

## DAFTAR PUSTAKA

- Ajai, Kamat, D.S., Chaturvedi, G.S., Singh, A.K., and Sinha, S.K. 1983. *Spectral assessment of leaf area index, chlorophyll content, and biomass of chickpea*. Photog. Eng. Remote Sens., 49 (12): 1721-1727
- Amiro, B.D., Chen, J.M., Liu, J. 2000. *Net primary productivity following forest fire for Canadian ecoregions*. Can. J. Forest Res. 30, 939-947
- Arief, A. 2003. *Hutan Mangrove Fungsi dan Manfaatnya*. Yogyakarta: Penertbit Kanisius
- Asrar, G., Funchs, M., Kanemasu, E.T., Hatfield, J.L. 1984. *Estimating Absorbed Photosynthetic Radiation and Leaf Area Index from Spectral Reflectance in Wheat*. Contribution No. 84-48-J from Dept Agronomy. Kansas State University. Manhattan
- Bachaqie, A., dan Indrawan. 1993. *Hutan Mangrove, Lahan Basah yang Kaya Raya*. dalam Warta Konservasi Lahan Basah. 2(1): 5-7
- Bengen, DG, 2004. *Pengenalan dan Pengelolaan Ekosistem Mangrove*. Pedoman Teknis. Pusat Kajian Sumberdaya Pesisir dan Lautan. IPB. Bogor
- Beeri, O. Phillips, R. Hendrickson, J. et al. 2007. *Estimating forage quantity and quality using aerial hyperspectral imagery for northern mixed-grass prairie*. Remote Sensing Environment 110:216-25
- Blasco, F., Gauquelin, T., Rasolofoharinoro, M., Denis, J., Aizpuru, dan M., Caldairou, V. 1998. *Recent advances in mangrove studies using remote sensing data*. Mar. Freshwater Res, 49, pp 287-296
- Blennow, K., 1995. *Sky view factors from high-resolution scanned fish-eye lens photographic negatives*. J Atmos. Ocean. Tech., 12: 1357-1362
- Breda, Nathalie. 2003. *Ground-based measurements of leaf area index: A review of methods, instruments and current controversies*. Journal of Experimental Botany, 54 (392): 2403-17

- Centre for Remote Imaging Sensing and Processing (CRISP). National University of Singapore. <http://www.crisp.nus.edu.sg> Diakses pada 10 Oktober 2019
- Chason, J., Baldocchi, D., Hutson, M. 1991. *A comparison of direct and indirect methods for estimating forest leaf area*. Agriculture and Forest Meteorology, 57: 107-128
- Chen, J.M dan Black, T.A. 1991. *Measuring leaf-area index of plant canopies with branch architecture*. Agric. For. Meteorol. 57, 1–12
- Chen, J.M. dan Black, T.A. 1992. *Defining leaf area index for non flat leave*. New York: John Wiley & Sons.
- Chen, J.M. 1996. *Evaluation of vegetation indices and a modified ratio for boreal applications*. Journal Remote Sens, 22: (229-242)
- Chen, J.M., Rich, P.M., Gower, S.T., Norman, J.M., dan Plummer, S. 1997. *Leaf area index of boreal forests: theory, techniques and measurements*. J. Geography. Res. 102 (D24), 29429–29443
- Cutini, A., Matteucci, G., Mugnozza, G. 1998. *Estimation of leaf area index with Li-Cor LAI 2000 in deciduous forests*. Forest Ecology and Management, 106 (1): 1-11
- Danoedoro, P. 1996. *Pengolahan Citra Digital Teori dan Aplikasinya dalam Bidang Penginderaan Jauh*. Yogyakarta: Fakultas Geografi UGM
- Danoedoro, P. 2012. *Pengantar Penginderaan Jauh Digital*. Yogyakarta: Andi Star
- Daughtry, C.S.T. 1990. *Direct measurements of canopy structure*. Remote Sens. Rev.5 (1), 45–60
- Departemen Kehutanan. (2005). *Pedoman Inventarisasi dan Identifikasi Lahan Kritis Mangrove*. Jakarta: Direktorat Jendral Rehabilitasi Lahan dan Perhutanan Sosial
- Dunsarwere. 2015. *Fungsi Fisik, Fungsi Kimia, Fungsi Biologis, Fungsi Ekonomi, Dan Fungsi Wanawisata Dari Hutan Mangrove*. Pendidikan Alam.

