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DAFTAR PUSTAKA

Aldrian, E., & Dwi Susanto, R. (2003). Identification of three dominant rainfall regions within Indonesia and their relationship to sea surface temperature. *International Journal of Climatology*, *23*(12), 1435–1452. https://doi.org/10.1002/joc.950

Anyenda, E. O., Higashi, T., Kambayashi, Y., Nguyen, T. T. T., Michigami, Y., Fujimura, M., Hara, J., Tsujiguchi, H., Kitaoka, M., Asakura, H., Hori, D., Yamada, Y., Hayashi, K., Hayakawa, K., & Nakamura, H. (2016). Associations of cough prevalence with ambient polycyclic aromatic hydrocarbons, nitrogen and sulphur dioxide: A longitudinal study. *International Journal of Environmental Research and Public Health*, *13*(8). https://doi.org/10.3390/ijerph13080800

Atkinson, R., & Arey, J. (2003). Atmospheric Degradation of Volatile Organic Compounds. *Chemical Reviews*, *103*(12), 4605–4638. https://doi.org/10.1021/cr0206420

Badan Pusat Statistik Indonesia. (2023a). *Neraca Tutupan Lahan Pulau Jawa (Hektar), 2019-2023*. https://www.bps.go.id/id/statistics-table/1/MjI2NCMx/-neraca-fisik-tutupan-lahan-pulau-jawa--hektar---2019-2023.html

Badan Pusat Statistik Indonesia. (2023b, October 2). *Jumlah Industri Pengolahan Besar dan Sedang, Jawa dan Luar Jawa, 2019-2021.* https://www.bps.go.id/id/statistics-table/2/NzMyIzI=/jumlah-industri-pengolahan-besar-dan-sedang-jawa-dan-luar-jawa.html

Badan Pusat Statistik Indonesia. (2024a, February 20). *Jumlah Kendaraan Bermotor Menurut Provinsi dan Jenis Kendaraan (unit), 2022.* https://www.bps.go.id/id/statistics-table/3/VjJ3NGRGa3dkRk5MTlU1bVNFOTVVbmQyVURSTVFUMDkjMyMwMDAw/jumlah-kendaraan-bermotor-menurut-provinsi-dan-jenis-kendaraan--unit-.html?year=2022

Badan Pusat Statistik Indonesia. (2024b, February 20). *Jumlah Kendaraan Bermotor Menurut Provinsi dan Jenis Kendaraan (unit), 2023.* https://www.bps.go.id/id/statistics-table/3/VjJ3NGRGa3dkRk5MTlU1bVNFOTVVbmQyVURSTVFUMDkjMw%253D%253D/jumlah-kendaraan-bermotor-menurut-provinsi-dan-jenis-kendaraan--unit---2023.html?year=2023

Badan Statistik Indonesia (BPS). (2023). *Statistik Indonesia 2023*.

Barnett, A. G., Williams, G. M., Schwartz, J., Best, T. L., Neller, A. H., Petroeschevsky, A. L., & Simpson, R. W. (2006). The effects of air pollution on hospitalizations for cardiovascular disease in elderly people in Australian and New Zealand cities. *Environmental Health Perspectives*, *114*(7), 1018–1023. https://doi.org/10.1289/ehp.8674

UNIVERSITAS
GADJAH MADA
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Barrington-Leigh, C., & Millard-Ball, A. (2017). The world's user-generated road map is more than 80% complete. *PLoS ONE*, *12*(8). https://doi.org/10.1371/journal.pone.0180698

Bauwens, M., Compernolle, S., Stavrakou, T., Müller, J. F., van Gent, J., Eskes, H., Levelt, P. F., van der A, R., Veefkind, J. P., Vlietinck, J., Yu, H., & Zehner, C. (2020). Impact of Coronavirus Outbreak on NO2 Pollution Assessed Using TROPOMI and OMI Observations. *Geophysical Research Letters*, *47*(11). https://doi.org/10.1029/2020GL087978

Beelen, R., Hoek, G., Vienneau, D., Eeftens, M., Dimakopoulou, K., Pedeli, X., Tsai, M. Y., Künzli, N., Schikowski, T., Marcon, A., Eriksen, K. T., Raaschou-Nielsen, O., Stephanou, E., Patelarou, E., Lanki, T., Yli-Tuomi, T., Declercq, C., Falq, G., Stempfelet, M., … de Hoogh, K. (2013). Development of NO2 and NOx land use regression models for estimating air pollution exposure in 36 study areas in Europe - The ESCAPE project. *Atmospheric Environment*, *72*, 10–23. https://doi.org/10.1016/j.atmosenv.2013.02.037

Beevers, S. D., & Carslaw, D. C. (2005). The impact of congestion charging on vehicle emissions in London. *Atmospheric Environment*, *39*(1), 1–5. https://doi.org/10.1016/j.atmosenv.2004.10.001

Beirle, S., Platt, U., Wenig, M., & Wagner, T. (2003). Atmospheric Chemistry and Physics Weekly cycle of NO 2 by GOME measurements: a signature of anthropogenic sources. In *Atmos. Chem. Phys* (Vol. 3). www.atmos-chem-phys.org/acp/3/2225/

Bhunia, G. S., & Shit, P. K. (2021). GeoComputation and Spatial Data Operation. In *Springer Geography* (pp. 15–36). Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/978-3-030-71198-6_2

Birkmann, J. (2013). *Measuring vulnerability to natural hazards: Towards disaster resilient societies*. United Nations University Press.

Blanchard, C. L., Tanenbaum, S., & Lawson, D. R. (2008). Differences between weekday and weekend air pollutant levels in Atlanta; Baltimore; Chicago; Dallas-Fort Worth; Denver; Houston; New York; Phoenix; Washington, DC; and surrounding areas. *Journal of the Air and Waste Management Association*, *58*(12), 1598–1615. https://doi.org/10.3155/1047-3289.58.12.1598

BMKG. (2025, August 31). *Prediksi Musim*. https://www.bmkg.go.id/iklim/prediksi-musim

BPS. (2020). *Statistik Indonesia (statistical yearbook of indonesia) 2020*.

BPS. (2024). *Pertumbuhan Ekonomi Indonesia Triwulan IV-2023*.

BPS Kabupaten Mojokerto. (2024). *Direktori Perusahaan Industri Manufaktur Kabupaten Mojokerto Tahun 2024*.

Brewer, C. A., & Pickle, L. (2002). Evaluation of Methods for Classifying Epidemiological Data on Choropleth Maps in Series. In *Annals of the Association of American Geographers* (Vol. 92, Number 4).

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Budi. (2024, April 27). *Indonesia Bukan Hanya Pulau Jawa*. Provinsi Kepulauan Bangka Belitung. https://babelprov.go.id/siaran_pers/indonesia-bukan-hanya-pulau-jawa

Burnett, R., Chen, H., Szyszkowicz, M., Fann, N., Hubbell, B., Pope, C. A., Apte, J. S., Brauer, M., Cohen, A., Weichenthal, S., Coggins, J., Di, Q., Brunekreef, B., Frostad, J., Lim, S. S., Kan, H., Walker, K. D., Thurston, G. D., Hayes, R. B., … Spadaro, J. V. (2018). Global estimates of mortality associated with longterm exposure to outdoor fine particulate matter. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(38), 9592–9597. https://doi.org/10.1073/pnas.1803222115

Chang, M., Chen, Z., Chen, X., Du, X., Zhang, N., Lu, D., Zhang, L., & Zheng, Y. (2025). Study on the impact of common air pollution indicators on tuberculosis incidence in high-TB-burden countries worldwide. *Frontiers in Public Health*, *13*. https://doi.org/10.3389/fpubh.2025.1628290

Cheng, Z., Luo, L., Wang, S., Wang, Y., Sharma, S., Shimadera, H., Wang, X., Bressi, M., de Miranda, R. M., Jiang, J., Zhou, W., Fajardo, O., Yan, N., & Hao, J. (2016). Status and characteristics of ambient PM2.5 pollution in global megacities. *Environment International*, *89–90*, 212–221. https://doi.org/10.1016/j.envint.2016.02.003

Christopher, S. A., & Gupta, P. (2010). Satellite remote sensing of particulate matter air quality: The cloud-cover problem. *Journal of the Air and Waste Management Association*, *60*(5), 596–602. https://doi.org/10.3155/1047-3289.60.5.596

Claiborn, C., Mitra, A., Adams, G., Bamesberger, L., Allwine, G., Kantamaneni, R., Lamb, B., & Westberg, H. (1995). *Evaluation Of Pmio Emission Rates From Paved And Unpaved Roads Using Tracer Techniques* (Vol. 29, Number IO).

Cleveland, W. S., Graedel, T. E., Kleiner, B., & Warner, J. L. (1974). Sunday and Workday Variations in Photochemical Air Pollutants in New Jersey and New York. *Science*, *186*.

