UNIVERSITAS
GADJAH MADA
**Pendugaan Intersepsi Tajuk Tegakan Jati Mega (Tectona grandis) Menggunakan Revisi Model Gash 1995 di
Petak 13 Hutan Pendidikan Wanagama I Gunungkidul**
Agian Wahyu Ningrum, Dr.Agr.Sc. Ir. Hatma Suryatmojo, S.Hut., M.Si., IPU., ASEAN Eng.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Acharya, S., McLaughlin, D., Kaplan, D., & Cohen, M. J. (2020). A proposed method for estimating interception from near-surface soil moisture response. *Hydrology and Earth System Sciences*, *24*(4), 1859-1870.

Afafi, S.N., Supartha, K.I., Fatmawati, H., Eka, N.H., Sari, J.D.R., Al-Husna, F.Y., Himawan, F.D., Aulia, M., Ardiansyah, M.B., dan Mulyana, B. 2022. Simpanan Karbon Tegakan Jati Mega Di Kawasan Hutan Dengan Tujuan Khusus Wanagama, Daerah Istimewa Yogyakarta. *Jurnal Galam*, Vol. 2(2): 66–76.

Ahrens, C. D., & Henson, R. (2022). Meteorology Today: An Introduction to Weather, Climate, and the Environment (13th ed.). *Cengage Learning*

Asdak, C. (2022). *Hidrologi dan pengelolaan daerah aliran sungai*. Ugm Press.

Asdak, C. (2023). *Hidrologi dan pengelolaan daerah aliran sungai*. Ugm Press.

Agustina, C. (2017). *Hubungan Tebal Hujan Dengan Pada Berbagai Kelas Kerapatan Tajuk Tegakan JatiI Mega Di Daerah Tangkapan Aair (DTA) Petak 13 Hutan Pendidikan Wanagama I Gunung Kidul* (Doctoral dissertation, Universitas Gadjah Mada).

Ayu, S. M., Rosdayanti, A., & Lolita, E. (2020). Throughfall Pada Jabon Merah (Anthocephalus macrophyllus). *Jurnal Penelitian Kehutanan BONITA*, *2*(2), 29-34.

Badaruddin, H.S.Kadir, K.Nisa.2021.Buku Ajar Hidrologi Hutan. Penerbit CV Batang. Banjarmasin.

Baniva, R., Sinta, D., Parwanti, S., Yuliany, E. H., Trikarno, M. A., Pramata, J., & Azizah, S. (2023). Pendampingan Pengamatan Alat Pengukur Hujan Pada Pos Hujan Desa Petani Di Kota Pagar Alam. *Jurnal Pengabdian kepada Masyarakat Nusantara*, *4*(3), 2153-2159.

Basri, E., & Wahyudi, I. (2013). Sifat dasar kayu jati plus perhutani dari berbagai umur dan kaitannya dengan sifat dan kualitas pengeringan. Jurnal Penelitian Hasil Hutan, 31(2), 93–102.

Basuki, T. M., & Pramono, I. B. (2020, August). The influence of teak plantation areas on water yield and peak discharge from five catchments in Blora Regency. In *IOP Conference Series: Earth and Environmental Science* (Vol. 533, No. 1, p. 012010). IOP Publishing.

Boley, J. D., Drew, A. P., & Andrus, R. (2009). Effects of active pasture, teak (*Tectona grandis*) and mixed native plantations on soil chemistry in Costa Rica. *Forest Ecology and Management, 257*.

Bruijnzeel, L. A. (1990). Hydrology of moist tropical forests and effects of conversion: a state of knowledge review.

UNIVERSITAS
GADJAH MADA
Pendugaan Intersepsi Tajuk Tegakan Jati Mega (Tectona grandis) Menggunakan Revisi Model Gash 1995 di Petak 13 Hutan Pendidikan Wanagama I Gunungkidul
Agian Wahyu Ningrum, Dr.Agr.Sc. Ir. Hatma Suryatmojo, S.Hut., M.Si., IPU., ASEAN Eng.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Calder IR. 1986. A stochastic model of rainfall interception. *J. Hydrol.* 89: 65–71.