- Easter, M.J dan Spies, T.A. 1994. *Using hemispherical photography for Estimating photosynthetic photon flux density under canopies and in gaps in Douglas-fir forests of the Pacific northwest*. Can. J. Forest Res. 24, 2050–2058
- European Space Agency. 2015. *Sentinel-2 User Handbook*.  
[https://sentinel.esa.int/documents/247904/685211/Sentinel-2\\_User\\_Handbook](https://sentinel.esa.int/documents/247904/685211/Sentinel-2_User_Handbook). Diakses oleh Shofi Khansa Aufa Pada Tanggal 7 Januari 2020
- Frazer, G.W., Fournier, R.A., Trofymow, J.A., dan Hall, R.J.A. 2001. *Comparison of digital and film fisheye photography for analysis of Forest canopy structure and gap light transmission*. Agric. For. Meteorology. 109, 249–263
- Frananda, H., Hartono., Jatmiko, R H. 2015. *Komparasi Indeks Vegetasi Untuk Estimasi Stock Karbon Hutan Mangrove Kawasan Segara Anak Pada Kawasan Taman Nasional Alas Purwo, Banyuwangi, Jawa Timur*. Majalah Ilmiah Globe Vol. 17 No. (2):113-123
- Gao, Jincheng. 2006. *Canopy chlorophyll estimation with hyperspectral remote sensing*. Department of Geography. Kansas State University. Manhattan
- Giri, C., Ochieng, E., Tieszen, L. L., Zhu, Z., Singh, A, Loveland, T., Duke, N. 2011. *Status and distribution of mangrove forests of the world using earth observation satellite data*. Global Ecology and Biogeography, 20(1), 154-159
- Gholz, H.L. 1982. *Environmental Limits on Aboveground Net Primary Production, Leaf Area, and Biomass in Vegetation Zones of the Pacific Northwest*. Ecological Society of America Journal, 63 (2), pp. 469-481
- Govaerts, Y.M., Verstraete, M.M., Pinty, B., and Gobron, N. 1999. *Designing optimum spectral indices: a feasibility and proof of concept study*. International Journal of Remote Sensing, 20-1853-73

- Gower, S.T., Kucharik, C.J., dan Norman, J.M. 1999. *Direct and indirect estimation of leaf area index, fAPAR, and net primary production of terrestrial ecosystems*. Remote Sens. Environ. 70, 29–51
- Green, E.P., Mumby, P.J., Edwards, A.J., Clark, C.D., dan Ellis, A.C. 1998. *The assessment of mangrove areas using high resolution multispectral Airborne imagery*. J. Coast. Res, 14, 433-443
- Heumann, B.W. 2011. *Satellite Remote Sensing of Mangrove Forest: Recent advances and future opportunities*. Remote Sensing Journal
- Howard, J.A. 1996. *Penginderaan Jauh untuk Sumberdaya Hutan: Teori dan Aplikasi*. Diterjemahkan oleh Hartono, Dulbahri, Suharyadi, Danoedoro P, Jatmiko R.H. Gadjah Mada University Press: Yogyakarta
- Huete, A.R. (1988). *A soil-adjusted vegetation index (SAVI)*. Remote Sensing of Environment, 25, 295–309
- Huete, A.R, Justice, C., dan van Leeuwen, W. 1996. *MODIS Vegetation Index*. Algorithm theoretical basis document. NASA
- Jonckheere, I., Fleck, S., Nackaerts, K., Muys, B., Coppin, P., Weiss, M., dan Baret, F. 2004. *Review of methods for in situ leaf area index determination Part I. Theories, sensors and hemispherical photography*. Agricultural and Forest Meteorology Journal, 121, pp. 19-35
- Jones, H.G dan Vaughan, R.A. 2010. *Remote Sensing of Vegetation: Principles, Techniques, and Applications*. Oxford University Press
- Jordan, C.F. 1969. *Derivation of leaf area index from quality of light on forest floor*. Ecology, 50.663
- Juniansah, A., et., al. 2018. *Mangrove Leaf Area Index Estimation Using Sentinel 2A Imagery in Teluk Ratai, Pesawaran Lampung*. IOP Conf Series: Earth and Environmental Science 165
- Kamal, M., Hartono., Wicaksono, P., Adi, N.S., dan Arjasakusuma, S. 2016. *Assesment of Mangrove Forest Degradation through Canopy Fractional*

