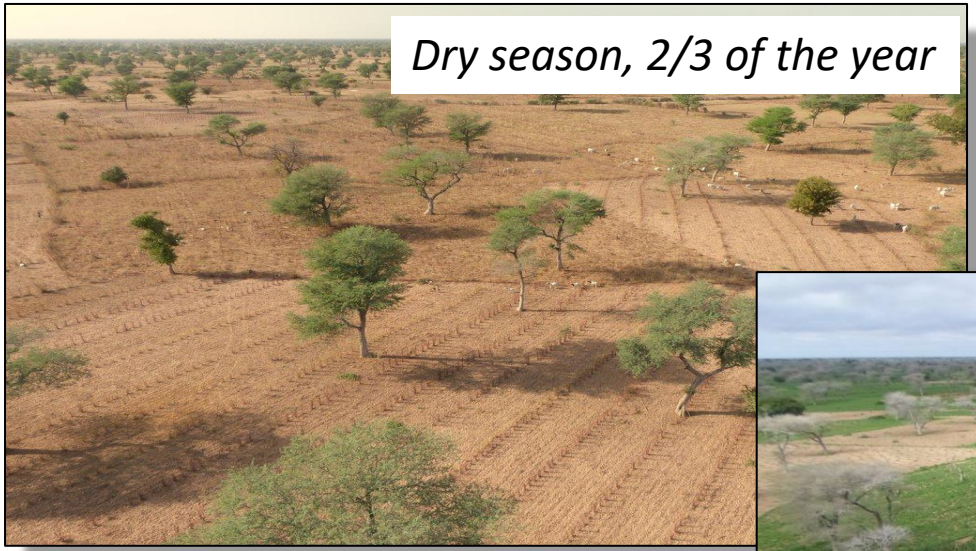
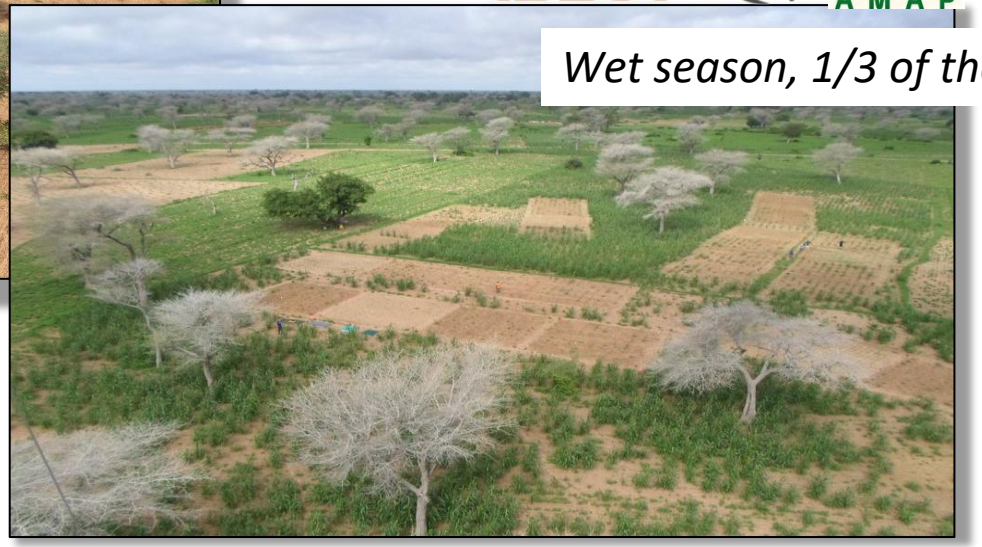
‘‘*Faidherbia-Flux*’’: A long-term Collaborative Observatory on food security, GHG fluxes, ecosystem services, mitigation and adaptation in a semi-arid agro-silvo-pastoral ecosystem (groundnut basin in Niakhar/Sob, Senegal)





“Faidherbia-Flux” Web site :
https://lped.info/wikiObsSN/?Faidherbia-Flux

Contact: olivier.roupsard@cirad.fr

Aims

- To foster agro-silvo-pastoralism and sustainable intensification research, through a Collaborative & highly instrumented Observatory
- To run the Observatory on the long term (> 10 years), through projects
- To assess ecosystem services, NPP, GHG (CO_2, H_2O, N_2O, CH_4) fluxes and balances, 4‰, crop yield (millet, groundnut, cowpea…), the role of livestock, the effects of management options …

