

# Supplementary material for : “Trends in remote sensing accuracy assessment approaches in the context of natural resources “

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## Appendix A

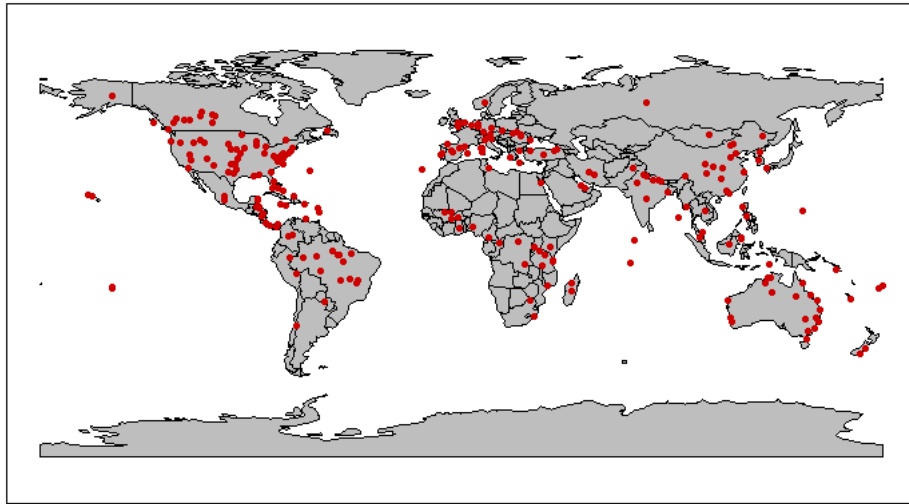


Figure S1 Global map showing the distribution of the reviewed literature

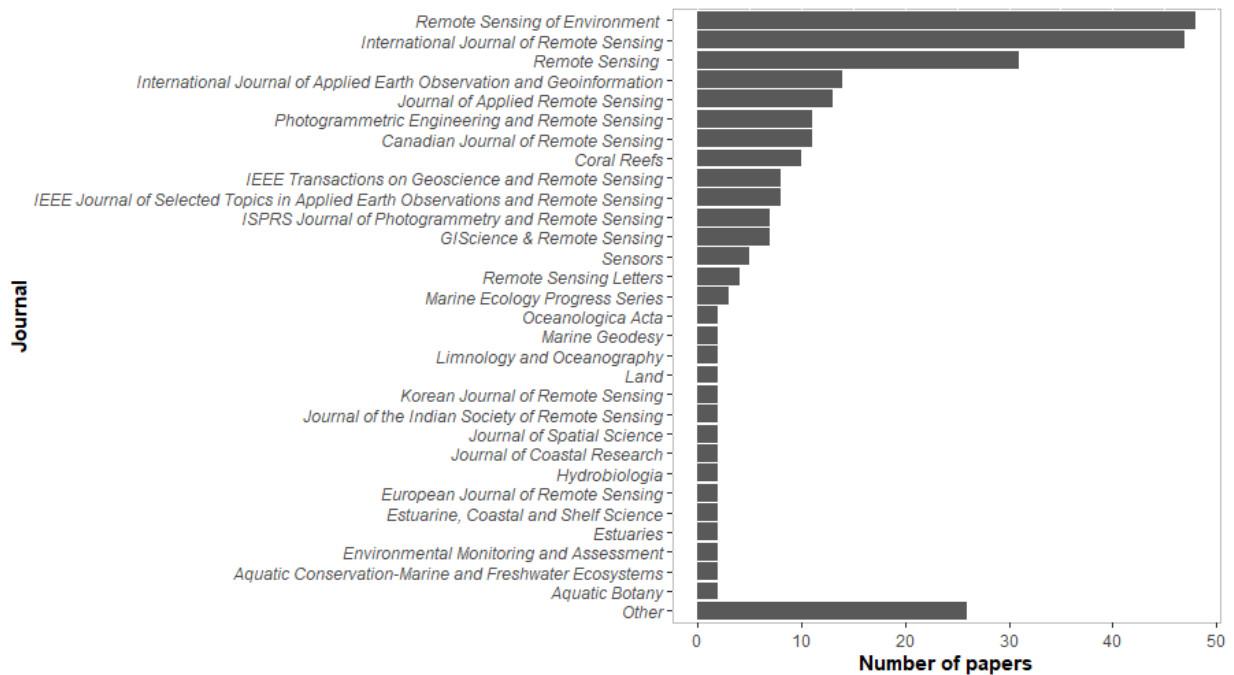


Figure S2 Distribution of the studies by journals with only one paper were group into Other. “Other”: included the following journals: Advances in Space Research, Biological Conservation, Ecological Applications, Ecological

Economics, Environmental and Ecological Statistics, Environmental Conservation, Environmental Earth Sciences, Environmental Management, Environmental Research Letters, Forests ,IEEE Geoscience and Remote Sensing Letter, International Journal of Digital Earth, ISPRS International Journal of Geo-Information, Journal of Coastal Conservation, Journal of Environmental Management, Journal of Photogrammetry and Remote Sensing, Landscape Ecology, New Zealand Geographer,Ocean Coastal Management,Open Geosciences, Revista Biologia Tropical,Science China Earth Sciences,South African Journal of Geomatics, Stochastic Environmental Research and Risk Assessment, The Egyptian Journal of Remote Sensing and Space Science,Wetlands Ecology and Management.

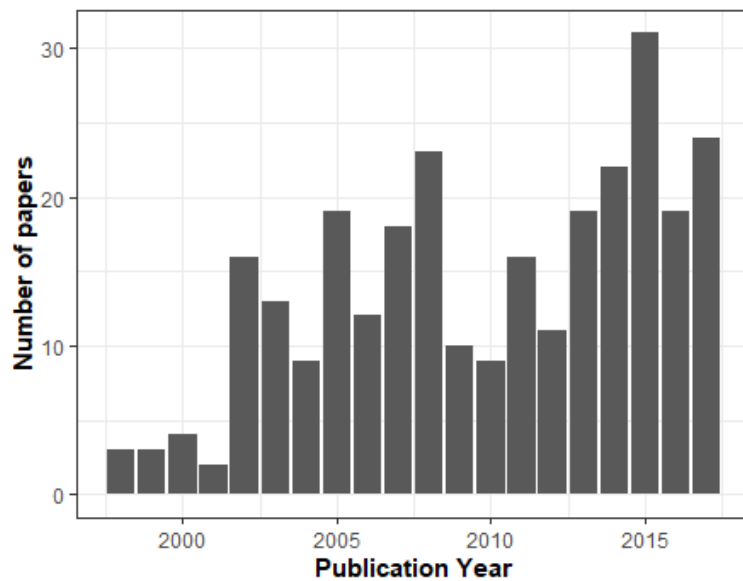
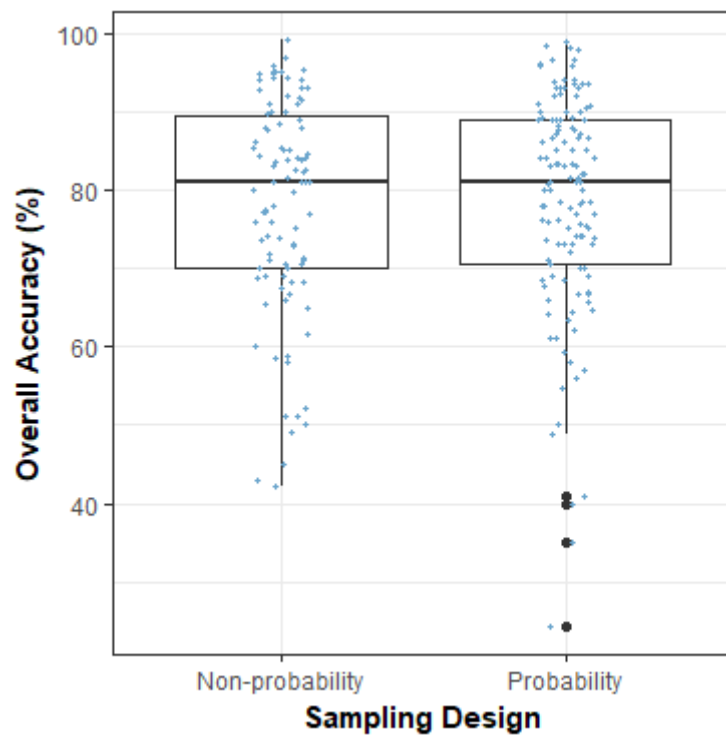


Figure S3 Distribution of the studies included in the database by year.



**Figure S4** Relationship between the overall accuracy and the type of sampling design used in the studies to collect the reference data (n=147).

## Appendix B

**Table S1** Description of the information extracted from each study. (Variables in the database.)

<b>Information</b>	<b>Description/Categories</b>
Title	Article title
Publication Year	Year of publication
Journal Name	Journal Name
Topic/Landcover type?	Main mapping aim: Accuracy analysis, Burn, coral reef, seagrass, forest, grassland, mangroves, Mixed, Wetland, Woodland, Vegetation type (species or specific vegetation formation)
Scale	Landscape, Regional, Regional-Global, Global
Study Area Size	Reported size of the study area (square km)
Location	Study area location
Remotes sensing data	List of all image data used to produce the map and as reference data. Classify based on spatial resolution (coarse, medium, high resolution)
Number of classes	Number of classes reported in the classified map
Classification description	General description of classification method, including classification algorithm
Sample size training data	Number of sample used as input in the classification
Validation method description	General description of how validation was implemented
Sample size validation data	Number of reference dataset sampling units
Type of validation unit	Sampling unit used for the accuracy assessment (GPS points, field plots, pixel, pixel clusters, polygon, whole map agreement, others, (ND, unclear))
Sampling design	Type of sampling design used to obtain the reference dataset (random, stratified, systematic, non-probability, NS (case of map agreement), ND , unclear))
Measures reported	Any accuracy metrics reported for the map
Overall accuracy	Accuracy of the reported map
Error matrix presence	Presence or absence of an error/confusion matrix
Confidence intervals	Presence or absence of any report of variance, standard deviation, or confidence intervals included when reported map accuracy

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**Table S2** Reference list of 282 papers considered in the analysis