- Cover in Karimunjawa Island, Central Java, Indonesia. Geoplanning: Journal of Geomatics and Planning*, Vol 3, No.2, 107-116
- Kamal, M., Phinn, S., Johansen, K., dan Adi, N.S. 2016. *Estimation of mangrove leaf area index from ALOS AVNIR-2 data (A Comparison of tropical and sub-tropical mangrove)*. AIP Conference Proceeding 1775 040005
- Kamal, M., Johansen, K., dan Phinn, S. 2016. *Assessment of multi-resolution image data for mangrove leaf area index mapping*. Remote Sensing for Environment Journal
- Klien, Isaac., Dejong, T.M., Weinbaum, S.A. 1991. *Specific Leaf Weight and Nitrogen Allocation Responses to Light Exposure within Walnut Trees*. University of California. Hort Science, 26 (2): 183-185
- KLHK (Kementerian Lingkungan Hidup dan Kehutanan) 2017. *Miliki 23% Ekosistem Mangrove Dunia, Indonesia Tuan Rumah Konferensi Internasional Mangrove 2017*.  
[https://ppid.menlhk.go.id/siaran\\_pers/browse/561](https://ppid.menlhk.go.id/siaran_pers/browse/561). Diakses oleh Shofi Khansa Aufa pada tanggal 9 Desember 2020
- Kovacs, J.M., Flores-Verdugo, F., Wang, J., dan Aspden, L.P. 2004. *Estimating LAI of a degraded mangrove forest using hires data*. Aquatic Botany 80, pp 13-22
- Kuenzer, C., Bluemel, A., Gebhardt, S., VoCuoc, T., dan Dech, St. 2011. *Remote Sensing of Mangrove Ecosystem: A Review*. Remote Sensing Journal 3, 878-928
- Kusmana, C. 1996. *Nilai Ekonomis Hutan Mangrove*. Fakultas Kehutanan IPB, Bogor. Media Konservasi Vol. V No. (1): 17-24
- LaCerva, G.R., dan McAdoo, B.G., 2006. *Simeulue Island mangrove rehabilitation assessment*. Poughkeepsie, NY., Department of Geology, Vassar College. Page 5
- Lang, A.R.G., Yueqin, X., dan Norman, J.M. 1985. *Crop structure and the penetration of direct sunlight*. Agric. For. Meteorol. 35, 83–101

- Le Dantec, V., Saugier, B., Dufrene, E. 2000. *Internnual and spatial variation in maximum Leaf Area Index of temperate deciduous stands*. Forest Ecology Management, 134 (71-78)
- Lillesand, T.M., Kiefer, R.W., dan Chipman, J.W. 2008. *Remote Sensing and Image Interpretation. 6th Edition*, John Wiley & Sons, Hoboken.
- Liyarossa, D. 2017. *Pemanfaatan Penginderaan Jauh dan Sistem Informasi Geografi Untuk Pemetaan Zona Mangrove Di Ekowisata Mangrove Wonorejo Surabaya*. Yogyakarta: Sekolah Vokasi UGM
- Lucas, R., Lule, A.V., Rodríguez, M.T., Kamal, M., Thomas, N., Asbridge, E., Kuenzer, C., Rivera-Monroy, V.H., Lee, S.Y., Kristensen, E., dan Twilley, R.R. 2017. *Spatial ecology of mangrove forests: A remote sensing perspective*. In *Mangrove Ecosystems: A Global Biogeographic Perspective: Structure, Function, and Services*. Springer International Publishing: Cham, Switzerland, pp: 87–112
- Mac Nae, W. 1968. *A General Account of Fauna and Flora of Mangrove Swamps and Forest*. Trop. Ecol. 23(27). 225-233
- Makela, P.S.A., Zou, X., Haikarainen, L. 2018. *Effect of Crop Leaf Angle on LAI-Sensitive Narrow-Band Vegetation Indices Derived from Imaging Spectroscopy*. University of Helsinki. Applied science 8 (9): 1435
- Marshall, N. 1994. *Mangrove conservation in relation to overall environmental considerations*. Hydrobiology, 285, 303-309
- Mather, P.M. 1987. *Computer Processing of Remotely-Sensed Images*. An Introduction, 1st Edition, Wiley, Chichester
- Meza Diaz, B & Blackburn, G.A. 2003. *Remote sensing of mangrove biophysical properties: evidence from laboratory simulation of the possible effect of background variation on spectral vegetation indices*. International Journal of Remote Sensing, Vol. 24, No.1, pp: 53-73
- Monsi, M., and T. Saeki. 1953. *Über den lichtfaktor in den pfl anzengesellschaft en und seine bedeutung fur die stoff produktion*. Jpn. J. Bot. 14:22–52

