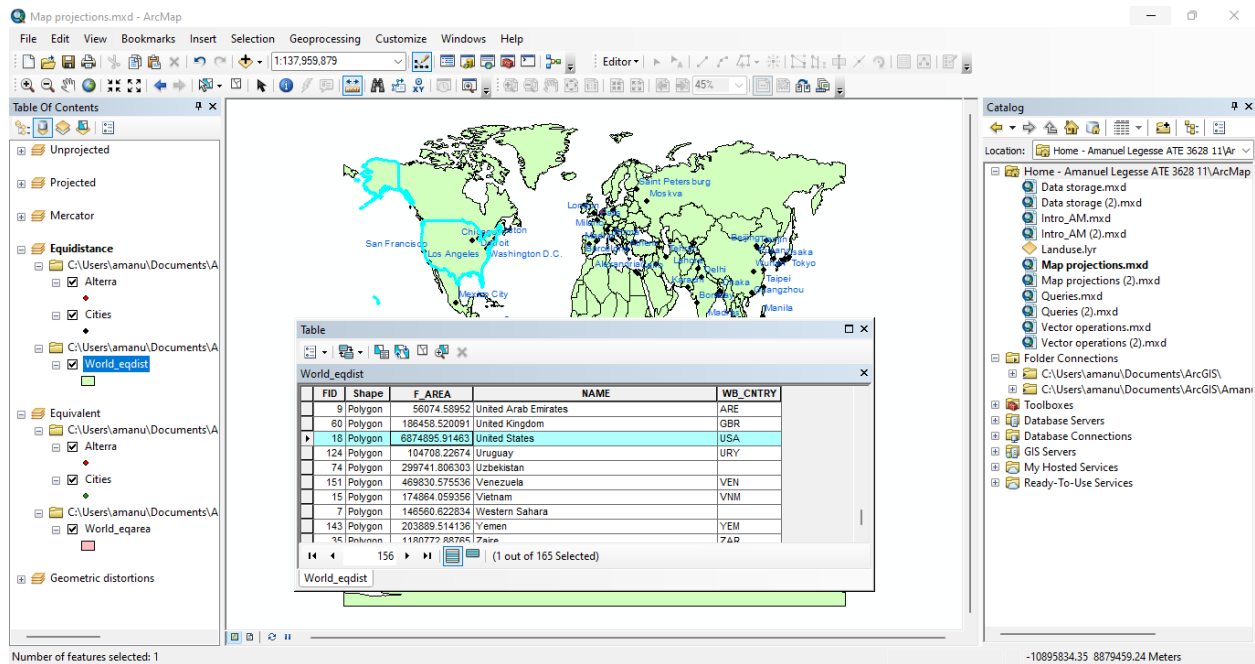


Figure: Area USA (km²)

