**Table 1. Summary of datasets used in this study from Multiple Sources**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Category** | | **Variables** | **Description** | **Spatial Resolution** | **Temporal Resolution** | **Time Scale** | **Source** |
| O3 measurements | | MDA8 | Daily maximum 8-h average O3 concentration | Point | Daily | 2013-2017, 2020 | CEMC (<http://www.cnemc.cn/>) |
| Meteorological  field | ERA 5 | T2m  Sp  Pr  sfcWind U\_wind  V\_wind  Rsds  Rlds | Near-surface air temperature(K)  Near-surface specific humidity  Precipitation (kg m-2 s-1)  Near-surface wind speed (m s-1)  Eastward near-surface wind (m s-1)  Northward near-surface wind (m s-1)  Surface downwelling shortwave radiation  Surface downwelling longwave radiation | 0.125°×0.125° | 6 hours | 2013-2020 | ERA-Interim (<http://apps.ecmwf.int/datasets/data/interim-full-daily/levtype=sfc/>) |
| CMIP6 | 1km×1km | Monthly | 2020, 2025, 2030, 2035, 2040, 2045, 2050 | ECMWF CMIP6 climate projections ( https://cds.climate.copernicus.eu/cdsapp#!/dataset/projections-cmip6?tab=overview)  BCC-CSM2-MR (China)  CNRM, CNRM-ESM2-1 (France) |
| Emission | MEIC | SO2  NOx  CO  NMVOC  NH3  PM10  PM2.5  BC  OC  CO2 | Sulfur dioxide  Nitrogen oxides  Carbon monoxide  Non-methane Volatile Organic Compound  Ammonia  Particulate matter 10  Particulate matter 2.5  Black carbon  Organic carbon  Carbon dioxide | 0.25°×0.25° | Monthly | 2013-2017 | MEIC (http://meicmodel.org/) |
| DPEC | 0.25°×0.25° | Monthly | 2015-2050 | DPEC (http://meicmodel.org/) |
| Temporal variables | | Year, Month | Year, Month | - | - | - |  |