

Geospatial data science

Consultancy

- geographic information science
- spatio-temporal data
- R data analysis
- geospatial data analytics
- geo e-infrastructure
- design & applicative & workflow
- interdisciplinary research projects



Short CURRICULUM VITAE

15 years of research in leading UK universities (Oxford, Leeds, Nottingham, Sheffield); 5 years at IRD (France); 2 years at Sanofi-Recherche (France); 4 years at INSERM (France); international context and European research programme (7 EU projects), UK, France, LMIC (in Africa and South-Asia); 44 articles (21 as 1st author), 67 communications in symposiums (21 extended abstracts, 4-6 pages); Excellent spoken and written French (native) and English (15 years)

My research profile in geocomputational data analytics of spatial information with data modelling and statistical analysis, which has developed from my academic experience in both France and the UK dealing with spatio-temporal data from different contexts, such as: spatial epidemiology, agro-ecological monitoring, dynamics of population studies, location based citizen crowdsourcing of environmental information, etc.

My approach draws from my dual competency in statistics and computing science, with a focus on providing tools to manage, combine within scientific workflows and analyse large datasets from various heterogeneous sources.

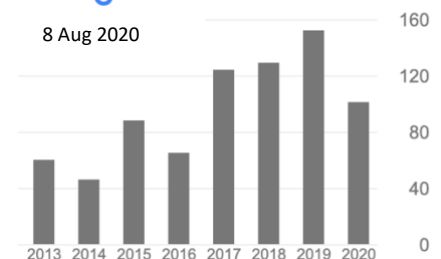
My research themes are at the intersection of geospatial information science, data mining, computing methodologies and open technologies; I am particularly interested in challenging the potential of interoperability developments to manage scientific models. Computing science linked to semantic modelling (e.g. ontologies) or computational architecture (e.g. workflow architectures) drive the data analysis methods I utilise, including multiway methods and spatial statistics of geo-located information for environmental and social studies, which in return can be used in information modelling and information retrieval for scientific workflow modelling.

My focus is on data information interaction, extraction and associations existing in spatio-temporal multi-attribute analysis within integrated modelling approaches. I also consider as essential the meta-information (e.g. provenance, uncertainty and data quality) with conflation and fusion models and its role in the design of the architecture of systems using geocomputational data analytics within an interdisciplinary context.

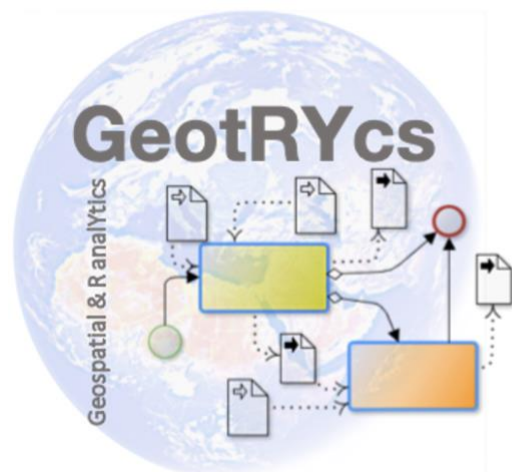
	All	Since 2015
Citations	1398	663
h-index	20	15
i10-index	28	17

Google Scholar

8 Aug 2020



Keywords Interests geocomputational data analytics / data science / statistical methods / geolocated information / data modelling / interoperability for data and processes / scientific workflows **Features** interaction and association / fusion / meta-information / quality and error propagation **Applied in** agro-ecological modelling / epidemiology and public health / crowdsourcing and Volunteered Geographical Information (VGI) / interdisciplinary research



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Expert evaluator for EU, and UK Research Council

2019- EIT Health InnoStars' RIS (12 projects), **2018-** MSC-IF (4 projects), **2008-2013** (FP7 Heath for SME: 8 projects per year), FP7 ICT for Health: 4 years evaluation during the project(**2012-2015**), **2014-**ESRC-UK (1 project), **2009-**EPSRC-UK (1 project), **2010-**Research Office Cyprus (1 project)

Topics: ICT, Health, Engineering, geospatial, Remote Sensing, Environmental Modelling & Analysis

