

CURRICULUM VITAE

(short)

Personal information

Name Maria Luísa Machado Cerqueira Bastos
Date of birth 1954/10/19
Gender Female
Nationality Portuguese

Institutional address

CIIMAR
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Academic degrees

1991 - PhD in Surveying Engineer by the University of Porto (Satellite Geodesy)
1976 – Licenciante in Surveying Engineering by the University of Porto
1975 – Bachelor in Mathematics by the University of Porto

Academic Awards

Year	Award	Institution
1976	Engenheiro António de Almeida	Foundation “Eng. António de Almeida”
1976	Doutor Manuel Ferreira	Doutor Manuel Ferreira

Work experience

Position held: From 1996 onwards holds a position as Principal Researcher of the Faculty of Sciences of the University of Porto.

Management positions:

Since 1997 Director of the Astronomical Observatory of the Faculty of Sciences.
Since 2002 Head of the Coastal and Ocean Dynamics group at the Interdisciplinary Centre of Marine and Environmental Research (CIIMAR).
2013 - 2015 Member of the Board of the Interdisciplinary Centre of Marine and Environmental Research (CIIMAR).
2014 - 2015 Member of the Board of the Marine Research and Innovation center of the University of Porto (OCEANUS).
2010 – 2014 Vice-President of the Department of Geosciences, Environment and Spatial Planning.
2003 - 2009 Member of the Board of the Institute of Common Resources of the University of Porto.

Area of scientific activity**Domain of specialization**

GNSS positioning Systems, with special emphasis on the development of applications based in the integration of GNSS with other sensors, especially inertial systems (INS) and its exploitation for airborne, terrestrial and marine applications.

Present investigation interests

Airborne gravimetry – implementation of strapdown systems (hardware integration and software development) using different IMUs grades.

Mobile Mapping Systems - implementation of MMS systems for coastal monitoring integrating different sensors and using different terrestrial and aerial platforms (light airplanes and UAVs).

Buoys positioning for studies of ocean dynamics and sea level monitoring.

Main activities and responsibilities

Working in Satellite Positioning and Navigation for more than 25 years, with special interest on the exploitation of GNSS based solutions in various domains through the development of GNSS applications for precise positioning, navigation, environmental monitoring and geo-information services.

Leading projects with multidisciplinary teams for the development of systems based in GNSS integration with other sensors and its exploitation for different applications (e. g., environmental monitoring, coastal oceanography airborne gravimetry, mobile mapping, etc.) using several types of platforms (terrestrial, marine or airborne, including UAVs).

Interest in fostering new uses of GNSS, in science and in everyday life.

Teaching in PhD., Msc. and Bsc. courses (lectures in Satellite Positioning and Navigation).

Supervision of researchers at the Post-graduate and Post-doc level.

Management of R&D

Large experience in management at the scientific and academic level acquired as board member, or member, of several research units or university bodies.

Definition of training plans, technology transfer and internationalization.

Dissemination of Science&Technology.

Establishment of Partnerships with external private and public entities.

Participation in Research Projects

In the last 20 years has been responsible for several Research Projects.

Presently is team leader or involved in the following projects:

- MELOA - Multi-purpose/Multi-sensor Extra Light Oceanography Apparatus (H2020)
- MarRISK – Adaptación costera ante el cambio climático: conocer los riesgos y aumentar la resiliencia (INTERREG V)
- MarInfo - Platform for Marine Data Acquisition and Analysis (Norte2020)
- CORAL - Sustainable Ocean Exploitation: Tools and Sensors (Norte 2020)
- INNOVMAR/ECOSERVICES - Innovation and Sustainability in the Management and Exploitation of Marine Resources/Assessing the environmental quality, vulnerability and risks for the sustainable management of NW coast natural resources and ecosystem services (Norte2020)

Other recent past projects:

- RAIA_TEC – Marine Technology and Information (Interreg)

- ECORISK - Ecological risk assessment of oils and hazardous and noxious substances in the NW Portuguese coast and Douro and Minho Rivers estuaries (SR&TD Integrated Program MARVALOR - ON.2)
- RAIA.co - Ocean Observatory of the Iberian Margin and Littoral (Interreg)
- PITVANT - Unmanned Air Vehicles development program (Portuguese Department of Defense)
- RAIA - Ocean Observatory of the Iberian Margin (Interreg)
- DEOSOM - Detection and Evaluation of Oil Spills by Optical Methods (AMPERA ERA-NET)
- FlexiMap3D - Flexible Kinematic System for Mapping through 3D Images (ADI-QREN)
- CALTIGO - Coastal Altimetry Improvement in the Portuguese EEZ for Geodesy and Oceanography (ESA)
- NICC - Northwest Iberian Coastal Current (FCT – National)
- ECCOIS - Estuarine COntributions to Inner Shelf dynamics (FCT – National)

Other skills and competences

Experience in the organisation of national and international scientific conferences (both as president/member of organising and scientific committees).