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1. Abdul Aziz, A.; Phinn, S.; Dargusch, P.; Omar, H.; Arjasakusuma, S. Assessing the potential applications of Landsat image archive in the ecological monitoring and management of a production mangrove forest in Malaysia. *Wetl. Ecol. Manag.* **2015**, *23*, 1049–1066.
  2. Akar, Ö. Mapping land use with using Rotation Forest algorithm from UAV images. *Eur. J. Remote Sens.* **2017**, *50*, 269–279.
  3. Alcantara, C.; Kuemmerle, T.; Baumann, M.; Bragina, E. V.; Griffiths, P.; Hostert, P.; Knorn, J.; Müller, D.; Prishchepov, A. V.; Schierhorn, F.; et al. Mapping the extent of abandoned farmland in Central and Eastern Europe using MODIS time series satellite data. *Environ. Res. Lett.* **2013**, *8*, 35035.
  4. Alexander, D. Remote sensing and the coast: Development of advanced techniques to map nuisance macro-algae in estuaries. *N. Z. Geog.* **2008**, *64*, 157–161.
  5. Ali, A.; de Bie, C.A.J.M.; Skidmore, A.K.; Scarrott, R.G.; Hamad, A.; Venus, V.; Lymberakis, P. Mapping land cover gradients through analysis of hyper-temporal NDVI imagery. *Int. J. Appl. Earth Obs. Geoinf.* **2013**, *23*, 301–312.
  6. Anaya, J.; Colditz, R.; Valencia, G.; Anaya, J.A.; Colditz, R.R.; Valencia, G.M. Land Cover Mapping of a Tropical Region by Integrating Multi-Year Data into an Annual Time Series. *Remote Sens.* **2015**, *7*, 16274–16292.
  7. Andréfouët, S.; Guzman, H.M. Coral reef distribution, status and geomorphology-biodiversity relationship in Kuna Yala (San Blas) archipelago, Caribbean Panama. *Coral Reefs* **2005**, *24*, 31–42.
  8. Andréfouët, S.; Kramer, P.; Torres-Pulliza, D.; Joyce, K.E.; Hochberg, E.J.; Garza-Pérez, R.; Mumby, P.J.; Riegl, B.; Yamano, H.; White, W.H.; et al. Multi-site evaluation of IKONOS data for classification of tropical coral reef environments. *Remote Sens. Environ.* **2003**, *88*, 128–143.
  9. Andréfouët, S.; Muller-Karger, F.; Robinson, J.; Kranenburg, C.; Torres-Pulliza, D.; A Spraggins, S.; Murch, B. *Global assessment of modern coral reef extent and diversity for regional science and management applications: a view from space*; Internat Coral Reef Soc: Okinawa, 2005; Vol. 2.
  10. Andréfouët, S.; Zubia, M.; Payri, C.; Andréfouët, S.; Zubia, M.; Payri, C. Mapping and biomass estimation of the invasive brown algae *Turbinaria ornata* (Turner) J. Agardh and *Sargassum mangarevense* (Grunow) Setchell on heterogeneous Tahitian coral reefs using 4-meter resolution IKONOS satellite data. *Coral Reefs* **2004**, *23*, 26–38.
  11. Aswani, S.; Lauer, M. Benthic mapping using local aerial photo interpretation and resident taxa inventories for designing marine protected areas. *Environ. Conserv.* **2006**, *33*, 263–273.
  12. Bai, Y.; Feng, M.; Jiang, H.; Wang, J.; Zhu, Y.; Liu, Y.; Bai, Y.; Feng, M.; Jiang, H.; Wang, J.; et al. Assessing Consistency of Five Global Land Cover Data Sets in China. *Remote Sens.* **2014**, *6*, 8739–8759.
  13. Balzter, H.; Talmon, E.; Wagner, W.; Gaveau, D.; Plummer, S.; Yu, J.J.; Quegan, S.; Davidson, M.; Toan, T. Le; Gluck, M.; et al. Accuracy assessment of a large-scale forest cover map of central Siberia from synthetic aperture radar. *Can. J. Remote Sens.* **2002**, *28*, 719–737.
  14. Barbosa, I.S.; Maillard, P. Mapping a wetland complex in the Brazilian savannah using an Ikonos image: assessing the potential of a new region-based classifier. *Can. J. Remote Sens.* **2010**, *36*, 231–242.
  15. Bartalev, S.A.; Belward, A.S.; Erchov, D. V.; Isaev, A.S. A new SPOT4-VEGETATION derived land cover map of Northern Eurasia. *Int. J. Remote Sens.* **2003**, *24*, 1977–1982.
  16. Bartholomé, E.; Belward, A.S. GLC2000: a new approach to global land cover mapping from Earth observation data. *Int. J. Remote Sens.* **2005**, *26*, 1959–1977.
  17. Bayarsaikhan, U.; Boldgiv, B.; Kim, K.R.; Park, K.A.; Lee, D. Change detection and classification of land cover at Hustai National Park in Mongolia. *Int. J. Appl. Earth Obs. Geoinf.* **2009**, *11*, 273–280.
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- 
18. Benfield, S.L.; Guzman, H.M.; Mair, J.M.; Young, J.A.T. Mapping the distribution of coral reefs and associated sublittoral habitats in Pacific Panama: A comparison of optical satellite sensors and classification methodologies. *Int. J. Remote Sens.* **2007**, *28*, 5047–5070.
  19. Bertels, L.; Vanderstraete, T.; Van Coillie, S.; Knaeps, E.; Sterckx, S.; Goossens, R.; Deronde, B. Mapping of coral reefs using hyperspectral CASI data; a case study: Fordata, Tanimbar, Indonesia. *Int. J. Remote Sens.* **2008**, *29*, 2359–2391.
  20. Borrelli, P.; Armenteras, D.; Panagos, P.; Modugno, S.; Schütt, B. The implications of fire management in the Andean Paramo: A preliminary assessment using satellite remote sensing. *Remote Sens.* **2015**, *7*, 11061–11082.
  21. Bourgeau-Chavez, L.; Endres, S.; Battaglia, M.; Miller, M.E.; Banda, E.; Laubach, Z.; Higman, P.; Chow-Fraser, P.; Marcaccio, J. Development of a bi-national Great Lakes coastal wetland and land use map using three-season PALSAR and Landsat imagery. *Remote Sens.* **2015**, *7*, 8655–8682.
  22. Bouvet, G.; Ferraris, J.; Andréfouët, S. Evaluation of large-scale unsupervised classification of New Caledonia reef ecosystems using Landsat 7 ETM+ imagery. *Oceanol. Acta* **2003**, *26*, 281–290.
  23. Boyd, D.; Sanchez-Hernandez, C.; Foody, G. Mapping a specific class for priority habitats monitoring from satellite sensor data. *Int. J. Remote Sens.* **2006**, *27*, 2631–2644.
  24. Brewer, W.L.; Lippitt, C.L.; Lippitt, C.D.; Litvak, M.E. Assessing drought-induced change in a piñon-juniper woodland with Landsat: a multiple endmember spectral mixture analysis approach. *Int. J. Remote Sens.* **2017**, *38*, 4156–4176.
  25. Brovelli, M.; Molinari, M.; Hussein, E.; Chen, J.; Li, R. The first comprehensive accuracy assessment of GlobeLand30 at a national level: Methodology and results. *Remote Sens.* **2015**, *7*, 4191–4212.
  26. Burnicki, A.C. Spatio-temporal errors in land-cover change analysis: Implications for accuracy assessment. *Int. J. Remote Sens.* **2011**, *32*, 7487–7512.
  27. Cai, S.; Liu, D. A comparison of object-based and contextual pixel-based classifications using high and medium spatial resolution images. *Remote Sens. Lett.* **2013**, *4*, 998–1007.
  28. Call, K.A.; Hardy, J.T.; Wallin, D.O. Coral reef habitat discrimination using multivariate spectral analysis and satellite remote sensing. *Int. J. Remote Sens.* **2003**, *24*, 2627–2639.
  29. Campbell, M.; Congalton, R.G.; Hartter, J.; Ducey, M. Optimal Land Cover Mapping and Change Analysis in Northeastern Oregon Using Landsat Imagery. *Photogramm. Eng. Remote Sens.* **2014**, *81*, 37–47.
  30. Cano, E.; Denux, J.-P.; Bisquert, M.; Hubert-Moy, L.; Cheret, V.; Chéret, V. Improved forest-cover mapping based on MODIS time series and landscape stratification. *Int. J. Remote Sens.* **2017**, *38*, 1865–1888.
  31. Cao, L.; Coops, N.C.; Innes, J.L.; Dai, J.; Ruan, H.; She, G. Tree species classification in subtropical forests using small-footprint full-waveform LiDAR data. *Int. J. Appl. Earth Obs. Geoinf.* **2016**, *49*, 39–51.
  32. Capolsini, P.; Andréfouët, S.; Rion, C.; Payri, C. A comparison of Landsat ETM+, SPOT HRV, Ikonos, ASTER, and airborne MASTER data for coral reef habitat mapping in South Pacific islands. *Can. J. Remote Sens.* **2003**, *29*, 187–200.
  33. Carrão, H.; Araújo, A.; Gonçalves, P.; Caetano, M. Multitemporal MERIS images for land-cover mapping at a national scale: A case study of Portugal. *Int. J. Remote Sens.* **2010**, *31*, 2063–2082.
  34. Carreiras, J.M.B.; Pereira, J.M.C.; Campagnolo, M.L.; Shimabukuro, Y.E. Assessing the extent of agriculture/pasture and secondary succession forest in the Brazilian Legal Amazon using SPOT VEGETATION data. *Remote Sens. Environ.* **2006**, *101*, 283–298.
  35. Cassata, L.; Collins, L.B. Coral reef communities, habitats, and substrates in and near sanctuary zones of Ningaloo Marine Park. *J. Coast. Res.* **2008**, *241*, 139–151.
-