- Moulin, S and Guerif, M., 1999. *Impact of model parameter uncertainties on crop reflectance estimates: a regional case study on wheat*. International Journal of Remote Sensing, 20 (1), pp 213-218
- Murdiyanto, Bambang. 2003. *Mengenal, Memelihara, dan Melestarikan Ekosistem Bakau*. Jakarta: COFISH Project
- Naylor, R.L., Goldberg, R.J., Primavera, J.H., Kautsky, N., Beveridge, M.C., Clay, J., Folke, C., Lubchenco, J., Mooney, H., dan Troell, M. 2000. *Effect of aquaculture on world fish supplies*. Nature, 405, 1017-1024
- Ni, J., Zhang, X.-S., Scurlock, J.M.O. 2001. *Synthesis and analysis of biomass and net primary productivity in Chinese forests*. Ann. For. Sci. 58, 351–384
- Nybakhen, J.W. 1988. *Biologi Laut Suatu Pendekatan Ekologis*. PT Gramedia, Jakarta
- Pierce, L.L dan Running. 1988. *Ground based Canopy Transmittance and Satellite Remotely Sensed Measurements for Estimation of Coniferous Forest Canopy Structure*. Elsevier Journal
- Planet, Labs. 2017. Planet Imagery Product Specification. Planet Labs Inc
- Polidoro, B.A., Carpenter, K.E., Collins, L., Duke, N.C., Ellison, A.M., Ellison, J.C., Fransworth, E.J., Fernando, E.S., Kathiresan, K., Koedam, N.E., Livingstone, S.R., Miyagi, T., Moore, G.E., Ngoc Nam., Ong, J.E., Primavera, J.H., Salmo, S.G., Sanciagco, J.C., Sukardjo, S., Wang, Y., Hong, Y. 2010. *The loss of species: mangrove extinction risk and geographic area of global concern*. PLoS ONE 5 (4): e 10095
- Prananda, A R A. 2018. *Pemetaan Leaf Area Index (LAI) Mangrove Menggunakan Citra Worldview 2 Di Estuari Perancak, Bali*. Yogyakarta: Fakultas Geografi UGM
- Primavera, JH. 2006. *Overcoming the impacts of aquaculture on the coastal zone*. Ocean Coas Manag. 49:531–545
- Rouse, J.W., Haas, R.H., Schell, J.A., dan Deering, D.W. 1974. *Monitoring vegetation system in The Great Plains with ERTS*. Third ERTS-1 Symposium (pp. 309-317). NASA, Washington DC