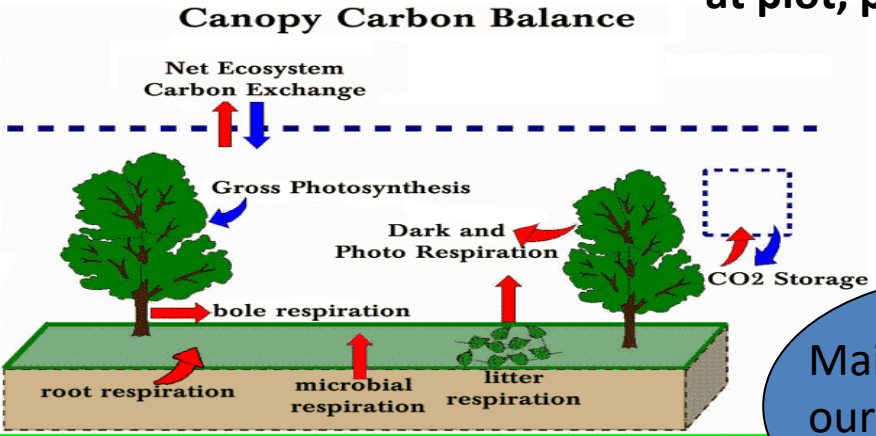
The Philosophy of Faidherbia-Flux

- Collaborative Platform (> 70 scientists, > 15 instititutes),

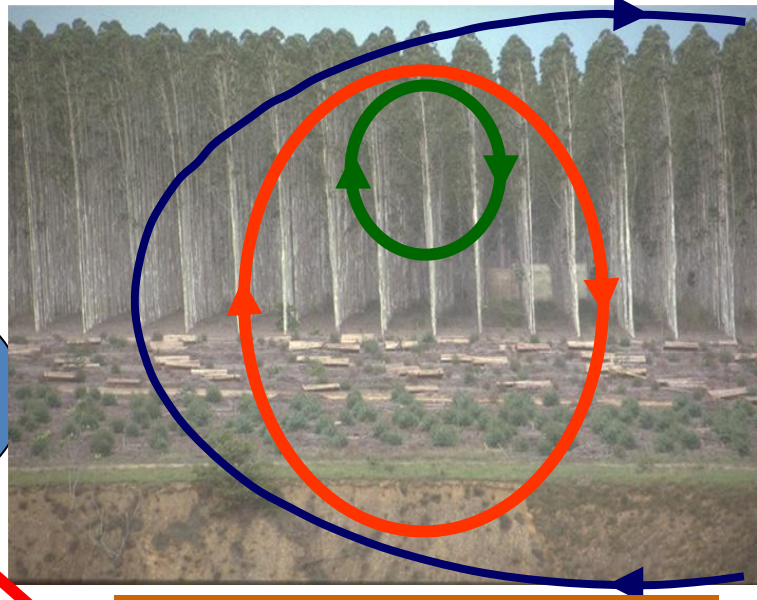
Anchorage for various Sahelian projects;

- We offer to mutualize efforts in one complex but representative ecosystem;
- Complementarity and facilitation are fostered, overlaps are minimized;
- Outcomes include high-level trans-disciplinary research, common projects, training, networking, international visibility…
- Any scientist, student, institution, NGO… welcome!

Our approaches: Monitoring + Modeling of fluxes, balances and ecosystem services at plot, plant and soil levels



Main research at our study sites



Carbon cycle

- Carbon sequestration
- Main fluxes (GPP, respiration, ANPP, NEP, C allocation)
- Dynamic of C stocks (soils, biomass)

Water cycle

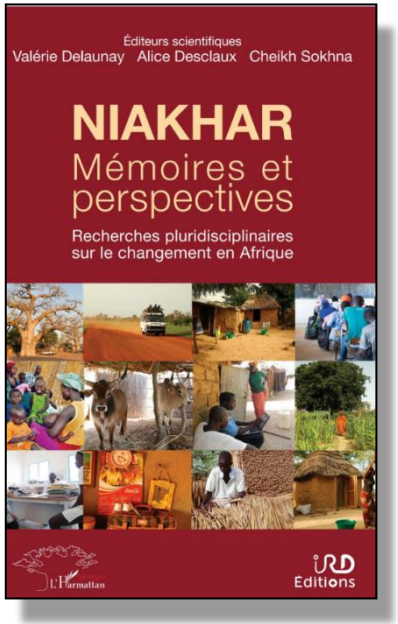
Evapotranspiration, stomatal regulation, dynamic of soil water content, water-use efficiency, watershed hydrology, root hydraulic redistributions, water isotopes

Nutrient cycles

Nutrient inputs and outputs, nutrients fluxes between ecosystem compartments, evolution of soil fertility, etc.

Where?

- In the Niakhar Health-Population-Environment Observatory (OPSE-Niakhar > 50 yrs of past research), https://lped.info/wikiObsSN/



Delaunay et al., 2018

"Faidherbia -Flux" is here

Lat. N: 14°29'44.916"
Long. W: 16°27'12.851"

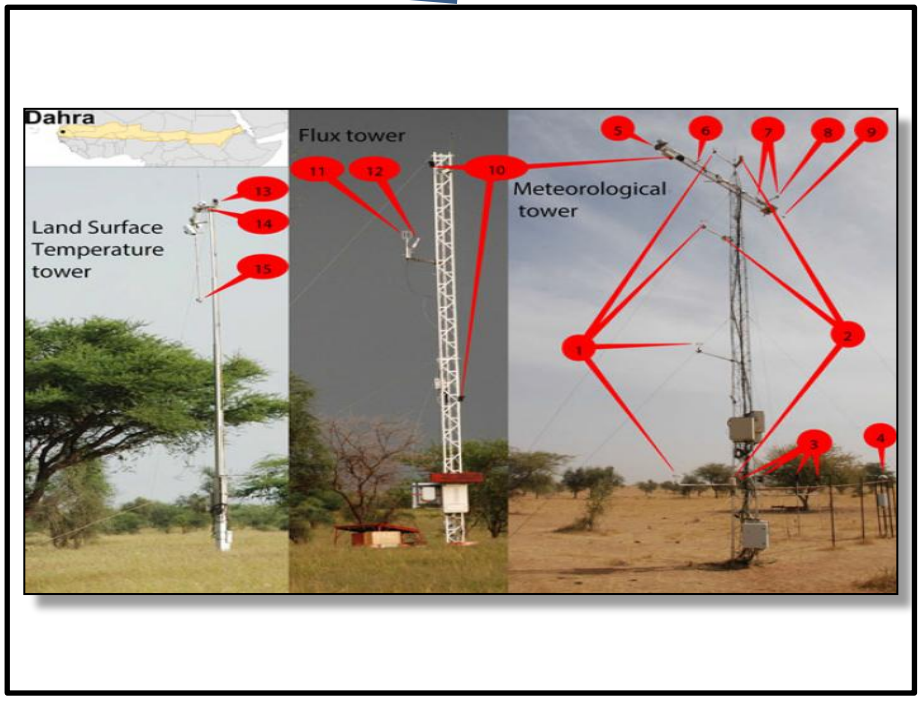
Complementarity of 2 Flux tower observatories