- 
36. Castilla, G.; Hird, J.; Hall, R.J.; Schieck, J.; McDermid, G.J. Completion and updating of a Landsat-Based land cover polygon layer for Alberta, Canada. *Can. J. Remote Sens.* **2014**, *40*, 92–109.
37. Cha, S.-Y.; Park, C.-H. The utilization of Google Earth images as reference data for the multitemporal land cover classification with MODIS data of north Korea. *Korean J. Remote Sens.* **2007**, *23*, 483–491.
38. Chauvaud, S.; Bouchon, C.; Maniere, R.; Smara, S.; Bouchon, C.; Maniere, R. Remote sensing techniques adapted to high resolution mapping of tropical coastal marine ecosystems (coral reefs, seagrass beds and mangrove). *Int. J. Remote Sens.* **1998**, *19*, 3625–3639.
39. Chauvaud, S.; Bouchon, C.; Maniere, R. Thematic mapping of tropical marine communities (coral reefs, seagrass beds and mangroves) using SPOT data in Guadeloupe Island. *Oceanol. Acta* **2001**, *24*, S3–S16.
40. Chen, P.Y.; Di Luzio, M.; Arnold, J.G. Spatial assessment of two widely used land-cover datasets over the continental US. *IEEE Trans. Geosci. Remote Sens.* **2005**, *43*, 2396–2404.
41. Colditz, R.R.; López Saldaña, G.; Maeda, P.; Espinoza, J.A.; Tovar, C.M.; Hernández, A.V.; Benítez, C.Z.; Cruz López, I.; Ressler, R. Generation and analysis of the 2005 land cover map for Mexico using 250 m MODIS data. *Remote Sens. Environ.* **2012**, *123*, 541–552.
42. Colditz, R.R.; Llamas, R.M.; Ressler, R.A. Detecting Change Areas in Mexico Between 2005 and 2010 Using 250 m MODIS Images. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* **2014**, *7*, 3358–3372.
43. Costa, H.; Carrão, H.; Bação, F.; Caetano, M. Combining per-pixel and object-based classifications for mapping land cover over large areas. *Int. J. Remote Sens.* **2014**, *35*, 738–753.
44. Cripps, E.; O'Hagan, A.; Quaipe, T. Quantifying uncertainty in remotely sensed land cover maps. *Stoch. Environ. Res. Risk Assess.* **2013**, *27*, 1239–1251.
45. Cuevas-Jiménez, A.; Ardisson, P.-L.; Condal, A.R. Mapping of shallow coral reefs by colour aerial photography. *Int. J. Remote Sens.* **2002**, *23*, 3697–3712.
46. Dahdouh-Guebas, F.; Coppejans, E.; Van Speybroeck, D. Remote sensing and zonation of seagrasses and algae along the Kenyan coast. *Hydrobiologia* **1999**, *400*, 63–73.
47. de Carvalho Júnior, O.A.; Guimarães, R.F.; Silva, C.R.; Gomes, R.A.T. Standardized time-series and interannual phenological deviation: New techniques for burned-area detection using long-term MODIS-NBR dataset. *Remote Sens.* **2015**, *7*, 6950–6985.
48. de Oliveira Silveira, E.M.; de Menezes, M.D.; Acerbi Júnior, F.W.; Castro Nunes Santos Terra, M.; de Mello, J.M. Assessment of geostatistical features for object-based image classification of contrasted landscape vegetation cover. *J. Appl. Remote Sens.* **2017**, *11*, 36004.
49. Dehaan, R.; Louis, J.; Wilson, A.; Hall, A.; Rumbachs, R. Discrimination of blackberry (*Rubus fruticosus* sp. agg.) using hyperspectral imagery in Kosciuszko National Park, NSW, Australia. *ISPRS J. Photogramm. Remote Sens.* **2007**, *62*, 13–24.
50. Dekker, A.G.; Brando, V.E.; Anstee, J.M. Retrospective seagrass change detection in a shallow coastal tidal Australian lake. *Remote Sens. Environ.* **2005**, *97*, 415–433.
51. Deus, D. Integration of ALOS PALSAR and Landsat data for land cover and forest mapping in northern Tanzania. *Land* **2016**, *5*, 43.
52. DeWitt, J.D.; Warner, T.A.; Chirico, P.G.; Bergstresser, S.E. Creating high-resolution bare-earth digital elevation models (DEMs) from stereo imagery in an area of densely vegetated deciduous forest using combinations of procedures designed for lidar point cloud filtering. *GIScience Remote Sens.* **2017**, *54*, 552–572.
53. Dibs, H.; Idrees, M.O.; Alsahin, G.B.A. Hierarchical classification approach for mapping rubber tree growth using per-pixel and object-oriented classifiers with SPOT-5 imagery. *Egypt. J. Remote Sens. Sp. Sci.* **2017**, *20*, 21–30.
54. Dierssen, H.M.; Zimmerman, R.C.; Leathers, R.A.; Downes, T.V.; Davis, C.O. Ocean color remote sensing of seagrass and bathymetry in the Bahamas Banks by high-resolution airborne imagery. *Limnol. Oceanogr.* **2003**, *48*, 444–455.
-