- Ruslisan, R., Kamal, M., and Sidik, F. 2018. *Monitoring the Restored Mangrove Condition at Perancak Estuary, Jembrana Bali, Indonesia*. IOP Conference Series: Earth and Environmental Science, 123 012122
- Saenger, P., Hegerl, E.J., and Da Vie, J.D.1983. *Global status of mangrove ecosystems*. By the working group on mangrove ecosystems on the IUCN Commission on Ecology. *The environmentalist*, Vol. 3. Supplement No.: p. 88
- Santoso, N. 2000. *Pola Pengawasan Ekosistem Mangrove*. Jakarta. Makalah Lokakarya Nasional Pengembangan Sistem Pengawasan Ekosistem Laut Tahun 2000
- Satellite Imaging Corporation. 2017. *SPOT 6 and SPOT 7 High Resolution Broad Coverage*. Airbus Defence & Space.  
[http://www.intelligenceairbusds.com/files/pmedia/public/r2928\\_9\\_int\\_012\\_spot6-7\\_en\\_low-2.pdf](http://www.intelligenceairbusds.com/files/pmedia/public/r2928_9_int_012_spot6-7_en_low-2.pdf). Diakses oleh Shofi Khansa Aufa Pada Tanggal 7 Januari 2020
- Satyasari, I. 2010. *Evaluasi Pengembangan Ekowisata Mangrove: Studi Kasus Di Bedul, Resort Grajagan, Taman Nasional Alas Purwo, Jawa Timur*. Bogor: Fakultas Kehutanan IPB
- Servina, Vina. 2011. *Fisika Korelasi dan Regresi*. Jakarta: Fisika UNJ
- Setyawan, A.D., Winanarno, K., Purnama, P.C. 2003. *Ekosistem Mangrove di Jawa: 1 Kondisi Terkini*. Universitas Sebelas Maret. Surakarta. Biodiversitas: Vol.4, No.2, (133-145)
- Smith, J.A. 1993. *LAI inversion using a back-propagation neural network trained with a multiple scattering model*. NASA Goddard Space Flight Center, Greenbelt, MD, USA. *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 31 (1102-1106)
- Spalding, M.D., Kainuma, M., Collins, L. 2010. *World Atlas of Mangroves, Earthscan with International Society for Mangrove Ecosystem*. Food and Agriculture Organization of the United Nations. The Nature Conservancy.

- UNEP World Conservation Monitoring Centre. United Nations Scientific and Culture Organization. United Nations University. London
- Sutanto. 1992. *Penginderaan Jauh Jilid I*. Yogyakarta: UGM Press
- Tobler, W. 1987. *Measuring Spatial Resolution*. Geography Department: University of California
- Turner, D.P., Steven, A.A., Joseph, E.M., Steven, L.G. 2000. *Assessing alternative allometric algorithms for estimating leaf area of Douglas-fir trees and stands*. Forest Ecology and Management, 126 (61-76)
- Vaiphasa, C., Skidmore, A.K., Boer, W.F. 2006. *A post-classifier for mangrove mapping using ecological data*. ISPRS Journal of Photogrammetry and Remote Sensing, 61 (1)
- Vina, A., Gitelson, A.A., Anthony, I., Robertson, N., dan Peng, Y., 2011. *Comparison of different vegetation indices for the remote assessment of green leaf area index of crops*. Journal Remote Sensing of Environment
- Wachid, M.N., Hapsara, R.P., Cahyo, R.D., Wahyu, G.N., Syarif, A.M., Umarhadi, D.A., Fitriani, A.N., Ramadhanningrum, D.P. & Widyatmanti, W. 2017. *Mangrove canopy density analysis using Sentinel-2A imagery satellite data*. IOP Conference Series: Earth and Environmental Science. Vol. 70, No. 1
- Walters, BB., P. Ronnback, JM. Kovacs, B. Crona, S.A Hussain, R. Bandola, J.H. Primavera, E. Barbier, dan F. Dahdouh Guebas. 2008. *Ethnobiology, Socio Economic, and Management of Mangrove Forests: a review*. Aquatic Botany
- Wang, G dan Weng, Q. 2005. *Remote Sensing of Natural resources*. New York: Taylor & Francis
- Weiss, M. 2002. *EYE-CAN User Guide*. NOV-3075-NT-1260. NOVELTIS, Toulouse, France
- Wilson, J.W., 1960. *Inclined point quadrats*. New Phytol. 59, 1–8
- Winoto, W K., Hartanto, D D., Muljosumarto, C. 2015. *Perancangan Promosi Wisata Alam Mangrove Blok Bedul Di Kabupaten Banyuwangi*

*Menggunakan Media Online.* Surabaya: Fakultas Seni dan Desain.

Universitas Kristen Petra, Siwalankerto

Xie, Y., Sha, Z., Yu, Mei. 2008. *Remote Sensing Imagery in Vegetation Mapping.*

Wuhan University. *Journal of Plant Ecology* 1 (1): 9-23

Zhang, Y., Chen, J M., Miller, J R. 2005. *Determining Digital Hemispherical*

*Photograph Exposure for Leaf Area Index Estimation.* *Agricultural and*

*Meteorology Journal*