Cohen, A. J., Brauer, M., Burnett, R., Anderson, H. R., Frostad, J., Estep, K., Balakrishnan, K., Brunekreef, B., Dandona, L., Dandona, R., Feigin, V., Freedman, G., Hubbell, B., Jobling, A., Kan, H., Knibbs, L., Liu, Y., Martin, R., Morawska, L., … Forouzanfar, M. H. (2017). Estimates and 25-year trends of the global burden of disease attributable to ambient air pollution: an analysis of data from the Global Burden of Diseases Study 2015. *The Lancet*, *389*(10082), 1907–1918. https://doi.org/10.1016/S0140-6736(17)30505-6

Cooper, O. R., Parrish, D. D., Ziemke, J., Balashov, N. V., Cupeiro, M., Galbally, I. E., Gilge, S., Horowitz, L., Jensen, N. R., Lamarque, J. F., Naik, V., Oltmans, S. J., Schwab, J., Shindell, D. T., Thompson, A. M., Thouret, V., Wang, Y., & Zbinden, R. M. (2014). Global distribution and trends of tropospheric ozone: An observation-based review. In *Elementa* (Vol. 2). BioOne. https://doi.org/10.12952/journal.elementa.000029

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

CREA. (2023). *Enforcing more stringent air pollution controls at Banten-Suralaya would prevent over 1,000 deaths and save USD billions: Health impact assessment (HIA)*. https://energyandcleanair.org/publication/air-quality-impacts-of-the-banten-suralaya-complex/

Crippa, M., Solazzo, E., Huang, G., Guizzardi, D., Koffi, E., Muntean, M., Schieberle, C., Friedrich, R., & Janssens-Maenhout, G. (2020). High resolution temporal profiles in the Emissions Database for Global Atmospheric Research. *Scientific Data*, *7*(1). https://doi.org/10.1038/s41597-020-0462-2

Danoedoro, P. (2012). *Pengantar Penginderaan Jauh Digital*. ANDI.

Davidson, E. A. (2009). The contribution of manure and fertilizer nitrogen to atmospheric nitrous oxide since 1860. *Nature Geoscience*, *2*(9), 659–662. https://doi.org/10.1038/ngeo608

De Smith, M. J., Goodchild, M. F., Longley, P. A., & Associates, &. (2005). *Geospatial Analysis A Comprehensive Guide to Principles Techniques and Software Tools 7th edition*.

Deng, X., Chen, J., Dai, R., Zhai, Z., He, D., Zhao, L., Jin, X., & Zhang, J. (2023). The Effects of Planetary Boundary Layer Features on Air Pollution Based on ERA5 Data in East China. *Atmosphere*, *14*(8). https://doi.org/10.3390/atmos14081273

Di, Q., Wang, Y., Zanobetti, A., Wang, Y., Koutrakis, P., Choirat, C., Dominici, F., & Schwartz, J. D. (2017). Air Pollution and Mortality in the Medicare Population. *New England Journal of Medicine*, *376*(26), 2513–2522. https://doi.org/10.1056/nejmoa1702747

Dominici, F., Peng, R. D., Barr, C. D., & Bell, M. L. (2010). Protecting human health from air pollution: Shifting from a single-pollutant to a multipollutant approach. In *Epidemiology* (Vol. 21, Number 2, pp. 187–194). https://doi.org/10.1097/EDE.0b013e3181cc86e8

Dotse, S. Q., Dagar, L., Petra, M. I., & De Silva, L. C. (2016). Influence of Southeast Asian Haze episodes on high PM10 concentrations across Brunei Darussalam. *Environmental Pollution*, *219*, 337–352. https://doi.org/10.1016/j.envpol.2016.10.059

Douros, J., Eskes, H., Van Geffen, J., Boersma, K. F., Compernolle, S., Pinardi, G., Blechschmidt, A. M., Peuch, V. H., Colette, A., & Veefkind, P. (2023a). Comparing Sentinel-5P TROPOMI NO2 column observations with the CAMS regional air quality ensemble. *Geoscientific Model Development*, *16*(2), 509–534. https://doi.org/10.5194/gmd-16-509-2023

Douros, J., Eskes, H., Van Geffen, J., Boersma, K. F., Compernolle, S., Pinardi, G., Blechschmidt, A. M., Peuch, V. H., Colette, A., & Veefkind, P. (2023b). Comparing Sentinel-5P TROPOMI NO2 column observations with the CAMS regional air quality ensemble. *Geoscientific Model Development*, *16*(2), 509–534. https://doi.org/10.5194/gmd-16-509-2023

Duncan, B. N., Lamsal, L. N., Thompson, A. M., Yoshida, Y., Lu, Z., Streets, D. G., Hurwitz, M. M., & Pickering, K. E. (2016). A space-based, high-resolution view of notable changes in urban NOx pollution around the

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

world (2005–2014). *Journal of Geophysical Research*, *121*(2), 976–996. https://doi.org/10.1002/2015JD024121

EPA. (2000). *Quality Guidance for Data Quality Assessment Practical Methods for Data Analysis*.

ESA. (2025). *Sentinel-5P* . Https://Sentiwiki.Copernicus.Eu/Web/S5p-Applications#:~:Text=Close-,Air%20Quality%20&%20Pollution,Absorbing%20aerosols%20including%20sulfate%20aerosols.

European Environment Agency. (2019). *EEA guidebook Introduction 2019*.

European Environment Agency. (2024, October 28). *Emissions of air pollutants from transport in Europe*.

Fatchurrokhman, M. F., & Sulistyowati. (2014). *Dampak Kawasan Industri Millenium Terhadap Kondisi Sosial, Ekonomi dan Lingkungan Masyarakat Desa Peusar Kecamatan Panongan Kabupaten Tangerang*.

Feng, C., Wang, H., Lu, N., Chen, T., He, H., Lu, Y., & Tu, X. M. (2014). Log-transformation and its implications for data analysis. *Shanghai Archives of Psychiatry*, *26*(2), 105–109. https://doi.org/10.3969/j.issn.1002-0829.2014.02.009

Fioletov, V. E., McLinden, C. A., Griffin, D., Abboud, I., Krotkov, N., Leonard, P. J. T., Li, C., Joiner, J., Theys, N., & Carn, S. (2023). Version 2 of the global catalogue of large anthropogenic and volcanic SO2 sources and emissions derived from satellite measurements. *Earth System Science Data*, *15*(1), 75–93. https://doi.org/10.5194/essd-15-75-2023

Fioletov, V., Mclinden, C. A., Griffin, D., Theys, N., Loyola, D. G., Hedelt, P., Krotkov, N. A., & Li, C. (2020). Anthropogenic and volcanic point source SO2 emissions derived from TROPOMI on board Sentinel-5 Precursor: First results. *Atmospheric Chemistry and Physics*, *20*(9), 5591–5607. https://doi.org/10.5194/acp-20-5591-2020

Fioletov, V., Mclinden, C. A., Griffin, D., Zhao, X., & Eskes, H. (2025). Global seasonal urban, industrial, and background NO2 estimated from TROPOMI satellite observations. *Atmospheric Chemistry and Physics*, *25*(1), 575–596. https://doi.org/10.5194/acp-25-575-2025

Firdaus, F. M., Elliott, B., & Ibanez, D. (2023, November 28). *Southeast Asian Cities Have Some of the Most Polluted Air in the World. El Niño Is Making it Worse*. https://www.wri.org/insights/air-pollution-southeast-asia-cities-jakarta-el-nino?utm_source=chatgpt.com

Firdaus, F. M., Elliott, B., Malsch, J., & Surjadi, P. (2023). *7 Things to Know About Jakarta's Air Pollution Crisis*. https://wri-indonesia.org/en/insights/7-things-know-about-jakartas-air-pollution-crisis?utm_source=chatgpt.com

Fujino, R., & Miyamoto, Y. (2022). PM2.5 decrease with precipitation as revealed by single-point ground-based observation. *Atmospheric Science Letters*, *23*(7). https://doi.org/10.1002/asl.1088

Gbangou, T. (2023). *Long-term trends of air pollutants at European and national level 2005-2021*. European Topic Centre. https://www.nilu.com/

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Ghahremanloo, M., Lops, Y., Choi, Y., & Mousavinezhad, S. (2021). Impact of the COVID-19 outbreak on air pollution levels in East Asia. *Science of the Total Environment*, *754*. https://doi.org/10.1016/j.scitotenv.2020.142226

Goldberg, D. L., Anenberg, S. C., Griffin, D., Mclinden, C. A., Lu, Z., & Streets, D. G. (2020). *Disentangling the impact of the COVID-19 lockdowns on urban NO2 from natural variability*. https://doi.org/10.1002/essoar.10503396.1

Goodchild, M. F. (2007). Citizens as sensors: The world of volunteered geography. In *GeoJournal* (Vol. 69, Number 4, pp. 211–221). https://doi.org/10.1007/s10708-007-9111-y

Goodchild, M. F. (2011). Scale in GIS: An overview. *Geomorphology*, *130*(1–2), 5–9. https://doi.org/10.1016/j.geomorph.2010.10.004

Gorelick, N., Hancher, M., Dixon, M., Ilyushchenko, S., Thau, D., & Moore, R. (2017). Google Earth Engine: Planetary-scale geospatial analysis for everyone. *Remote Sensing of Environment*, *202*, 18–27. https://doi.org/10.1016/j.rse.2017.06.031