Career path since 2001

2018 - 2020 *Researcher in Geocomputational Data Science; school of Mathematics & Statistics, University of Sheffield, UK;* Land Surface Modelling and uncertainty, project CLINF on climate sensitive diseases (NordForsk funds)

2013 - 2017 *Senior Research Fellow in Geocomputational Data Analytics; Nottingham Geospatial Institute and school of Geography, University of Nottingham, UK;* Scientific lead for Nottingham and WP leader in FP7 COBWEB and H2020 LandSense: Crowdsourcing /error propagation / spatio-temporal pattern analysis /data quality and OGC (Open Geospatial Consortium) standards web services / interoperability issues related to these interests / Supervision and teaching of PhD and MSc students

2012- 2013 *Research Fellow in Geocomputational Statistical Analysis; Centre for Computational Geography and School of Geography, University of Leeds, UK;* Pursuing previous activities in the context of social simulation modelling within the ESRC –NCRM project Talisman

2006 - 2012 *Research Fellow in Geospatial Modelling & Analysis; Nottingham Geospatial Institute and school of Geography, University of Nottingham, UK;* Scientific co-lead in FP7 EuroGEOSS, lead in FP7 e-Soter for the University of Nottingham partner; Spatio-temporal modelling / cross-scales and multi-scale problems / integrated modelling / data quality, error propagation, OGC and interoperability of web / Supervision and teaching of PhD and MSc students

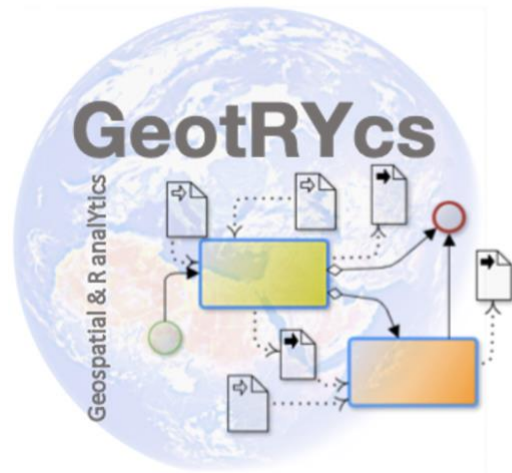
2002 - 2006 *Researcher in Geoinformatics and GIS Modelling; 'Desertification' Unit, IRD- (Institut de Recherche pour le Développement, France);* Researcher in ROSELT-OSS project, FP6 DeSurvey; Analysis of prospective modelling / statistical contributions to satellite images clustering / conception and implementation of exploratory and prospective GIS ecological landscape modelling to build desertification risk indicators / Teaching and training in GIS at University of Montpellier, Master SILAT and within the research network with African partners

1999-2001 *Research Fellow in Statistics and Image Analysis; FMRIB centre, University of Oxford, UK;* Glaxo Wellcome funded research on Image and time series analysis of functional MRI data / linear and smooth modelling for multi-subject multi-group studies / mixed GLM and exploratory multiway data analysis / random fields theory, permutation and bootstrapping testing / Teaching PostDocs in Neurosciences from a series of seminars, Co-supervision of a PhD student

Member of Steering or Programme Committee, Board of editors

- **Organisation of international conferences** IEEE Geosciences & Remote Sensing Symposium (**IGARSS** 2008-2013); Free and Open Source Software for Geospatial (**FOSS4G** 2013); International Symposium on Spatial Data Quality (**ISSDQ** 2015); Association of Geographic Information Laboratories in Europe conferences (**AGILE** 2013-2015); Knowledge Extraction from Geographical Data (**KEGeoD** 2018); International conference of Spatial Analysis and Geomatics (**SAGEO** 2016, 2018, 2019); Conference On Spatial Information Theory (**COSIT** 2013, 2019)

- **Board of editors** Entropy (guest editor 2018); International Journal of Geomatics and Spatial Analysis (**IJGS RIG** since 2013); Open Statistics; Top peer reviewer 2017 [Publons](#)