- 
55. Dihkan, M.; Guneroglu, N.; Karsli, F.; Guneroglu, A. Remote sensing of tea plantations using an SVM classifier and pattern-based accuracy assessment technique. *Int. J. Remote Sens.* **2013**, *34*, 8549–8565.
56. Doraiswamy, P.C.; Doraiswamy, P.C.; Akhmedov, B. Techniques for developing land-use classification using moderate resolution imaging spectroradiometer imagery. *J. Appl. Remote Sens.* **2009**, *3*, 33517.
57. Egorov, A.V.; Hansen, M.C.; Roy, D.P.; Kommareddy, A.; Potapov, P.V. Image interpretation-guided supervised classification using nested segmentation. *Remote Sens. Environ.* **2015**, *165*, 135–147.
58. Enkhbaatar, L.; Jayakumar, S.; Heo, J. Support Vector Machine and Spectral Angle Mapper Classifications of High Resolution Hyper Spectral Aerial Image. *Korean J. Remote Sens.* **2009**, *25*, 233–242.
59. Estoque, R.C.; Estoque, R.S.; Murayama, Y. Prioritizing areas for rehabilitation by monitoring change in barangay-based vegetation cover. *ISPRS Int. J. Geo-Information* **2012**, *1*, 46–68.
60. Everitt, J.H.; Yang, C.; Johnson, H.B. Canopy spectra and remote sensing of Ashe juniper and associated vegetation. *Environ. Monit. Assess.* **2007**, *130*, 403–413.
61. Evrendilek, F.; Gulbeyaz, O. Boosted decision tree classifications of land cover over Turkey integrating MODIS, climate and topographic data. *Int. J. Remote Sens.* **2011**, *32*, 3461–3483.
62. Fisher, A.; Day, M.; Gill, T.; Roff, A.; Danaher, T.; Flood, N. Large-area, high-resolution tree cover mapping with multi-temporal SPOT5 imagery, New South Wales, Australia. *Remote Sens.* **2016**, *8*, 515.
63. Fonte, C.C.; Minghini, M.; Patriarca, J.; Antoniou, V.; See, L.; Skopeliti, A. Generating up-to-date and detailed land use and land cover maps using OpenStreetMap and GlobeLand30. *ISPRS Int. J. Geo-Information* **2017**, *6*.
64. Foody, G.M. Valuing map validation: The need for rigorous land cover map accuracy assessment in economic valuations of ecosystem services. *Ecol. Econ.* **2015**, *111*, 23–28.
65. Foody, G.M. Local characterization of thematic classification accuracy through spatially constrained confusion matrices. *Int. J. Remote Sens.* **2005**, *26*, 1217–1228.
66. Foody, G.M. Latent class modeling for site- and non-site-specific classification accuracy assessment without ground data. *IEEE Trans. Geosci. Remote Sens.* **2012**, *50*, 2827–2838.
67. Foody, G.M.; Boyd, D.S. Using volunteered data in land cover map validation: Mapping west African forests. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* **2013**, *6*, 1305–1312.
68. Fornes, A.; Basterretxea, G.; Orfila, A.; Jordi, A.; Alvarez, A.; Tintore, J. Mapping *Posidonia oceanica* from IKONOS. *ISPRS J. Photogramm. Remote Sens.* **2006**, *60*, 315–322.
69. Franklin, E.C.; Ault, J.S.; Smith, S.G.; Luo, J.; Meester, G.A.; Diaz, G.A.; Chiappone, M.; Swanson, D.W.; Miller, S.L.; Bohnsack, J.A. Benthic habitat mapping in the Tortugas Region, Florida. *Mar. Geod.* **2003**, *26*, 19–34.
70. Friedl, M.A.; McIver, D.K.; Hodges, J.C.F.; Zhang, X.Y.; Muchoney, D.; Strahler, A.H.; Woodcock, C.E.; Gopal, S.; Schneider, A.; Cooper, A.; et al. Global land cover mapping from MODIS: algorithms and early results. *Remote Sens. Environ.* **2002**, *83*, 287–302.
71. Friedl, M.A.; Woodcock, C.; Gopal, S.; Muchoney, D.; Strahler, A.H.; Barker-Schaaf, C. A note on procedures used for accuracy assessment in land cover maps derived from AVHRR data. *Int. J. Remote Sens.* **2000**, *21*, 1073–1077.
72. Friedl, M.A.; Sulla-Menashe, D.; Tan, B.; Schneider, A.; Ramankutty, N.; Sibley, A.; Huang, X. MODIS Collection 5 global land cover: Algorithm refinements and characterization of new datasets. *Remote Sens. Environ.* **2010**, *114*, 168–182.
73. Gallaun, H.; Steinegger, M.; Wack, R.; Schardt, M.; Kornberger, B.; Schmitt, U. Remote sensing based two-stage sampling for accuracy assessment and area estimation of land cover changes. *Remote Sens.* **2015**, *7*, 11992–12008.
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- 
74. Gao, T.; Zhu, J.; Zheng, X.; Shang, G.; Huang, L.; Wu, S. Mapping spatial distribution of larch plantations from multi-seasonal landsat-8 OLI imagery and multi-scale textures using random forests. *Remote Sens.* **2015**, *7*, 1702–1720.
75. Gao, Y.; Francois Mas, J.; Kerle, N.; Navarrete Pacheco, J.A. Optimal region growing segmentation and its effect on classification accuracy. *Int. J. Remote Sens.* **2011**, *32*, 3747–3763.
76. García-Álvarez, D.; Camacho Olmedo, M.T. Changes in the methodology used in the production of the Spanish CORINE: Uncertainty analysis of the new maps. *Int. J. Appl. Earth Obs. Geoinf.* **2017**, *63*, 55–67.
77. Garza-Pérez, J.; Lehmann, A.; Arias-González, J. Spatial prediction of coral reef habitats: integrating ecology with spatial modeling and remote sensing. *Mar. Ecol. Prog. Ser.* **2004**, *269*, 141–152.
78. Garzon-Lopez, C.; Foody, G.; Bastin, L.; Rocchini, D.; Pal, M. The Sensitivity of Mapping Methods to Reference Data Quality: Training Supervised Image Classifications with Imperfect Reference Data. *ISPRS Int. J. Geo-Information* **2016**, *5*, 199.
79. Gaughan, A.E.; Holdo, R.M.; Anderson, T.M. Using short-term MODIS time-series to quantify tree cover in a highly heterogeneous African savanna. *Int. J. Remote Sens.* **2013**, *34*, 6865–6882.
80. Gessner, U.; Machwitz, M.; Esch, T.; Tillack, A.; Naeimi, V.; Kuenzer, C.; Dech, S. Multi-sensor mapping of West African land cover using MODIS, ASAR and TanDEM-X/TerraSAR-X data. *Remote Sens. Environ.* **2015**, *164*, 282–297.
81. Ghimire, B.R.; Nagai, M.; Tripathi, N.K.; Witayangkurn, A.; Mishara, B.; Sasaki, N. Mapping of *Shorea robusta* forest using time series MODIS data. *Forests* **2017**, *8*, 384.
82. Gianinetto, M.; Lechi, G. The development of superspectral approaches for the improvement of land cover classification. *IEEE Trans. Geosci. Remote Sens.* **2004**, *42*, 2670–2679.
83. Giri, C.; Jenkins, C. Land cover mapping of Greater Mesoamerica using MODIS data. *Can. J. Remote Sens.* **2005**, *31*, 274–282.
84. Giri, C.; Muhlhausen, J.; Giri, C.; Muhlhausen, J. Mangrove Forest Distributions and Dynamics in Madagascar (1975–2005). *Sensors* **2008**, *8*, 2104–2117.
85. Godman, J.; Ustin, S.L. Classification of benthic composition in a coral reef environment using spectral unmixing. *J. Appl. Remote Sens.* **2007**, *1*, 11501.
86. Gonçalves, L.M.S.; Fonte, C.C.; Júlio, E.N.B.S.; Caetano, M. A method to incorporate uncertainty in the classification of remote sensing images. *Int. J. Remote Sens.* **2009**, *30*, 5489–5503.
87. Griffiths, P.; Kuemmerle, T.; Baumann, M.; Radeloff, V.C.; Abrudan, I. V.; Lieskovsky, J.; Munteanu, C.; Ostapowicz, K.; Hostert, P. Forest disturbances, forest recovery, and changes in forest types across the carpathian ecoregion from 1985 to 2010 based on landsat image composites. *Remote Sens. Environ.* **2014**, *151*, 72–88.
88. Grinand, C.; Rakotomalala, F.; Gond, V.; Vaudry, R.; Bernoux, M.; Vieilledent, G. Estimating deforestation in tropical humid and dry forests in Madagascar from 2000 to 2010 using multi-date Landsat satellite images and the random forests classifier. *Remote Sens. Environ.* **2013**, *139*, 68–80.
89. Gullström, M.; Lundén, B.; Bodin, M.; Kangwe, J.; Öhman, M.C.; Mtolera, M.S.P.; Björk, M. Assessment of changes in the seagrass-dominated submerged vegetation of tropical Chwaka Bay (Zanzibar) using satellite remote sensing. *Estuar. Coast. Shelf Sci.* **2006**, *67*, 399–408.
90. Günlü, A.; Sivrikaya, F.; Baskent, E.Z.; Keles, S.; Çakir, G.; Kadiogullari, A.I. Estimation of stand type parameters and land cover using landsat-7 ETM image: A case study from Turkey. *Sensors* **2008**, *8*, 2509–2525.
91. Guo, J.; Huo, H. An Enhanced IT2FCM{\*}Algorithm Integrating Spectral Indices and Spatial Information for Multi-Spectral Remote Sensing Image Clustering. *Remote Sens.* **2017**, *9*.
92. Habeeb, R.L.; Johnson, C.R.; Wotherspoon, S.; Mumby, P.J. Optimal scales to observe habitat dynamics: a coral reef example. *Ecol. Appl.* **2007**, *17*, 641–7.
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93. Haest, B.; Borre, J. Vanden; Spanhove, T.; Thoonen, G.; Delalieux, S.; Kooistra, L.; Mûcher, C.A.; Paelinckx, D.; Scheunders, P.; Kempeneers, P. Habitat mapping and quality assessment of NATURA 2000 heathland using airborne imaging spectroscopy. *Remote Sens.* **2017**, *9*.
94. Hansen, M.C.; Sohlberg, R.; Defries, R.S.; Townshend, J.R.G.G.; Sohlberg, R. Global land cover classification at 1 km spatial resolution using a classification tree approach. *Int. J. Remote Sens.* **2000**, *21*, 1331–1364.
95. Hashim, M.; Pour, A.B.; Wei, C.K. Comparison of ETM+ and MODIS Data for Tropical Forest Degradation Monitoring in the Peninsular Malaysia. *J. Indian Soc. Remote Sens.* **2014**, *42*, 383–396.
96. Hermosilla, T.; Wulder, M.A.; White, J.C.; Coops, N.C.; Hobart, G.W. Regional detection, characterization, and attribution of annual forest change from 1984 to 2012 using Landsat-derived time-series metrics. *Remote Sens. Environ.* **2015**, *170*, 121–132.
97. Hladik, C.; Schalles, J.; Alber, M. Salt marsh elevation and habitat mapping using hyperspectral and LIDAR data. *Remote Sens. Environ.* **2013**, *139*, 318–330.
98. Hoekman, D.H.; Vissers, M.A.M.; Wielaard, N. PALSAR Wide-Area Mapping of Borneo: Methodology and Map Validation. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* **2010**, *3*, 605–617.
99. Holmes, K.W.W.; Van Niel, K.P.P.; Kendrick, G.A.A.; Radford, B. Probabilistic large-area mapping of seagrass species distributions. *Aquat. Conserv. Mar. Freshw. Ecosyst.* **2007**, *17*, 385–407.
100. Homer, C.; Huang, C.; Yang, L.; Wylie, B.; Coan, M. Development of a 2001 National Land-Cover Database for the United States. *Photogramm. Eng. Remote Sensing* **2004**, *70*, 829–840.
101. Houk, P.; Van Woesik, R. Dynamics of shallow-water assemblages in the Saipan Lagoon. *Mar. Ecol. Prog. Ser.* **2008**, *356*, 39–50.
102. Huang, C.; Song, K.; Kim, S.; Townshend, J.R.G.; Davis, P.; Masek, J.G.; Goward, S.N. Use of a dark object concept and support vector machines to automate forest cover change analysis. *Remote Sens. Environ.* **2008**, *112*, 970–985.
103. Huang, S.; Ramirez, C.; Kennedy, K.; Mallory, J.; Wang, J.; Chu, C. Updating land cover automatically based on change detection using satellite images: case study of national forests in Southern California. *GIScience Remote Sens.* **2017**, *54*, 495–514.
104. Iames, J.S.; Congalton, R.G.; Lunetta, R.S. Analyst variation associated with land cover image classification of Landsat ETM + data for the assessment of coarse spatial resolution regional/global land cover products. *GIScience Remote Sens.* **2013**, *50*, 604–622.
105. Isoun E; Fletcher, C.; Frazer, N.; Gradie, J. Multi-spectral mapping of reef bathymetry and coral cover; Kailua Bay, Hawaii. *Coral Reefs* **2003**, *22*, 68–82.
106. Jiao, Z.; Woodcock, C.; Schaaf, C.B.; Tan, B.; Liu, J.; Gao, F.; Strahler, A.; Li, X.; Wang, J. Improving MODIS land cover classification by combining MODIS spectral and angular signatures in a Canadian boreal forest. *Can. J. Remote Sens.* **2011**, *37*, 184–203.
107. Jin, H.; Huang, C.; Lang, M.W.; Yeo, I.Y.; Stehman, S. V. Monitoring of wetland inundation dynamics in the Delmarva Peninsula using Landsat time-series imagery from 1985 to 2011. *Remote Sens. Environ.* **2017**, *190*, 26–41.
108. Jokar Arsanjani, J.; See, L.; Tayyebi, A. Assessing the suitability of GlobeLand30 for mapping land cover in Germany. *Int. J. Digit. Earth* **2016**, *9*, 873–891.
109. Jordan, A.; Lawler, M.; Halley, V.; Barrett, N. Seabed habitat mapping in the Kent Group of islands and its role in marine protected area planning. *Aquat. Conserv. Mar. Freshw. Ecosyst.* **2005**, *15*, 51–70.
110. Joyce, K.E.; Phinn, S.R.; Roelfsema, C.M.; Neil, D.T.; Dennison, W.C. Combining Landsat ETM+ and Reef Check classifications for mapping coral reefs: A critical assessment from the southern Great Barrier Reef, Australia. *Coral Reefs* **2004**, *23*, 21–25.
111. Jupiter, S.D.; Marion, G.S. Changes in forest area along stream networks in an agricultural catchment of the Great Barrier Reef Lagoon. *Environ. Manage.* **2008**, *42*, 66–79.
-

- 
112. Kaptué Tchuenté, A.T.; De Jong, S.M.; Roujean, J.L.; Favier, C.; Mering, C. Ecosystem mapping at the African continent scale using a hybrid clustering approach based on 1-km resolution multi-annual data from SPOT/VEGETATION. *Remote Sens. Environ.* **2011**, *115*, 452–464.
113. Katagis, T.; Gitas, I.Z.; Mitri, G.H. An object-based approach for fire history reconstruction by using three generations of landsat sensors. *Remote Sens.* **2014**, *6*, 5480–5496.
114. Kavzoglu, T.; Colkesen, I. An assessment of the effectiveness of a rotation forest ensemble for land-use and land-cover mapping. *Int. J. Remote Sens.* **2013**, *34*, 4224–4241.
115. Kendrick, G.A.; Aylward, M.J.; Hegge, B.J.; Cambridge, M.L.; Hillman, K.; Wyllie, A.; Lord, D.A. Changes in seagrass coverage in Cockburn Sound, Western Australia between 1967 and 1999. *Aquat. Bot.* **2002**, *73*, 75–87.
116. Khatami, R.; Mountrakis, G.; Stehman, S. V. Predicting individual pixel error in remote sensing soft classification. *Remote Sens. Environ.* **2017**, *199*, 401–414.
117. Kim, D.-H.; Sexton, J.O.; Noojipady, P.; Huang, C.; Anand, A.; Channan, S.; Feng, M.; Townshend, J.R. Global, Landsat-based forest-cover change from 1990 to 2000. *Remote Sens. Environ.* **2014**, *155*, 178–193.
118. Klonowski, W.M.; Fearn, P.R.C.S.; Lynch, M.J. Retrieving key benthic cover types and bathymetry from hyperspectral imagery. *J. Appl. Remote Sens.* **2007**, *1*, 11505.
119. Knight, A.W.; Tindall, D.R.; Wilson, B.A. A multitemporal multiple density slice method for wetland mapping across the state of Queensland, Australia. *Int. J. Remote Sens.* **2009**, *30*, 3365–3392.
120. Kuemmerle, T.; Chaskovskyy, O.; Knorn, J.; Radeloff, V.C.; Kruhlov, I.; Keeton, W.S.; Hostert, P. Forest cover change and illegal logging in the Ukrainian Carpathians in the transition period from 1988 to 2007. *Remote Sens. Environ.* **2009**, *113*, 1194–1207.
121. Kutser, T.; Miller, I.; Jupp, D.L.B.B. Mapping coral reef benthic substrates using hyperspectral space-borne images and spectral libraries. *Estuar. Coast. Shelf Sci.* **2006**, *70*, 449–460.
122. Kvernevik, T.-I.; Zambri Mohd Akhir, M.; Studholme, J. A low-cost procedure for automatic seafloor mapping, with particular reference to coral reef conservation in developing nations. *Hydrobiologia* **2002**, *474*, 67–79.
123. Landmann, T.; Schramm, M.; Colditz, R.R.; Dietz, A.; Dech, S. Wide area wetland mapping in semi-arid Africa using 250-meter MODIS metrics and topographic variables. *Remote Sens.* **2010**, *2*, 1751–1766.
124. Langner, A.; Achard, F.; Vancutsem, C.; Pekel, J.F.; Simonetti, D.; Grassi, G.; Kitayama, K.; Nakayama, M. Assessment of above-ground biomass of Borneo forests through a new data-fusion approach combining two pan-tropical biomass maps. *Land* **2015**, *4*, 656–669.
125. Lathrop, R.G.; Montesano, P.; Haag, S. A Multi-scale Segmentation Approach to Mapping Seagrass Habitats Using Airborne Digital Camera Imagery. *Photogramm. Eng. Remote Sens.* **2013**, *72*, 665–675.
126. Latifovic, R.; Pouliot, D. Multitemporal land cover mapping for Canada: methodology and products. *Can. J. Remote Sens.* **2005**, *31*, 347–363.
127. Latifovic, R.; Pouliot, D.; Olthof, I. Circa 2010 land cover of Canada: Local optimization methodology and product development. *Remote Sens.* **2017**, *9*, 1098.
128. Lauer, M.; Aswani, S. Integrating indigenous ecological knowledge and multi-spectral image classification for marine habitat mapping in Oceania. *Ocean Coast. Manag.* **2008**, *51*, 495–504.
129. Lehnert, L.W.; Meyer, H.; Wang, Y.; Miehe, G.; Thies, B.; Reudenbach, C.; Bendix, J. Retrieval of grassland plant coverage on the Tibetan Plateau based on a multi-scale, multi-sensor and multi-method approach. *Remote Sens. Environ.* **2015**, *164*, 197–207.
130. Lesser, M.P.; Mobley, C.D. Bathymetry, water optical properties, and benthic classification of coral reefs using hyperspectral remote sensing imagery. *Coral Reefs* **2007**, *26*, 819–829.
-