Grange, S. K., Carslaw, D. C., Lewis, A. C., Boleti, E., & Hueglin, C. (2018). *Random forest meteorological normalisation models for Swiss PM10 trend analysis*. https://doi.org/10.5194/acp-2017-1092

Griffin, D., Chen, J., Anderson, K., Makar, P., McLinden, C. A., Dammers, E., & Fogal, A. (2024). Biomass burning CO emissions: exploring insights through TROPOMI-derived emissions and emission coefficients. *Atmospheric Chemistry and Physics*, *24*(17), 10159–10186. https://doi.org/10.5194/acp-24-10159-2024

Gu, J., Wang, Y., Ma, J., Lu, Y., Wang, S., & Li, X. (2022). An Estimation Method for PM2.5 Based on Aerosol Optical Depth Obtained from Remote Sensing Image Processing and Meteorological Factors. *Remote Sensing*, *14*(7). https://doi.org/10.3390/rs14071617

Gupta, P., Christopher, S. A., Wang, J., Gehrig, R., Lee, Y., & Kumar, N. (2006). Satellite remote sensing of particulate matter and air quality assessment over global cities. *Atmospheric Environment*, *40*(30), 5880–5892. https://doi.org/10.1016/j.atmosenv.2006.03.016

Gurjar, B. R., Butler, T. M., Lawrence, M. G., & Lelieveld, J. (2008). Evaluation of emissions and air quality in megacities. *Atmospheric Environment*, *42*(7), 1593–1606. https://doi.org/10.1016/j.atmosenv.2007.10.048

Guttikunda, S. K., & Calori, G. (2013). A GIS based emissions inventory at 1 km × 1 km spatial resolution for air pollution analysis in Delhi, India. *Atmospheric Environment*, *67*, 101–111. https://doi.org/10.1016/j.atmosenv.2012.10.040

Hamed, K. H., & Rao, A. R. (1998). Hydrology A modified Mann-Kendall trend test for autocorrelated data. In *Journal of Hydrology* (Vol. 204).

Han, S., & Sun, B. (2019). Impact of population density on PM2.5 concentrations: A case study in Shanghai, China. *Sustainability (Switzerland)*, *11*(7). https://doi.org/10.3390/su11071968

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Hanami, Z. A., Amin, M., Hustim, M., Putri, R. M., Torabi, S. E., Ramadhani, A. A. T., & Suryati, I. (2025). Spatial–Temporal Changes in Air Pollutants in Four Provinces of Sumatra Island, Indonesia: Insights from Sentinel-5P Satellite Imagery. *Urban Science*, *9*(2). https://doi.org/10.3390/urbansci9020042

Harini, R., Yunus, H. S., & Hartono, S. (2012). Agricultural Land Conversion: Determinants And Impact For Food Sufficiency In Sleman Regency. *Indonesian Journal of Geography*, *44*(2), 120–133.

Harrison, R. M., Laxen, D., Moorcroft, S., & Laxen, K. (2012). Processes affecting concentrations of fine particulate matter (PM2.5) in the UK atmosphere. *Atmospheric Environment*, *46*, 115–124. https://doi.org/10.1016/j.atmosenv.2011.10.028

He, G., Pan, Y., & Tanaka, T. (2020). The short-term impacts of COVID-19 lockdown on urban air pollution in China. *Nature Sustainability*, *3*(12), 1005–1011. https://doi.org/10.1038/s41893-020-0581-y

Health Effects Institute. (2010). *Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects*. www.healtheffects.org

Health Effects Institute. (2024). *State of Global Air 2024*.

HeiGIT. (2024, August 27). *Analysis of OSM building data completeness using new data*. https://heigit.org/analysis-of-osm-building-data-completeness-using-new-data/

Hidayati, I. (2020). BENTANG LAHAN JAWA BAGIAN TENGAH. *Jurnal Geografi*, *18*(2).

Hien, P. D., Vuong, T. B., Anh, H. L., & Vuong, Q. T. (2024). Impacts of the East Asia monsoon on the PM2.5 acidity in Hanoi. *Atmospheric Pollution Research*, *15*(12). https://doi.org/10.1016/j.apr.2024.102304

Hilboll, A., Richter, A., & Burrows, J. P. (2013). Long-term changes of tropospheric NO2 over megacities derived from multiple satellite instruments. *Atmospheric Chemistry and Physics*, *13*(8), 4145–4169. https://doi.org/10.5194/acp-13-4145-2013

Hile, M. G., & Noel, J. G. (1999). *Relative Change Index: Derivation and Interpretation*. https://www.researchgate.net/publication/2459356

Ho, K. F., Lee, S. C., Chow, J. C., & Watson, J. G. (2003). Characterization of PM10 and PM2.5 source profiles for fugitive dust in Hong Kong. *Atmospheric Environment*, *37*(8), 1023–1032. https://doi.org/10.1016/S1352-2310(02)01028-2

Hoek, G., Beelen, R., de Hoogh, K., Vienneau, D., Gulliver, J., Fischer, P., & Briggs, D. (2008). A review of land-use regression models to assess spatial variation of outdoor air pollution. In *Atmospheric Environment* (Vol. 42, Number 33, pp. 7561–7578). https://doi.org/10.1016/j.atmosenv.2008.05.057

Hollander, M., Wolfe, D. A., & Chicken, E. (2014). *Nonparametric Statistical Methods*. John Wiley & Sons, Inc.

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Humas Sekretariat Kabinet Republik Indonesia. (2021, January 23). *Hasil Sensus Penduduk 2020; BPS Meski Lambat, Ada Pergeseran Penduduk Antarpulau*. https://setkab.go.id/hasil-sensus-penduduk-2020-bps-meski-lambat-ada-pergeseran-penduduk-antarpulau/

Hyndman, R. J., & Athanasopoulos, G. (2018). *Forecasting: Principles & Practice* (2th ed.). OTexts.

Ikram, N. M., Afifah, L., Arthatia, B. S., Wicaksono, S. J., Maharani, M., Ediyanto, Ihsanudin, T., & Apriyanti, D. (2022). Monitoring CO and O3concentration that caused climate change periodically using Google Earth Engine (study case: Java Island). *IOP Conference Series: Earth and Environmental Science*, *1047*(1). https://doi.org/10.1088/1755-1315/1047/1/012021

Intergovernmental Panel on Climate Change (IPCC). (2023). Technical Summary. In *Climate Change 2022 – Impacts, Adaptation and Vulnerability* (pp. 37–118). Cambridge University Press. https://doi.org/10.1017/9781009325844.002

Iqbal Aryuda Nugroho, M., Indiani Pangastuti, A., Fauzul Akbar, M., & Tinggi Meteorologi Klimatologi dan Geofisika, S. (2023). *Agung Hari Saputra 5) 1), 2), 3), 4), 5)* (Vol. 5, Number 1).

ISO 31000, 17 (2018).

Ivy, D., Mulholland, J. A., & Russell, A. G. (2008). Development of ambient air quality population-weighted metrics for use in time-series health studies. *Journal of the Air and Waste Management Association*, *58*(5), 711–720. https://doi.org/10.3155/1047-3289.58.5.711

Jacob, D. J. (1999). *INTRODUCTION TO ATMOSPHERIC CHEMISTRY*.

Jacob, D. J., & Winner, D. A. (2009). Effect of climate change on air quality. *Atmospheric Environment*, *43*(1), 51–63. https://doi.org/10.1016/j.atmosenv.2008.09.051

Jakob, A., Hasibuan, S., & Fiantis, D. (2022). Empirical evidence shows that air quality changes during COVID-19 pandemic lockdown in Jakarta, Indonesia are due to seasonal variation, not restricted movements. In *Environmental Research* (Vol. 208). Academic Press Inc. https://doi.org/10.1016/j.envres.2021.112391

Jandacka, D., Durcanska, D., & Bujdos, M. (2017). The contribution of road traffic to particulate matter and metals in air pollution in the vicinity of an urban road. *Transportation Research Part D: Transport and Environment*, *50*, 397–408. https://doi.org/10.1016/j.trd.2016.11.024

Jensen, J. R., & Clarke, K. C. (2016). *DIGITAL IMAGE PROCESSING A Remote Sensing Perspective * PEARSON SERIES IN GEOGRAPHIC INFORMATION SCIENCE*.