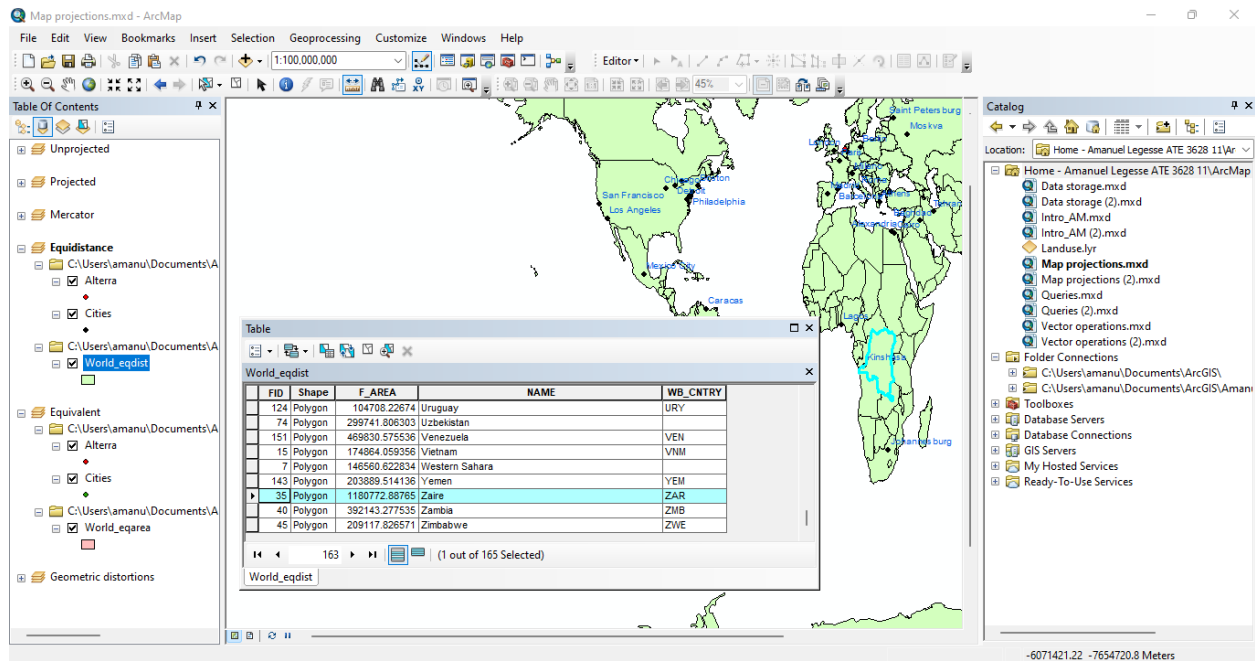


Figure: Area Dem. Rep. Congo (km²)

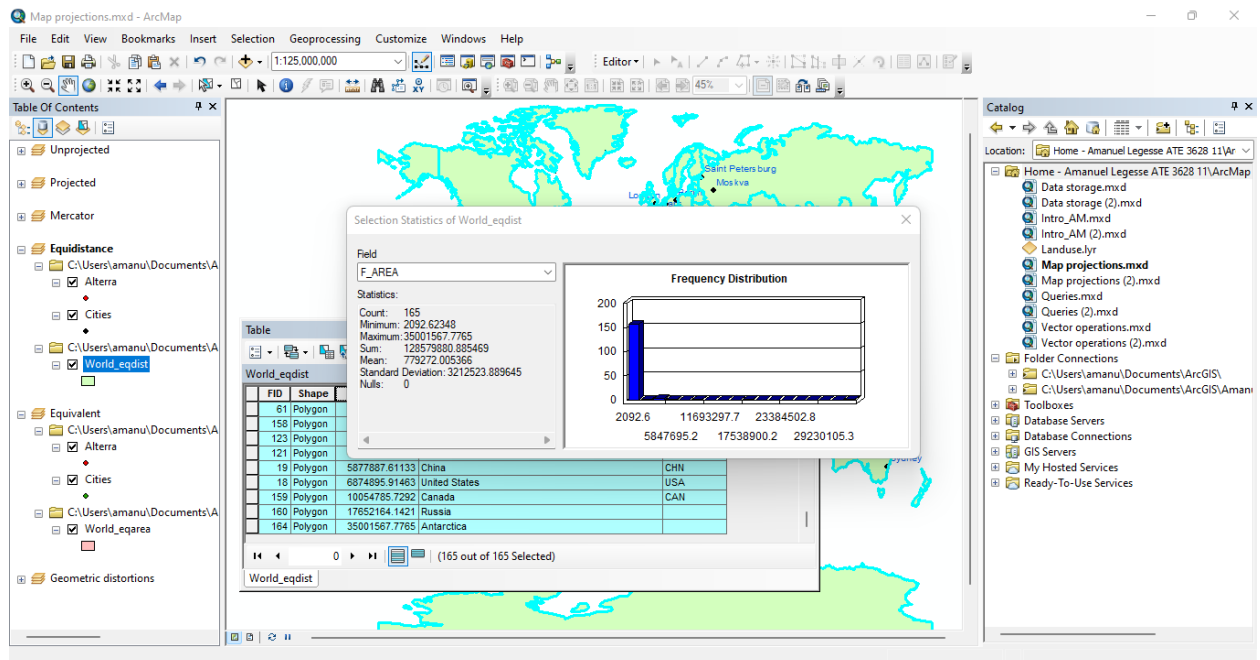


Figure: Area World (km²)