- 
131. Lewis, D.L.; Phinn, S.R. Accuracy assessment of vegetation community maps generated by aerial photography interpretation: perspective from the tropical savanna, Australia. *J. Appl. Remote Sens.* **2011**, *5*, 53565.
132. Lewis, D.; Phinn, S.; Arroyo, L. Cost-effectiveness of seven approaches to map vegetation communities - A case study from Northern Australia's tropical savannas. *Remote Sens.* **2013**, *5*, 377–414.
133. Li, C.; Wang, J.; Hu, L.; Yu, L.; Clinton, N.; Huang, H.; Yang, J.; Gong, P. A circa 2010 thirty meter resolution forest map for China. *Remote Sens.* **2014**, *6*, 5325–5343.
134. Li, G.; Lu, D.; Moran, E.; Dutra, L.; Batistella, M. A comparative analysis of ALOS PALSAR L-band and RADARSAT-2 C-band data for land-cover classification in a tropical moist region. *ISPRS J. Photogramm. Remote Sens.* **2012**, *70*, 26–38.
135. Li, G.; Lu, D.; Moran, E.; Hetrick, S. Land-cover classification in a moist tropical region of Brazil with Landsat Thematic Mapper imagery. *Int. J. Remote Sens.* **2011**, *32*, 8207–8230.
136. Liu, J.; Heiskanen, J.; Aynekulu, E.; Maeda, E.E.; Pellikka, P.K.E. Land cover characterization in West Sudanian savannas using seasonal features from annual landsat time series. *Remote Sens.* **2016**, *8*, 365.
137. Long, J.B.; Giri, C. Mapping the Philippines' mangrove forests using Landsat imagery. *Sensors* **2011**, *11*, 2972–2981.
138. Louchard, E.M.; Reid, R.P.; Stephens, F.C.; Davis, C.O.; Leathers, R.A.; Downes, T.V. Optical remote sensing of benthic habitats and bathymetry in coastal environments at Lee Stocking Island, Bahamas: A comparative spectral classification approach. *Limnol. Oceanogr.* **2003**, *48*, 511–521.
139. Loveland, T.R.; Zhu, Z.; Ohlen, D.O.; Brown, J.F.; Reed, B.C.; Yang, L. An analysis of IGBP global land-cover characterization process. *Photogramm. Eng. Remote Sensing* **1999**, *65*, 1021–1032.
140. Lowry, J.; Ramsey, R.D.; Thomas, K.; Schrupp, D.; Sajwaj, T.; Kirby, J.; Waller, E.; Schrader, S.; Falzarano, S.; Langs, L.; et al. Mapping moderate-scale land-cover over very large geographic areas within a collaborative framework: A case study of the Southwest Regional Gap Analysis Project (SWReGAP). *Remote Sens. Environ.* **2007**, *108*, 59–73.
141. Lu, D.; Li, G.; Moran, E.; Dutra, L.; Batistella, M. A Comparison of Multisensor Integration Methods for Land Cover Classification in the Brazilian Amazon. *GIScience Remote Sens.* **2011**, *48*, 345–370.
142. Lucas, R.M.; Honzák, M.; Curran, P.J.; Foody, G.M.; Nguete, D.T. Characterizing tropical forest regeneration in Cameroon using NOAA AVHRR data. *Int. J. Remote Sens.* **2000**, *21*, 2831–2854.
143. Lunetta, R.S.; Ediriwickrema, J.; Iiames, J.; Johnson, D.M.; Lyon, J.G.; McKerrow, A.; Pilant, A. A quantitative assessment of a combined spectral and GIS rule-based land-cover classification in the Neuse River Basin of North Carolina. *Photogramm. Eng. Remote Sensing* **2003**, *69*, 299–310.
144. Lwin, K.K.; Murayama, Y. Evaluation of land cover classification based on multispectral versus pansharpened landsat ETM+ imagery. *GIScience Remote Sens.* **2013**, *50*, 458–472.
145. Ma, L.; Cheng, L.; Li, M.; Liu, Y.; Ma, X. Training set size, scale, and features in Geographic Object-Based Image Analysis of very high resolution unmanned aerial vehicle imagery. *ISPRS J. Photogramm. Remote Sens.* **2015**, *102*, 14–27.
146. Maeder, J.; Narumalani, S.; Rundquist, D.C.; Perk, R.L.; Schalles, J.; Hutchins, K.; Keck, J. Classifying and mapping general coral-reef structure using Ikonos data. *Photogramm. Eng. Remote Sens.* **2002**, *68*, 1297–1305.
147. Mafanya, M.; Tsele, P.; Botai, J.; Manyama, P.; Swart, B.; Monate, T. Evaluating pixel and object based image classification techniques for mapping plant invasions from UAV derived aerial imagery: *Harrisia pomanensis* as a case study. *ISPRS J. Photogramm. Remote Sens.* **2017**, *129*, 1–11.
-

- 
148. Magdon, P.; Fischer, C.; Fuchs, H.; Kleinn, C. Translating criteria of international forest definitions into remote sensing image analysis. *Remote Sens. Environ.* **2014**, *149*, 252–262.
  149. Maggi, M.; Stroppiana, D. Advantages and drawbacks of NOAA-AVHRR and SPOT-VGT for burnt area mapping in a tropical savanna ecosystem. *Can. J. Remote Sens.* **2002**, *28*, 231–245.
  150. Massetti, A.; Sequeira, M.M.; Pupo, A.; Figueiredo, A.; Guiomar, N.; Gil, A. Assessing the effectiveness of RapidEye multispectral imagery for vegetation mapping in Madeira Island (Portugal). *Eur. J. Remote Sens.* **2016**, *49*, 643–672.
  151. Mathieu, R.; Aryal, J.; Chong, A.; Mathieu, R.; Aryal, J.; Chong, A.K. Object-Based classification of Ikonos imagery for mapping large-scale vegetation communities in urban areas. *Sensors* **2007**, *7*, 2860–2880.
  152. McCleary, A.L.; Crews-Meyer, K.A.; Young, K.R. Refining forest classifications in the western Amazon using an intra-annual multitemporal approach. *Int. J. Remote Sens.* **2008**, *29*, 991–1006.
  153. McCloy, K.R.; Bøcher, P.K. Optimizing image resolution to maximize the accuracy of hard classification. *Photogramm. Eng. Remote Sens.* **2007**, *73*, 893–903.
  154. McCormick, C. Mapping exotic vegetation in the Everglades from large-scale aerial photographs. *Photogramm. Eng. Remote Sensing* **1999**, *65*, 179–184.
  155. McIver, D.K.; Friedl, M.A. Estimating pixel-scale land cover classification confidence using nonparametric machine learning methods. *IEEE Trans. Geosci. Remote Sens.* **2001**, *39*, 1959–1968.
  156. McRoberts, R.E. Satellite image-based maps: Scientific inference or pretty pictures? *Remote Sens. Environ.* **2011**, *115*, 715–724.
  157. McRoberts, R.E.; Walters, B.F. Statistical inference for remote sensing-based estimates of net deforestation. *Remote Sens. Environ.* **2012**, *124*, 394–401.
  158. Meehan, A.J.; Williams, R.J.; Watford, F.A. Detecting trends in seagrass abundance using aerial photograph interpretation: Problems arising with the evolution of mapping methods. *Estuaries* **2005**, *28*, 462–472.
  159. Meng, R.; Wu, J.; Schwager, K.L.; Zhao, F.; Dennison, P.E.; Cook, B.D.; Brewster, K.; Green, T.M.; Serbin, S.P. Using high spatial resolution satellite imagery to map forest burn severity across spatial scales in a Pine Barrens ecosystem. *Remote Sens. Environ.* **2017**, *191*, 95–109.
  160. Mfitumukiza, D.; Kayendeke, E.; Mwanjalolo, J. Classification and mapping of rangeland vegetation physiognomic composition using Landsat Enhanced Thematic Mapper and IKONOS imagery. *South African J. Geomatics* **2014**, *3*, 259.
  161. Miao Li; Shuying Zang; Li, M.; Zang, S.; Miao Li; Shuying Zang Mapping Localized Patterns of Classification Accuracies Through Incorporating Image Segmentation. *IEEE Geosci. Remote Sens. Lett.* **2015**, *12*, 1571–1575.
  162. Middinti, S.; Jha, C.S.; Reddy, T.B. Forest type classification with combination of advanced polarimetric decompositions and textures of L-band synthetic aperture radar data. *J. Appl. Remote Sens.* **2017**, *11*, 16035.
  163. Miettinen, J.; Wong, C.M.; Liew, S.C. New 500 m spatial resolution land cover map of the western insular Southeast Asia region. *Int. J. Remote Sens.* **2008**, *29*, 6075–6081.
  164. Miettinen, J.; Shi, C.; Liew, S.C. 2015 Land cover map of Southeast Asia at 250 m spatial resolution. *Remote Sens. Lett.* **2016**, *7*, 701–710.
  165. Miettinen, J.; Shi, C.; Tan, W.J.; Liew, S.C. 2010 land cover map of insular Southeast Asia in 250-m spatial resolution. *Remote Sens. Lett.* **2012**, *3*, 11–20.
  166. Millard, K.; Richardson, M. On the importance of training data sample selection in Random Forest image classification: A case study in peatland ecosystem mapping. *Remote Sens.* **2015**, *7*, 8489–8515.
-