Faidherbia-Flux

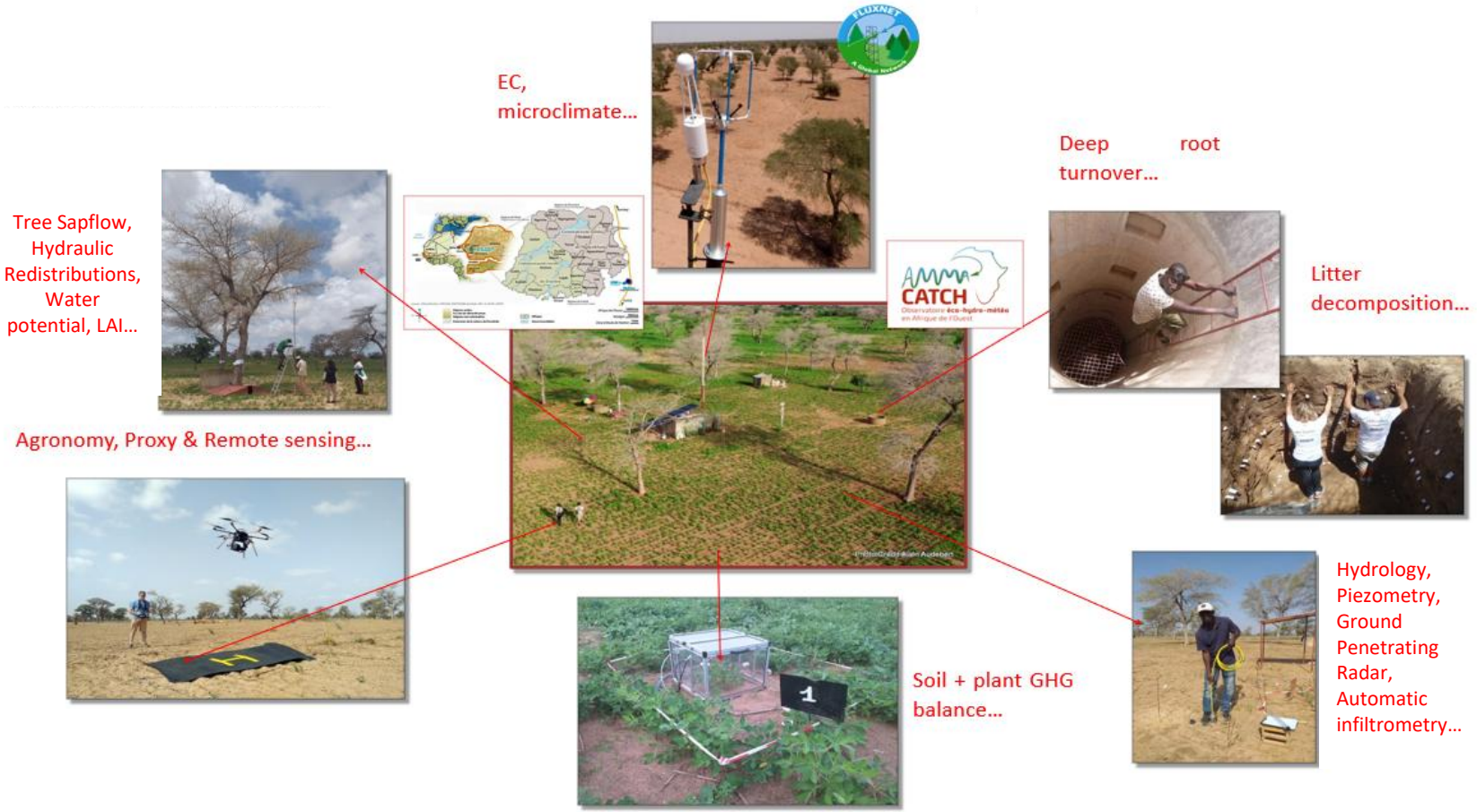
(agro-silvo-pastoral / Sudanian savanna ecoclimatic zone (Olson et al., 2001))

Dahra

(silvo-pastoral): / Sahel ecoclimatic zone (Olson et al., 2001))



Trans-disciplinarity



Opportunities for multi-site comparisons & regional studies

https://doi.org/10.5194/gmd-2020-417
Preprint. Discussion started: 5 February 2021
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Geoscientific Model Development Discussions
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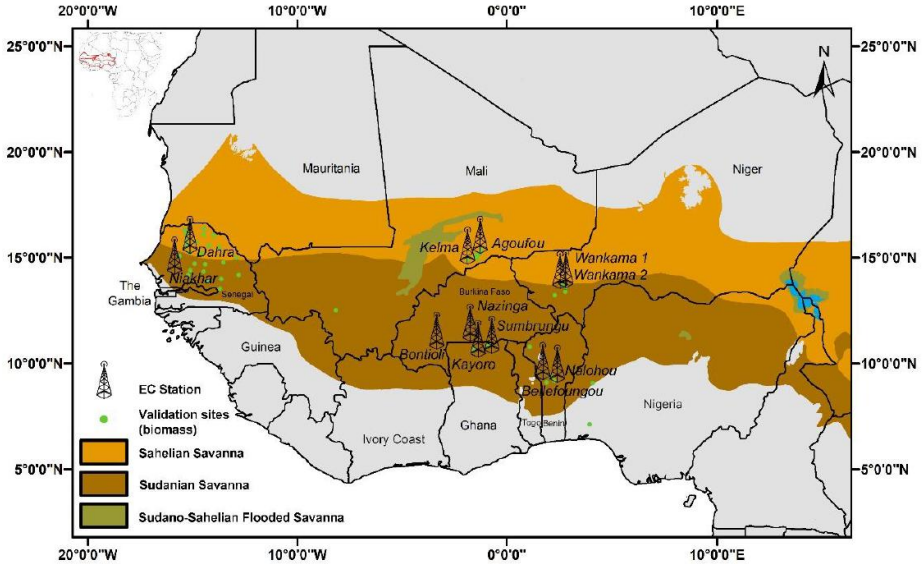