4.C: Equivalent

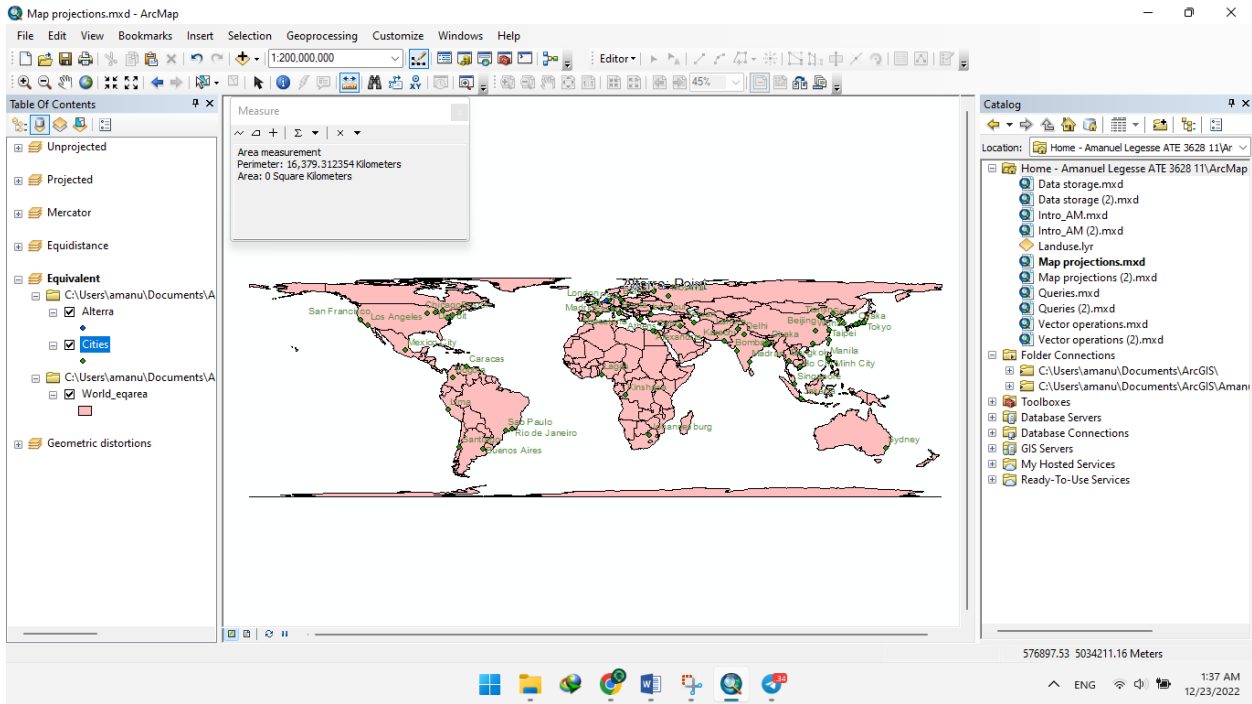


Figure: Alterra – Johannesburg (km)