- 
167. Mishra, D.; Narumalani, S.; Rundquist, D.; Lawson, M. Benthic Habitat Mapping in Tropical Marine Environments Using QuickBird Multispectral Data. *Photogramm. Eng. Remote Sens.* **2006**, *72*, 1037–1048.
168. Mittal, V.; Singh, D.; Saini, L.M. A critical analysis of em based fusion of different polarization data for effect on land cover classification. *Adv. Sp. Res.* **2015**, *56*, 1094–1105.
169. Montealegre, A.L.; Lamelas, M.T.; Tanase, M.A.; De la Riva, J. Forest fire severity assessment using ALS data in a mediterranean environment. *Remote Sens.* **2014**, *6*, 4240–4265.
170. Moore, K.A.; Wilcox, D.J.; Orth, R.J. Analysis of the abundance of submersed aquatic vegetation communities in the Chesapeake Bay. *Estuaries* **2000**, *23*, 115–127.
171. Morales, R.M.; Idol, T.; Friday, J.B. Assessment of Acacia koa forest health across environmental gradients in Hawai'i using fine resolution remote sensing and GIS. *Sensors* **2011**, *11*, 5677–5694.
172. Muchoney, D.M.; Strahler, A.H. Pixel- and site-based calibration and validation methods for evaluating supervised classification of remotely sensed data. *Remote Sens. Environ.* **2002**, *81*, 290–299.
173. Muinonen, E.; Parikka, H.; Pokharel, Y.P.; Shrestha, S.M.; Eerikäinen, K. Utilizing a multi-source forest inventory technique, MODIS data and landsat TM images in the production of forest cover and volume maps for the terai physiographic zone in Nepal. *Remote Sens.* **2012**, *4*, 3920–3947.
174. Muller, S.V.; Walker, D.A.; Nelson, F.E.; Auerbach, N.A.; Bockheim, J.G.; Guyer, S.; Sherba, D. Accuracy assessment of a land-cover map of the Kuparuk River basin, Alaska: Considerations for remote regions. *Photogramm. Eng. Remote Sensing* **1998**, *64*, 619–628.
175. Müllerová, J.; Pergl, J.; Pyšek, P. Remote sensing as a tool for monitoring plant invasions: Testing the effects of data resolution and image classification approach on the detection of a model plant species *Heracleum mantegazzianum* (giant hogweed). *Int. J. Appl. Earth Obs. Geoinf.* **2013**, *25*, 55–65.
176. Mumby, P.J.; Green, E.P.; Clark, C.D.; Edwards, A.J. Digital analysis of multispectral airborne imagery of coral reefs. *Coral Reefs* **1998**, *17*, 59–69.
177. Mumby, P.J.; Edwards, A.J. Mapping marine environments with IKONOS imagery: enhanced spatial resolution can deliver greater thematic accuracy. *Remote Sens. Environ.* **2002**, *82*, 248–257.
178. Murdoch, T.; Glasspool, A.; Outerbridge, M.; Ward, J.; Manuel, S.; Gray, J.; Nash, A.; Coates, K.; Pitt, J.; Fourqurean, J.; et al. Large-scale decline in offshore seagrass meadows in Bermuda. *Mar. Ecol. Prog. Ser.* **2007**, *339*, 123–130.
179. Muthukumarasamy, I.; Shanmugam, R.S.; Kolanuvada, S.R. SAR polarimetric decomposition with ALOS PALSAR-1 for agricultural land and other land use/cover classification: case study in Rajasthan, India. *Environ. Earth Sci.* **2017**, *76*, 455.
180. Naseer, A.; Hatcher, B.G. Inventory of the Maldives? coral reefs using morphometrics generated from Landsat ETM+ imagery. *Coral Reefs* **2004**, *23*, 161–168.
181. Newman, C.M.; Knudby, A.J.; LeDrew, E. Assessing the effect of management zonation on live coral cover using multi-date IKONOS satellite imagery. *J. Appl. Remote Sens.* **2007**, *1*, 11504.
182. Niculescu, S.; Lardeux, C.; Grigoras, I.; Hanganu, J.; David, L. Synergy Between LiDAR, RADARSAT-2, and Spot-5 Images for the Detection and Mapping of Wetland Vegetation in the Danube Delta. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* **2016**, *9*, 3651–3666.
183. Odindi, J.; Adam, E.; Ngubane, Z.; Mutanga, O.; Slotow, R. Comparison between WorldView-2 and SPOT-5 images in mapping the bracken fern using the random forest algorithm. *J. Appl. Remote Sens.* **2014**, *8*, 83527.
184. Okhimamhe, A.A. ERS SAR interferometry for land cover mapping in a savanna area in Africa. *Int. J. Remote Sens.* **2003**, *24*, 3583–3594.
-

- 
185. Orth, R.J.; Luckenbach, M.L.; Marion, S.R.; Moore, K.A.; Wilcox, D.J. Seagrass recovery in the Delmarva Coastal Bays, USA. *Aquat. Bot.* **2006**, *84*, 26–36.
186. Ortiz, S.M.; Breidenbach, J.; Knuth, R.; Kändler, G. The Influence of DEM Quality on Mapping Accuracy of Coniferous- and Deciduous-Dominated Forest Using TerraSAR-X Images. *Remote Sens.* **2012**, *4*, 661–681.
187. Padilla, M.; Stehman, S. V.; Chuvieco, E. Validation of the 2008 MODIS-MCD45 global burned area product using stratified random sampling. *Remote Sens. Environ.* **2014**, *144*, 187–196.
188. Padilla, M.; Stehman, S. V.; Litago, J.; Chuvieco, E. Assessing the temporal stability of the accuracy of a time series of burned area products. *Remote Sens.* **2014**, *6*, 2050–2068.
189. Palandro, D.; Andréfouët, S.; Dustan, P.; Muller-Karger, F.E. Change detection in coral reef communities using Ikonos satellite sensor imagery and historic aerial photographs. *Int. J. Remote Sens.* **2003**, *24*, 873–878.
190. Palandro, D.A.; Hu, C.; Hallock, P.; Müller-Karger, F.E.; Dustan, P.; Callahan, M.K.; Kranenburg, C.; Beaver, C.R.; Andréfouët, S.; Hu, C.; et al. Quantification of two decades of shallow-water coral reef habitat decline in the Florida Keys National Marine Sanctuary using Landsat data (1984–2002). *Remote Sens. Environ.* **2008**, *112*, 3388–3399.
191. Parent, J.R.; Volin, J.C.; Civco, D.L. A fully-automated approach to land cover mapping with airborne LiDAR and high resolution multispectral imagery in a forested suburban landscape. *ISPRS J. Photogramm. Remote Sens.* **2015**, *104*, 18–29.
192. Park, N.-W.; Kyriakidis, P.; Hong, S.-Y.; Park, N.-W.; Kyriakidis, P.C.; Hong, S.-Y. Spatial Estimation of Classification Accuracy Using Indicator Kriging with an Image-Derived Ambiguity Index. *Remote Sens.* **2016**, *8*, 320.
193. Pasqualini, V.; Clabaut, P.; Pergent, G.; Benyoussef, L.; Pergent-Martini, C. Contribution of side scan sonar to the management of Mediterranean littoral ecosystems. *Int. J. Remote Sens.* **2000**, *21*, 367–378.
194. Pasqualini, V.; Pergent-Martini, C.; Pergent, G.; Agreil, M.; Skoufas, G.; Sourbes, L.; Tsirika, A. Use of SPOT 5 for mapping seagrasses: An application to *Posidonia oceanica*. *Remote Sens. Environ.* **2005**, *94*, 39–45.
195. Peneva, E.; Griffith, J.A.; Carter, G.A. Seagrass mapping in the northern Gulf of Mexico using airborne hyperspectral imagery: A comparison of classification methods. *J. Coast. Res.* **2008**, *244*, 850–856.
196. Pengra, B.W.; Johnston, C.A.; Loveland, T.R. Mapping an invasive plant, *Phragmites australis*, in coastal wetlands using the EO-1 Hyperion hyperspectral sensor. *Remote Sens. Environ.* **2007**, *108*, 74–81.
197. Pengra, B.; Long, J.; Dahal, D.; Stehman, S. V.; Loveland, T.R. A global reference database from very high resolution commercial satellite data and methodology for application to Landsat derived 30 m continuous field tree cover data. *Remote Sens. Environ.* **2015**, *165*, 234–248.
198. Perez-Hoyos, A.; Garcia-Haro, F.J.; Valcarcel, N. Incorporating sub-dominant classes in the accuracy assessment of large-area land cover products: Application to globcover, MODISLC, GLC2000 and CORINE in Spain. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* **2014**, *7*, 187–205.
199. Pergent, G.; Djellouli, A.; Hamza, A.A.; Ettayeb, K.S.; Mansouri, A.A. El; Talha, F.M.; Hamza, M.A.; Pergent-Martini, C.; Platini, F. Characterization of the benthic vegetation in the Farwà Lagoon (Libya). *J. Coast. Conserv.* **2002**, *8*, 119–126.
200. Pervez, W.; Uddin, V.; Khan, S.A.; Khan, J.A. Satellite-based land use mapping: comparative analysis of Landsat-8, Advanced Land Imager, and big data Hyperion imagery. *J. Appl. Remote Sens.* **2016**, *10*, 26004.
201. Phinn, S.; Roelfsema, C.; Dekker, A.; Brando, V.; Anstee, J. Mapping seagrass species, cover and biomass in shallow waters: An assessment of satellite multi-spectral and airborne hyper-spectral imaging systems in Moreton Bay (Australia). *Remote Sens. Environ.* **2008**, *112*, 3413–3425.
-