Calder IR. 1996. Dependence of rainfall interception on drop size: 1. Development of the two-layer stochastic model. *J. Hydrol.* 185: 363-378

Carle, J. B., Ball, J. B., & Del Lungo, A. (2009). The global thematic study of planted forests. In *Planted forests: Uses, impacts and sustainability*. Rome: FAO & CAB International.

Chang, M. (2012). *Forest Hydrology: An Introduction to Water and Forests* (3rd ed.). CRC Press.

Corti, G., Agnelli, A., Cocco, S., Cardelli, V., Masse, J., & Courchesne, F. (2019). Soil affects throughfall and stemflow under Turkey oak (Quercus cerris L.). *Geoderma*, *333*, 43-56.

de Lima, J. A., Van Stan, J. T., Lewińska, K., Dradrach, A., Ceglarek, J., & Tonello, K. C. (2026). Stemflow Dynamics in the Jamari National Forest (Brazilian Amazon): I. The Role of Tree Structure. *Biotropica*, *58*(3), e70195.

Deguchi, A., Hattori, S., & Park, H. T. (2006). The influence of seasonal changes in canopy structure on interception loss: Application of the revised Gash model. *Journal of Hydrology*, *318*(1-4), 80-102.

Deng, J., Yu, Y., Shao, J., Lu, S., Liu, F., Li, Z., & Shi, X. (2022). Rainfall interception using the revised Gash analytical model for Pinus sylvestris var. mongolica in a semi-humid region of NE China. *Ecological Indicators*, *143*, 109399.

Fata, Y. A., Hendrayanto, Y. A. P., & Erizal, S. D. T. (2023). Evaluation of the gash rainfall interception model in forest plantations. *Journal of Hunan University Natural Sciences*, *50*(12).

Fathizadeh, O., Hosseini, S. M., Keim, R. F., & Boloorani, A. D. (2018). A seasonal evaluation of the reformulated Gash interception model for semi-arid deciduous oak forest stands. *Forest Ecology and Management*, *409*, 601-613.

Fauzi, M. A., Hasna, T. M., Setiadi, D., & Adinugraha, H. A. (2021). Variasi Morfologi Empat Spesies Jati (Tectona Sp) di Asia Tenggara: Potensi Pemuliaan Pohon dan Bioteknologinya. *Biota : Jurnal Ilmiah Ilmu-Ilmu Hayati*, *5*(2), 115–123.

Gash JHC. 1979. An analytical model of rainfall interception in forests. *Q. J. R. Meteor. Soc*. 105: 43–55.

Gash JHC, Lachaud G, Lloyd CR. 1995. Estimating sparse forest rainfall intercepstion with an analytical model. *J.Hydrol*. 170: 79-86

Goebes P, Bruelheide H, Härdtle W, Kröber W, Kühn P, Li Y, et al. (2015) Species-Specific Effects on Throughfall Kinetic Energy in Subtropical Forest Plantations Are Related to Leaf Traits and Tree Architecture. PLoS ONE 10(6): e0128084. doi:10.1371/journal.pone.0128084

UNIVERSITAS
GADJAH MADA
**Pendugaan Intersepsi Tajuk Tegakan Jati Mega (Tectona grandis) Menggunakan Revisi Model Gash 1995 di
Petak 13 Hutan Pendidikan Wanagama I Gunungkidul**
Agian Wahyu Ningrum, Dr.Agr.Sc. Ir. Hatma Suryatmojo, S.Hut., M.Si., IPU., ASEAN Eng.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Gulo, L. S., & Lase, N. K. (2025). Peran Vegetasi Penutup Tanah Dalam Menekan Laju Erosi Dan Meningkatkan Infiltrasi Air. *Jurnal Ilmu Pertanian dan Perikanan*, *2*(3), 7-12.

Hajawa, H., Rosmimi, R., & Mukti, J. (2025). Persentase Tutupan Tajuk Pohon Penaung Pada Lahan Agroforestry Kopi Terhadap Produktivitas Tanaman Kopi Di Desa Paccekke. *Forest Services*, *3*(1), 50-67.

Handoko, I., Kodarsih, T., & Ariyani, A. (2010). Koefisien Pemadaman Tajuk dan Efisiensi Penggunaan Radiasi Surya pada Tanaman Kentang (Solanum Tuberosum L.) Varietas Granola di Galudra, Cianjur, Jawa Baratcanopy Extinction Coefficient And Solar Radiation Use Efficiency... *Agromet*, *24*(2), 246847.