Figure 1: Map of West Africa showing the Sudanian and Sahelian ecological zones that were derived after Olson et al. (2001). Locations of measurements are indicated as towers (eddy covariance flux stations) or green dots (biomass production).

Modelling Gas Exchange and Biomass Production in West African Sahelian and Sudanian Ecological Zones

Jaber Rahimi[1], Expedit Evariste Ago[2,3], Augustine Ayantunde[4], Sina Berger[1,5], Jan Bogaert[3], Klaus Butterbach-Bahl[1,6], Bernard Cappelaere[7], Jérôme Demarty[7], Abdoul Aziz Diouf[8], Ulrike Falk[9], Edwin Haas[1], Pierre Hiernaux[10], David Kraus[1], Olivier Roupsard[11,12,13], Clemens Scheer[1], Amit Kumar Srivastava[14], Torbern Tagesson[15,16], Rüdiger Grote[1]

https://gmd.copernicus.org/preprints/gmd-2020-417/

36 peer-reviewed articles since project start (2018) : 1/2

1. Agbohessou, Y., Audebert, A., Ndour, A., Leroux, L., Jourdan, C., Clermont-Dauphin, C., Sow, S., Pierre, C., Taugourdeau, S., Sarr, M. S., Diatta, S., Sanogo, D., Seghieri, J., le Maire, G., Vezy, R., Fonceka, D., & Roupsard, O. (2025). Proxydetection of the impact distance of trees on crops: An indicator of the Land Equivalent Ratio? ***Agriculture, Ecosystems & Environment***, *394*, 109918. https://doi.org/https://doi.org/10.1016/j.agee.2025.109918
2. Agbohessou, Y., Delon, C., Mougin, E., Grippa, M., Tagesson, T., Diedhiou, M., Ba, S., Ngom, D., Vezy, R., Ndiaye, O., Assouma, M. H., Diawara, M., & Roupsard, O. (2023). To what extent are greenhouse-gas emissions offset by trees in a Sahelian silvopastoral system? Agricultural and Forest Meteorology, 343, 109780. https://doi.org/https://doi.org/10.1016/j.agrformet.2023.109780
3. Agbohessou, Y., Delon, C., Grippa, M., Mougin, E., Ngom, D., Gaglo, E. K., Ndiaye, O., Salgado, P., & Roupsard, O. (2024). Modelling CO2 and N2O emissions from soils in silvopastoral systems of the West African Sahelian band. ***Biogeosciences***, *21*(11), 2811–2837. https://doi.org/10.5194/bg-21-2811-2024
4. Akhabue, E.F., Cunliffe, A.M., Bett-Williams, K., Harper, A.B., Zhu, S., Holden, P., Ardö, J., Aurela, M., Demarty, J., Do, F.C., Etchanchu, J., Gondwe, M., Helfter, C., Kergoat, L., Nicolini, G., Nouvellon, Y., Duran Rojas, M.C., Roupsard, O., Tagesson, T., Vakkari, V., VanZyl, P., Wieckowski, A., 2026. Assessing JULES Across Bioclimatic Domains Through a Pan-African Flux Tower Evaluation: Insights Into Controls on Gross Primary Productivity, Ecosystem Respiration, and Evapotranspiration Biases. **Journal of Advances in Modeling Earth Systems** 18, e2026MS005888. https://doi.org/10.1029/2026MS005888
5. Ba, S. M., Roupsard, O., Chapuis-Lardy, L., Bouvery, F., Agbohessou, Y., Duthoit, M., Wieckowski, A., Tagesson, T., Assouma, M. H., Gaglo, E. K., Delon, C., Sambou, B., & Serça, D. (2026). Drivers and CO_2 flux budgets in a Sahelian Faidherbia albida agro-silvo-pastoral parkland: Insights from continuous high-frequency soil chamber measurements and Eddy Covariance. **SOIL** (EGU). Accepted March 2026, 1–60. https://doi.org/10.5194/egusphere-2025-2660
6. Clermont-Dauphin, C., Ndienor, M., Leroux, L., Ba, H.S., Bongers, F., Jourdan, C., Roupsard, O., Do, F., Cournac, C., Seghieri, J., 2023. Faidherbia albida trees form a natural buffer against millet water stress in agroforestry parklands in a Sub-sahelian environment. **Biotechnologie, Agronomie, Société et Environnement (BASE)** ; special issue "Agroforestry in West Africa", 1–14. https://doi.org/DOI: 10.25518/1780-4507.20477
7. Diack, I., Diene, S.M., Leroux, L., Heuclin, B., Letoumy, P., Audebert, A., Roupsard, O., Diouf, A.A., Sarr, I., Diallo, M., 2023. Combining UAV and Sentinel-2 imagery for estimating millet FCover in an heterogeneous agricultural landscape of Senegal. **IEEE Transactions on Geoscience & Remote Sensing**. https://doi.org/10.1109/JSTARS.2024.3373508.
