◦ Nadine Dessay

French National Research Institute for Sustainable Development (IRD),

Joined Research Unit « Space for Development » - ESPACE-DEV (IRD, Universities of Montpellier, French Indies, French Guiana, Reunion Island). Maison de la Télédétection, 500 rue Jean-François Breton, 34093 Montpellier Cedex 5. Phone number : (00 33) + 4 67 55 86 09; Email: nadine.dessay@ird.fr.

PRESENT POSITION

Nadine Dessay is a research engineer processing analysis and representation of spatial information at IRD to the **ESPACE-DEV**. Her research focuses on the use of remote sensing data for development of spatial methods in the context of deforestation and health; image processing (classification, texture and oriented-objet approach; spatial analysis of impacts at local and regional scales; mapping and understanding the spatial-temporal heterogeneity of the different indicators and determinants of the risk (local, regional, country-wide); teaching, geographic information systems applied to health issues. She participates to, or supervises several partnership and research projects to improve knowledge about the relationship between environment and vector-borne diseases, between French Guiana and Brazil and within other cross-border contexts.
Within ESPACE-DEV, she is in charge of the Satellite observation, Time series, Radar Optic, processing chaiNs, Genericity team (STRONG).

ACADEMIC BACKGROUND

2006 **PhD in** PhD in Geography/Remote Sensing, University of Paris X, France
title*:* “Dynamics of vegetation and climate : remote sensing study of five Brazilian biomes, dense and open rainforest, cerrados, caatinga and campanha gaúcha.

COORDINATION / IMPLICATION IN INTERNATIONAL PROJECTS

2017-22 LMI Sentinela: The objectives of the International Joint Laboratory "Crossborder Observatories of the Environment, Climate and Vectorborne Diseases Sentinel Sites of the Brazilian Climate and Health Observatory" (LMI Sentinela) are to: structure, strengthen and sustain the integrated approach Geography Environment Climate Health at the Brazilian level, in the sectors of education, research and public policies; strengthen the international visibility of the Brazilian teams carrying this theme. Leader project DELICIOSA; Member of the he Scientific and Technical Monitoring Committee).

2020-24 LMI PAYSAGE: The main objective of the International Joint Laboratory is to establish an inventory of the main types of rural landscapes, to understand the factors of their evolution and to analyze their components and structures in order to determine the conditions and factors that allow them to evolve towards resilient landscapes, where social, ecological and economic sustainability is ensured. Co-coordinator of axis 5 "Platform of interdisciplinary exchanges towards a collaborative observatory of landscapes and their sustainability" Member of the direction Committee.

2020-23 DELICIOSA "Intra-urban Dengue and Leptospirosis: Contribution of Earth Observation Imaging to Health". This project focuses on the study and monitoring of environmental markers of potential exposure to dengue and leptospirosis at the intra-urban and peripheral scale of 3 Brazilian cities. The main objective is to improve the understanding at this scale of environmental and climatic determinants of these two infectious diseases. (Leader).

2020-22 PCIA3 PROGYSAT (Projet de coopération Régionale d'Observation des GuYanes par SATellite) This project, proposed within the framework of the Interreg Amazon Territorial Cooperation Operational Program, has as its main objective to formalize and put into operation geo-environmental services based on the processing of satellite information adapted to the missions

of the institutional community of the sub-region in charge of environmental managemen. I am leader of the WP "The characterization of the urban habitat to better assess the different levels of vulnerability of human ".

2015-20 In charge of the Spatial Observation of Environment team: 46 people from different disciplines (applied mathematics, environmental sciences, geography, signal physics, and engineering sciences) and different sites (Guyana, Reunion, Madagascar, New Caledonia, Montpellier, Perpignan.

Skills

Remote sensing data for development of spatial methods in the context of deforestation and health. Image processing analysis and representation of spatial information (classification, texture analysis and oriented-object approach. Spatial analysis of impacts at local and regional scales

Publications of the last 5 years

Renaud Marti, Zhichao Li, Thibault Catry, Emmanuel Roux, Morgan Mangeas, et al.. A Mapping Review on Urban Landscape Factors of Dengue Retrieved from Earth Observation Data, GIS Techniques, and Survey Questionnaires. *Remote Sensing*, MDPI, 2020, 12 (6), pp.932. ⟨10.3390/rs12060932⟩. ⟨hal-02682042⟩.

Cissoko M., Sagara I., Sankare M. H., Dieng S., Guindo A., Doumbia Z., Allasseini B., Traore D., Fomba S., Bendiane M. K., Landier J., **Dessay N.**, Gaudart J. Geo-epidemiology of malaria at the health area level, Dire health district, Mali, 2013-2017. International Journal of Environmental Research and Public Health, 2020, 17 (11), p. art. 3982

Ngom, N. M., M. Mbaye, D. Baratoux, L. Baratoux, T. Catry, N. Dessay, G. Faye, E. H. Sow, and E. Delaitre. 2020. "Mapping Artisanal and Small-Scale Gold Mining in Senegal Using Sentinel 2 Data." *GeoHealth* 4 (12). https://doi.org/10.1029/2020GH000310

Defrance D., Thibault C., Rajaud A., **Dessay N.**, Benjamin S.. Impacts of Greenland and Antarctic Ice Sheet melt on future Koppen climate zone changes simulated by an atmospheric and oceanic general circulation model. Applied Geography, 2020, 119, art. 102216 [13 p.] ISSN 0143-6228

Roux. E., Ignotti. E., Bègue, N., Bencherif. H., Catry. T., Dessay, N., ... & Barcellos. C. (2020). Toward an Early Warning System for Health Issues Related to Particulate Matter Exposure in Brazil: The Feasibility of Using Global PM2. 5 Concentration Forecast Products. Remote Sensing, 2020, 12 (24), 4074 [45 p.]

