

DESSAY Nadine

Née le: 01/08/58

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PRESENT POSITION

Nadine Dessay (F) is a research engineer processing analysis and representation of spatial information at (IRD). 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-object 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 is the coordinator of French Brazilian project TéléPal which takes place in French Guyana and Brazil transboundary (funded by CNES). Within ESPACE-DEV, she is in charge of the OSE Team (Spatial Observation of Environment).

ACADEMIC BACKGROUND

PhD Thesis: 2006, PhD in Geography/Remote Sensing, University of Paris X, France

RESEARCH TOPICS

- Images calibration and registration.
- Use 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.
- Low-resolution images for analyzing impacts on vegetation, of climate spatial variation and temporal change.

COORDINATION/ IMPLICATION IN INTERNATIONAL PROJECTS

TELEPAL (2015-2016) : Project Leader « Évaluation de la contribution de la télédétection multi-dates et multi-capteurs dans la construction d'indicateurs spatialisés du risque de transmission du paludisme en région amazonienne transfrontalière Guyane-Brésil (TéléPal) » (financement TOSCA/CNES).

GEOSUD "GEOinformation for SUsustainable Development "(2007-2019) Financing Investissement d'avenir (EQUIPEX) Partners: UMR Tetis, IGN, LIRMM, HPC@LR, CINES, OSU-OREME, CETE, GEOMATYS. Research in WP3 " Methodological research in spatio-temporal analysis of large volumes of satellite images" .

RELAIS : [Regional Epidemiological Landscape Amazon Information System], (2012-2016), Deliver data and indicators dedicated to the Amazon environmental health; Participation of the co-construct with decision makers scientific priorities for Amazonian environmental health issues

OSEGUYAMAPÁ : [Spatial Observation of the Environment of the French Guiana-Brazil] Cross-Border Region, (2011-2014), Multi-thematic mapping of Oyapock basin territories, Research in workpackage : indicators of malaria related of the environment.

ISSE-MAYOTTE : Health Interactions - Societies - Environment: study of malaria and leptospirosis in Mayotte (2013-2015), co-coordination of the workpackage whose objectives is to identify environmental parameters and their combinations characterizing sites of occurrence of these diseases.

TEACHING EXPERIENCES

Training:

- Interventions Master Géomatique Montpellier II 2013-2015: (i) Apprentissage des logiciels de traitements d'images OTB-Monteverdi du CNES, ENVI. (ii) Application des Systèmes d'Information Géographique (SIG) et de la télédétection à la santé.
- Geo-Health workshop and training, SEAS-OI station, Saint Pierre, La Réunion (1 au 12 avril 2013) 1er week: Geographic Information System for health, 2nd week Remote sensing for health.
- Remote sensing applied to health environment (using software SPRING) in master II, University Montpellier II (2011-2013).
- Participation in the supervision of training "Studies associations between entomological data and environmental data" given in the Workshop EDEN-MAL 29/06/2009 -10/07/2009. Responsible of the event Anne-Lise Tran (CIRAD-Unité AGIRs).
- Geographic information systems applied for health environment. In the Master "Expertise and engineering systems Health information (EISIS) Timone Hospital, Marseille (2008-2011). Target audience: french speakers foreign doctors.

PhD and MsC supervisions

Several completed MsC as main supervisor (> 20)

2 PhD as co-director

Member of 4 ongoing PhD supervision committee

CO-DIRECTION OF PHD THESES AND SUPERVISOR

2014-2016. PhD Thesis of Claudio ALMEIDA : « Identification des systèmes de production agro-pastoraux intensif et extensif à trois échelles de travail: régionale (Amazonie brésilienne), état fédéral (Rondônia), locale (commune) ». Director : F. Seyler, HDR, co-direction L. Durieux and N. Dessay.

2014-2016. PhD Thesis of Zhichao LI : « Modélisation des relations entre occupation - usage du sol - distribution spatiale du paludisme par télédétection optique et radar. Application à un environnement en évolution : région transfrontalière Guyane Française – Brésil ». Director : F. Seyler, HDR, co-direction E. Roux and N. Dessay.

2014-2017. PhD Thesis Leandro DA SILVA: « Analyse multitemporelle (entre 2005 et 2015) des dynamiques urbaine et environnementale mises en lien avec la dynamique de la Dengue pour le District Fédéral (Brasilia) et une de ces villes sentinelles Sao Sebastien. ». Director : Helen GURGEL, Supervisor : N. Dessay.