- 
202. Pouliot, D.; Latifovic, R. Land change attribution based on Landsat time series and integration of ancillary disturbance data in the Athabasca oil sands region of Canada. *GIScience Remote Sens.* **2016**, *53*, 382–401.
203. Prada, M.C.; Appeldoorn, R.S.; Rivera, J.A. Improving coral reef habitat mapping of the Puerto Rico insular shelf using side scan sonar. *Mar. Geod.* **2008**, *31*, 49–73.
204. Pu, R.; Gong, P.; Tian, Y.; Miao, X.; Carruthers, R.I.; Anderson, G.L. Using classification and NDVI differencing methods for monitoring sparse vegetation coverage: a case study of saltcedar in Nevada, USA. *Int. J. Remote Sens.* **2008**, *29*, 3987–4011.
205. Puertas, O.L.; Brenning, A.; Meza, F.J. Balancing misclassification errors of land cover classification maps using support vector machines and Landsat imagery in the Maipo river basin (Central Chile, 1975–2010). *Remote Sens. Environ.* **2013**, *137*, 112–123.
206. Purkis, S.J.; Graham, N.A.J.; Riegl, B.M. Predictability of reef fish diversity and abundance using remote sensing data in Diego Garcia (Chagos Archipelago). *Coral Reefs* **2008**, *27*, 167–178.
207. Purkis, S.J. A “Reef-Up” approach to classifying coral habitats from IKONOS imagery. *IEEE Trans. Geosci. Remote Sens.* **2005**, *43*, 1375–1390.
208. Purkis, S.; Riegl, B. Spatial and temporal dynamics of Arabian Gulf coral assemblages quantified from remote-sensing and in situ monitoring data. *Mar. Ecol. Prog. Ser.* **2005**, *287*, 99–113.
209. Qin, Y.; Niu, Z.; Chen, F.; Li, B.; Ban, Y. Object-based land cover change detection for cross-sensor images. *Int. J. Remote Sens.* **2013**, *34*, 6723–6737.
210. Qin, Y.; Xiao, X.; Wang, J.; Dong, J.; Ewing, K.; Hoagland, B.; Hough, D.J.; Fagin, T.D.; Zou, Z.; Geissler, G.L.; et al. Mapping annual forest cover in sub-humid and semi-arid regions through analysis of Landsat and PALSAR imagery. *Remote Sens.* **2016**, *8*, 933.
211. Quintano, C.; Fernández-Manso, A.; Roberts, D.A. Multiple Endmember Spectral Mixture Analysis (MESMA) to map burn severity levels from Landsat images in Mediterranean countries. *Remote Sens. Environ.* **2013**, *136*, 76–88.
212. Radoux, J.; Defourny, P. A quantitative assessment of boundaries in automated forest stand delineation using very high resolution imagery. *Remote Sens. Environ.* **2007**, *110*, 468–475.
213. Reshitnyk, L.; Costa, M.; Robinson, C.; Dearden, P. Evaluation of WorldView-2 and acoustic remote sensing for mapping benthic habitats in temperate coastal Pacific waters. *Remote Sens. Environ.* **2014**, *153*, 7–23.
214. Riegl, B.; Moyer, R.; Morris, L.; Virnstein, R.; Dodge, R.. Determination of the distribution of shallow-water seagrass and drift algae communities with acoustic seafloor discrimination. *Rev. Biol. Trop.* **2005**, *53*, 165–174.
215. Riegl, B.M.; Purkis, S.J. Detection of shallow subtidal corals from IKONOS satellite and QTC View (50, 200 kHz) single-beam sonar data (Arabian Gulf; Dubai, UAE). *Remote Sens. Environ.* **2005**, *95*, 96–114.
216. Roelfsema, C.M.; Phinn, S.R.; Dennison, W.C. Spatial distribution of benthic microalgae on coral reefs determined by remote sensing. *Coral Reefs* **2002**, *21*, 264–274.
217. Roelfsema, C.; Phinn, S. Evaluating eight field and remote sensing approaches for mapping the benthos of three different coral reef environments in Fiji. In Proceedings of the Remote Sensing of Inland, Coastal, and Oceanic Waters; Frouin, R.J., Andrefouet, S., Kawamura, H., Lynch, M.J., Pan, D., Platt, T., Eds.; International Society for Optics and Photonics, 2008; Vol. 7150, p. 71500F.
218. Roelfsema, C.; Phinn, S.R. Integrating field data with high spatial resolution multispectral satellite imagery for calibration and validation of coral reef benthic community maps. *J. Appl. Remote Sens.* **2010**, *4*, 43527.
219. Roth, K.L.; Roberts, D.A.; Dennison, P.E.; Peterson, S.H.; Alonzo, M. The impact of spatial resolution on the classification of plant species and functional types within imaging spectrometer data. *Remote Sens. Environ.* **2015**, *171*, 45–57.
-



- 
220. Rowlands, G.P.; Purkis, S.J.; Riegl, B.M. The 2005 coral-bleaching event Roatan (Honduras): Use of pseudoinvariant features (PIFs) in satellite assessments. *J. Spat. Sci.* **2008**, *53*, 99–112.
221. Roy, D.P.; Boschetti, L. Southern Africa Validation of the MODIS, L3JRC, and GlobCarbon Burned-Area Products. *IEEE Trans. Geosci. Remote Sens.* **2009**, *47*, 1032–1044.
222. Roy, P.S.; Behera, M.D.; Murthy, M.S.R.; Roy, A.; Singh, S.; Kushwaha, S.P.S.; Jha, C.S.; Sudhakar, S.; Joshi, P.K.; Reddy, C.S.; et al. New vegetation type map of India prepared using satellite remote sensing: Comparison with global vegetation maps and utilities. *Int. J. Appl. Earth Obs. Geoinf.* **2015**, *39*, 142–159.
223. Sagawa, T.; Mikami, A.; Komatsu, T.; Kosaka, N.; Kosako, A.; Miyazaki, S.; Takahashi, M. Mapping seagrass beds using IKONOS satellite image and side scan sonar measurements: A Japanese case study. *Int. J. Remote Sens.* **2008**, *29*, 281–291.
224. Salovaara, K.J.; Thessler, S.; Malik, R.N.; Tuomisto, H. Classification of Amazonian primary rain forest vegetation using Landsat ETM plus satellite imagery. *Remote Sens. Environ.* **2005**, *97*, 39–51.
225. Samaniego, L.; Bardossy, A.; Schulz, K. Supervised classification of remotely sensed imagery using a modified k-NN technique. *IEEE Trans. Geosci. Remote Sens.* **2008**, *46*, 2112–2125.
226. Santra, A.; Mitra, S.S. A Comparative Study of Tasselled Cap Transformation of DMC and ETM+ Images and their Application in Forest Classification. *J. Indian Soc. Remote Sens.* **2014**, *42*, 373–381.
227. Schultz, M.; Verbesselt, J.; Avitabile, V.; Souza, C.; Herold, M. Error Sources in Deforestation Detection Using BFAST Monitor on Landsat Time Series Across Three Tropical Sites. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* **2016**, *9*, 3667–3679.
228. Schweizer, D.; Armstrong, R.A.; Posada, J. Remote sensing characterization of benthic habitats and submerged vegetation biomass in Los Roques Archipelago National Park, Venezuela. *Int. J. Remote Sens.* **2005**, *26*, 2657–2667.
229. Sedano, F.; Gong, P.; Ferrão, M. Land cover assessment with MODIS imagery in southern African Miombo ecosystems. *Remote Sens. Environ.* **2005**, *98*, 429–441.
230. Sedano, F.; Kempeneers, P.; Strobl, P.; McInerney, D.; San Miguel, J. Increasing spatial detail of burned scar maps using IRS-AWiFS data for Mediterranean Europe. *Remote Sens.* **2012**, *4*, 726–744.
231. See, L.; Laso Bayas, J.; Schepaschenko, D.; Perger, C.; Dresel, C.; Maus, V.; Salk, C.; Weichselbaum, J.; Lesiv, M.; McCallum, I.; et al. LACO-Wiki: A new online land cover validation tool demonstrated using GlobeLand30 for Kenya. *Remote Sens.* **2017**, *9*, 754.
232. Selkowitz, D.J.; Stehman, S. V. Thematic accuracy of the National Land Cover Database (NLCD) 2001 land cover for Alaska. *Remote Sens. Environ.* **2011**, *115*, 1401–1407.
233. Seto, K.C.; Woodcock, C.E.; Song, C.; Huang, X.; Lu, J.; Kaufmann, R.K. Monitoring land-use change in the Pearl River Delta using Landsat TM. *Int. J. Remote Sens.* **2002**, *23*, 1985–2004.
234. Shermeyer, J.; Haack, B. Remote sensing change detection methods to track deforestation and growth in threatened rainforests in Madre de Dios, Peru. *J. Appl. Remote Sens.* **2015**, *9*, 96040.
235. Sinha, P.; Kumar, L. Binary images in seasonal land-cover change identification: A comparative study in parts of New South Wales, Australia. *Int. J. Remote Sens.* **2013**, *34*, 2162–2186.
236. Smith, J.H.; Stehman, S. V; Wickham, J.D.; Yang, L.M. Effects of landscape characteristics on land-cover class accuracy. *Remote Sens. Environ.* **2003**, *84*, 342–349.
237. Smith, J.H.; Wickham, J.D.; Stehman, S. V; Yang, L. Impacts of patch size and land-cover heterogeneity on thematic image classification accuracy. *Photogramm. Eng. Remote Sensing* **2002**, *68*, 65–70.
238. Souza-Filho, P.W.M.; de Souza, E.B.; Silva Júnior, R.O.; Nascimento, W.R.; Versiani de Mendonça, B.R.; Guimarães, J.T.F.; Dall’Agnol, R.; Siqueira, J.O. Four decades of land-cover,
-