8. Diedhiou, M., Sarr, O., Diouf Abdoul Aziz, Mbaye Tamsir, Ndiaye Ousmane, Diatta, S., & Ngom Daouda. (2025). Evaluating Structure-from-Motion Photogrammetry for Dendrometric Measurements of Trees in Agro-Sylvopastoral Landscapes. **American Journal of Climate Change**, 14(3), 605–625. https://doi.org/https://doi.org/10.4236/ajcc.2025.143029
9. Diene, S. M., Diack, I., Audebert, A., Roupsard, O., Leroux, L., Diouf, A. A., Mbaye, M., Fernandez, R., Diallo, M., & Sarr, I. (2024). Improving pearl millet yield estimation from UAV imagery in the semiarid agroforestry system of Senegal through textural indices and reflectance normalization. ***IEEE Access***. https://doi.org/10.1109/ACCESS.2024.3460107
10. Diene, S. M., Diack, I., Fernandez, R., Audebert, A., Roupsard, O., Leroux, L., Diouf, A. A., Cicek, H., Diallo, M., & Sarr, I. (2025). 'Probabilistic Atlas', a new approach to assess complexity in agroforestry systems using UAV images: example of the spatial effect of *Faidherbia albida* on pearl millet NDVI. **Agroforestry Systems**. Accepted Nov. 2025
11. Diongue DML, Roupsard O, Do F, Stumpp C, Orange D, Sow S, Jourdan C, Faye S. 2022. Evaluation of parameterisation approaches for estimating soil hydraulic parameters with HYDRUS-1D in the Groundnut basin of Senegal. **Hydrological Sciences Journal**. 10.1080/02626667.2022.2142474
12. Diongue DML, Stumpp C, Roupsard O, Orange D, Do FC, Faye S. 2023. Estimating water fluxes in the critical zone using water stable isotope approaches in the Groundnut and Ferlo basins of Senegal. **Hydrological Processes**, 37: e14787. https://doi.org/10.1002/hyp.14787
13. Diongue DML, Brunetti G, Stumpp C, Do F, Roupsard O, Orange D, Faye W, Sow S, Jourdan C, Faye S. 2023. A probabilistic framework for assessing the hydrological impact of *Faidherbia albida* in an arid Area of Senegal. **Journal of Hydrology**, 622. 10.1016/j.jhydrol.2023.129717
14. Duthoit, M., Roupsard, O., Créquy, N., Sauze, J., Van den Meersche, K., 2020. Conception d'un dispositif automatisé de chambres de mesures d'échanges gazeux du sol à fermeture horizontale. **Le Cahier des techniques de l'INRA** (2020, 102). https://www6.inrae.fr/cahier_des_techniques/Les-Cahiers-parus/Les-N-reguliers/2020/Cahier-N-102/Art4-ct102-2020, 19 pp.
15. Etchanchu, J., Demarty, J., Dezetter, A., Farhani, N., Thiam, P. B., Allies, A., Bodian, A., Boulet, G., Chahinian, N., Diop, L., Mainassara, I., Ndiaye, P. M., Ollivier, C., Olioso, A., & Roupsard, O. (2025). Multiscale analysis of existing actual evapotranspiration products over agropastoral Sahel. **Journal of Hydrology**, 651, 132585. https://doi.org/10.1016/J.JHYDROL.2024.132585
16. Farhani, N., Etchanchu, J., Boulet, G., Gamet, P., Olioso, A., Dezetter, A., Bodian, A., Chahinian, N., Mallick, K., Ollivier, C., Roupsard, O., Allies, A., & Demarty, J. (2025). Spatially remotely sensed evapotranspiration estimates in Sahel region using an ensemble contextual model with automated heterogeneity assessment. ***Science of Remote Sensing***, *11*, 100229. https://doi.org/https://doi.org/10.1016/j.srs.2025.100229
17. Farhani, N., Etchanchu, J., Vauclare, S., Goffin, B., Wijmer, T., Olioso, A., Boulet, G., Mwangi, S., Chahinian, N., Gamet, P., Sarrazin, E., Mallick, K., Diene, S.M., Maïnassara, I., Roupsard, O., Demarty, J., 2026. Benefits of high-resolution satellite evapotranspiration for agro-silvo-pastoral systems in the Sahel. **Science of Remote Sensing** 14, 100454. https://doi.org/10.1016/j.srs.2026.100454