Member of academic jury (PhD. and MSc.) in Portugal and other European countries.

Member of several specialized Commissions (national and international).

Setting up 7FP proposals as Project coordinator and partner.

Member of panels of national and international competitions of business ideas.

Co-Editor of Proceedings of international and national conferences.

Referee of scientific articles submitted to several international reference journals (ex.

Journal of Geodesy, Sensors, Journal of Geodynamics, Physics and Chemistry of the Earth, Pageoph “IAG Symposia Series”, Tectonophysics, etc.)

Consultancy for private and public entities in the domain of Navigation, Cartography Control, GIS and LBS.

Appointed by the EU to integrate the “Mission Evolution Advisory Group” of GNSS experts (2010-2014).

Project evaluator (7FP and H2020).

Invited for Scientific or Organization Committees (including as president), or as session chair/co-chair, in several conferences

WEGENER 2016 – September 2016, Azores, Portugal

WORKSHOP SARWatch: Advances in the Science and Applications of SAR Interferometry, October 2015, Troia, Portugal.

Workshop “Airborne Gravity – comparison of strapdown and scalar techniques”. May 2014, Observatório Astronómico, Vila Nova de Gaia, Portugal

4ª Conferência Luso-Espanhola de Geodesia e Geofísica – session “S01- Espaço” - Portugal, February de 2004.

ISPRS Workshop: Theory, Technology and Realities of Inertial / GPS Sensor Orientation – session “Non conventional applications” – Barcelona, September 2003.

ION GPS 2002 - session "Land Applications" - Portland, September 2002.

GG2002 – session “Geodynamics and Gravity Variations” – Salónica, August 2002.

3ª Conferência Luso-Espanhola de Geodesia e Geofísica - session "Gravimetria e Marés" - Valência, February 2002.

3ª Conferência Nacional de Cartografia e Geodesia – Universidade de Aveiro, December 2002.

WEGENER 2002 Assembly – Athens, Greece, June 2002

EOSS Workshop – Session “Connecting tide gauges to a terrestrial reference frame”- Dubrovnik, September 2001;

IAG 2001 Scientific Assembly – Session “Airborne Gravimetry” – Budapeste, Setembro de 2001;

Workshop Azores-Tunisia, ““Workshop on the Geodynamics of the Western part of the Eurasia-Africa plate Boundary” – Session S3, “Geodetic Measurements of Crustal Motions” – San Fernando, Spain, May 2001;

XXV European Geophysical Society General Assembly - Session G3 “The Earth Gravity Field: Geoid use in engineering, geophysical and oceanographic applications”, Nice, Abril de 2000.

“The Tenth General Assembly of the WEGENER Project” – Cadiz, Spain, September 2000

II Conferência de Cartografia e Geodesia - Session “Sistema Geodésicos de Referência”, Luso, Setembro de 1999.

XXIV European Geophysical Society General Assembly - Session G17 "Geodetic and geological monitoring of coastal processes", Haia, Abril de 1999.

XXIII European Geophysical Society General Assembly - Session G2 "Recent crustal movements of coastal regions: new geodetic, geological and geophysical results" , Nice, Abril de 1998.

1a. Assembleia Luso-Espanhola de Geodesia e Geofísica – Session S02 "Gravimetria e Marés", Almeria,1998.

Some More Recent Publications (ISI):

YAN, W., BASTOS, L., GONÇALVES, J. A., , MAGALHÃES, A., XU, TIANHE (2017). Image-aided platform orientation determination with a GNSS/low-cost-IMU system using robust adaptive Kalman Filter. *GPS Solutions* (accepted).

IGLESIAS, I., LORENZO, MARÍA N, LÁZARO, C, FERNANDES, J, BASTOS, L. (2017). Sea Level Anomaly response to North Atlantic teleconnection patterns. *Science of the Total Environment*, 609, 861-874, 2017. DOI: 10.1016/j.scitotenv.2017.07.220.

YAN, W., BASTOS, L., MADEIRA, S., MAGALHÃES, A., GONÇALVES, J. A. (2017). Using Relative Orientation to Improve the Accuracy of Exterior Orientation Parameters of Low Cost POS. *Photogrammetric Engineering & Remote Sensing* 83 (2), 153-161. DOI.org/10.14358/PERS.83.2.153.