- 
- land-use and hydroclimatology changes in the Itacaiúnas River watershed, southeastern Amazon. *J. Environ. Manage.* **2016**, *167*, 175–184.
239. Stambaugh, M.; Hammer, L.; Godfrey, R.; Stambaugh, M.C.; Hammer, L.D.; Godfrey, R. Performance of burn-severity metrics and classification in oak woodlands and grasslands. *Remote Sens.* **2015**, *7*, 10501–10522.
240. Steele, B.M.; Patterson, D.A.; Redmond, R.L. Toward estimation of map accuracy without a probability test sample. *Environ. Ecol. Stat.* **2003**, *10*, 333–356.
241. Stein, A.; Aryal, J.; Gort, G. Use of the Bradley-Terry model to quantify association in remotely sensed images. *IEEE Trans. Geosci. Remote Sens.* **2005**, *43*, 852–856.
242. Sulla-Menashe, D.; Friedl, M.A.; Krankina, O.N.; Baccini, A.; Woodcock, C.E.; Sibley, A.; Sun, G.; Kharuk, V.; Elsakov, V. Hierarchical mapping of Northern Eurasian land cover using MODIS data. *Remote Sens. Environ.* **2011**, *115*, 392–403.
243. Tana, G.; Letu, H.; Cheng, Z.; Tateishi, R. Wetlands mapping in North America by decision rule classification using MODIS and ancillary data. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* **2013**, *6*, 2391–2401.
244. Tchuenté, A.T.K.; Roujean, J.L.; de Jong, S.M. Comparison and relative quality assessment of the GLC2000, GLOBCOVER, MODIS and ECOCLIMAP land cover data sets at the African continental scale. *Int. J. Appl. Earth Obs. Geoinf.* **2011**, *13*, 207–219.
245. Thompson, S.D.; Gergel, S.E. Conservation implications of mapping rare ecosystems using high spatial resolution imagery: recommendations for heterogeneous and fragmented landscapes. *Landsc. Ecol.* **2008**, *23*, 1023–1037.
246. Thoonen, G.; Hufkens, K.; Borre, J. Vanden; Spanhove, T.; Scheunders, P. Accuracy assessment of contextual classification results for vegetation mapping. *Int. J. Appl. Earth Obs. Geoinf.* **2012**, *15*, 7–15.
247. Tiwari, L.K.; Sinha, S.K.; Saran, S.; Tolpekin, V.A.; Raju, P.L.N. Forest encroachment mapping in Baratang Island, India, using maximum likelihood and support vector machine classifiers. *J. Appl. Remote Sens.* **2016**, *10*, 16016.
248. Tole, L. An estimate of forest cover extent and change in Jamaica using Landsat MSS data. *Int. J. Remote Sens.* **2002**, *23*, 91–106.
249. Tsendbazar, N.E.; de Bruin, S.; Mora, B.; Schouten, L.; Herold, M. Comparative assessment of thematic accuracy of GLC maps for specific applications using existing reference data. *Int. J. Appl. Earth Obs. Geoinf.* **2016**, *44*, 124–135.
250. Tsendbazar, N.E.; Bruin, S. de; Fritz, S.; Herold, M. Spatial accuracy assessment and integration of global land cover datasets. *Remote Sens.* **2015**, *7*, 15804–15821.
251. Upadhyay, P.; Ghosh, S.K.; Kumar, A.; Krishna Murthy, Y.V.N.; Raju, P.L.N. Moist deciduous forest identification using MODIS temporal indices data. *Int. J. Remote Sens.* **2014**, *35*, 3177–3196.
252. Vanderstraete, T.; Goossens, R.; Ghabour, T.K. The use of multi-temporal Landsat images for the change detection of the coastal zone near Hurghada, Egypt. *Int. J. Remote Sens.* **2006**, *27*, 3645–3655.
253. Vanonckelen, S.; Lhermitte, S.; Van Rompaey, A. The effect of atmospheric and topographic correction on pixel-based image composites: Improved forest cover detection in mountain environments. *Int. J. Appl. Earth Obs. Geoinf.* **2015**, *35*, 320–328.
254. Varga, K.; Szabó, S.; Szabó, G.; Dévai, G.; Tóthmérész, B. Improved land cover mapping using aerial photographs and satellite images. *Open Geosci.* **2015**, *7*, 15–26.
255. Wabnitz, C.C.; Andréfouët, S.; Torres-Pulliza, D.; Müller-Karger, F.E.; Kramer, P.A. Regional-scale seagrass habitat mapping in the wider Caribbean region using Landsat sensors: Applications to conservation and ecology. *Remote Sens. Environ.* **2008**, *112*, 3455–3467.
256. Walker, K.L. Seasonal mixing in forest-cover maps for humid tropics and impact of fluctuations in spectral properties of low vegetation. *Remote Sens. Environ.* **2016**, *179*, 79–88.
-

- 
257. Wang, K.; Franklin, S.E.; Guo, X. The applicability of a small satellite constellation in classification for large-area habitat mapping: a case study of DMC multispectral imagery in west-central Alberta. *Can. J. Remote Sens.* **2010**, *36*, 671–681.
258. Wang, T.J.; Skidmore, A.K.; Toxopeus, A.G. Improved understorey bamboo cover mapping using a novel hybrid neural network and expert system. *Int. J. Remote Sens.* **2009**, *30*, 965–981.
259. Wang, Y.; Lu, D. Mapping *Torreya grandis* spatial distribution using high spatial resolution satellite imagery with the expert rules-based approach. *Remote Sens.* **2017**, *9*, 564.
260. Waske, B.; Braun, M. Classifier ensembles for land cover mapping using multitemporal SAR imagery. *ISPRS J. Photogramm. Remote Sens.* **2009**, *64*, 450–457.
261. Weber, K.T.; Langille, J. Improving classification accuracy assessments with statistical bootstrap resampling techniques. *GIScience Remote Sens.* **2007**, *44*, 237–250.
262. Wessels, K.; De Fries, R.; Dempewolf, J.; Anderson, L.; Hansen, A.; Powell, S.; Moran, E. Mapping regional land cover with MODIS data for biological conservation: Examples from the Greater Yellowstone Ecosystem, USA and Pará State, Brazil. *Remote Sens. Environ.* **2004**, *92*, 67–83.
263. Whiteside, T.G.; Boggs, G.S.; Maier, S.W. Comparing object-based and pixel-based classifications for mapping savannas. *Int. J. Appl. Earth Obs. Geoinf.* **2011**, *13*, 884–893.
264. Whiteside, T.G.; Maier, S.W.; Boggs, G.S. Area-based and location-based validation of classified image objects. *Int. J. Appl. Earth Obs. Geoinf.* **2014**, *28*, 117–130.
265. Wickham, J.D.; Stehman, S. V.; Smith, J.H.; Wade, T.G.; Yang, L. A priori evaluation of two-stage cluster sampling for accuracy assessment of large-area land-cover maps. *Int. J. Remote Sens.* **2004**, *25*, 1235–1252.
266. Wulder, M.A.; Franklin, S.E.; White, J.C.; Cranny, M.M.; Dechka, J.A. Inclusion of topographic variables in an unsupervised classification of satellite imagery. *Can. J. Remote Sens.* **2004**, *30*, 137–149.
267. Wulder, M.A.; White, J.C.; Luther, J.E.; Strickland, G.; Rimmel, T.K.; Mitchell, S.W. Use of vector polygons for the accuracy assessment of pixel-based land cover maps. *Can. J. Remote Sens.* **2006**, *32*, 268–279.
268. Wundram, D.; Loeffler, J.; Löffler, J. High-resolution spatial analysis of mountain landscapes using a low-altitude remote sensing approach. *Int. J. Remote Sens.* **2008**, *29*, 961–974.
269. Yan, G.; Mas, J. -F.; Maathuis, B.H.P.; Xiangmin, Z.; Van Dijk, P.M. Comparison of pixel-based and object-oriented image classification approaches—a case study in a coal fire area, Wuda, Inner Mongolia, China. *Int. J. Remote Sens.* **2006**, *27*, 4039–4055.
270. Yan, W.Y.; Shaker, A. The effects of combining classifiers with the same training statistics using Bayesian decision rules. *Int. J. Remote Sens.* **2011**, *32*, 3729–3745.
271. Yang, C.; Everitt, J.H. Comparison of hyperspectral imagery with aerial photography and multispectral imagery for mapping broom snakeweed. *Int. J. Remote Sens.* **2010**, *31*, 5423–5438.
272. Yang, C.; Everitt, J.H.; Johnson, H.B. Applying image transformation and classification techniques to airborne hyperspectral imagery for mapping Ashe juniper infestations. *Int. J. Remote Sens.* **2009**, *30*, 2741–2758.
273. Yang, X.; Liu, Z. Using satellite imagery and GIS for land-use and land-cover change mapping in an estuarine watershed. *Int. J. Remote Sens.* **2005**, *26*, 5275–5296.
274. Yang, Y.; Xiao, P.; Feng, X.; Li, H. Accuracy assessment of seven global land cover datasets over China. *ISPRS J. Photogramm. Remote Sens.* **2017**, *125*, 156–173.
275. Young, D.R.R.; Clinton, P.J.J.; Specht, D.T.T.; DeWitt, T.H.H.; Lee, H. Monitoring the expanding distribution of nonindigenous dwarf eelgrass *zostera japonica* in a pacific northwest USA estuary using high resolution digital aerial orthophotography. *J. Spat. Sci.* **2008**, *53*, 87–97.
276. Yousefi, S.; Khatami, R.; Mountrakis, G.; Mirzaee, S.; Pourghasemi, H.R.; Tazeh, M. Accuracy assessment of land cover/land use classifiers in dry and humid areas of Iran. *Environ. Monit. Assess.* **2015**, *187*.
-

- 
277. Zhang, H.K.; Roy, D.P. Using the 500 m MODIS land cover product to derive a consistent continental scale 30 m Landsat land cover classification. *Remote Sens. Environ.* **2017**, *197*, 15–34.
278. Zhao, Y.; He, C.; Zhang, Q. Monitoring vegetation dynamics by coupling linear trend analysis with change vector analysis: a case study in the Xilingol steppe in northern China. *Int. J. Remote Sens.* **2012**, *33*, 287–308.
279. Zharikov, Y.; Skilleter, G.A.; Loneragan, N.R.; Taranto, T.; Cameron, B.E. Mapping and characterising subtropical estuarine landscapes using aerial photography and GIS for potential application in wildlife conservation and management. *Biol. Conserv.* **2005**, *125*, 87–100.
280. Zhong, B.; Yang, A.; Nie, A.; Yao, Y.; Zhang, H.; Wu, S.; Liu, Q. Finer Resolution land-cover mapping using multiple classifiers and multisource remotely sensed data in the Heihe River Basin. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* **2015**, *8*, 4973–4992.
281. Zhu, P.; Gong, P. Suitability mapping of global wetland areas and validation with remotely sensed data. *Sci. China Earth Sci.* **2014**, *57*, 2283–2292.
282. Zillmann, E.; Gonzalez, A.; Montero Herrero, E.J.; Van Wolvelaer, J.; Esch, T.; Keil, M.; Weichelt, H.; Garzón, A.M. Pan-European grassland mapping using seasonal statistics from multisensor image time series. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* **2014**, *7*, 3461–3472.
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**Table S3** Number of cases according to the study area categories

Study area category	Number of cases	Percentage
Landscape	172	56.6
Regional	40	13.2
RegionalGlobal	74	24.3
Global	16	5.2