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Prizes and awards Runner-up best paper award in AGILE 2016 conference, Helsinki; Best paper award 2011 in International Journal of Image and Data Fusion; Best Spatial Analysis conference paper award in GISRUUK 2011, Southampton; Best Spatial Analysis conference paper award in GISRUUK 2010, London

Participation in 7 EU projects

Funding received

2016-2020 EU H2020 SC5-17-20151 'A Citizen Observatory and Innovation Marketplace for Land Use and Land Cover Monitoring, LandSense', Nottingham partner, €343k (€5.6M 18 partners) **My Role:** Researcher, continuation of my work from COBWEB on Quality Assurance for crowdsourced and citizen science data, used in LandSense

2012-2016 EU FP7 ENV.2012.6.5-1 Developing community-based environmental monitoring and information systems using innovative and novel earth observation applications 'COBWEB', Nottingham partner, €486k (€6.5M, 13 partners) **My Role:** Researcher co-Investigator (col), scientific lead for Nottingham & WorkPackage (Nottingham contribution based on my work on data Quality Assurance)

2013-2014 BBSRC TDRF call 2 Support for Development of Bioinformatic Tools and Computational Approaches to the Biosciences 'Geospatial Resource for Agricultural Species and Pests with integrated workflow modelling to support Global Food Security (GRASP-GFS): a prototype', Nottingham, £150k **My Role:** Researcher Principal Investigator (PI) writing up the whole proposal

2009-2012 EU FP7 ENV.2008.4.1.1.1: European Environment Earth Observation system supporting INSPIRE (INfrastructure for SPatial INfoRmation in the European community) and compatible with GEOSS (Global Earth Observation System of Systems), 'EuroGEOSS', Nottingham partner €620k (€7M, 23 partners) **My Role:** Researcher col and scientific lead for Nottingham (contribution in writing-up proposal)

2008-2011 EU FP7 ENV-2007-1: Regional pilot platform as EU contribution to a Global Soil Observing System 'eSoTer', Nottingham partner €81k (€2.7M, 14 partners) **My Role:** Researcher PI, managing the Nottingham team, writing up Nottingham's contribution

2011 University of Nottingham /Global Food Security Projects, 'GRASP' project (Open Source based Geospatial Resource for Agricultural Species and Pests) £10k **My Role:** Researcher-co-PI


2009 EU FP7 e-content+ project 'GIS4EU': GIS data harmonisation for Europe, and EU FP7 collaborative 'GIGAS': 'GEOSS, INSPIRE, GMES, Action in Support' for convergence of the initiatives' **My Role:** participating as internal consultant

2009 University of Nottingham / Bridging the Gaps Awards 'Geospatial mash-up technologies in Health and disease mapping', £3k **My Role:** Researcher-co-PI

2005-2010 EU FP6 Global Changes & Ecosystem DeSurvey, IRD €250k (€10.3M, 39 partners) **My Role:** Researcher until 2006, doing GIS coupling-models integration, training for partners (contribution to writing up the proposal)

Qualifications and training

PhD Mathematical Sciences- Biostatistics (Université de Montpellier II, France, 1993, mention 'très honorable', 'Facteurs à Mesures Répétées et Analyses Factorielles : Applications à un Suivi Épidémiologique'; **MSc** Computing Science (Université de Montpellier II, France, 2002, mention 77%, Project: 'Metadata Structure relative to Data and Protocols' in the CIRAD-Forest Dpt CIRAD-Montpellier spring 2002, Industrial placement: 'Developing a GIS extension