Jerrett, M., Arain, A., Kanaroglou, P., Beckerman, B., Potoglou, D., Sahsuvaroglu, T., Morrison, J., & Giovis, C. (2005). A review and evaluation of intraurban air pollution exposure models. In *Journal of Exposure Analysis and Environmental Epidemiology* (Vol. 15, Number 2, pp. 185–204). https://doi.org/10.1038/sj.jea.7500388

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Jokar Arsanjani, J., Mooney, P., Zipf, A., & Schauss, A. (2015). Quality assessment of the contributed land use information from OpenStreetMap versus authoritative datasets. *Lecture Notes in Geoinformation and Cartography*, *0*(9783319142791), 37–58. https://doi.org/10.1007/978-3-319-14280-7_3

Jumadil, J. (2023). Analisis Kualitas Udara (Nilai Parameter PM2,5 dan Karbon Monoksida) di Sekitar Kampus Universitas Bosowa Makassar. *Jurnal Ilmiah Ecosystem*, *23*(1), 164–171. https://doi.org/10.35965/eco.v23i1.2514

Kaplan, G., & Avdan, Z. Y. (2020). SPACE-BORNE AIR POLLUTION OBSERVATION FROM SENTINEL-5P TROPOMI: RELATIONSHIP BETWEEN POLLUTANTS, GEOGRAPHICAL AND DEMOGRAPHIC DATA. *International Journal of Engineering and Geosciences*, *5*(3), 130–137. https://doi.org/10.26833/ijeg.644089

Karner, A. A., Eisinger, D. S., & Niemeier, D. A. (2010). Near-roadway air quality: Synthesizing the findings from real-world data. *Environmental Science and Technology*, *44*(14), 5334–5344. https://doi.org/10.1021/es100008x

Kaufman, Y. J., Tanré, D., Remer, L. A., Vermote, E. F., Chu, A., & Holben, B. N. (1997). Operational remote sensing of tropospheric aerosol over land from EOS moderate resolution imaging spectroradiometer. *Journal of Geophysical Research Atmospheres*, *102*(14), 17051–17067. https://doi.org/10.1029/96jd03988

Kayes, I., Shahriar, S. A., Hasan, K., Akhter, M., Kabir, M. M., & Salam, M. A. (2019). The relationships between meteorological parameters and air pollutants in an urban environment. *Global Journal of Environmental Science and Management*, *5*(3), 265–278. https://doi.org/10.22034/gjesm.2019.03.01

Kemeneterian Lingkungan Hidup dan Kehutanan. (2022). *Status Lingkungan Hidup Indonesia Tahun 2022*.

Khaled Ahmad Ali Abdulla Al Koas, A. (2010). *GIS-based Mapping and Statistical Analysis of Air Pollution and Mortality in*.

Khreis, H., Sanchez, K. A., Foster, M., Burns, J., Nieuwenhuijsen, M. J., Jaikumar, R., Ramani, T., & Zietsman, J. (2023). Urban policy interventions to reduce traffic-related emissions and air pollution: A systematic evidence map. *Environment International*, *172*. https://doi.org/10.1016/j.envint.2023.107805

KLHK. (2021, February 24). *Indeks Kualitas Lingkungan Hidup Indonesia Tahun 2020 Meningkat*. https://ppid.menlhk.go.id/berita/siaran-pers/5835/indeks-kualitas-lingkungan-hidup-indonesia-tahun-2020-meningkat

Krotkov, N. A., McLinden, C. A., Li, C., Lamsal, L. N., Celarier, E. A., Marchenko, S. V., Swartz, W. H., Bucsela, E. J., Joiner, J., Duncan, B. N., Folkert Boersma, K., Pepijn Veefkind, J., Levelt, P. F., Fioletov, V. E., Dickerson, R. R., He, H., Lu, Z., & Streets, D. G. (2016). Aura OMI observations of regional SO2 and NO2 pollution changes from 2005 to

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
Salsabila, Prof. Dr. Drs. R. Suharyadi, M.Sc.; Dr. Nur Mohammad Farda, S.Si., M.Cs.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

2015. *Atmospheric Chemistry and Physics*, *16*(7), 4605–4629. https://doi.org/10.5194/acp-16-4605-2016

Kurniawan, A. (2018). Pengukuran Parameter Kualitas Udara (Co, No2, So2, O3 Dan Pm10) Di Bukit Kototabang Berbasis Ispu. *Jurnal Teknosains*, *7*(1), 1. https://doi.org/10.22146/teknosains.34658

Lalitaporn, P., Kurata, G., Matsuoka, Y., Thongboonchoo, N., & Surapipith, V. (2013). Long-term analysis of NO2, CO, and AOD seasonal variability using satellite observations over Asia and intercomparison with emission inventories and model. *Air Quality, Atmosphere and Health*, *6*(4), 655–672. https://doi.org/10.1007/s11869-013-0205-z

Landgraf, J., Aan De Brugh, J., Scheepmaker, R., Borsdorff, T., Hu, H., Houweling, S., Butz, A., Aben, I., & Hasekamp, O. (2016). Carbon monoxide total column retrievals from TROPOMI shortwave infrared measurements. *Atmospheric Measurement Techniques*, *9*(10), 4955–4975. https://doi.org/10.5194/amt-9-4955-2016

Larkin, A., Anenberg, S., Goldberg, D. L., Mohegh, A., Brauer, M., & Hystad, P. (2023). A global spatial-temporal land use regression model for nitrogen dioxide air pollution. *Frontiers in Environmental Science*, *11*. https://doi.org/10.3389/fenvs.2023.1125979

Larkin, A., Geddes, J. A., Martin, R. V, Xiao, Q., Liu, Y., Marshall, J. D., Brauer, M., & Hystad, P. (2017). A Global Land Use Regression Model for Nitrogen Dioxide Air Pollution. In *Environ. Sci. Technol*. http://pubs.acs.org

Lee, C., Martin, R. V., Van Donkelaar, A., Lee, H., Dickerson, R. R., Hains, J. C., Krotkov, N., Richter, A., Vinnikov, K., & Schwab, J. J. (2011). SO2 emissions and lifetimes: Estimates from inverse modeling using in situ and global, space-based (SCIAMACHY and OMI) observations. *Journal of Geophysical Research Atmospheres*, *116*(6). https://doi.org/10.1029/2010JD014758

Lelieveld, J., Evans, J. S., Fnais, M., Giannadaki, D., & Pozzer, A. (2015). The contribution of outdoor air pollution sources to premature mortality on a global scale. *Nature*, *525*(7569), 367–371. https://doi.org/10.1038/nature15371

Lestari, P., Damayanti, S., & Arrohman, M. K. (2020). Emission Inventory of Pollutants (CO, SO2, PM2.5, and NOX) in Jakarta Indonesia. *IOP Conference Series: Earth and Environmental Science*, *489*(1). https://doi.org/10.1088/1755-1315/489/1/012014

Leys, C., Ley, C., Klein, O., Bernard, P., & Licata, L. (2013). Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median. *Journal of Experimental Social Psychology*, *49*(4), 764–766. https://doi.org/10.1016/j.jesp.2013.03.013

Li, K., Tan, R., Qiao, W., Lee, T., Wang, Y., Zhang, D., Tang, M., Zhao, W., Gu, Y., Fan, S., Zhang, J., Lyu, X., Xue, L., Xu, J., Ma, Z., Latif, M. T., Amnuaylojaroen, T., Gil, J., Lee, M. H., … Koo, J. H. (2025). Surface and tropospheric ozone over East Asia and Southeast Asia from observations:

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Distributions, trends, and variability. *Atmospheric Chemistry and Physics*, *25*(19), 11575–11596. https://doi.org/10.5194/acp-25-11575-2025

Li, M., Kurokawa, J., Zhang, Q., Woo, J. H., Morikawa, T., Chatani, S., Lu, Z., Song, Y., Geng, G., Hu, H., Kim, J., Cooper, O. R., & McDonald, B. C. (2024). MIXv2: A long-Term mosaic emission inventory for Asia (2010-2017). *Atmospheric Chemistry and Physics*, *24*(7), 3925–3952. https://doi.org/10.5194/acp-24-3925-2024

Li, R., Gong, J., Chen, L., & Wang, Z. (2015). Estimating ground-level PM2.5 using fine-resolution satellite data in the megacity of Beijing, China. *Aerosol and Air Quality Research*, *15*(4), 1347–1356. https://doi.org/10.4209/aaqr.2015.01.0009

Li, Y., Liu, J., Han, H., Zhao, T., Zhang, X., Zhuang, B., Wang, T., Chen, H., Wu, Y., & Li, M. (2019). Collective impacts of biomass burning and synoptic weather on surface PM2.5 and CO in Northeast China. *Atmospheric Environment*, *213*, 64–80. https://doi.org/10.1016/j.atmosenv.2019.05.062

Limpert, E., Stahel, W. A., & Abbt, M. (2001). *Log-normal Distributions across the Sciences: Keys and Clues*. *51*(5), 341–352. https://doi.org/10.1641/0006

Little, R. J. A. ., & Rubin, D. B. . (2020). *Statistical analysis with missing data*. Wiley.

