It is crucial to observe that certain factors such as rainfall and temperature do not align precisely with the recorded date. Notably, the impact of rainfall and temperature on features like level, flow, depth to groundwater, and hydrometry manifests after a certain time lag. For example, precipitation on January 1st does not immediately influence the aforementioned features but rather takes some time to manifest. The exact duration of this temporal delay is unknown, adding an additional layer of complexity to consider when analyzing the dataset.

Date: The date of the recorded data.
Rainfall_Gallicano: Rainfall measurement in Gallicano.
Rainfall_Pontetetto: Rainfall measurement in Pontetetto.
Rainfall_Monte_Serra: Rainfall measurement in Monte Serra.
Rainfall_Orentano: Rainfall measurement in Orentano.
Rainfall_Borgo_a_Mozzano: Rainfall measurement in Borgo a Mozzano.
Rainfall_Piaggione: Rainfall measurement in Piaggione.
Rainfall_Calavorno: Rainfall measurement in Calavorno.
Rainfall_Croce_Arcana: Rainfall measurement in Croce Arcana.
Rainfall_Tereglio_Coreglia_Antelminelli: Rainfall measurement in Tereglio Coreglia Antelminelli.
Rainfall_Fabbriche_di_Vallico: Rainfall measurement in Fabbriche di Vallico.
Depth_to_Groundwater_LT2: Depth to groundwater at location LT2.
Depth_to_Groundwater_SAL: Depth to groundwater at location SAL.
Depth_to_Groundwater_PAG: Depth to groundwater at location PAG.
Depth_to_Groundwater_CoS: Depth to groundwater at location CoS.
Depth_to_Groundwater_DIEC: Depth to groundwater at location DIEC.
Temperature_Orentano: Temperature measurement in Orentano.
Temperature_Monte_Serra: Temperature measurement in Monte Serra.
Temperature_Ponte_a_Moriano: Temperature measurement in Ponte a Moriano.
Temperature_Lucca_Orto_Botanico: Temperature measurement in Lucca Orto Botanico.
Volume_POL: Volume measurement at location POL.
Volume_CC1: Volume measurement at location CC1.
Volume_CC2: Volume measurement at location CC2.
Volume_CSA: Volume measurement at location CSA.
Volume_CSAL: Volume measurement at location CSAL.
Hydrometry_Monte_S_Quirico: Hydrometry measurement at Monte S. Quirico.
Hydrometry_Piaggione: Hydrometry measurement at Piaggione.

Please note that the units for each measurement column (e.g., millimeters for rainfall, meters for depth to groundwater, degrees Celsius for temperature, etc.)

There are two wells - North well and South well for which
north_well = ["Depth_to_Groundwater_SAL", "Depth_to_Groundwater_PAG", "Depth_to_Groundwater_CoS", "Depth_to_Groundwater_DIEC"]

south_well = ["Depth_to_Groundwater_LT2"]
This parameters are given.

As hint you can check how rainfall, temperature, Hydrometry and Volume in regions varies with the Depth of each of the wells in North and in the South region wells and do further Time series analysis.

You have to predict Depth_to_Groundwater_SAL, Depth_to_Groundwater_CoS, Depth_to_Groundwater_LT2 for the next 3 yrs as told in the problem statement.

For missing values you can try filling NAN and solving and filling it afterwards
It can be interpolated further
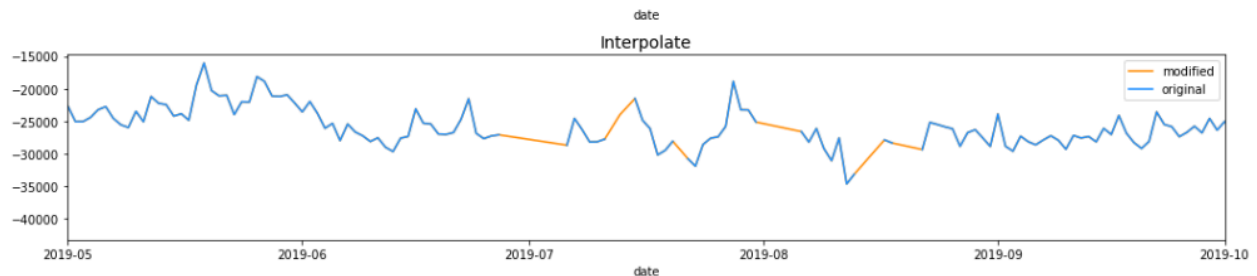
You can look up time series analysis and models used for it on internet and try to predict Depth of asked portion for next 3 yrs.

Some points will be given even if you try to predict depth of one well and pts. Increase as your correlation increases.

Please give a thorough attempt to the problem and try your best.

Thanks
Team AZeotropy