

General Information

Name of Research Unit:	(MATH-LVT-Lisboa-6) Centro de Estatística e Aplicações da Universidade de Lisboa
Coordinator:	MARIA ISABEL FRAGA ALVES
Main Scientific Domain:	Matemática
Other Subdomains:	n/a

Host Institutions

Leading Host Institution:	Faculdade de Ciências - Universidade de Lisboa
Other Institutions Involved:	

Objectives & Achievements

Unit Description

The Center of Statistics and Applications of University Lisbon (CEAUL-Centro de Estatística e Aplicações da Universidade de Lisboa), created in 1975, is a Unit I&D, close to Department of Statistics and Operations Research (DEIO) of Faculty of Sciences of the University of Lisbon (FCUL:Host Institution), which offers physical facilities to CEAUL- infrastructures, installations, budget management and contribution of a technician - to the prosecution of CEAUL's activities in accordance with article 2 of the Regulation of Program of Financing Plurianual of I&D (PFP I&D); financial support is assured in the picture of PFP I&D FCT, being the Foundation of FCUL the Management Institution.

The Internal Organization of CEAUL's team (45 PhD Integrated (I) and 52 Collaborators (C)) members in 31 December 2008) it is systematized in 4 Research Groups (GI's), sharing similar scientific interests in Applied Probability, Statistical Inference, Probability Modelling and Data Analysis, but with diverse emphasis in methods and applications and accordingly with the Planning Subproject of each senior Principal Investigator. The GI's are encouraged to interact between them in its activities, whenever that is appealing.

- GI 1: Order Statistics, Extremes and Applications (10 (I) + 9 (C))

Responsible Researcher: Maria Ivette Leal de Carvalho Gomes

- GI 2: Probability, Modelling and Data Analysis (14 (I) + 14 (C))

Responsible Researcher: Dinis Duarte Ferreira Pestana

- GI 3: Statistical Modelling in Environmental and Life Sciences (16 (I) + 19 (C))

Responsible Researcher: Maria Antonia Conceição Abrantes Amaral Turkman

- GI 4: Applied Multivariate Data Analysis and Modelling (5 (I) + 10 (C))

Responsible Researcher: Maria Helena Bacelar Valente da Costa Nicolau

The 4 groups leaders, together with the elect Coordinator and Vice-Coordinator, are the core of the scientific panel whose responsibility is to monitor and inflect the main goals of the research unit, and to rule the investment policies.

In the last Evaluation, the International Panel as given a classification of VERY GOOD to the GLOBAL UNITY, although reports asymmetries between Groups performances . For each GI, the evaluation reflected the following classifications: Excellent for Group 1 and Group 3, Good for Group 2 and Group 4. In particular, for the latter there has been a strong recommendation about the integration of this group in the main strategy of CEAUL, as the report quotation reveals: "Indeed there was some doubt whether the group really belongs within Mathematics though given the lack of an obvious alternative, continued membership of CEAUL probably is in the best interests of the group themselves."

As a consequence of the Panel recommendations, at a general meeting of the Scientific Committee, it was set a schedule to restructure the Unity very soon, probably in 2010.

The Internal Regulation of CEAUL provides a Scientific Committee, which approves in a plenary meeting the general guidelines of Scientific and Financial management: a part of the budget for common expenses (Periodicals and Books for the Library, Common Software and Informatics Assistance as well as maintenance of WebPage) and the remaining is shared among the GI's, according to the number of PhDs in each GI.

At the Scientific and General meetings of the Center, it was approved for 2009 a different guideline to the division of the budget among the 4 Groups, as a natural corollary of each Evaluation Panel Report.

There is a scientific as well as a financial autonomy of the GIs.