L. BASTOS, A. BIO AND I. IGLESIAS (2016). The Importance of Marine Observatories and of RAIAs in Particular. *Frontiers in Marine Science*, section Coastal Ocean Processes. doi.org/10.3389/fmars.2016.00140

AYRES-SAMPAIO, D., DEURLOO, R., BOS, MS, MAGALHÃES, A., BASTOS, L. (2015). A comparison between three IMUs for strapdown airborne gravimetry. *Surveys in Geophysics*. DOI 10.1007/s10712-015-9323-5.

BECKER, D., NIELSEN, J. E., AYRES-SAMPAIO, D., FORSBERG, R., BECKER, M., BASTOS. L. (2015). Drift reduction in strapdown airborne gravimetry using a simple thermal correction. *Journal of Geodesy*, 89, 1133–1144. DOI 1. 10.1007/s00190-015-0839-8.

DEURLOO, R., YAN, W., BOS, M., AYRES-SAMPAIO, D., MAGALHÃES, A., BECKER, M., BECKER, D., & BASTOS, L. (2014). A comparison of the performance of medium- and high-quality inertial systems grades for strapdown airborne gravimetry. In: Rizos C., Willis P. (eds) *IAG 150 Years. International Association of Geodesy Symposia*, vol 143. Springer, Cham. doi.org/10.1007/1345_2015_1.

MADEIRA, S., WENLIN Y., GONÇALVES, J., BASTOS, L. (2014). Accuracy Assessment of the Integration of GNSS and a MEMS IMU in a Terrestrial Platform. *Sensors* 11/2014; 14(11):20866-20881. DOI: 10.3390/s141120866.

BIO, A.; L. BASTOS; H. GRANJA; J.L.S. PINHO; J.A. GONÇALVES; R. HENRIQUES; S. MADEIRA; A. MAGALHÃES & D. RODRIGUES (2014). Methods for coastal monitoring and erosion risk assessment: two portuguese case studies/Métodos de monitorização e análise de risco de erosão costeira: dois casos de estudo portugueses. *Journal of Integrated Coastal Management*. <http://dx.doi.org/10.5894/rgci490>.

BOS, M. S., S. D. P. WILLIAMS, I. B. ARAÚJO, L. BASTOS, (2013). The effect of temporal correlated noise on the sea level rate and acceleration uncertainty. *Geophysical Journal International* (DOI: 10.1093/gji/ggt481).

MADEIRA S., J. GONÇALVES, L. BASTOS, (2013). Accurate DTM generation in sand beaches using mobile mapping. *Journal of Coastal Conservation* 17, Issue 3, 579-588 (DOI: 10.1007/s11852-013-0256-1).

SOUSA, J. J., L. BASTOS, (2013). Multi-temporal SAR interferometry reveals acceleration of bridge sinking before collapse. *Nat. Hazards Earth Syst. Sci.*, 13, 659-667 (DOI:10.5194/nhess-13-659-2013).

OZENER, H., S. ZERBINI, L. BASTOS, M. BECKER, M. MEGHRAOUI, R. REILINGER, (2013). WEGENER: World earthquake GEodesy network for environmental hazard research. *Journal of Geodynamics* 67, 2-12 (DOI: 10.1016/j.jog.2012.12.005).

ARAÚJO, I.B., BOS, M.S., BASTOS, L.C., CARDOSO, M.M., (2012). Analysing the hundred year sea level record of Leixões, Portugal. *Journal of Hydrology*. doi: 10.1016/j.jhydrol.2012.12.019.

J. REINKING, A. HÄRTING, L. BASTOS, (2012). Determination of sea surface height from moving ships with dynamic corrections. *Journal of Geodetic Science*, Versita, Warsaw: doi: 10.2478/v10156-011-0038-3.

M. S. BOS, R. M. S. FERNANDES, S. D. P. WILLIAMS, L. BASTOS, (2012). Fast error analysis of continuous GNSS observations with missing data. *Journal of Geodesy*, DOI: 10.1007/s00190-012-0605-0.

P. MARREIROS, M. J. FERNANDES, L. BASTOS, (2012). Evaluating the feasibility of GPS measurements of SSH on board a ship along the Portuguese West Coast. *Advances in Space Research*. dx.doi.org/10.1016/j.asr.2012.10.028.