36 peer-reviewed articles since project start (2018) : 2/2

18. Faye, W., Fall, A.N., Orange, D., Do, F., Roupsard, O., Kane, A., 2020. Climatic variability in the Sine-Saloum basin and its impacts on water resources: case of the Sob and Diohine watersheds in the region of Niakhar. **Proc. IAHS** 383, 391-399. https://piahs.copernicus.org/articles/383/391/2020/
19. Gaglo, E. K., Chaste, E., Luyssaert, S., Roupsard, O., Jourdan, C., Sow, S., Vandewalle, N., Do, F., Ngom, D., & Valade, A. (2025). Sensitivity of a Sahelian groundwater-based agroforestry system to tree density and water availability using the land surface model ORCHIDEE (r7949). **Geoscientific Model Development**, 2025, 1–38. https://doi.org/10.5194/egusphere-2025-1102
20. Gbodjo, J.E., Ienco, D., Leroux, L., 2021. Benchmarking statistical modelling approaches with multi-source remote sensing data for millet yield monitoring: A case study of the Groundnut basin in central Senegal. **Int. J. Remote Sens.** 42, 9277–9300. doi:10.1080/01431161.2021.1993465
21. Gning F, Jourdan C, Marone D, Ngom D, Ræbild A. 2023. Root distribution of *Adansonia digitata, Faidherbia albida* and *Borassus akeassii* along a climate gradient in Senegal. **Agroforestry Systems.** 1-11; 1572-9680. https://link.springer.com/article/10.1007/s10457-023-00813-7
22. Gning, F., Jourdan, C., Marone, D., Ngom, D., & Ræbild, A. (2025). Root growth and biomass partitioning of nine juvenile Sahelian agroforestry tree species under drought and irrigation treatments. **Plant and Soil**. https://doi.org/10.1007/s11104-024-07155-y
23. Guzinski, R., Nieto, H., Ramo Sánchez, R., Sánchez, J. M., Jomaa, I., Zitouna-Chebbi, R., Roupsard, O., & López-Urrea, R. (2023). Improving field-scale crop actual evapotranspiration monitoring with Sentinel-3, Sentinel-2, and Landsat data fusion**. International Journal of Applied Earth Observation and Geoinformation**, 125, 103587. https://doi.org/https://doi.org/10.1016/j.jag.2023.103587
24. Lembrechts et al., 2020. SoilTemp: a global database of near-surface temperature. **Global Change Biology 26, 11:** 6616-6629. DOI: 10.1111/gcb.15123 n/a.
25. Lembrechts et al., 2022. Global maps of soil temperature. **Global Change Biology**. Online. https://doi.org/10.1111/gcb.16060
26. Leroux, L., Falconnier, G.N., Diouf, A.A., Ndao, B., Gbodjo, J.E., Tall, L., Balde, A.A., Clermont-Dauphin, C., Bégué, A., Affholder, F., Roupsard, O., 2020. Using remote sensing to assess the effect of trees on millet yield in complex parklands of Central Senegal. **Agricultural Systems** 184, 102918. https://doi.org/10.1016/j.agsy.2020.102918
27. Leroux L, Clermont-Dauphin C, Ndienor M, Jourdan C, Roupsard O, Seghieri J. 2022. A spatialized assessment of ecosystem service relationships in a multifunctional agroforestry landscape of Senegal. **Science of The Total Environment**, 853: 158707.https://doi.org/10.1016/j.scitotenv.2022.158707
28. Rahimi, J., Ago, E.E., Ayantunde, A., Berger, S., Bogaert, J., Butterbach-Bahl, K., Cappelaere, B., Demarty, J., Diouf, A.A., Falk, U., Haas, E., Hiernaux, P., Kraus, D., Roupsard, O., Scheer, C., Srivastava, A.K., Tagesson, T., Grote, R., 2021. Modelling Gas Exchange and Biomass Production in West African Sahelian and Sudanian Ecological Zones. **Geosci. Model Dev.** https://gmd.copernicus.org/preprints/gmd-2020-417/ 2021, 1-39.
29. Raynal, P.-A., Rajot, J.-L., Marticorena, B., Tall, A., Lemaire, B., Civil, J.-A., Fall, D. C., Dorego, G. S., Sarr, I., Faye, I., Emmendoerffer, A., Guillaume, H., Bouet, C., Affholder, F., Faye, B., Agbohessou, Y., & Pierre, C. (2025). Evaluating the impact of different agropastoral practices on wind erosion in western Sahel. ***CATENA***, *260*, 109433. https://doi.org/https://doi.org/10.1016/j.catena.2025.109433
30. Roupsard, O., Audebert, A., Ndour, A.P., Clermont-Dauphin, C., Agbohessou, Y., Sanou, J., Koala, J., Faye, E., Sambakhe, D., Jourdan, C., le Maire, G., Tall, L., Sanogo, D., Seghieri, J., Cournac, L., Leroux, L., 2020. How far does the tree affect the crop in agroforestry? New spatial analysis methods in a Faidherbia parkland. **Agriculture, Ecosystems & Environment** 296, 106928. https://www.sciencedirect.com/science/article/pii/S0167880920301134
31. Sarr, M. S., Diouf, K., Roupsard, O., Rocheteau, A., Orange F., D., Jourdan J., C., Diedhiou, I., Seghieri, J., & Do, F. (2023). Estimation of seasonal water use of *Faidherbia albida* (Del.) A. Chev. in a Sahelian agroforestry parkland. **Biotechnologie, Agronomie, Société et Environnement (BASE)**, 27(3), 196–204. https://popups.uliege.be/1780-4507/index.php?id=20512
32. Siegwart L, Bertrand I, Roupsard O, Duthoit M, Jourdan C. 2022. Root litter decomposition in a sub-Sahelian agroforestry parkland dominated by Faidherbia albida. **Journal of Arid Environments** 198, 104696.https://doi.org/10.1016/j.jaridenv.2021.104696.
33. Siegwart L, Bertrand I, Roupsard O, Jourdan C. 2023. Contribution of tree and crop roots to soil carbon stocks in a Sub-Sahelian agroforestry parkland. **Agriculture, Ecosystems & Environment .** https://doi.org/10.1016/j.agee.2023.108524
34. Sow S, Senghor Y, Sadio K, Tounkara A, Vezy R, Roupsard O, Affholder F, Ndienor M, Clermont-Dauphin C, Gaglo E, Ba S, Tounkara A, balde AA, Agbohessou Y, Seghieri J, Sall SN, Couedel A, Leroux L, Jourdan C, Sanogo D, Falconnier G. 2024. Calibrating the STICS soil-crop model to explore the impact of agroforestry parklands on millet growth. ***Field Crop Research.*** https://doi.org/10.1016/j.fcr.2023.109206
35. Wieckowski, A., Vestin, P., Ardö, J., Roupsard, O., Ndiaye, O., Diatta, O., Ba, S., Agbohessou, Y., Fensholt, R., Verbruggen, W., Gebremedhn, H. H., & Tagesson, T. (2024). Eddy covariance measurements reveal a decreased carbon sequestration strength 2010-2022 in an African semi-arid savanna. ***Global Change Biology***, *30*(9), e17509. https://doi.org/https://doi.org/10.1111/gcb.17509
36. Wieckowski, A., Vestin, P., Ardö, J., Roupsard, O., Ndiaye, O., Ba, S., Delon, C., Serça, D., & Tagesson, T. (2026). Contrasting roles of ground, trees, ponds and grazing in carbon dioxide, methane and nitrous oxide fluxes of an African semi-arid savanna. **Agriculture, Ecosystems & Environment**, 399, 110199. https://doi.org/https://doi.org/10.1016/j.agee.2025.110199