CEAUL has 3 associated FCT Projects:

FCT/PPCDT/ MAT/58876/2004 "ERAS" PI: M. Ivette Gomes

FCT/ PTDC/MAT/64924/2006"EXES PI: Laurentius de Haan

FCT/ PTDC/MAT/64353/2006 "MEGA" PI: Prof. K.F.Turkman

General Objectives

This I&D Unit plays a central role in Portugal as a Research Center in Probability, Statistics and its Applications, developing multidisciplinary activities that aim to carry out research in domains as diverse as Health Sciences and Biology, Financial Risk and hazards posed by nature in Geophysics and Environment, Statistics of Extremes, Computational Statistics and Simulation, Resampling Methodologies, Quality Control, Bayesian Statistics, Biostatistics, Genomics and Proteomics,

Objectives & Achievements

Survival Analysis, Clinical Trials, Time Series, Data Analysis, Sampling, Psychology, Automatic Classification, Temporal and Spatial Statistics, Design of Experiments and Teaching of Statistics.

The main objective of CEAUL is to contribute to the development of new theoretical framework and of methodological issues addressed to applications to real problems, making efforts to correct use of Statistics in Society and Academics. That is attained through different inter-linked activities, among which we mention Conferences and Seminars, Scientific Publications both in National and International peer review journals, Post-graduate courses (MSc, PhD), support in Statistics and an updated Library to community.

Another objective involves the links with National Statistical Institutions, namely National Institute of Statistics (INE) and Portuguese Statistical Society (SPE). Some of the senior members of CEAUL are deeply involved with the implementation of REVSTAT – Statistical Journal, an International Journal in the area of Probability and Statistics in English. [1 vol. (= 3 issues) a year] Journal, ISSN 1645-6726, <http://www.ine.pt/revstat/index.html>, edited by INE, which has been a success among international and national scientific academy. The link CEAUL/SPE has also been collaborating in some tasks that are going on.

Each GI had specific research objectives for the period under observation, which had been fulfilled. The collaboration with INE's Alea Project, in Teaching of Statistics has also been an objective during the period of 2008.

Main objectives of G1 were in the fields of Statistics of Extremes and applications to Insurance, Finance and Environment, but also in fields as diverse as Reliability, Statistical Quality Control, Robustness and Outliers, where order statistics play a prominent role.

G2 main interests have been in Asymptotic issues concerning some Probability families, Stability and on Infinite Divisibility (Sums and Extremes), Statistical Inference which includes bias reduction and tail behaviour issues, interacting with Group G1, Statistical modeling of biological and linguistic data and the History of Probability and Statistics, and teaching of Statistics.

The main objective of Group G3 was to make contributions on specific probability and statistical issues in modeling environmental and biological data, as well as, to create a group with expertise in analyzing data coming from these fields. To achieve this goal the group has been under collaboration with researchers from the environmental and biological sciences, not only with the objective to gather data to apply the methodology developed, but as well to help them in solving their own problems. Some themes involving Extremes in Environment interact with group G1.

Main Achievements during the year of 2008

CEAUL as a whole was able to increase substantially the scientific production, with special effort on publication in what would be widely regarded as the mainstream high quality journals in each field, leading to a large number of publications:

- 45 Publications in peer review International Journals.

There has also been a special focus in published communications – a significant proportion are invited - in international conferences and at national meetings, mainly in SPE Annual Conferences.

- 42 Other International Publications,
- 46 National Publications.

Although these publication efforts, CEAUL members have not disregarded the national counterpart of their teaching duties involving the supervision of PhD and MSc students : in the period 2008 have been completed

- 11 Ph. D. Thesis
- 34 M. Sc. Thesis.

Aside from publication in the mainstream domains in the areas of Probability and Statistics, there has been a great investment in communicating the interest of Statistics to general society and attracting young students to the area.

There has also been a great investment in Organizing Conferences and Workshops, which lead to the involvement of several members of Researchers Team of CEAUL in the Organization of

- 13 different Conferences/Workshops.

The collaboration of CEAUL with SPE has been fruitful with the production of Portuguese Statistical Glossary.

There has been a new reinforcement in some branches, as for instance: PORT methods in Extreme Values, Internet Auction Markets, History of Probability and Statistics in Portugal in the early XXth century, Teaching of Statistics with Documentation for Teachers, in collaboration with INE's Alea Project, Quantification of Regional Risk of Large Wildfire Sizes, Study of the Evolution of the Human Resources of the Faculty of Sciences of Lisbon, Theoretical Issues in Applications with Genome Analysis, Statistical Models to Genetics and Epidemiological Data, Optimal Screening Methods in Gene Profile Classification, and some other achievements that are explicitly referred in each Group report.