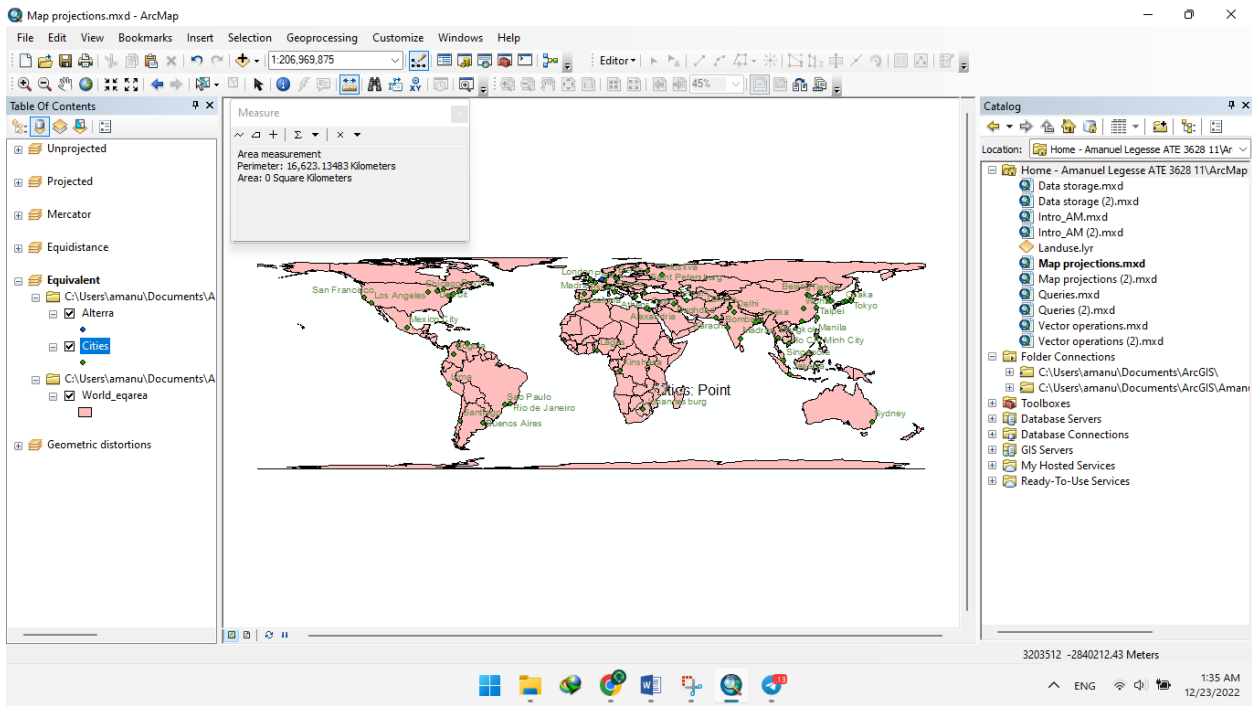


Figure: São Paulo – Jakarta (km)