Hardwick, S. R., Toumi, R., Pfeifer, M., Turner, E. C., Nilus, R., & Ewers, R. M. (2015). The relationship between leaf area index and microclimate in tropical forest and oil palm plantation: Forest disturbance drives changes in microclimate. *Agricultural and Forest Meteorology*, *201*, 187-195.

Ikhsan, M. I. M., Refiyanni, M., & Safriana, I. (2018). Studi Intersepsi Berbagai Kelas Umur Kelapa Sawit. *Jurnal Teknik Sipil dan Teknologi Konstruksi*, *1*(1).

Indriyanto. 2008. Pengantar Budi Daya Hutan. Jakarta: Bumi Aksara.

Jayanti, S. D., Mustafril, dan R. Munandar. 2015. Pengembangan Model Intersepsi Pada Pohon Jati (Tectona grandis) Dan Pohon Pinus (Casuarina Cunninghamiana). Jurnal Agroteknologi, 17(2): 32-40.

Justicia, M. G. (2025). *Intersepsi Tajuk pada Lahan Agroforestri Kopi Robusta (Coffea canephora) di Desa Binangun Kecamatan Karangkobar Kabupaten Banjarnegara* (Doctoral dissertation, Universitas Gadjah Mada).

Klingaman NP, FL Delphis, dan EF Ethan. 2007. A comparison of three canopy interception models for a leafless mixed deciduous forest stand in the Eastern United States. *J.H.M* 8:825–836

Kusumandari, A., & Marpaung, P. A. R. (2019, December). The reduction of infiltration capacity at various tourist attraction areas in Wanagama I Education forest. In *IOP Conference Series: Earth and Environmental Science* (Vol. 399, No. 1, p. 012127). IOP Publishing.

Kusumandari, A., Kusmandana, M., & Bahari, G. A. (2021). The comparison of erosion rates in grassland, teak Forest, crops land, and gliricidia Forest plantation in Wanagama Edu Forest. *International Journal on Advanced Science, Engineering and Information Technology*, *11*(6), 2220-2225.

Kusumandari, A., Marhaento, H., & Suryatmojo, H. (2024). Vegetation Analysis of the Spring Water Surroundings at the Wanagama Rehabilitated Forest. In *BIO Web of Conferences* (Vol. 94, p. 04012). EDP Sciences.

Kusumandari, A., Purwanto, R., & Widayanti, W. T. (2021, March). Soil properties under four different land uses in relation to soil erosion and conservation in Wanagama.

UNIVERSITAS GADJAH MADA
Pendugaan Intersepsi Tajuk Tegakan Jati Mega (Tectona grandis) Menggunakan Revisi Model Gash 1995 di Petak 13 Hutan Pendidikan Wanagama I Gunungkidul
Agian Wahyu Ningrum, Dr.Agr.Sc. Ir. Hatma Suryatmojo, S.Hut., M.Si., IPU., ASEAN Eng.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

In *IOP Conference Series: Earth and Environmental Science* (Vol. 683, No. 1, p. 012057). IOP Publishing.

Levia, D. F., & Germer, S. (2015). A review of stemflow generation dynamics and stemflow-environment interactions in forests and shrublands. *Reviews of Geophysics*, *53*(3), 673-714.

Levia, D. F., and Frost, E. E. (2003). A review and evaluation of stemflow literature in the hydrologic and biogeochemical cycles of forested and agricultural ecosystems. J. Hydrol. 274, 1–29. doi: 10.1016/S0022-1694(02)00399-2

Levia Jr, D. F., & Frost, E. E. (2003). A review and evaluation of stemflow literature in the hydrologic and biogeochemical cycles of forested and agricultural ecosystems. *Journal of hydrology*, *274*(1-4), 1-29.

Li, G., Wan, L., Cui, M., Wu, B., & Zhou, J. (2019). Influence of canopy interception and rainfall kinetic energy on soil erosion under forests. *Forests*, *10*(6), 509.

Li, X. Y., Liu, L. Y., Gao, S. Y., Ma, Y. J., & Yang, Z. P. (2008). Stemflow in three shrubs and its effect on soil water enhancement in semiarid loess region of China. *Agricultural and forest meteorology*, *148*(10), 1501-1507.