Little, R. J. A., & Rubin, Donald. B. (2019). *Statistical Analysis with Missing Data*. John Wiley & Sons. https://doi.org/10.1002/9781119482260.fmatter

Litvinov, P., Chen, C., Dubovik, O., Bindreiter, L., Matar, C., Fuertes, D., Lopatin, A., Lapyonok, T., Lanzinger, V., Hangler, A., Aspetsberger, M., de Graaf, M., Tilstra, L. G., Stammes, P., Dandocsi, A., Gasbarra, D., Fluck, E., Zehner, C., & Retscher, C. (2024). Extended aerosol and surface characterization from S5P/TROPOMI with GRASP algorithm. Part I: Conditions, approaches, performance and new possibilities. *Remote Sensing of Environment*, *313*. https://doi.org/10.1016/j.rse.2024.114355

Liu, J., He, C., Si, Y., Li, B., Wu, Q., Ni, J., Zhao, Y., Hu, Q., Du, S., Lu, Z., Jin, J., & Xu, C. (2024). Toward Better and Healthier Air Quality: Global PM2.5 and O3 Pollution Status and Risk Assessment Based on the New WHO Air Quality Guidelines for 2021. *Global Challenges*, *8*(4). https://doi.org/10.1002/gch2.202300258

Liu, L., & Wang, Q. (2022). Is the effect of human activity on air pollution linear or nonlinear? Evidence from Wuhan, China, under the COVID-19 lockdown. *Cities*, *127*. https://doi.org/10.1016/j.cities.2022.103752

Lu, X., Zhang, L., Wang, X., Gao, M., Li, K., Zhang, Y., Yue, X., & Zhang, Y. (2020). Rapid Increases in Warm-Season Surface Ozone and Resulting Health Impact in China since 2013. *Environmental Science and Technology Letters*, *7*(4), 240–247. https://doi.org/10.1021/acs.estlett.0c00171

Lyapustin, A., Wang, Y., Korkin, S., & Huang, D. (2018). MODIS Collection 6 MAIAC algorithm. *Atmospheric Measurement Techniques*, *11*(10), 5741–5765. https://doi.org/10.5194/amt-11-5741-2018

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Majid, F. A., Mustikaningrum, I. A., & Ammar, L. A. (2019). Affecting Factors NO 2 Distribution in the East Java, Indonesia. *International Journal of Environment and Climate Change*, *15*(2).

Marr, L. C., & Harley, R. A. (2002a). Spectral analysis of weekday-weekend differences in ambient ozone, nitrogen oxide, and non-methane hydrocarbon time series in California. In *Atmospheric Environment* (Vol. 36).

Marr, L. C., & Harley, R. A. (2002b). Spectral analysis of weekday-weekend differences in ambient ozone, nitrogen oxide, and non-methane hydrocarbon time series in California. In *Atmospheric Environment* (Vol. 36).

Marr, L. C., Noblet, G. S., & Harley, R. A. (2002). Formation of photochemical air pollution in central California 2. Impact of revised emissions on Eulerian model predictions. *Journal of Geophysical Research Atmospheres*, *107*(5–6). https://doi.org/10.1029/2001jd000690

Marshall, J. D., Riley, W. J., McKone, T. E., & Nazaroff, W. W. (2003). Intake fraction of primary pollutants: Motor vehicle emissions in the South Coast Air Basin. *Atmospheric Environment*, *37*(24), 3455–3468. https://doi.org/10.1016/S1352-2310(03)00269-3

Martins, V. S., Lyapustin, A., De Carvalho, L. A. S., Barbosa, C. C. F., & Novo, E. M. L. M. (2017). Validation of high-resolution MAIAC aerosol product over South America. *Journal of Geophysical Research*, *122*(14), 7537–7559. https://doi.org/10.1002/2016JD026301

Mavroidis, I., & Ilia, M. (2012). Trends of NO x, NO 2 and O 3 concentrations at three different types of air quality monitoring stations in Athens, Greece. *Atmospheric Environment*, *63*, 135–147. https://doi.org/10.1016/j.atmosenv.2012.09.030

Mennis, J. (2009). Dasymetric mapping for estimating population in small areas. *Geography Compass*, *3*(2), 727–745. https://doi.org/10.1111/j.1749-8198.2009.00220.x

Mhawish, A., Banerjee, T., Sorek-Hamer, M., Lyapustin, A., Broday, D. M., & Chatfield, R. (2019). Comparison and evaluation of MODIS Multi-angle Implementation of Atmospheric Correction (MAIAC) aerosol product over South Asia. *Remote Sensing of Environment*, *224*, 12–28. https://doi.org/10.1016/j.rse.2019.01.033

Monks, P. S. (2005). NucleobasesGas-phase radical chemistry in the troposphere. *Chemical Society Reviews*, *34*(5), 376–395. https://doi.org/10.1039/b307982c

Monks, P. S., Archibald, A. T., Colette, A., Cooper, O., Coyle, M., Derwent, R., Fowler, D., Granier, C., Law, K. S., Mills, G. E., Stevenson, D. S., Tarasova, O., Thouret, V., Von Schneidemesser, E., Sommariva, R., Wild, O., & Williams, M. L. (2015). Tropospheric ozone and its precursors from the urban to the global scale from air quality to short-lived climate forcer. In *Atmospheric Chemistry and Physics* (Vol. 15, Number 15, pp. 8889–8973). Copernicus GmbH. https://doi.org/10.5194/acp-15-8889-2015

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Monks, P. S., Granier, C., Fuzzi, S., Stohl, A., Williams, M. L., Akimoto, H., Amann, M., Baklanov, A., Baltensperger, U., Bey, I., Blake, N., Blake, R. S., Carslaw, K., Cooper, O. R., Dentener, F., Fowler, D., Fragkou, E., Frost, G. J., Generoso, S., … von Glasow, R. (2009). Atmospheric composition change - global and regional air quality. In *Atmospheric Environment* (Vol. 43, Number 33, pp. 5268–5350). https://doi.org/10.1016/j.atmosenv.2009.08.021

Moreira, L. L., de Brito, M. M., & Kobiyama, M. (2021). Effects of different normalization, aggregation, and classification methods on the construction of flood vulnerability indexes. *Water (Switzerland)*, *13*(1). https://doi.org/10.3390/w13010098

Nowak, D. J., Crane, D. E., & Stevens, J. C. (2006). Air pollution removal by urban trees and shrubs in the United States. *Urban Forestry and Urban Greening*, *4*(3–4), 115–123. https://doi.org/10.1016/j.ufug.2006.01.007

OECD. (2008). *Handbook on Constructing Composite Indicators*. www.oecd.org/publishing/corrigenda.

Osborne, J. W. (2002). *Notes on the use of data transformations*. http://ericae.net/pare/getvn.asp?v=8&n=6.

Oujidi, B., Benchrif, A., Tahri, M., Zahry, F., Bounakhla, M., Bazairi, H., Mhammdi, N., & Snoussi, M. (2023). Gaseous Pollutants and Particulate Matter in Ambient Air: First Field Experiment in an Urban Mediterranean Area (Nador, Morocco). *Aerosol and Air Quality Research*, *23*(8). https://doi.org/10.4209/aaqr.220451

Pangestu, B. A., Azizah, R., & Setioningrum, R. N. K. (2020). Analysis of Environmental Health Risk of So2, No2, Nh3, and Dust Exposure In Sentra Industri Surabaya, Gresik And Sidoarjo City. *STRADA Jurnal Ilmiah Kesehatan*, *9*(2), 1346–1352. https://doi.org/10.30994/sjik.v9i2.350

Penner, J., Annegarn, H. J., & Barrie, L. (2001). *Aerosols, their Direct and Indirect Effects*. https://www.researchgate.net/publication/44158598

Peraturan Menteri Pekerjaan Umum Dan Perumahan Rakyat Indonesia 13 Tahun 2024 Jalan Berdasarkan Penggunaan Jalan Serta Kelancaran Lintas Dan Angkutan Jalan, Pub. L. NOMOR 13 TAHUN 2024, 1 (2024). https://jdih.pu.go.id

Pommier, M. (2022). Estimations of NOx emissions, NO2 lifetime and their temporal variation over three British urbanised regions in 2019 using TROPOMI NO2 observations. *Environmental Science: Atmospheres*, *3*(2), 408–421. https://doi.org/10.1039/d2ea00086e

Pope, C. A., & Dockery, D. W. (2006). Health effects of fine particulate air pollution: Lines that connect. *Journal of the Air and Waste Management Association*, *56*(6), 709–742. https://doi.org/10.1080/10473289.2006.10464485

Querol, X., Viana, M., Alastuey, A., Amato, F., Moreno, T., Castillo, S., Pey, J., de la Rosa, J., Sánchez de la Campa, A., Artíñano, B., Salvador, P., García Dos Santos, S., Fernández-Patier, R., Moreno-Grau, S., Negral, L., Minguillón, M. C., Monfort, E., Gil, J. I., Inza, A., … Zabalza, J. (2007).

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Source origin of trace elements in PM from regional background, urban and industrial sites of Spain. *Atmospheric Environment*, *41*(34), 7219–7231. https://doi.org/10.1016/j.atmosenv.2007.05.022

Ramdhanu, L. T. P., Salsabila, S., & Jaelani, L. M. (2024). Dampak Emisi PLTU Suralaya terhadap Konsentrasi PM2.5 di Jakarta Raya: Analisis Spasio-Temporal Berbasis Citra Satelit MODIS (2019-2022). *Jurnal Ilmiah Geomatika*, *4*(2), 90. https://doi.org/10.31315/imagi.v4i2.13765

Reisinger, A., Howden, M., Vera, C., Garschagen, M., Hurlbert, M., Kreibiehl, S., Mach, K. J., Mintenbeck, K., O'neill, B., Pathak, M., Pedace, R., Pörtner, H.-O., Poloczanska, E., Rojas Corradi, M., Sillmann, J., Van Aalst, M., Viner, D., Jones, R., Ruane, A. C., & Ranasinghe, R. (2020). *The concept of risk in the IPCC Sixth Assessment Report The concept of risk in the IPCC Sixth Assessment Report: a summary of cross-Working Group discussions*.

