

# Matching Tiff Files to Geographical Coordinates using ArcGIS Pro

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## Create a shapefile

### To add XY point data to your project in ArcGIS Pro:

1. Open ArcGIS Pro.
2. Start by opening a new blank template: “map” and choose a folder for saving your project.
3. Open your project in ArcGIS Pro.
4. Select the "Map" tab at the upper left corner and click on "Add Data" in the top ribbon.
5. From the dropdown menu, choose "XY Point Data".
6. Navigate to your file (.csv, .txt, .xls, or .xlsx), and specify where you want to save under "Output Feature Class".
7. In the "X field" option, choose Longitude and in the "Y field" option, choose Latitude.
8. The “Z” Field can be your initial dataset identifier (optional)
9. Now, you need to know the spatial reference of the input coordinates. Then, you go to the "Coordinate System" option, and you select the appropriate reference.
10. Finally, the shapefile will be added to your map (as points).

### You now have to convert these XY point data into a shapefile. For this, you need:

1. Open your toolbox and choose “Feature Class To Shapefile”.
2. Under the Input Feature, you should select your XY point data.
3. Under the Output Folder, you should select a folder in which all the files associated to the shapefile will be located. I recommend creating a new folder specifically for the shapefile.
4. Run your function.

## Download a raster Tiff file

1. Go on the GAEZ v4 Data Portal
2. Open the data viewer.
3. Select the theme you are interested in.
4. Filter your raster by selecting the variable you want, and all the other options such as the time period, the climate data source and the RCP.
5. Open the table at the bottom of the page and click on the link under "Download URL".

## Match the shapefile and the raster file

1. Create a folder containing your raster file (.tif) and your shapefile.
2. Open the analysis tools: Analysis → Tools
3. Choose: Spatial Analyst Tool → Zonal → double click on Zonal Statistic as Table (zonal analysis) <sup>1</sup>.
4. "Input raster or feature zone data": drag your shapefile
5. "Zone field": choose your wanted identifier (e.g. field1)
6. "Input value raster": choose your raster (.tif file)
7. "Output table": select your output folder and name your table (e.g. TableRain)
8. Click on "Run". The function may take several seconds (or minutes) depending on the size of the shapefile.
9. You will have to wait to get a confirmation on the right down corner that the function was run correctly.
10. In ArcGIS Pro, there is a bar indicating the progress of the function.

## Convert your table to a csv file

1. Open the analysis tools again.
2. Choose Table to Table.
3. Under input rows, choose your table created before.
4. Choose the output location, i.e. the folder where you want to put your file.
5. Under the output name, here it is really important to add the extension you want for your file (i.e. RainingDays.csv).

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<sup>1</sup>You may run into an error saying, *"your tool is not licensed"*. Solution consists of changing your ArcGIS Pro license in the home menu. More details here: <https://www.youtube.com/watch?v=R-pdI7liI64>