Pierre Hiernaux

Agricultural engineer (National Agronomy School in Montpellier, France, 1970), Doctor in vegetation ecology (University of Montpellier, 1975), specialized in vegetation ecology applied to natural resource management, Pierre Hiernaux has 45 years of professional experience in tropical Africa. He has authored or co-authored over 250 publications, with an emphasis on plant ecology and range resource survey, on mapping and remote sensing applied to resources monitoring, on rangeland productivity, dynamics and management, and on the functioning and bio-economic modelling of agricultural systems.
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Last years publications :

Ke H., Brandt M., Hiernaux P., Tucker C.J., Rasmussen L., Reiner F., Li S., Kariryaa A., Mugabowindekwe M., Braber B., Small J., Sino S., Fensholt R., 2023. Mapping every adult baobab (*Adansonia digitata L.*) across the Sahel to uncover the co-existence with rural livelihoods. https://doi.org/10.21203/rs.3.rs-3243009/v1

Turner M.D., Davis D.K., Yeh E.T., Hiernaux P., Loizeaux E.R., Fornof E.M., Rice A.M., Suiter A.K., 2023. Great Green Walls: hype, myth, and Science. Annu. Rev. Environ. Resour.. 48:1.1–1.25 https://doi.org/10.1146/annurev-environ-112321-111102

Tucker C., Brandt M., Hiernaux P., Kariryaa A., Rasmussen K., Small J., Igel C., Reiner F., Melocik K., Meyer J., Sinno S., Romero E., Glennie E., Fitts Y., Morin A., Pinzon J., McClain D., Morin P., Porter C., Loeffler S., Kergoat L., Issoufou B-A., Savadogo P., Wigneron J.P., Poulter B., Ciais P., Kaufmann R., Myneni R., Saatchi S., Fensholt R.,

2023. Sub-continental-scale carbon stocks of individual trees in African drylands. Nature, 615: 80-86 https://doi.org/10.1038/s41586-022-05653-6

Mugabowindekwe M, Brandt M S, Chave J., Reiner F., Skole D. L., Kariryaa A., Igel C., Hiernaux P., Ciais P., Mertz O., Tong X., Li S., Rwanyiziri G., Dushimiyimana T., Ndoli A., Uwizeyimana V., Lillesø J.-P. Barnekow G., Fabian C., Tucker C. J., Saatchi S., Fensholt R., 2023. Nation-wide mapping of tree-level aboveground carbon stocks in Rwanda; Nature climate change. 13, p. 91-97 https://doi.org/10.1038/s41558-022-01544-w

Hiernaux P., Issoufou H. B.-A. Igel C., Kariryaa A., Kourouma M., Chave J., Mougin E., Savadogo P., 2023. Allometric equations to estimate the dry mass of Sahel woody plants mapped with very-high resolution satellite imagery. Forest Ecology and Management 529, 1200653 https://doi.org/10.1016/j.foreco.2022.120653

Hiernaux P., Adamou Kalilou A., Kergoat L., Brandt M., Mougin E., Fitts Y., 2022. Woody plant decline in the Sahel of western Niger (1996-2017) : is it driven by climate of land use changes? J. Arid Envir., 200: 104719

Lu T., Brandt M., Tong X., Hiernaux P., Leroux L., Ndao B., Fensholt R. 2022. Mapping the abundance of multipurpose agroforestry *Faidherbia albida* trees in Senegal. *Remote Sens. 14*, 662. https://doi.org/10.3390/rs14030662

Gangneron F., Pierre C., Robert E., Kergoat L., Grippa M., Guichard F., Hiernaux P., Leauthaud C., 2022. Persistence and success of the Sahel desertification narrative. Regional Environmental Change, 22, 118: 1-11 https://doi.org/10.1007/s10113-022-01969-1

Lo A., Diouf A.A., Diedhiou I., Bassène C.D.E., Leroux L., Tagesson T., Fensholt R., Hiernaux P., Mottet A., Taugourdeau S., Ngom D., Touré I., Ndao B., Sarr M.A., 2022. , Dry season forage assessment across senegalese rangelands using earth observation data. Front. Environ. Sci. 10:931299. https://doi.org/10.3389/fenvs.2022.931299