Rentschler, J., & Leonova, N. (2023). Global air pollution exposure and poverty. *Nature Communications*, *14*(1). https://doi.org/10.1038/s41467-023-39797-4

Rodriguez Valido, M., Perez Marrero, J., Mauro González, A., Fabiani Bendicho, P., & Efrem Mora, C. (2023). Evaluation of the Potential of Sentinel-5P TROPOMI and AIS Marine Traffic Data for the Monitoring of Anthropogenic Activity and Maritime Transport NOx-Emissions in Canary Islands Waters. *Sustainability (Switzerland)*, *15*(5). https://doi.org/10.3390/su15054632

Roy, D. P., Wulder, M. A., Loveland, T. R., C.E., W., Allen, R. G., Anderson, M. C., Helder, D., Irons, J. R., Johnson, D. M., Kennedy, R., Scambos, T. A., Schaaf, C. B., Schott, J. R., Sheng, Y., Vermote, E. F., Belward, A. S., Bindschadler, R., Cohen, W. B., Gao, F., … Zhu, Z. (2014). Landsat-8: Science and product vision for terrestrial global change research. *Remote Sensing of Environment*, *145*, 154–172. https://doi.org/10.1016/j.rse.2014.02.001

Ruhiat, Y., Syafrizal, & Hidayat, S. (2018). THE IMPACT OF SO2 AND DUST POLLUTION EMISSION FROM INDUSTRIAL AREA TOWARD THE AMBIENT CHANGES IN CILEGON CITY. *Journal of Industrial PO Control*.

Sakti, A. D., Anggraini, T. S., Ihsan, K. T. N., Misra, P., Trang, N. T. Q., Pradhan, B., Wenten, I. G., Hadi, P. O., & Wikantika, K. (2023a). Multi-air pollution risk assessment in Southeast Asia region using integrated remote sensing and socio-economic data products. *Science of the Total Environment*, *854*. https://doi.org/10.1016/j.scitotenv.2022.158825

Sakti, A. D., Anggraini, T. S., Ihsan, K. T. N., Misra, P., Trang, N. T. Q., Pradhan, B., Wenten, I. G., Hadi, P. O., & Wikantika, K. (2023b). Multi-air pollution risk assessment in Southeast Asia region using integrated remote sensing and socio-economic data products. *Science of the Total Environment*, *854*. https://doi.org/10.1016/j.scitotenv.2022.158825

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GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Santoso, M., Lestiani, D. D., Kurniawati, S., Damastuti, E., Kusmartini, I., Atmodjo, D. P. D., Sari, D. K., Hopke, P. K., Mukhtar, R., Muhtarom, T., Tjahyadi, A., Parian, S., Kholik, N., Sutrisno, D. A., Wahyudi, D., Sitorus, T. D., Djamilus, J., Riadi, A., Supriyanto, J., … Suprayadi, L. S. (2020). Assessment of urban air quality in Indonesia. *Aerosol and Air Quality Research*, *20*(10), 2142–2158. https://doi.org/10.4209/aaqr.2019.09.0451

Santoso, M., Lestiani, D. D., Kurniawati, S., Damastuti, E., Kusmartini, I., Prakoso, D., Dimas, Triyambodo, & Rita. (2019). Elemental Composition of Particulate Matter Air Pollution Collected Around Industrial Area in East Java. *IOP Conference Series: Earth and Environmental Science*, *303*(1). https://doi.org/10.1088/1755-1315/303/1/012036

Sarmadi, M., Rahimi, S., Rezaei, M., Sanaei, D., & Dianatinasab, M. (2021). Air quality index variation before and after the onset of COVID-19 pandemic: a comprehensive study on 87 capital, industrial and polluted cities of the world. *Environmental Sciences Europe*, *33*(1). https://doi.org/10.1186/s12302-021-00575-y

Saulnier, D. D., Dixit, A. M., & Nunes, A. R. (2021). *WHO Guidance on Research Methods for Health Emergency and Disaster Risk Management*.

Savenets, M. V., Nadtochii, L. M., Kozlenko, T. V., Komisar, K. M., & Zhemera, N. S. (2023). Status of atmospheric air pollution in Ukraine prior to the full-scale russian invasion. Part 2: Pollutants total content according to the satellite data. *Ukrainian Hydrometeorological Journal*, (32), 130–143. https://doi.org/10.31481/uhmj.32.2023.09

Schober, P., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. *Anesthesia and Analgesia*, *126*(5), 1763–1768. https://doi.org/10.1213/ANE.0000000000002864

Seinfeld, J. H., & Pandis, S. N. (2006). *ATMOSPHEMC CHEMISTRY AND PHYSICS* (2nd ed). John Wiley & Sons, Inc.

She, Y., Chen, Q., Ye, S., Wang, P., Wu, B., & Zhang, S. (2022). *Spatial-temporal heterogeneity and driving factors of PM2.5 in China: A natural and socioeconomic perspective*. http://www.cnemc.cn/

Shearston, J. A., Cerna-Turoff, I., Hilpert, M., & Kioumourtzoglou, M. A. (2022). Quantifying diurnal changes in NO2 due to COVID-19 stay-at-home orders in New York City. *Hygiene and Environmental Health Advances*, *4*. https://doi.org/10.1016/j.heha.2022.100032

Shen, Z., Cao, J., Zhang, L., Zhao, Z., Dong, J., Wang, L., Wang, Q., Li, G., Liu, S., & Zhang, Q. (2014). Characteristics of surface O3 over Qinghai Lake area in Northeast Tibetan Plateau, China. *Science of the Total Environment*, *500–501*, 295–301. https://doi.org/10.1016/j.scitotenv.2014.08.104

Shetty, S., Schneider, P., Stebel, K., David Hamer, P., Kylling, A., & Koren Berntsen, T. (2024). Estimating surface NO2 concentrations over Europe using Sentinel-5P TROPOMI observations and Machine Learning. *Remote Sensing of Environment*, *312*. https://doi.org/10.1016/j.rse.2024.114321

Sicard, P., Paoletti, E., Agathokleous, E., Araminienė, V., Proietti, C., Coulibaly, F., & De Marco, A. (2020). Ozone weekend effect in cities: Deep insights

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
Salsabila, Prof. Dr. Drs. R. Suharyadi, M.Sc.; Dr. Nur Mohammad Farda, S.Si., M.Cs.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

for urban air pollution control. *Environmental Research*, *191*. https://doi.org/10.1016/j.envres.2020.110193

Sihotang, E., Artaningh, F., Septi Anggraini, T., & Dimara Sakti, A. (2019). *Artikel ini dapat ditemukan di Pemantauan Konsentrasi Gas SO2 di Sekitar Gunung Sinabung Menggunakan Citra Satelit Sentinel-5 Precursor*. http://jurnal.mapin.or.id/index.php/jpji/issue/archive

Sillman, S. (1999). The relation between ozone, NOx and hydrocarbons in urban and polluted rural environments. In *Atmospheric Environment* (Vol. 33).

Simon, H., Hogrefe, C., Whitehill, A., Foley, K. M., Liljegren, J., Possiel, N., Wells, B., Henderson, B. H., Valin, L. C., Tonnesen, G., Appel, K. W., & Koplitz, S. (2024). Revisiting day-of-week ozone patterns in an era of evolving US air quality. *Atmospheric Chemistry and Physics*, *24*(3), 1855–1871. https://doi.org/10.5194/acp-24-1855-2024

SKB Perubahan Libur Nasional Dan Cuti Bersama 2024 (2024).

Slocum, T. A. , McMaster, R. B., Kessler, F. C., & Howard, H. H. (2014). *Thematic Cartography and Geovisualization*. Pearson Education Limited.