Li, X., Xiao, Q., Niu, J., Dymond, S., van Doorn, N. S., Yu, X., … & Li, J. (2016). Process-based Rainfall Interception by Small Trees in Northern China: The Effect of Rainfall Traits and Crown Structure Characteristics. *Agricultural and forest meteorology*, *218*, 65-73.

Liu, Y., Wang, F., Zhang, S., Ding, W., Li, R., Han, J., ... & Shi, S. (2024). Analysis of canopy interception characteristics and influencing factors in typical artificial forest in the Loess Plateau semi-arid region. *Journal of Environmental Management*, *370*, 122455.

Liu, Z., Wang, Y., Tian, A., Liu, Y., Webb, A. A., Wang, Y., ... & Xu, L. (2018). Characteristics of canopy interception and its simulation with a revised Gash model for a larch plantation in the Liupan Mountains, China. *Journal of forestry research*, *29*(1), 187-198.

Macinnis-Ng, C.M.O., Flores, E.E., Muller, H., Schwendenmann, L., 2012. Rainfall partitioning into throughfall and stemflow and associated nutrient fluxes: land use impacts in a lower montane tropical region of Panama. Biogeochemistry 111, 661–676. https://doi.org/10.1007/s10533-012-9709-0.

Magliano, P. N., Whitworth-Hulse, J. I., & Baldi, G. (2019). Interception, throughfall and stemflow partition in drylands: Global synthesis and meta-analysis. *Journal of Hydrology*, *568*, 638-645.

Melo Neto, J. O., Rodrigues, A. F., & Mello, C. R. (2024). On Canopy Rainfall Interception Modeling in a Eucalyptus Plantation. *Forests*, *15*(9), 1577.

Morgan, R.P.C.(2005).Soil Erosionand Conservation. Blackwell Publishing.

UNIVERSITAS
GADJAH MADA
**Pendugaan Intersepsi Tajuk Tegakan Jati Mega (Tectona grandis) Menggunakan Revisi Model Gash 1995 di
Petak 13 Hutan Pendidikan Wanagama I Gunungkidul**
Agian Wahyu Ningrum, Dr.Agr.Sc. Ir. Hatma Suryatmojo, S.Hut., M.Si., IPU., ASEAN Eng.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Naharuddin, N. (2018). Komposisi dan struktur vegetasi dalam potensinya sebagai parameter hidrologi dan erosi. *Jurnal Hutan Tropis*, *5*(2), 134-142.

Na'iem, M., Rudiana, P. A., Hasibuan, S. M., Idhom, A. M., Mustaqim, A., Sutriyati, & Cahyono, M. F. 2020. *Wanagama: Kisah Terciptanya Hutan Pendidikan, Konservasi, dan Kesejahteraan Sosial Ekonomi bagi Rakyat Sekitar (1st ed.)*. Yogyakarta: Penerbit Samudra Biru.

Nanko, K., Watanabe, A., Hotta, N., & Suzuki, M. (2013). Physical interpretation of the difference in drop size distributions of leaf drips among tree species. *Agricultural and Forest Meteorology, 169*, 74–84. https://doi.org/10.1016/j.agrformet.2012.09.018

Návar, J., 2013. The performance of the reformulated Gash's interception loss model in Mexico's northeastern temperate forests. Hydrol. Process. 27, 1626–1633. https://doi.org/10.1002/hyp.9309.

Návar, J. (2020). Modeling rainfall interception loss components of forests. *Journal of Hydrology*, *584*, 124449.

Nugroho, J., Zid, M., & Miarsyah, M. (2020). Potensi sumber air dan kearifan masyarakat dalam menghadapi risiko kekeringan di wilayah karst (Kabupaten Gunung Kidul, Provinsi Yogyakarta). *Jurnal Pengelolaan Lingkungan Berkelanjutan (Journal of Environmental Sustainability Management)*, 438-447.

Nugroho, S. A. (2016). *Variasi Iintersepsi Kanopi Pada Tegakan Tanaman Jati Plus Perhutani Dan Jati Konvensional Di KPH Cepu, Jawa Tengah* (Doctoral dissertation, Universitas Gadjah Mada).