PUBLICATIONS

2016

- 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. Web of Science [WOS:000375156500052](https://doi.org/10.1016/j.rse.2016.04.002).
- 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.
- Almeida C. A., Coutinho A. C., Esquerdo J. C. D. M., Adami M., Venturieri A., Diniz C. G., Dessay N., Durieux L., Gomes A. R., High spatial resolution land use and land cover mapping of the Brazilian Legal Amazon in 2008 using Landsat-5/TM and MODIS data, Acta-Amazonica, vol. 46 (3), p. 291 - 302, ISSN 0044-5967. [Web of Science WOS:000378017800007](https://doi.org/10.1007/s000378017800007).

2015

- Bamba, A., Dieppois, B., Konaré, A., Pellarin, T., Balogun, A., **Dessay, N.**, Kamagaté, B., Savané, I. and

Diédhiou, A. Changes in Vegetation and Rainfall over West Africa during the Last Three Decades (1981-2010). *Atmospheric and Climate Sciences*, 2015, 5 (4), 367-379. ISSN 2160-0414 <http://dx.doi.org/10.4236/acs.2015.54028>.

- Révillion C., Lagadec E., Le Minter G., **Dessay N.**, Guernier V., Sand A., Tortosa P., Dellagi K., Herbreteau V., Utilisation de la très haute résolution spatiale pour la caractérisation des habitats de rongeurs, vecteurs de zoonoses à la Réunion. *Revue Française de Photogrammétrie et de Télédétection* 2015 (109), p. 65-71. ISSN 1768-9791.
- Gaudart J., Graffeo N., Coulibaly D., Barbet G., Rebaudet S, **Dessay N.**, Doumbo O., Giorgi R., SPODT: An R Package to Perform Spatial Partitioning. *Journal of Statistical Software* 2015; 63 (16), 23 p. SSN 1548-7660 [Web of Science WOS:000349847100001](#)
- Amogu O., Esteves M., Vandervaere J. P., Abdou M. M., Panthou G., Rajot J-L., Yero K. S., Boubkraoui S., Lapetite J-M., **Dessay N.**, Zin I., Bachir A., Moussa I. B., Maïga O. F., Gautier E., Mamadou I., Descroix Luc., Runoff evolution due to land-use change in a small Sahelian catchment, *Hydrological Sciences Journal*, 2015, 60 (1), p. 78-95. ISSN 0262-6667. [Web of Science WOS:000346588200006](#)

2014

- Gaudart J., Ettinger B., Lai M.J., Dessay N., Coulibaly D., Thera M., Giorgi R., Guillas S., 2014, Estimation de surfaces spatiales par des fonctions splines bivariées: application à la densité de population, *Revue d'épidémiologie et de santé publique*, Vol 62, S43, Doi : 10.1016/j.respe.2013.12.038.

2013

- Coulibaly D., Rebaudet S., Travassos M., Tolo Y., Laurens M., Kone A. K., Traore K., Guindo A., Diarra I., Niangaly A., Daou M., Dembele A., Sissoko M., Kouriba B., **Dessay N.**, Gaudart J., Piarroux R., Thera M. A., Plowe C. V., Doumbo O. K. Spatio-temporal analysis of malaria within a transmission season in Bandiagara, Mali. *Malaria Journal*, 2013, 12:82. ISSN 1475-2875.
[Web of Science WOS:000317229000001](#)
- Stefani A., Dusfour I., Correa A.P.S.A., Cruz M.C.B., **Dessay N.**, Galardo A.K.R., Galardo C.D., Girod R., Gomes M.S.M., Gurgel H., Lima A.C.F., Moreno E.S., Musset L., Nacher M., Soares A.C.S., Carme B., Roux E., Land cover, land use and malaria in the Amazon: a systematic literature review of studies using remotely sensed data, *Malaria Journal*, 2013, 12:1, 192, 8 p. ISSN 1475-2875
- Roux, E., Gaborit, P., Romaña, C A, Girod, R., **Dessay N.**, Dusfour, I., Objective sampling design in a highly heterogeneous landscape - characterizing environmental determinants of malaria vector distribution in French Guiana, in the Amazonian region. *BMC Ecology*, 2013, 13; P.45. ISSN 1472-6785.
[Web of Science WOS:000328458000001](#).
- Sighomnou D., Descroix L., Genthon P., Mahé G., Bouzou Moussa I., Gautier E., Mamadou I., Vandervaere J.P., Bachir T., Coulibaly B., Rajot J-L, Malam Issa O., Malam Abdou M., **Dessay N.**, Delaitre E., Faram Maïga O., Diedhiou A., Panthou G., Vishel T., Yacouba H., Karambiri H., Paturel J-E, Diello P., Mougin E., Kergoat L., Hiernaux P. La crue de 2012 à Niamey : un paroxysme du paradoxe du Sahel ?. *Sécheresse*, 2013, 24 (1), p. 3-13. ISSN 1777-5930.

