



REFERENCES

- Achmad, A.C., 2015. Evaluation on the implementation of early warning system for lahar in Merapi area (case study at Boyong river). *J. Civ. Eng. Forum* 1, 77–84.
- Akhyar, M., Hardjosuwarno, S., Putri, R.N., 2016. The effect of lag time on correlation analysis of rainfall data between Radar X-Band and rainfall station in the Merapi volcano area. *Pus. Litbang Sumber Daya Air* 75–83.
- Alfieri, L., Thielen, J., 2015. A European precipitation index for extreme rain-storm and flash flood early warning. *Meteorol. Appl.* 22, 3–13.
- Aoki, M., Iwai, H., Nakagawa, K., Ishii, S., Mizutani, K., 2016. Measurements of rainfall velocity and raindrop size distribution using coherent Doppler lidar. *J. Atmos. Ocean. Technol.* 33, 1949–1966.
- Arattano, M., Marchi, L., 2005. Measurements of debris flow velocity through cross-correlation of instrumentation data. *Nat. Hazards Earth Syst. Sci.* 5, 137–142.
- ArcGIS Resources, 2014. How IDW works [WWW Document]. ArcGIS Help. URL https://resources.arcgis.com/en/help/main/10.2/index.html#/How_IDW_works/009z00000075000000/ (accessed 4.22.20).
- Balai Sabo, R. team, 2014. Sistem Informasi Curah Hujan Spasial di Daerah Gunung Merapi dan sekitarnya untuk keperluan Kebencanaan, Riset dan Informasi Publik melalui WebGIS. Pusat Litbang Sumber Daya Air, Yogyakarta.
- Berndt, C., Rabiei, E., Haberlandt, U., 2014. Geostatistical merging of rain gauge and radar data for high temporal resolutions and various station density scenarios. *J. Hydrol.* 508, 88–101.
- Billa, L., Mansor, S., Mahmud, A.R., 2004. Spatial information technology in flood early warning systems: An overview of theory, application and latest developments in Malaysia. *Disaster Prev. Manag. An Int. J.* 13, 356–363.
- Boxel, J.H. van, 1997. Numerical model for the fall speed of raindrops in a rainfall simulator, in: Proceedings of the Workshop on Wind and Water Erosion. ResearchGate, Ghent, pp. 77–85.
- Burcea, S., Cheval, S., Dumitrescu, A., Antonescu, B., Bell, A., Breza, T., 2012. Comparison between radar estimated and rain gauge measured precipitations in the Moldavian Plateau. *Envrionmental Eng. Manag. J.* 11, 723–731.
- Bureau of Meteorology, 2016. Cloud types and precipitation [WWW Document]. Aust. Gov. URL <http://www.bom.gov.au/weather-services/about/cloud/cloud-types.shtml> (accessed 4.21.20).
- Chen, X., Zhang, L., Gippel, C.J., Shan, L., Chen, S., Yang, W., 2016. Uncertainty of Flood Forecasting Based on Radar Rainfall Data Assimilation. *Adv. Meteorol.* 2016, 1–12.
- Echolls, T., 2017. Rain clouds vs snow clouds [WWW Document]. Sciencing. URL <https://sciencing.com/type-clouds-rain-clouds-8261472.html> (accessed 4.21.20).
- Fibriyantoro, E.A., 2015. Development of Warning Criteria for Lahar Flow Disaster in Gendol River Area of Mount Merapi. *J. Civ. Eng. Forum* 1, 17–22.



- Geomatics, 2019. Spatial Interpolation with Inverse Distance Weighting (IDW) Method Explained [WWW Document]. Geodose, your Dly. geospatial dose. URL <https://www.geodose.com/2019/03/spatial-interpolation-inverse-distance-weighting-idw.html> (accessed 4.22.20).
- Germann, U., Galli, G., Boscacci, M., Bolliger, M., 2006. Radar precipitation measurement in a mountainous region. *Q. J. R. Meteorol. Soc.* 132, 1669–1692.
- Gunn, R., Kinzer, G., 1949. The terminal velocity of fall for water droplets in stagnant air. *J. Meteorol.* 6, 243–248.
- Hairani, A., Rahardjo, A.P., Legono, D., Istiarto, I., 2019. Snake Line Performance Applying Single Pixel X-Band MP Radar Data (Case of Mt. Merapi Area, Indonesia). *J. Civ. Eng. Forum* 5, 201–210. <https://doi.org/10.22146/jcef.44781>
- Hambali, R., Djoko, L., Rachmad, J., Satoru, O., 2019a. Improving Spatial Rainfall Estimates at Mt. Merapi Area Using Radar-Rain Gauge Conditional Merging. *J. Disaster Res.* 14, 69–79.
- Hambali, R., Legono, D., Jayadi, R., 2019b. Correcting Radar Rainfall Estimates Based on Ground Elevation Function. *J. Civ. Eng. Forum* 5, 301–310.
- Hambali, R., Legono, D., Jayadi, R., Oishi, S., 2018a. Statistical properties of short-term rainfall time series as observed by XMP Radar (Case of Mt. Merapi area), in: Multi-Perspective Water for Sustainable Development. Yogyakarta, pp. 1317–1324.
- Hambali, R., Mawandha, H.G., Djoko, L., Rachmad, J., Satoru, O., 2018b. Rain Behaviour at Mt. Merapi Area as Observed by XMPR and ARR. *Appl. Mech. Mater.* 881, 34–41.
- Hoedjes, J.C.B., Kooiman, A., Maathuis, B.H.P., Said, M.Y., Becht, R., Limo, A., Mumo, M., Nduhiu-Mathenge, J., Shaka, A., Su, B., 2014. A conceptual flash flood early warning system for Africa, based on terrestrial microwave links and flash flood guidance. *ISPRS Int. J. Geo-Information* 3, 584–598.
- Hong, Y., Gourley, J.J., 2015a. Radar Quantitative Precipitation Estimation, in: Radar Hydrology Principles Models and Applications. CRC Press, pp. 17–40.
- Hong, Y., Gourley, J.J., 2015b. Radar Hydrology Principles, Models, and Applications, 1st ed, CRC Press of Taylor & Francis Group. CRC Press, Boca Raton, London, New York.
- Hong, Y., Gourley, J.J., 2014. Flash flood forecasting, in: Radar Hydrology Principles Models and Applications. CRC Press, pp. 157–174.
- Hunter, S.M., 1996. WSR-88D Radar Rainfall Estimation: Capabilities, Limitations and Potential Improvements. *Natl. Weather Dig.* 20, 26–36.
- Krajewski, W.F., Smith, J.A., 2002. Radar hydrology: rainfall estimation. *Adv. Water Resour.* 25, 1387–1394.
- Laksana, P.J., 2015. Rainfall characteristic on the slopes of Mount Merapi region. *J. Civ. Eng. Forum* 1, 43–50.
- Li, Z., Yang, D., Hong, Y., Qi, Y., Cao, Q., 2015. Evaluation of Radar-Based Precipitation Estimates for Flash Flood Forecasting in the Three Gorges Region. *Remote Sens. GIS Hydrol. Water Resour.* 368, 89–95.