Nugroho, W. (2016). Sifat Fisika dan Mekanika Kayu Jati Unggul" Mega" dan Kayu Jati Konvensional yang Ditanam di Hutan Pendidikan, Wanagama, Gunungkidul, Yogyakarta. *Jurnal Ilmu Kehutanan*.

Pratama, Y. A. (2021). *Pendugaan intersepsi tajuk tegakan kayu afrika (Maesopsis eminii E) dan jati (Tectona grandis) menggunakan model Gash di Kecamatan Sukajaya, Kabupaten Bogor* [Skripsi tidak diterbitkan, Institut Pertanian Bogor].

Purnomo, D. W., & Usmadi, D. (2012). Pengaruh Struktur dan Komposisi Vegetasi Dalam Menentukan Nilai Konservasi Kawasan Rehabilitasi di Hutan Wanagama I dan Sekitarnya. *Jurnal Biologi Indonesia*, 8(2).

Purnomo, D. W. (2010). A habitat selection model for Javan deer (Rusa timorensis) in Wanagama I Forest, Yogyakarta. *Nusantara Bioscience*, *2*(2).

Qurniawan, T. F. (2013). Amfibi dan Reptil Karst Gunung Sewu Zona Batur Agung, Gunung Kidul, Daerah Istimewa Yogyakarta. *Biota: Jurnal Ilmiah Ilmu-Ilmu Hayati*, 75-82.

Rahman, M. T. (2023). Rancang Bangun Alat Pengukur Intensitas Curah Hujan Otomatis Menggunakan Energi Solar Panel Berbasis Iot. *ALINIER: Journal of Artificial Intelligence & Applications*, *4*(2), 105-112.

UNIVERSITAS GADJAH MADA
Pendugaan Intersepsi Tajuk Tegakan Jati Mega (Tectona grandis) Menggunakan Revisi Model Gash 1995 di Petak 13 Hutan Pendidikan Wanagama I Gunungkidul
Agian Wahyu Ningrum, Dr.Agr.Sc. Ir. Hatma Suryatmojo, S.Hut., M.Si., IPU., ASEAN Eng.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Rodrigo, A., Avila, A., and Rodá, F. (2003). The chemistry of precipitation, throughfall and stemflow in two holm oak (Quercus ilex L.) forests under a contrasted pollution environment in NE Spain. Science of the Total Environment 305, 195–205. doi: 10.1016/S0048-9697(02)00470-9

Rosier, C.L., Van Stan II, J.T., Moore, L.D., Schrom, J.O.S., Wu, T., Reichard, J.S., Kan, J., 2015. Forest canopy structural controls over throughfall affect soil microbial community structure in an epiphyte-laden maritime oak stand. Ecohydrology 8, 1459–1470. https://doi.org/10.1002/eco.1595.

Rustan, F. R., Tanje, H. W., Sukri, A. S., Amir, M. K., Sriwati, M., & Rachman, R. M. (2024). *Hidrologi*. TOHAR MEDIA.

Ruswanti, D. (2020). Pengukuran performa support vector machine dan neural netwok dalam meramalkan tingkat curah hujan. *Jurnal Gaung Informatika*, *13*(1).

Safira, D. A., & Rusdiana, O. (2025). Variasi Tekstur Tanah dan Bahan Organik Berdasarkan Kerapatan Tajuk Studi Kasus pada Hutan Kota Muhammad Sabki, Kota Jambi: Variation of Soil Texture and Organic Matter Based on Canopy Density A Case Study in the Muhammad Sabki City Forest, Jambi City. *Jurnal Silva Tropika*, *9*(1), 32-43.

Sapan, H., Rombang, J., & Kalangi, J. (2024). Distribusi Hujan Pada Pohon Nantu (Palaquium Sp.), Pala (Myristica fragrans), Cengkeh (Syzygium aromaticum) di Desa Warembungan, Kab. Minahasa. *Silvarum*, *3*(2), 82-87.

Sari, T. M. (2016). *Hubungan Tebal Hujan Dengan Pada Berbagai Kelas Kerapatan Tajuk Tegakan JatiI Lokal Di Daerah Tangkapan Aair (DTA) Petak 13 Hutan Pendidikan Wanagama I Gunung Kidul* (Doctoral dissertation, Universitas Gadjah Mada).