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Selected publications

- Leibovici DG, Quegan S, Comyn-Platt E, Hayman G, Val Martin M, Guimberteau M, Druel A, Zhu D, and P Ciais (2020) 'Spatio-Temporal Variations and Uncertainty in Land Surface Modelling for High Latitudes: Univariate Response Analysis'. *Biogeosciences* 17(7):1821-1844
- Leibovici, DG, and C Claramunt (2019) 'On Integrating Size and Shape Distributions into a Spatio-Temporal Information Entropy Framework'. *Entropy* 21, no. 11: 1112.
- Rosser JF, M Jackson, and DG Leibovici (2018) 'Full Meta Object Profiling for Flexible Geoprocessing Workflows'. *Transactions in GIS* 22, no. 5: 1221–1237.
- Rosser JF, DG Leibovici, and MJ Jackson (2017) 'Rapid Flood Inundation Mapping Using Social Media, Remote Sensing and Topographic Data'. *Natural Hazards* 87, no. 1: 103–120.
- Leibovici DG, S Anand, R Santos, S Mayes, R Ray, M Al-Azri, A Baten, et al. (2017) 'Geospatial Binding for Transdisciplinary Research in Crop Science: The GRASPGfs Initiative'. *Open Geospatial Data, Software and Standards* 2, no. 1: 20.
- Leibovici DG, JF Rosser, C Hodges, B Evans, M Jackson, and C Higgins (2017) 'On Data Quality Assurance and Conflation Entanglement in Crowdsourcing for Environmental Studies'. *ISPRS International Journal of Geo-Information* 6, no. 3: 78.
- Meek S, M Jackson, and DG Leibovici (2016) 'A BPMN Solution for Chaining OGC Services to Quality Assure Location-Based Crowdsourced Data'. *Computers & Geosciences* 87: 76–83.
- Higgins CI, J Williams, DG Leibovici, I Simonis, MJ Davis, C Muldoon, P van Genuchten, G O'Hare, and S Wiemann (2016) 'Citizen OBServatory WEB (COBWEB): A Generic Infrastructure Platform to Facilitate the Collection of Citizen Science Data for Environmental Monitoring'. *International Journal of Spatial Data Infrastructures Research* 11, no. 1: 20–48.
- Leibovici DG, and MH Birkin (2015) 'On Geocomputational Determinants of Entropic Variations for Urban Dynamics Studies'. *Geographical Analysis* 47, no. 3: 193–218.
- Stock K, DG Leibovici, L Delazari, and R Santos (2015) 'Discovering Order in Chaos: Using a Heuristic Ontology to Derive Spatio-Temporal Sequences for Cadastral Data'. *Spatial Cognition & Computation* 15, no. 2: 115–141.
- Clonan A, P Wilson, JA Swift, DG Leibovici, and M Holdsworth (2015) 'Red and Processed Meat Consumption and Purchasing Behaviours and Attitudes: Impacts for Human Health, Animal Welfare and Environmental Sustainability'. *Public Health Nutrition* 18, no. 13: 2446–2456.
- Samarasundera E, A Hansell, DG Leibovici, CJ Horwell, S Anand, and CA Oppenheimer (2014) 'Geological Hazards: From Early Warning Systems to Public Health Toolkits'. *Health & Place* 30: 116–119.
- Leibovici DG, A Pourabdollah, and MJ Jackson (2013) 'Which Spatial Data Quality Can Be Meta-Propagated?' *Journal of Spatial Science* 58, no. 1: 3–14.
- Clonan A, M Holdsworth, JA Swift, DG Leibovici, and Paul Wilson (2012) 'The Dilemma of Healthy Eating and Environmental Sustainability: The Case of Fish'. *Public Health Nutrition* 15, no. 2: 277–284.
- Leibovici DG, and M Jackson (2011) 'Multi-Scale Integration for Spatio-Temporal Ecoregioning Delineation'. *International Journal of Image and Data Fusion* 2, no. 2: 105–119.
- Leibovici DG (2010) 'Spatio-Temporal Multiway Decompositions Using Principal Tensor Analysis on k-Modes: The R Package PTAK'. *Journal of Statistical Software* 34, no. 10: 1–34.
- Leibovici DG, G Quillevere, and J-C Desconnets (2007) 'A Method to Classify Ecoclimatic Arid and Semiarid Zones in Circum-Saharan Africa Using Monthly Dynamics of Multiple Indicators'. *IEEE Transactions on Geoscience and Remote Sensing* 45, no. 12: 4000–4007.
- Estienne F, N Matthijs, DL Massart, P Ricoux, and DG Leibovici (2001) 'Multi-Way Modelling of High-Dimensionality Electroencephalographic Data'. *Chemometrics and Intelligent Laboratory Systems* 58, no. 1: 59–72.