DEURLOO, R., L. BASTOS, M. BOS (2012). On the Use of UAVs for Strapdown Airborne Gravimetry. *Geodesy for Planet Earth, International Association of Geodesy Symposia, Vol. 136*, edited by S. Kenyon et al., Springer-Verlag Berlin Heidelberg, pp. 255-261, 2011.

BASTOS, L., A. BIO, J.L.S. PINHO, H. GRANJA, A. JORGE DA SILVA, (2012). Dynamics of the Douro estuary sand spit before and after breakwater construction. *Coastal and Shelf Science*. doi:10.1016/j.ecss.2012.05.017.

MADEIRA, S. GONÇALVES, J. BASTOS, L. (2012). Sensor Integration in a Low Cost Land Mobile Mapping System. *Sensors*, 2012, 12, 2935-2953; doi:10.3390/s120302935.

JOAQUIM J. SOUSA , ANDREW J. HOOPER, RAMON F. HANSSEN, LUISA C. BASTOS, ANTONIO M. RUIZ, (2011). Persistent Scatterer InSAR: A comparison of methodologies based on a

model of temporal deformation vs. spatial correlation selection criteria. *Remote Sensing of Environment*. doi:10.1016/j.rse.2011.05.021.

GENG, Y., R. DEURLOO, R., L. BASTOS AND J. SOUSA, (2011). A Low-cost MEMS IMU/DVL/Pressure Sensor Integrated Navigation System for Autonomous Underwater Vehicle. *Proceedings of 2011 International Technical Meeting*, ITM 2011, January 25-27, San Diego, USA, pp. 703.

GENG, Y., DEURLOO, R., BASTOS, L. (2011). A method for automatic lever-arm estimation in loosely-coupled GNSS/INS integration system using unscented particle filter. *Proceedings of 2011 International Technical Meeting*, ITM 2011, January 25-27, San Diego, USA. Institute of Navigation - International Technical Meeting 2011, ITM 2011 2 , pp. 841.

GENG, Y., R. DEURLOO, R. AND L. BASTOS, 2010. Hybrid Derivative-free Extended Kalman Filter for Unknown Lever-arm Estimation in Tightly-coupled DGPS/INS Integration. *GPS Solutions*. DOI: 10.1007/s10291-010-0190-8.

JOAQUIM J. SOUSA, ANTONIO M. RUIZ, RAMON F. HANSSEN, LUISA BASTOS, ANTONIO J. GIL AND JESÚS GALINDO-ZALDÍVAR, (2010). PS-InSAR processing methodologies in the detection of field surface deformation - study of the Granada basin (Central Betic Cordilleras, Southern Spain). *Journal of Geodynamics* 49 (2010), pp. 181-189. DOI 10.1016/j.jog.2009.12.002.

M.S. BOS, L. BASTOS, R.M.S. FERNANDES, (2010). The influence of seasonal signals on the estimation of the tectonic motion in short continuous GPS time-series. *Journal of Geodynamics* 49 (2010), pp. 205-209. DOI 10.1016/j.jog.2009.12.002

FERNANDES M. J., LÁZARO, C., NUNES, A. L., PIRES, N., BASTOS, L., MENDES, V. B., (2010). GNSS-derived Path Delay: an approach to compute the wet tropospheric correction for coastal altimetry. *IEEE Geoscience and Remote Sensing Letters*, DOI:10.1109/LGRS.2010.2042425.

MADEIRA, S. BASTOS, L., GONÇALVES, J. (2010). Photogrammetric Mapping and Measuring Application Using MATLAB. *Computers & Geosciences* 36 (2010) pp. 699–706.

BASTOS, L., BOS M. and FERNANDES, R. M. (2010). Deformation and Tectonics: Contribution of GPS Measurements to Plate Tectonics – Overview and Recent Developments. *Sciences of Geodesy – I, Advances and Future Directions*. Xu, Guochang (Ed.). 1st Edition., 2010, XVII, 507 p. 100 illus., Hardcover. ISBN: 978-3-642-11740-4.

BOS, M.S., R.M.S. FERNANDES, S.D.P. WILLIAMS, AND L. BASTOS, (2008). Fast error analysis of continuous GPS observations. *Journal of Geodesy*, DOI: 10.1007/s00190-007-0165-x, 2007.

BAPTISTA, P., BASTOS, L., BERNARDES, C., CUNHA, T., DIAS, J., (2008). Monitoring Sandy Shores Morphologies by DGPS. A Practical Tool to Generate Digital Elevation Models. *Journal of Coastal Research*, Volume 24, Issue 6: pp. 1516 – 1528. doi.org/10.2112/07-0861.1