Shachnovich, Y., Berliner, P. R., & Bar, P. (2008). Rainfall interception and spatial distribution of throughfall in a pine forest planted in an arid zone. *Journal of Hydrology*, *349*(1-2), 168-177.

Sheng, H., & Cai, T. (2019). Influence of rainfall on canopy interception in mixed broad-leaved—Korean pine forest in xiaoxing'an mountains, northeastern China. *Forests*, *10*(3), 248.

Sheppard, J.P., Mitchell, M.J., Scott, T.J., Zhang, Y.M., Raynal, D.J., 1989. Measurement of wet and dry deposition in a northern hardwood forest. Water Air Soil Pollut. 48, 225–238. https://doi.org/10.1007/BF00282380.

Sittadewi, E. H., & Tejakusuma, I. G. (2020). Efek Intersepsi, Evapotranspirasi dan Penguatan Akar Tanaman Terhadap Stabilitas Lereng. *Jurnal Sains dan Teknologi Mitigasi Bencana*, *15*(1), 19-26.

Sofiah, S., & Soejono, S. (2019). Stemflow Throughfall and Rainwater Interception of Eight Indonesian Tree Species. *BIOTROPIA*, 27(1), 1–13.

UNIVERSITAS
GADJAH MADA
Pendugaan Intersepsi Tajuk Tegakan Jati Mega (Tectona grandis) Menggunakan Revisi Model Gash 1995 di Petak 13 Hutan Pendidikan Wanagama I Gunungkidul
Agian Wahyu Ningrum, Dr.Agr.Sc. Ir. Hatma Suryatmojo, S.Hut., M.Si., IPU., ASEAN Eng.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Suryatmojo, H., & Imron, M. A. (2017). Hydrological processes in different types of teak (Tectona grandis L.) plantation. In *Sustainable Future for Human Security: Environment and Resources* (pp. 11-19). Singapore: Springer Singapore.

Utama, L. (2022). Kawasan Berpotensi Banjir Pada Daerah Aliran Sungai (DAS) Kuranji. *Rang Teknik Journal*, *5*(1), 110-115.

Van Stan, J. T., & Gordon, D. A. (2018). Mini-review: stemflow as a resource limitation to near-stem soils. *Frontiers in Plant Science*, *9*, 248.

Wahyudi, I., Priadi, T., & Rahayu, I. S. (2014). Karakteristik Dan Sifat-Sifat Dasar Kayu Jati Unggul Umur 4 Dan 5 Tahun Asal Jawa Barat. Jurnal Ilmu Pertanian Indonesia, 19(1), 50–56.

Wanagama. (n.d.). *Mengenal Kawasan Hutan Dengan Tujuan Khusus (KHDTK) Wanagama*. Fakultas Kehutanan Universitas Gadjah Mada. Diakses pada 30 April 2026, https://wanagama.fkt.ugm.ac.id/wanagama-2/

Wei, W., Song, X., Li, L., Zhao, X., Meng, P., Fu, C., ... & Li, H. (2024). Modelling rainfall interception losses of three plantations in the Loess Plateau. *Hydrological Processes*, *38*(3), e15136.

Whitford, W. G., Anderson, J., & Rice, P. M. (1997). Stemflow contribution to the 'fertile island'effect in creosotebush, Larrea tridentata. *Journal of Arid Environments*, *35*(3), 451-457.

Winarno, GD., Hatma dan S.A Soedjoko. 2010. Hidrologi Hutan Universitas Lampung, Bandar Lampung

Yuferev, V. G., Zavalin, A. A., Pleskachev, Y. N., Vdovenko, A. V., & Fomin, S. D. (2019). Degradation of landscapes in the south of the Privolzhsky Upland. *Journal of Forest Science, 65*(5), 195–202.

Zhang, Y. F., Wang, X. P., Hu, R., & Pan, Y. X. (2016). Throughfall and its spatial variability beneath xerophytic shrub canopies within water-limited arid desert ecosystems. *Journal of Hydrology*, *539*, 406-416.

Zuriyani, E. (2017). Dinamika kehidupan manusia dan kondisi sumberdaya alam daerah aliran sungai. *Jurnal Spasial: Penelitian, Terapan Ilmu Geografi, Dan Pendidikan Geografi*, *6*(2), 131312.