Leandro da Silva Gregorio, Helen Gurgel, Nadine Dessay, Gustavo Mota De Sousa, Emmanuel Roux. Population estimate by people in pixel model applied to the study of dengue in the Federal District-Brazil. *Confins - Revue franco-brésilienne de géographie/Revista franco-brasileira de geografia*, Hervé Théry, 2019, ⟨10.4000/confins.22922⟩. ⟨hal-02397277⟩

Catry, T.; Li, Z.; Roux, E.; Herbreteau, V.; Gurgel, H.; Mangeas, M.; Seyler, F.**; Dessay, N**. Wetlands and Malaria in the Amazon: Guidelines for the Use of Synthetic Aperture Radar Remote-Sensing. International Journal of **Environmental** Research and Public Health, 2018, 15 (3), p. art. 468 [27 p.]. ISSN 1660-4601. WOS :000428509200075 〈hal-01827332〉

Herbreteau, V., Kassié D., Roux E., Marti R., Catry R., Attoumane A., Révillon C., Commins J., **Dessay N.**, Mangeas M., Tran A., Observer la terre pour appréhender spatialement les inégalités de santé : regard historique et prospectif sur l'utilisation de la télédétection dans le domaine de la santéIn : Gurgel H. (dir.), Laques Anne-Elisabeth (dir.). Dossiê Geografia, saúde e ambiente : uma abordagem da complexidade dos problemas atuais na saúde = Dossier Géographie, santé et environnement : une

approche de la complexité des questionnements actuels en santé. Confins, 2018, (37), art. no 15362 [27 p. en ligne] ISSN 1958-9212. doi:10.4000/confins.15362 37.

Catry, T., Pottier A., Marti R., Li, Z., Roux, E., Herbreteau, V., Mangeas, M., Demagistri L., Gurgel, H., **Dessay, N.**, Apports de la combinaison d'images satellites optique et radar dans l'étude des maladies à transmission vectorielle : cas du paludisme à la frontière Guyane française-Brésil, In : Gurgel H. (dir.), Laques Anne-Elisabeth (dir.). Dossiê Geografia, saúde e ambiente : uma abordagem da complexidade dos problemas atuais na saúde = Dossier Géographie, santé et environnement : une approche de la complexité des questionnements actuels en santé. Confins, 2018, (37), art. no 15027 [32 p. en ligne] ISSN 1958-9212

Kassié D., Roudot A., **Dessay N.**, Piermay J.-L., Salem G., Fournet F., 2017. Development of a spatial sampling protocol using GIS to measure health disparities in Bobo-Dioulasso, Burkina Faso, a medium-sized African city, Int J Health Geogr, 16, 14, DOI : 10.1186/s12942-017-0087-7, https://ij-healthgeographics.biomedcentral.com/articles/10.1186/s12942-017-0087-7

Sissoko M. S., Sissoko K., Kamate B., Samake Y., Goita S., Dabo A., Yena M**., Dessay N.**, Piarroux R., Doumbo O.K., Gaudart J., Temporal dynamic of malaria in a suburban area along the Niger River, Malaria Journal (2017) 16: p.art.420. [10 p.]. ISSN 1475-2875. WOS: 000413364300001

Coulibaly D., Travassos M. A., Tolo Y., Laurens M.B., Kone A. K., Traore K., Sissoko M., Niangaly A., Diarra I., Daou M., Guindo B., Rebaudet S., Kouriba B., Dessay N., Piarroux R., Plowe C. V., Doumbo O.K., Thera M. A., Gaudart, J., Spatio-temporal dynamics of asymptomatic malaria: bridging the gap between annual malaria resurgences in a Sahelian environment. American Journal of Tropical Medicine and Hygiene, 2017, 97 (6), p. 1761-1769. ISSN 0002-9637.DOI: 10.4269/ajtmh.17-0074; WOS: 000423231800027

Adde A., Roux E., Morgan M., **Dessay N**., Nacher M., Dusfour I., Girod R., Brioland S., Dynamical Mapping of *Anopheles darlingi* Densities in a Residual Malaria Transmission Area of French Guiana by Using Remote Sensing and Meteorological Data. PLoS ONE,Public Library of Science, 2016, 11(10): e0164685. doi:10.1371/journal.pone.0164685

Li Z., Roux E., **Dessay N**., Girod R., Stefani A., Nacher M., Moire A., Seyler F., Mapping a Knowledge-based Malaria Hazard Index Related to Landscape Using Remote Sensing: Application to the Cross-border Area between French Guiana and Brazil, Remote sensing, 2016; 8(4):319.

Almeida C., Mourao M. Jr, **Dessay N.**, Laques A.E., Monteiro A., Durieux Laurent, Venturieri A., Seyler F. Typologies and spatialization of agricultural production systems in Rondônia, Brazil : linking land use, socioeconomics and territorial configuration. In : Aspinall R. (ed.) Land system science. Land, 2016, 5 (2), 18. ISSN 2073-445X