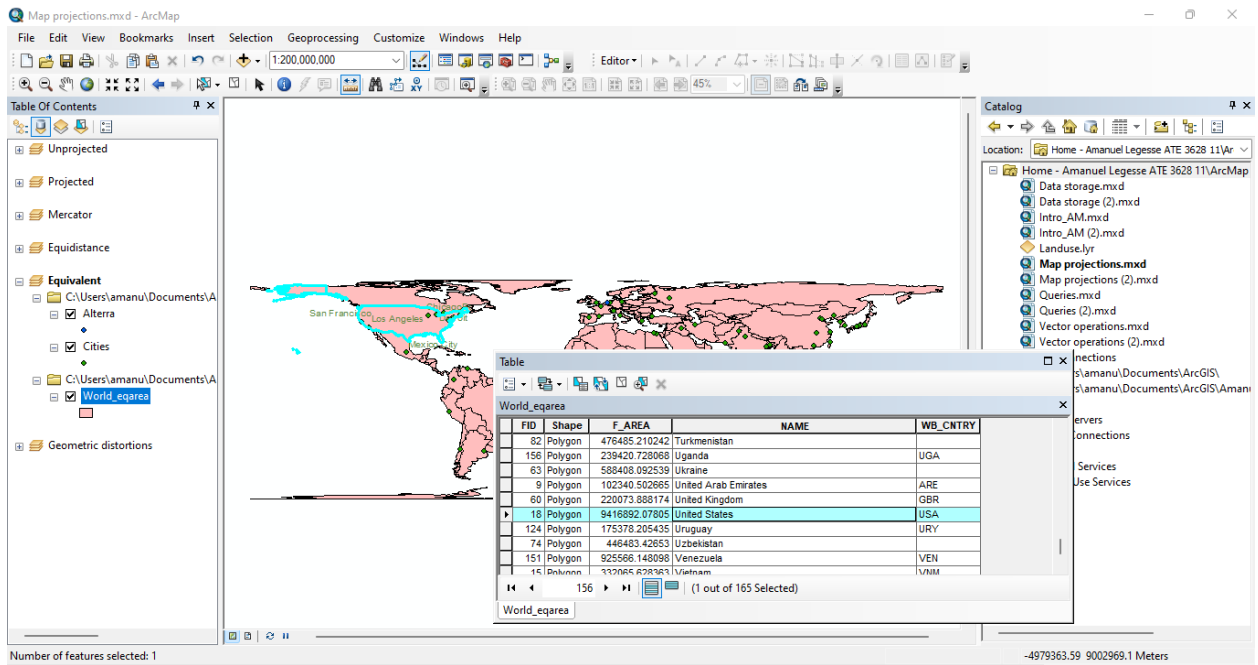


Figure: Area USA (km²)

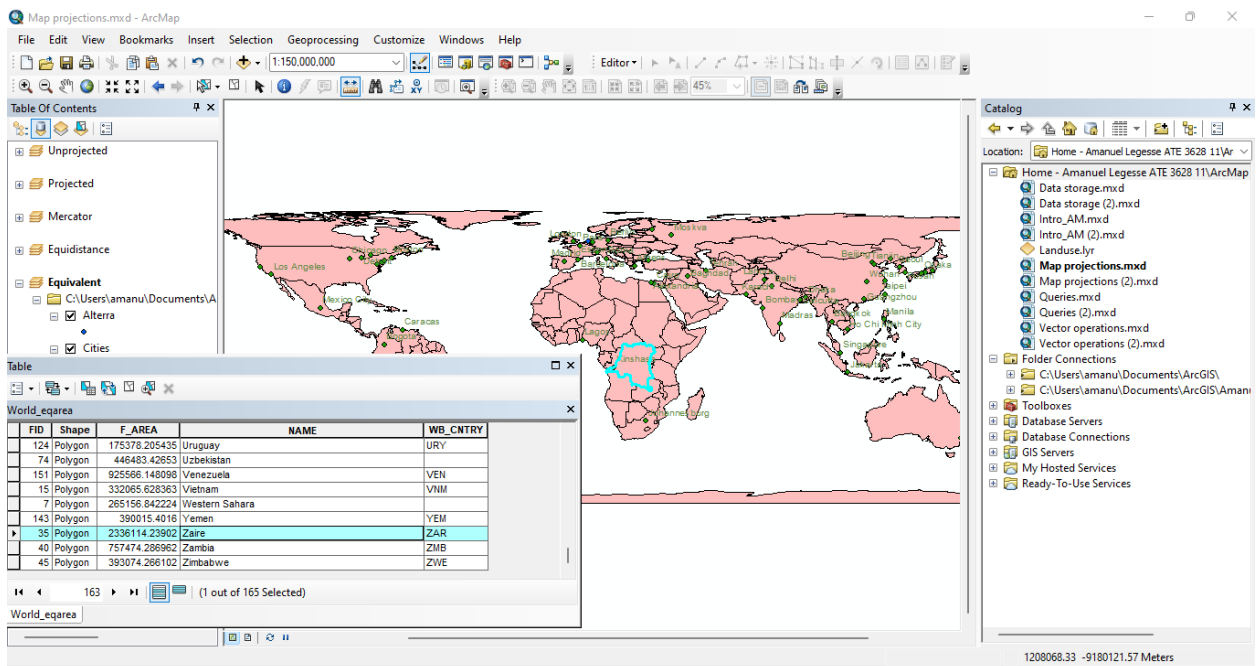


Figure: Area Dem. Rep. Congo (km²)