Smith, S. J., Van Aardenne, J., Klimont, Z., Andres, R. J., Volke, A., & Delgado Arias, S. (2011). Anthropogenic sulfur dioxide emissions: 1850-2005. *Atmospheric Chemistry and Physics*, *11*(3), 1101–1116. https://doi.org/10.5194/acp-11-1101-2011

Soemarko, D. S., Fadlyana, E., Haryanto, B., Buftheim, S., Hartono, B., Wasito, E., & Basrowi, R. W. (2023). Linking Jakarta's Typical Indonesian Urban Context, Air Pollution, and Child Health. *The Open Public Health Journal*, *16*(1). https://doi.org/10.2174/18749445-v16-e230831-2023-109

Solichah, Z. (2024, November 21). *Gunung Semeru erupsi dengan letusan setinggi 800 meter*. https://bali.antaranews.com/berita/362625/gunung-semeru-erupsi-dengan-letusan-setinggi-800-meter

Stephens, S., Madronich, S., Wu, F., Olson, J. B., Ramos, R., Retama, A., Muñoz, R., & Muñoz, M. (2008). Weekly patterns of México City's surface concentrations of CO, NO x , PM 10 and O 3 during 1986-2007. In *Atmos. Chem. Phys* (Vol. 8). www.atmos-chem-phys.net/8/5313/2008/

Stratoulias, D., Nuthammachot, N., Dejchanchaiwong, R., Tekasakul, P., & Carmichael, G. R. (2024). Recent Developments in Satellite Remote Sensing for Air Pollution Surveillance in Support of Sustainable Development Goals. *Remote Sensing*, *16*(16). https://doi.org/10.3390/rs16162932

Su, J. G., Jerrett, M., Beckerman, B., Verma, D., Arain, M. A., Kanaroglou, P., Stieb, D., Finkelstein, M., & Brook, J. (2010). A land use regression model for predicting ambient volatile organic compound concentrations in Toronto, Canada. *Atmospheric Environment*, *44*(29), 3529–3537. https://doi.org/10.1016/j.atmosenv.2010.06.015

Suhadi, D. R., Awang, M., Hassan, M. N., Abdullah, R., & Muda, A. Hj. (2005). Review of Photochemical Smog Pollution in Jakarta Metropolitan, Indonesia. *American Journal of Environmental Sciences*, *1*(2), 110–118. https://doi.org/10.3844/ajessp.2005.110.118

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
Salsabila, Prof. Dr. Drs. R. Suharyadi, M.Sc.; Dr. Nur Mohammad Farda, S.Si., M.Cs.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Sumarga, E., Nurudin, N., & Suwandhi, I. (2020). Land-cover and elevation-based mapping of aboveground carbon in a tropical mixed-shrub forest area in West Java, Indonesia. *Forests*, *11*(6). https://doi.org/10.3390/F11060636

Sunarsih, E., Suheryanto, Mutahar, R., & Garmini, R. (2019). Risk assesment of air pollution exposure (NO2, SO2, total suspended particulate, and particulate matter 10 micron) and smoking habits on the lung function of bus drivers in Palembang City. *Kesmas*, *13*(4), 202–206. https://doi.org/10.21109/kesmas.v13i4.1923

Sutanto. (1992). *Penginderaan Jauh*. Gadjah Mada University Press.

Syafrijon, Marzuki, Emriadi, & Pratama, R. (2018). Relationship between modis-based aerosol optical depth and pm10 over sumatra to overcome the limitations of air quality monitoring data availability. *Oriental Journal of Chemistry*, *34*(4), 2163–2169. https://doi.org/10.13005/ojc/3404058

Szulejko, J. E., Adelodun, A. A., Kim, K. H., Seo, J. W., Vellingiri, K., Jeon, E. C., Hong, J., & Brown, R. J. C. (2018). Short and long-term temporal changes in air quality in a Seoul urban area: The weekday/Sunday effect. *Sustainability (Switzerland)*, *10*(4). https://doi.org/10.3390/su10041248

Tai, A. P. K., Mickley, L. J., & Jacob, D. J. (2010). Correlations between fine particulate matter (PM2.5) and meteorological variables in the United States: Implications for the sensitivity of PM2.5 to climate change. *Atmospheric Environment*, *44*(32), 3976–3984. https://doi.org/10.1016/j.atmosenv.2010.06.060

Tai, A. P. K., Mickley, L. J., Jacob, D. J., Leibensperger, E. M., Zhang, L., Fisher, J. A., & Pye, H. O. T. (2012). Meteorological modes of variability for fine particulate matter (PM2.5) air quality in the United States: Implications for PM2.5 sensitivity to climate change. In *Atmospheric Chemistry and Physics* (Vol. 12, Number 6, pp. 3131–3145). https://doi.org/10.5194/acp-12-3131-2012

Tatem, A. J. (2017). WorldPop, open data for spatial demography. In *Scientific Data* (Vol. 4). Nature Publishing Groups. https://doi.org/10.1038/sdata.2017.4

Theys, N., Hedelt, P., De Smedt, I., Lerot, C., Yu, H., Vlietinck, J., Pedergnana, M., Arellano, S., Galle, B., Fernandez, D., Carlito, C. J. M., Barrington, C., Taisne, B., Delgado-Granados, H., Loyola, D., & Van Roozendael, M. (2019). Global monitoring of volcanic SO 2 degassing with unprecedented resolution from TROPOMI onboard Sentinel-5 Precursor. *Scientific Reports*, *9*(1). https://doi.org/10.1038/s41598-019-39279-y

Tikader, M., Mukhopadhyay, D., & Dabhadker, K. (2024). Remote Sensing and GIS in Air Pollution Mitigation: A Bibliometric Review of Chhattisgarh, India. *International Journal of Environment and Climate Change*, *14*(4), 174–193. https://doi.org/10.9734/ijecc/2024/v14i44106

Traini, E., Huss, A., Portengen, L., Rookus, M., Verschuren, W. M. M., Vermeulen, R. C. H., & Bellavia, A. (2022). A Multipollutant Approach to Estimating Causal Effects of Air Pollution Mixtures on Overall Mortality in

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
Salsabila, Prof. Dr. Drs. R. Suharyadi, M.Sc.; Dr. Nur Mohammad Farda, S.Si., M.Cs.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

a Large, Prospective Cohort. *Epidemiology*, *33*(4), 514–522. https://doi.org/10.1097/EDE.0000000000001492

Trinh, L. H., Le, V. P., Tong, T. H., & Mai, S. D. (2024). Mapping The Spatial Distribution Of Air Pollutants In Quang Ninh Province (Vietnam) Using Sentinel 5p Data. *Geodetski Vestnik*, *68*(3), 313–326. https://doi.org/10.15292/geodetski-vestnik.2024.03.313-326

UNDP. (2020). *Human Development Report Technical Notes*.

UNDRR. (2021). *Hazard Information Profiles: Supplement to UNDRR-ISC Hazard Definition & Classification Review – Technical Report*. https://doi.org/10.24948/2021.05

UNEP. (2025, March 11). *Air Quality*. https://www.unep.org/topics/air

UNSD. (2023). *SDG Indicator Metadata*.

Van Donkelaar, A., Hammer, M. S., Bindle, L., Brauer, M., Brook, J. R., Garay, M. J., Hsu, N. C., Kalashnikova, O. V., Kahn, R. A., Lee, C., Levy, R. C., Lyapustin, A., Sayer, A. M., & Martin, R. V. (2021). Monthly Global Estimates of Fine Particulate Matter and Their Uncertainty. *Environmental Science and Technology*, *55*(22), 15287–15300. https://doi.org/10.1021/acs.est.1c05309

Van Donkelaar, A., Martin, R. V., Li, C., & Burnett, R. T. (2019). Regional Estimates of Chemical Composition of Fine Particulate Matter Using a Combined Geoscience-Statistical Method with Information from Satellites, Models, and Monitors. *Environmental Science and Technology*, *53*(5), 2595–2611. https://doi.org/10.1021/acs.est.8b06392

Van Geffen, J., Eskes, H., Compernolle, S., Pinardi, G., Verhoelst, T., Lambert, J. C., Sneep, M., Linden, M. Ter, Ludewig, A., Folkert Boersma, K., & Pepijn Veefkind, J. (2022). Sentinel-5P TROPOMI NO2retrieval: impact of version v2.2 improvements and comparisons with OMI and ground-based data. *Atmospheric Measurement Techniques*, *15*(7), 2037–2060. https://doi.org/10.5194/amt-15-2037-2022

Veefkind, J. P., Aben, I., McMullan, K., Förster, H., de Vries, J., Otter, G., Claas, J., Eskes, H. J., de Haan, J. F., Kleipool, Q., van Weele, M., Hasekamp, O., Hoogeveen, R., Landgraf, J., Snel, R., Tol, P., Ingmann, P., Voors, R., Kruizinga, B., … Levelt, P. F. (2012a). TROPOMI on the ESA Sentinel-5 Precursor: A GMES mission for global observations of the atmospheric composition for climate, air quality and ozone layer applications. *Remote Sensing of Environment*, *120*, 70–83. https://doi.org/10.1016/j.rse.2011.09.027

Veefkind, J. P., Aben, I., McMullan, K., Förster, H., de Vries, J., Otter, G., Claas, J., Eskes, H. J., de Haan, J. F., Kleipool, Q., van Weele, M., Hasekamp, O., Hoogeveen, R., Landgraf, J., Snel, R., Tol, P., Ingmann, P., Voors, R., Kruizinga, B., … Levelt, P. F. (2012b). TROPOMI on the ESA Sentinel-5 Precursor: A GMES mission for global observations of the atmospheric composition for climate, air quality and ozone layer applications. *Remote Sensing of Environment*, *120*, 70–83. https://doi.org/10.1016/j.rse.2011.09.027