Faidherbia albida, a perfect candidate for ecological intensification?

- Widespread in semi-arid Africa
- Multi-purpose
- Domesticated and maintained by the people in parklands
- Reverse Phenology: minimum competition, forage for animals during the dry season
- N_2 Fixing
- Microclimate and fertility islets effects
- Phreatophytic (hydraulic redistributions?)
- Survived the 1970-2000 severe drought in the Sahel
- Positive effects on most crops
- Compliant with other options: livestock, mixed cropping, precision agriculture etc.

Academic reports

PhD

- Agbohessou, Y. F. U. (2024). Modélisation du bilan de gaz à effet de serre des systèmes agroforestiers du sahel : de la parcelle au paysage. Thèse de doctorat. Université Cheikh Anta Diop de Dakar. ED Sciences de la Vie, de la Santé et de l'Environnement. Facultés des Sciences et techniques. Thèse en Biologie et Pathologie Végétales. Spécialité Ecologie et Agroforesterie. Défendue le 02/02/2024. Mention Très Honorable avec Félicitations du Jury. 165 pp. Senegal.
- Diack, I. (2026). Évaluation spatialisée des rendements céréaliers sous système agroforestier en contexte de petite agriculture familiale au Sahel : une approche basée sur le couplage drone-satellite. Thèse de doctorat de l'Université Cheikh Anta Diop de Dakar-Sénégal, Mention Informatique et Télécommunications, Spécialité Intelligence Artificielle et Géomatique Appliquée. Soutenue publiquement le 11 février 2026. Mention Très Honorable. 134 pages + Annexes. Senegal.
- Diene, S. M. (2026). Évaluation spatialisée des performances agronomiques sous-système agroforestier en contexte de petite agriculture familiale au Sahel : évaluation de l'effet du Faidherbia albida à l'échelle intra-parcellaire à partir de l'imagerie drone et des approches géostatistiques. Thèse de doctorat, Mention Informatique et Télécommunications, Spécialité Intelligence Artificielle et Géomatique Appliquée. Soutenue publiquement le 4 février 2026. Mention Très Honorable. 124 pages + Annexes. Senegal.
- Diongue, D. M. L. (2023). PARTITIONNEMENT DES FLUX D'EAU DANS LE CONTINUUM SOL-VÉGÉTATION-ATMOSPHÈRE EN MILIEUX SEMI-ARIDES (Bassin arachidier & Ferlo) : Apport des modèles mécanistiques et des isotopes stables de la molécule d'eau (δ2H et δ18O). Thèse de doctorat UCAD. Soutenue le 25/02/2023. Mention Très Honorable. Elue meilleure thèse UCAD 2023. Senegal.
- Faye W. 2021. Ecohydrologie du bassin arachidier (cas de Niakhar): dynamique de l'infiltration et modélisation des aquifères superficiels dans un espace sylvopastoral semi-aride. PhD, UCAD : Faculté des Lettres et Sciences Humaines, Géographie. Dakar, Sénégal. Thèse défendue le 10 décembre 2021
- Siegwart, L.. 2023. Contribution des racines aux stocks de carbone dans le profil de sol de deux systèmes agroforestiers contrastés : distribution, décomposition et impact sur la minéralisation du carbone et des nutriments. Thèse de Doctorat, Institut Agro de Montpellier. http://www.theses.fr/2023NSAM0012/document
- Sow, S. (2026). Adaptation des agriculteurs au changement climatique et approche par modélisation de la productivité et du bilan hydrique d'un système agroforestier à base de Faidherbia albida dans le bassin arachidier du Sénégal. Thèse de doctorat de l'Université Gaston Berger de Saint-Louis, Sénégal. Soutenue publiquement le 21 février 2026. Mention Très Honorable avec Félicitations du Jury. 135pp + Annexes.