- Marshall, J.S., Palmer, W.M., 1948. Shorter Contributions; the distribution of raindrops with size. *Journal Meteorol.* 5, 165–166.
- Martina, M.L. V., Todini, E., Libralon, A., 2006. A Bayesian decision approach to rainfall thresholds based flood warning. *Hydrol. Earth Syst. Sci.* 10, 413–426.
- Menke, W., Menke, J., 2012. Environmental Data Analysis with MATLAB, 2nd ed, Elsevier. Glyn Jones, London.
- Mook, F.J.R. van, 2002. Driving rain on building envelopes, Bouwstenen. ed. Eindhoven University of Technology, Eindhoven.
- Morin, E., Krajewski, W.F., Goodrich, D.C., Gao, X., Sorooshian, S., 2003. Estimating Rainfall Intensities from Weather Radar Data: The Scale-Dependency Problem. *J. Hydrometeorol.* 4, 782–797.
- Niu, S., Jia, X., Sang, J., Liu, X., Lu, C., Liu, Y., 2009. Distributions of raindrop sizes and fall velocities in a semiarid plateau climate: convective versus stratiform rains. *J. Appl. Meteorol. Climatol.* 49, 632–645.
- Ozkaya, A., Akyurek, Z., 2019. Evaluating the use of bias-corrected radar rainfall data in three flood events in Samsun, Turkey, *Natural Hazards*. Springer Netherlands.
- Pak, S. Il, Oh, T.H., 2010. Correlation and simple linear regression. *J. Vet. Clin.* 27, 427–434.
- Putra, S.S., Ridwan, B.W., Yamanoi, K., Shimomura, M., Sulistiyan, Hadiyuwono, D., 2019. Point-Based Rainfall Intensity Information System in Mt. Merapi Area by X-Band Radar. *J. Disaster Res.* 14, 80–89.
- Sorooshian, S., Nguyen, P., Sellars, S., Braithwaite, D., Agha Kouchak, A., Hsu, K., 2014. Satellite-based remote sensing estimation of precipitation for early warning systems, in: Isamail-Zadeh, A., Fucugauchi, J.U., Kijko, A., Takeuchi, K., Zaliapin, I. (Eds.), *Extreme Natural Hazards, Disaster Risks and Societal Implications (Special Publications of the International Union of Geodesy and Geophysics)*. Cambridge University Press, pp. 99–112.
- Sujono, J., Jayadi, R., Nurrochmad, F., 2018. Heavy Rainfall Characteristics at South-West of Mt. Merapi-Yogyakarta and Central Java Province, Indonesia. *Int. J. GEOMATE* 14, 184–191.
- Sung, E.-X., Tsai, M.-H., Kang, S.-C., 2014. Rainfall Thresholds and Flood Warnings: A Case Study in New Taipei City. *AComputing Civ. Build. engineering* 1254–1261.
- Thurai, M., Bringi, V., Gatlin, P.N., Petersen, W.A., Wingo, M.T., 2019. Measurements and modeling of the full rain drop size distribution. *Atmosphere (Basel)*. 10, 1–16.
- UNEP-DHI Partnership, UNEP-DTU, CTCN, 2017. Early warning systems for floods, Technology Compendium.
- Van De Beek, C.Z., Leijnse, H., Hazenberg, P., Uijlenhoet, R., 2016. Close-range radar rainfall estimation and error analysis. *Atmos. Meas. Tech.* 9, 3837–3850.
- Yoon, S.S., Bae, D.H., 2013. Optimal rainfall estimation by considering elevation in the Han River Basin, South Korea. *J. Appl. Meteorol. Climatol.* 52, 802–818.