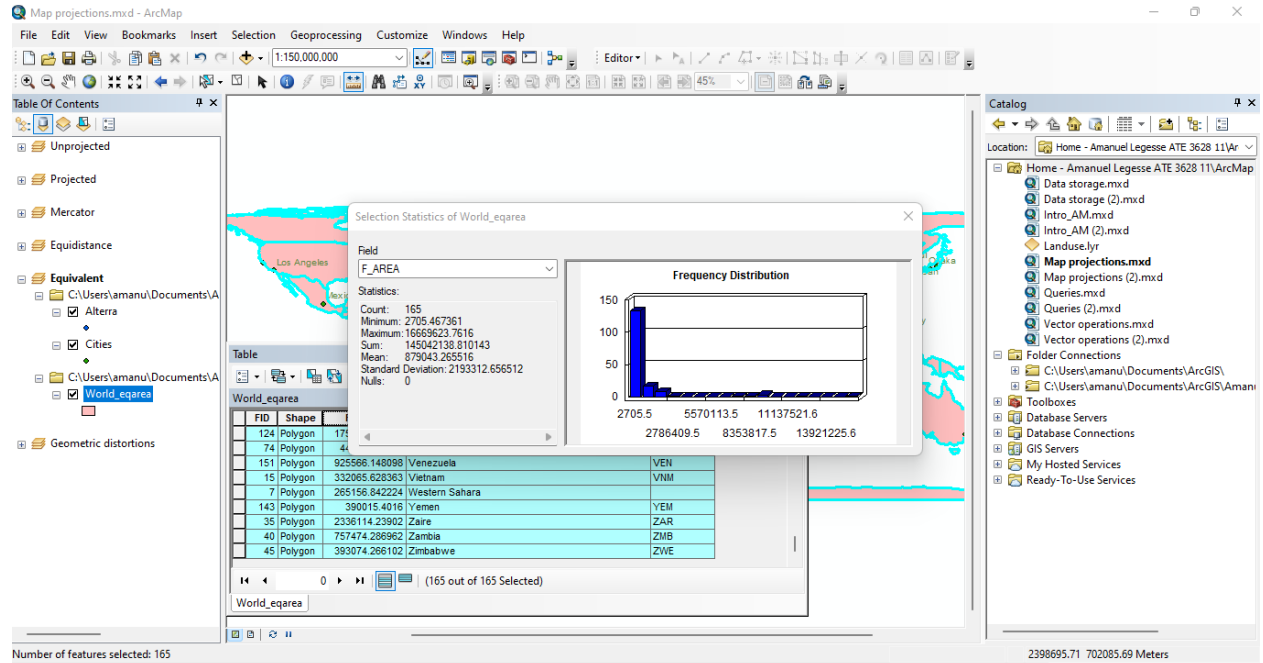


Figure: Area World (km²)

	Mercator	Equidistant	Equivalent	Equivalent True dist./ area
Alterra – Johannesburg (km)	10,078.480832	17,508.032125	16,379.312354	8,979
São Paulo – Jakarta (km)	17,190.127355	17,503.196928	16,623.13483	15,646
Area USA (km²)	21518700.3426	6874895.91463	9416892.07805	9,631,418
Area Dem. Rep. Congo (km²)	2355858.05155	1180772.88765	2336114.23902	2,345,410
Area World (km²)	1009355323.875683	128579880.885469	145042138.810143	148,939,100

Table: Distance and area comparison using different projections