MSc, Engineer

- Agbohessou, Y.F.U., 2020. Effets du Faidherbia albida (Del.) A. Chev. sur la productivité aérienne et souterraine de la culture associée (arachide) : Utilisation des drones pour l'estimation du rendement et du Land-Equivalent-Ratio (LER), depuis les placettes à tout le système agro-sylvo-pastoral à la parcelle entière. Senegal, 31rd of October 2020. Master en Agroforesterie, Ecologie et Adaptation (AFECA), UCAD-Faculté des Sciences et Techniques, Département de Biologie Végétale, Dakar, Senegal. Félicitations du jury, p. 60 pp + Annexes.
- Chenu, C. (2024). Analyse de la dynamique l'indice foliaire de Faidherbia albida. Césure de l'ENSAToulouse.
- Diatta, S., 2021. Estimation du stock et du stockage annuel de carbone dans la biomasse aérienne de Faidherbia albida (Del.) A chev du parc agroforestier de Sob (Observatoire de Niakhar, Sénégal) : approches par inventaires et dendrochronologie. Senegal, Master en Foresterie et Environnement pour une gestion durable des ressources naturelles. Université de Thiès-ENSA, Thiès, Senegal., soutenu le 06 janvier 2021. 45pp + Annexes. Mention Bien.
- Diouf, K., 2020. Evaluation de la transpiration par mesure du flux de sève chez l'espèce agroforestière Faidherbia albida (Del.) A. Chev. dans un site semi-aride du bassin arachidier au Sénégal. Senegal, Diplôme d'ingénieur agronome de l'Université de Thiès-ENSA, option Productions Végétales. ENSA, Thiès, Senegal. 13 juillet 2020, p. 55.
- Martin, L. (2025). Caractérisation des variations spatiotemporelles de la photosynthèse foliaire et modélisation de sa réponse à la température dans la couronne d'un Faidherbia albida adulte au sein d'un parc agroforestier sahélien au Sénégal.
- Niang AH. (2023). M1 : Application des images drone en RGB et de l'Intelligence Artificielle (IA) pour dénombrer les pieds de mils et estimer leur taux de couverture à l'échelle de parcelles dans un système agroforestier dominé par Faidherbia albida.
- Niang AH. (2025). M2: Comparaison des températures de différentes surfaces en milieu agroforestier: approche par drone thermique et Deep Learning dans un parc agroforestier à Faidherbia albida au Sénégal.
- Vandewalle, N. (2024). Parametrization of the foliar photosynthesis of Faidherbia albida within an agroforestry parkland in the groundnut bassin of Senegal. MSc thesis of U. Louvain-la-Neuve. Defended on June 2024. 80 pp.

Projects, Networks…

- « Big » projects: RAMSES II (EU-LeapAgri, ANR, AFD), CASSECS (EU-DESIRA), SustainSahel (EU-H2020), DSCATT (Agropolis+Total Fond.), PEPR FaircarboN-Rift+SLAM-B (ANR),
- Other projects: GLDC (CGIAR), ENCAS (EC2CO); SOCA (Fondation BNP-Paribas); OpenOPSE (FSPI); ELISA (CIRAD-CRESI),
- Networks: FLUXNET (*), AMMA-CATCH (**), West Africa Flux Network (WAF-Net), SEACRIFOG, ECOSTRESS (NASA),

(*) 'SN-Nkr' site at http://www.europe-fluxdata.eu/pi-area/sites-info
(**) Met DOI : http://dx.doi.org/10.17178/AMMA-CATCH.PA.Met_SNNs; Flux DOI Jeu flux: http://dx.doi.org/10.17178/AMMA-CATCH.PA.H2OFlux_SNNs
(***)WAF-Net: https://fluxnet.org/about/regional-networks/

PhD Students (13)

- ISRA/UCAD/CNRF/SUPAGRO: W. Faye (hydrology); E. Gaglo (ORCHIDEE landscape modelling); F. Gning (tree roots and water content); S. Sow (Tree+crop modelling with MAESPA + STICS); D.L. Diongue (HYDRUS water and isotopes modelling); O. Malou (SOC = f(pratiques culturales)); K. Sadio (SOM, manure and GES); Y. Agbohessou (STEP, STICS MAESPA GHG Modeling); Diedhiou Moussa (Tree allometry); S. Ba (soil GHG and C stocks); L. Siegwart (soil C dynamics); M. Diene (Drone, from subplot to plot); I. Diack (Satellite, from plot to landscape), S. Talla (Hydraulic redistributions)

MSc & Fellowships

- G. Demarchi; S. Diatta; K. Diouf; Y. Agbohessou; N. Crequy; M. Faye; P. O. Bousso; Dabo; R. Beye; A. Lesimple; M. Bourchanin; E.H.M. Ndour; K. Diop;

Partner institutions, per country

- Sénégal: ISRA (LNRPV, CNRF, CRZ), UCAD (EDEQUE), UGB, U. Thiès, ENSA Thiès: Prof. S. Faye; Prof. D. Ngom; Prof. S.N. Sall; Prof. A. Kane; Prof. A.N. Fall; Prof. I. Diedhiou,,D. Sanogo; M. Sokhna Sarr; M. Ndienor; O. Ndiaye; C.O. Samb; O. Ndiaye; L. Tall; Y. Ndour; Tcheheumeni Axel
- Burkina Faso: INERA: J. Koala, J. Sanou; B. Bastide
- France: CIRAD , IRD, INRA, CNRS, CNRM, IPGP : O. Roupsard; C. Jourdan; F. Do; A. Rocheteau; D. Orange; L. Cournac; M. Duthoit; F. Bouvéry; Valade Aude; I. Bertrand; A. Audebert; J. Seghieri, L. Leroux; L. Chapuis-Lardy; C. Clermont-Dauphin; F. Timouk; L. Kergoat; Delon Claire; Serça Dominique; C. Pierre; J.L. Rajot; G. le Maire; R. Vezy; S. Taugourdeau; P. Salgado; H. Assouma; E. Faye; K. Van den Meersche; D. Masse; P. Moulin; H. Aroui; A. Albrecht; V. Delaunay; R. Lalou; L. Fleury; Montes Nicolas; Grippa; K. Assigbetse; R. Manlay; C. Coillot; K. Telali; V. Lesur; N. Leroy; M. Vallee; S. Lewicky-Dhainaut; L. Vidal; I. Henry; J-L. Chotte; J.P. Laclau
- Scandinavia: U. Copenhagen + U. Lund: R. Fensholt; J Ardö; T. Tagesson; A. Raebuild

Thank you !!!

“Faidherbia-Flux” Web site : https://lped.info/wikiObsSN/?Faidherbia-Flux