2012

- Martiny N., **Dessay N.**, Yaka P., Doumbo O., Sultan B., Rebaudet S., Broutin H., Piarroux R., Chiapello I., Sagara I., Fontaine B., Sissoko M., Jeanne I., Toure O., Gaudart J., le climat, un facteur de risque pour la santé en Afrique de l'Ouest, *Numéro spécial Météorologie -AMMA*, 2012, 72, pp 72-78.

2011

- Begue A., Vintrou E., Ruelland D., Gladen M., **Dessay N.**, 2011, Can a 25-year trend in Soudano-Sahelian vegetation dynamics be interpreted in terms of land use change? A remote sensing approach, *Global Environmental Change: Human and Policy Dimensions*, 2011, 21 (2), p. 413-420. ISSN 0959-3780. [Web of Science WOS:000292177500014](#)
- Descroix L., Esteves M., Souley Yéro K., Rajot J.-L., Malam Abdou M., Boubkraoui S., Lapetite J. M., **Dessay N.**, Zin I., Amogu O., Bachir A., Bouzou Moussa I., Le Breton E., Mamadou I., 2011, Runoff

evolution according to land use change in a small Sahelian catchment, *Hydrology and Earth System Sciences Discussions*, 8, 1569-1607.

2010

- Dessay N., Toure O., Gaudart J., Labbé S., Coulibaly D., Thera M., Doumbo OK., Estimation de la densité de population à l'aide de l'outil de télédétection sur le site de Bandiagara (Mali), 2010, *Revue d'Epidémiologie et de Santé Publique*. 2010, 58 (S2) :91.
- Gaudart J., Barbet G., Roch Giorgi, Dessay N., Faucher B., Demongeot J., Doumbo OK., Arbre de décision oblique: présentation de l'algorithme SpODT et application à la cartographie, 2010b, *Revue d'Epidémiologie et de Santé Publique*. 2010, 58 (S2) :79.
- Soti V., Puech C., Lo Seen D., Bertran A., Vignolles C., Mondet B., Dessay N., Tran A., The potential for remote sensing and hydrologic modelling to assess the spatio-temporal dynamics of ponds in the Ferlo region (Senegal), *Hydrology and Earth System Sciences*, 14, 1449-1464 ISSN 1027-5606. *Web of Science* [WOS:000281432500003](https://doi.org/10.1029/2009JH013503)
- Soti V., Puech C., Lo Seen D., Bertran A., Vignolles C., Mondet B., Dessay N., Tran A., Monitoring temporary ponds dynamics in arid areas with remote sensing and spatial modelling, *Hydrology and Earth System Sciences Discussions (HESSD)*, 7, 103-133, 2010, www.hydrol-earth-syst-sci-discuss.net/7/103/2010/ © Author(s) 2010

2009

- Gerbaux M., Hall N.M.J, **Dessay N.**, Zin I., 2009, The sensitivity of Sahelian Runoff to Climate Change, *Hydrological Sciences Journal*, 2009, 54(1), p 5-16, ISSN 0262-6667. *Web of Science* [WOS:000263690600002](https://doi.org/10.1080/02626667.2009.3443103)
- Gaudart J., Toure, O., **Dessay N.**, Dicko, A., Ranque, S., Forest, L., Demongeot, J., & Doumbo, O., Modelling malaria incidence with environmental dependency in a locality of Sudanese savannah area, *Mali Malaria Journal*, 2009, 8(61). *Web of Science* [WOS:000266326000001](https://doi.org/10.1080/102361909032600001)

2006

Dessay N., 2006, Dynamique de la végétation et du climat: étude par télédétection de cinq biomes brésiliens, forêt ombrophile dense et ouverte, cerrados, caatinga et campanha gaúcha, Thèse de l'Université Paris X, 362 pp.

2004

- **Dessay N.**, Laurent H., Machado L.A.T, Shimabukuro Y. E., Batista G. T., Diedhiou A., Ronchail J., 2004, Comparative study of 1982-1983 and 1997-1998 El Niño events over different types of vegetation in South America, *International Journal of Remote Sensing*, 25, 4063-4077. ISSN 0262-6667. *Web of Science* [WOS:000224024000001](https://doi.org/10.1080/02626660410001663103)
- Machado L.A.T., Laurent H., **Dessay N.**, Miranda I., 2004, Seasonal and diurnal variability of convection over the Amazonia: a comparison of different vegetation types and large scale forcing, *Theoretical Applied Climatology*, 78, 61-77.

1999

- Pasqualini V., Iltis J., **Dessay N.**, Lointier M., Guelorget, O., Polidori L., 1999. Mangrove mapping in North-Western Madagascar using SPOT-XS and SIR-C radar data. *Hydrobiologia*, 413:127-133.