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
Salsabila, Prof. Dr. Drs. R. Suharyadi, M.Sc.; Dr. Nur Mohammad Farda, S.Si., M.Cs.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Venter, Z. S., Aunan, K., Chowdhury, S., & Lelieveld, J. (2020). COVID-19 lockdowns cause global air pollution declines. *PNAS*, (22). https://doi.org/10.1073/pnas.2006853117/-/DCSupplemental

Verhoelst, T., Compernolle, S., Pinardi, G., Lambert, J. C., Eskes, H. J., Eichmann, K. U., Fjæraa, A. M., Granville, J., Niemeijer, S., Cede, A., Tiefengraber, M., Hendrick, F., Pazmiño, A., Bais, A., Bazureau, A., Folkert Boersma, K., Bognar, K., Dehn, A., Donner, S., … Zehner, C. (2021). Ground-based validation of the Copernicus Sentinel-5P TROPOMI NO2 measurements with the NDACC ZSL-DOAS, MAX-DOAS and Pandonia global networks. *Atmospheric Measurement Techniques*, *14*(1), 481–510. https://doi.org/10.5194/amt-14-481-2021

Vîrghileanu, M., Săvulescu, I., Mihai, B. A., Nistor, C., & Dobre, R. (2020). Nitrogen dioxide (No2) pollution monitoring with sentinel-5p satellite imagery over europe during the coronavirus pandemic outbreak. *Remote Sensing*, *12*(21), 1–29. https://doi.org/10.3390/rs12213575

Wei, J., Li, Z., Wang, J., Li, C., Gupta, P., & Cribb, M. (n.d.). *Ground-level gaseous pollutants (NO 2 , SO 2 , and CO) in China: daily seamless mapping and spatiotemporal 2 variations*.

WHO. (2024, October 24). *Ambient (outdoor) air pollution*. https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health

Wilks, D. S. (2006). *Statistical Methods in the Atmospheric Sciences Second Edition*. Elsevier Inc.

Wolff, G. T., Kahlbaum, D. F., & Heuss, J. M. (2013). The vanishing ozone weekday/weekend effect. *Journal of the Air and Waste Management Association*, *63*(3), 292–299. https://doi.org/10.1080/10962247.2012.749312

Worden, H. M., Deeter, M. N., Frankenberg, C., George, M., Nichitiu, F., Worden, J., Aben, I., Bowman, K. W., Clerbaux, C., Coheur, P. F., De Laat, A. T. J., Detweiler, R., Drummond, J. R., Edwards, D. P., Gille, J. C., Hurtmans, D., Luo, M., Martínez-Alonso, S., Massie, S., … Warner, J. X. (2013). Decadal record of satellite carbon monoxide observations. *Atmospheric Chemistry and Physics*, *13*(2), 837–850. https://doi.org/10.5194/acp-13-837-2013

World Bank. (2020). *Pollution Management and Environmental Health Program*. Https://Www.Worldbank.Org/En/Programs/Pollution-Management-and-Environmental-Health-Program.

World Bank Grup. (2014, August 1). *Bank Dunia dan lingkungan di Indonesia*. https://www.worldbank.org/in/country/indonesia/brief/world-bank-and-environment-in-indonesia?utm_source=chatgpt.com

World Health Organization. (2021). *WHO global air quality guidelines*.

World Health Organization (WHO). (2018). *WHO-EURO-2018-2376-42131-58026-eng*.

Worldpop.Org. (2025). *Global Demographic Data Public release R2024B V1*. www.worldpop.org

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
Salsabila, Prof. Dr. Drs. R. Suharyadi, M.Sc.; Dr. Nur Mohammad Farda, S.Si., M.Cs.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Wu, L., Xie, J., & Kang, K. (2022). Changing weekend effects of air pollutants in Beijing under 2020 COVID-19 lockdown controls. *Npj Urban Sustainability*, *2*(1). https://doi.org/10.1038/s42949-022-00070-0

Wu, Q., Zhang, H., Chen, F., & Dou, J. (2008). A web-based spatial decision support system for spatial planning and governance in the Guangdong Province. *Geoinformatics 2008 and Joint Conference on GIS and Built Environment: The Built Environment and Its Dynamics*, *7144*, 71442G. https://doi.org/10.1117/12.812837

Yang, H., Chen, W., & Liang, Z. (2017). Impact of land use on PM2.5 pollution in a representative city of middle China. *International Journal of Environmental Research and Public Health*, *14*(5). https://doi.org/10.3390/ijerph14050462

Yao, Y., & Liu, L. (2022). Research on Population Mobility and Sustainable Economic Growth From a Communication Perspective. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.935606

Yue, S., Pilon, P., Phinney, B., & Cavadias, G. (2002). The influence of autocorrelation on the ability to detect trend in hydrological series. *Hydrological Processes*, *16*(9), 1807–1829. https://doi.org/10.1002/hyp.1095

Zandbergen, P. A., & Ignizio, D. A. (2010). Comparison of dasymetric mapping techniques for small-area population estimates. *Cartography and Geographic Information Science*, *37*(3), 199–214. https://doi.org/10.1559/152304010792194985

Zanobetti, A., Austin, E., Coull, B. A., Schwartz, J., & Koutrakis, P. (2014). Health effects of multi-pollutant profiles. *Environment International*, *71*, 13–19. https://doi.org/10.1016/j.envint.2014.05.023

Zhan, C., Xie, M., Lu, H., Liu, B., Wu, Z., Wang, T., Zhuang, B., Li, M., & Li, S. (2023). Impacts of urbanization on air quality and the related health risks in a city with complex terrain. *Atmospheric Chemistry and Physics*, *23*(1), 771–788. https://doi.org/10.5194/acp-23-771-2023

Zhang, H., Zheng, Z., & Wang, S. (2024). Evaluation of Urban Air Quality Based on Entropy Weight Method. In *Highlights in Science, Engineering and Technology GTREE* (Vol. 2024).

Zhang, J., Su, Y., Chen, C., Guo, W., Tan, Q., Feng, M., Song, D., Jiang, T., Chen, Q., Li, Y., Li, W., Wang, Y., Huang, X., Han, L., Wu, W., & Wang, G. (2024). Chemical composition, sources and formation mechanism of urban PM 2.5 in Southwest China: a case study at the beginning of 2023. *Atmospheric Chemistry and Physics*, *24*(5), 2803–2820. https://doi.org/10.5194/acp-24-2803-2024

Zhang, L., You, S., Zhang, M., Zhang, S., Yi, S., & Zhou, B. (2022). The effects of urbanization on air pollution based on a spatial perspective: Evidence from China. *Frontiers in Environmental Science*, *10*. https://doi.org/10.3389/fenvs.2022.1058009

Zhang, N., Huang, H., Duan, X., Zhao, J., & Su, B. (2018). Quantitative association analysis between PM2.5 concentration and factors on industry,

UNIVERSITAS
GADJAH MADA
INTEGRASI CITRA PENGINDERAAN JAUH DAN DATA AKTIVITAS MANUSIA DALAM ANALISIS SPASIO-TEMPORAL RISIKO POLUSI UDARA DI PULAU JAWA
Salsabila, Prof. Dr. Drs. R. Suharyadi, M.Sc.; Dr. Nur Mohammad Farda, S.Si., M.Cs.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

energy, agriculture, and transportation. *Scientific Reports*, *8*(1). https://doi.org/10.1038/s41598-018-27771-w

Zhang, S., Lei, J., Tong, Y., Zhang, X., Lu, D., Fan, L., & Duan, Z. (2023). Temporal and spatial responses of ecological resilience to climate change and human activities in the economic belt on the northern slope of the Tianshan Mountains, China. *Journal of Arid Land*, *15*(10), 1245–1268. https://doi.org/10.1007/s40333-023-0070-z

Zhao, C., Sun, Y., Zhong, Y., Xu, S., Liang, Y., Liu, S., He, & X., Zhu, J., Shibamoto, T., & He, M. (2021). *Spatio-temporal analysis of urban air pollutants throughout China during 2014-2019*. https://doi.org/10.1007/s11869-021-01043-5/Published

Zheng, B., Zhang, Q., Geng, G., Shi, Q., Lei, Y., & He, K. (2020). Changes in China's anthropogenic emissions during the COVID-19 pandemic. *Earth System Science Data*. https://doi.org/10.6084/m9.figshare.c.5214920.v1

Zheng, H., Yang, Z., Yang, J., Tao, Y., & Zhang, L. (2022). Comprehensive Evaluation of Environmental Air Quality Based on the Entropy Weights and Concentration Variation Trends of Pollutants. *Atmosphere*, *13*(12). https://doi.org/10.3390/atmos13121978

Ziemke, J. R., Chandra, S., Duncan, B. N., Froidevaux, L., Bhartia, P. K., Levelt, P. F., & Waters, J. W. (2006). Tropospheric ozone determined from Aura OMI and MLS: Evaluation of measurements and comparison with the Global Modeling Initiative's Chemical Transport Model. *Journal of Geophysical Research Atmospheres*, *111*(19). https://doi.org/10.1029/2006JD007089

Zulkarnain, R., & Ramadani, K. D. (2020). *Kualitas Udara Dan Potensi Transmisi Covid-19 Di Pulau Jawa*.