Rahimi J., Ago E.E., Ayantunde A., Berger S., Bogaert J., Butterbach-Bahl K., Cappelaere B., Cohard J-M., Demarty J., Diouf A.A., Falk U., Haas E., Hiernaux P., Kraus D., Roupsard O., Scheer C.,Srivastava QA. K., Tagesson T., Grote R., 2021. Modeling gas exchange and biomass production in West African Sahelian and Sudanian ecological zones. Geosci. Model Dev., 14:3789–3812. Doi: 10.5194/gmd-14-3789-2021

Hiernaux P., Turner M.D., Eggen M.,Marie J.,Haywood M., 2021. Resilience of wetland vegetation to recurrent drought in the Inland Niger Deltaof Mali from 1982 to 2014. Wetlands Ecol. Manage. https://doi.org/10.1007/s11273-021-09822-8

Diawara M.O., Ba A., Sissoko S., Hiernaux P., Diakité H.S., Soumaguel N., Coulibaly D., 2021. Pastoral livestock farming in the eastern Malian Sahel (Hombori): survey of flows in two livestock markets. Intern. J. of Livestock Production, 12, 4: 176-182. DOI: 10.5897/IJLP2021.0793

Tong X., Brandt M., Hiernaux P., Herrmann S.,Vang Rasmussen L., Rasmussen K., Tia Tagesson T., Zhang W.,Fensholt R., 2020. The forgotten land use class: Mappi fallow fields across the Sahel using Sentinel-2. Remote Sensing of Environment, 239, 111598

Hiernaux P., Assouma M.H., 2020. Adapting pastoral breeding to global changes in West and Central tropical Africa: Review of ecological views. *Rev. Elev. Med. Vet. Pays Trop.*, 73 (3): 1-11, doi: 10.19182/remvt.31893

Brandt M., Tucker C.J., Kariryaa A., Rasmussen K., Abel C., Small J., Chave J., Vang Rasmussen L, Hiernaux P., Diouf A.A., Kergoat L., Mertz O., Igel C., Gieseke F., SchöningJ., Li S., Melocik K., Meyer J., Sinno S., Romero E., Glennie E., Montagu A., Dendoncker M.,

Fensholt R., 2020. An unexpectedly large count of trees in the West African Sahara and Sahel. Nature. https://doi.org/10.1038/s41586-020-2824-5

Assouma M. H., Hiernaux P., Lecomte P., Ickowicz A., Bernoux M., Vayssières J., 2019. Contrasted seasonal balances in a Sahelian pastoral system result in a neutral annual carbon balance. J. of Arid Envir., 162: 62-73

Benjaminsen T.A., Hiernaux P., 2019. From desiccation to global climate change: a history of desertification narrative in the West African Sahel, 1900-2018. Glo bal Environnment 12: 206-236. https://doi.org/10.3197/ge.2019.120109

Brandt M., Hiernaux P., Rasmussen K., Tucker C. J., Wigneron J.-P., Diouf A. A., Herrmann S. M., Zhang W., Kergoat L., Mbow C., Abel C., Auda Y., Fensholt R., 2019. Changes in rainfall distribution promote woody foliage production in the Sahel. Communications Biology, 13, 2, 1. Doi: 10.1038/s42003-019-0383-9

Mougin E., Diawara M.O., Soumaguel N., Maïga A.A., Demarez V., Hiernaux P., Grippa M., Chaffard V., Ba A., 2019. A leaf area index data set acquired in Sahelian rangelands of Gourma in Mali over the 2005–2017 period. Earth Syst. Sci. Data, 11: 675–686. Doi: 10.5194/essd-11-675-2019

Hiernaux P., Adamou K., Moumouni O., Turner M.D., Tong X., Savadogo P., Tong X., Mougin E.., Malam Issa O., 2019. Expanding networks of field hedges in densely populated landscapes in the Sahel.*Forest Ecology and Management*, 440: 178-188; DOI: 10.1016/j.foreco.2019.03.016

Wendling V. , Peugeot C. ,Mayor A.G. , Hiernaux P. , Mougin E., Grippa M., Kergoat L., Walcker R., Galle S., Lebel T., 2019. Drought-induced regime shift and resilience of a Sahelian ecohydrosystem. *Environ. Res. Lett.* **14** 105005