The ML Coursework 2025A1 dataset was created for the 2025 Machine Learning module assessment. It is made up of data extracted from FAO and NASA databases.

The dataset contains 17 csv files, each covering a category of variables. See each csv file for the variables it contains (you can open each file using Microsoft Excel). The table below provides descriptions of the variables. Note that the files do not have the same number of rows and columns due to differences in resolution (see Resolution column in table below) and organization. However, longitude and latitude variables (and year also when relevant) are common to all files.

Variable (*file not variable)	**Full name**	**Additional info**	**Unit**	**Resolution**	**Source info summary**
longitude	Longitude	where "centroid" is included in the variable name, the value refers to the midpoint for the given country	Degrees east	1.0 degree (except for *country_longitude_latitude_area_lookup* file)	
latitude	Latitude	where "centroid" is included in the variable name, the value refers to the midpoint for the given country	Degrees north	1.0 degree (except for *country_longitude_latitude_area_lookup* file)	
country	Country				
*country_longitude_latitude_area_lookup**	Lookup table to match country by name to centroid				https://developers.google.com/publ

Variable (*file not variable)	Full name	Additional info	Unit	Resolution	Source info summary
	longitude and latitude for the country				ic-data/docs/canonical/countries_csv
centroid radius		You can use this to match country centroid longitude and latitude to other longitude and latitude data. You can ignore the area variable. It was only include for computing the radius. The area data was obtained from https://unstats.un.org/unsd/environment/totalarea.htm	Degrees		Computed from the area assuming circular region (i.e. area pi*radius^2) and assuming that 1 degree (latitude/longitude) is equivalent to 100km
year	Year	Months 1, 2, 3, … in a year always correspond to Jan, Feb, March, …			
Snowf_tavg	Snow precipitation rate	Rate of snow fall	Kilogram per squared metre per second	per longitude and latitude pair per	https://disc.gsfc.nasa.gov/datasets/GLDAS_CL

Variable (*file not variable)	Full name	Additional info	Unit	Resolution	Source info summary
Rainf_tavg	Rain precipitation rate	Rate of rainfall	Kilogram per squared metre per second	month per year	SM10_M_2.1/summary
TVeg_tavg	Transpiration	Evaporation of water from plant	Watts per squared metre		
ESoil_tavg	Direct Evaporation from Bare Soil		Watts per squared metre		
CanopInt_inst	Plant canopy surface water	Water on plant surfaces	Kilogram per squared metre		
TWS_inst	Terrestrial water storage	Typical indicator of drought	millimetre		
SoilMoi0_10cm_inst	Soil moisture at 0-10cm		Kilogram per squared metre	per longitude and latitude pair per month per year	https://disc.gsfc.nasa.gov/datasets/GLDAS_NOAH10_M_2.1/summary
SoilMoi10_40cm_inst	Soil moisture at 10-40cm		Kilogram per squared metre		

Variable (*file not variable)	Full name	Additional info	Unit	Resolution	Source info summary
SoilMoi40_100cm_inst	Soil moisture at 40-100cm		Kilogram per squared metre		
SoilMoi100_200cm_inst	Soil moisture at 100-200cm		Kilogram per squared metre		
SoilTMP0_10cm_inst	Soil temperature at 0-10cm		Kelvin		
SoilTMP10_40cm_inst	Soil temperature at 10-40cm		Kelvin		
SoilTMP40_100cm_inst	Soil temperature at 10-400cm		Kelvin		
SoilTMP100_200cm_inst	Soil temperature at 100-200cm		Kelvin		
Land_cover_percent	Percentage of each of 17 land cover classes	Land cover classes code & description 1 – Evergreen needleleaf forests 2 – Evergreen broadleaf forests 3 – Deciduous needleleaf forests 4 – Deciduous broadleaf forests 5 – Mixed forests 6 – Closed shrublands 7 – Open shrublands 8 – Woody savannas 9 – Savannas 10 – Grasslands	%	per year per longitude and latitude pair	

Variable (*file not variable)	Full name	Additional info	Unit	Resolution	Source info summary
		11 – Permanent wetlands 12 – Croplands 13 – Urban and built-up lands 14 – Cropland / Natural vegetation mosaics 15 – Permanent snow and ice 16 – Barren 17 – Water bodies			
Yield	Yield		Kilogram per hectare	per year per country per crop category	https://www.fao.org/faostat/en/#data/QCL
Production	Production quantity		tonnes		