All in all, interaction with CEAUL and national and international research groups has been reinforced, and evidenced by publications in cooperation, in a wide spectrum of fields as Extremes, Bayesian Statistics, Data Analysis, Biostatistics and Biomedical applications of Statistics, Environmental Statistics and Spatio-Temporal Data Analysis.

Activities

Integrative/multidisciplinary activities during the year of 2008

There has been a direct evidence of interaction between the theoretical and applied components of the work. Moreover, there has been a considerable effort on theoretical issues reinforced with involvement in applications to real world.

We also highlight below some of the CEAUL integrative/multidisciplinary activities in 2008, with reference to Links with Portuguese Institutions:

- In 2008 there have been two novelties in the CEAUL, promoted by CIENCIA2007 and CIENCIA2008 Programmes:
 1. Ciência2008 Programme gave the opportunity to bilateral collaboration with another I&D Unity from FCUL, through a basic level BII_Project "Spatial Heterogeneity of soil surface characteristics", announced in July 2008, with the objective of studying which soil characteristics are influential to the vegetation of the soil. The Hired Grant Researcher Student BII_2008 has been integrated in G3 for one year, J Miranda, through the Ciência2008 Programme and he is supervised by V Andreozzi (G3), who interacts also with Centre for Environmental Biology (Professor C Cruz, CBA) FCUL, in Initiation to Research with Multidisciplinary activities Statistical Modelling and Environmental Biology.
 2. The CIENCIA2007 PhD Researcher, V Andreozzi, has given a big input to CEAUL, working as Biostatistician in collaboration with Portuguese Ministry of Health

Activities

Unit/Dept of Statistical Analysis; the main task consists in Monitoring and Evaluation of the National Health Plan 2004-2010,

- Collaborations with:

- CEAUL / CIM

CEAUL is an associate from CIM (International Center for Mathematics), which promotes research in Mathematics and interdisciplinary conferences; in 2008 MI Gomes was in the Board of Directors and Amaral-Turkman in the Scientific Council. L Canto e Castro, from G1, organized a Workshop "Statistical Extremes" (Coimbra, February 2007), in collaboration with SPE. Invited speaks and Discussants: L Pereira (DM-UBI) (G1), MI Gomes (DEIO-FCUL) (G1), J Hüsler (Bern), A Ferreira (ISA-UTL) (G1) and L de Haan (Lisbon/Rotterdam) (G1).

- CEAUL / SPE

SPE (Sociedade Portuguesa de Estatística) in numerous Integrative/multidisciplinary activities, feg, "XVI Congresso da Sociedade Portuguesa de Estatística" (Vila Real, October 2008); short course "Análise de dados espaciais" by L Carvalho and I Natário (G13). D. Paulino, L Carvalho and D. Pestana worked out the Portuguese part in the ISI multilingual Statistics dictionary.

- CEAUL / INE

INE (National Institute of Statistics): implementation of REVSTAT – Statistical Journal) and ALEA project.

- CEAUL / CGF

CGF (Calouste Gulbenkian Foundation): D. Pestana lectured at Ph. D. program on Computational Biology and gave a conference for the International Researchers at IGC.

- CEAUL / ISA

ISA (Instituto Superior de Agronomia) in "A Matemática nas Ciências Biológicas" (2008), Organized by MM Neves (G1) and D Pestana as Invited Speaker.

- CEAUL / ESTSL

ESTSL (Escola Superior de Tecnologia da Saúde de Lisboa) in "VI Conferência Estatística e Qualidade na Saúde" (November 2008). MM Neves (G1) and A Amaral Turkman (G13) in Scientific Committee. C Fortes (G13) in Organizing Committee.

- CEAUL / CLAD

CLAD (Ass Port Classificação e Análise de Dados) in "XV JOCLAD", at ESCE IPS (Setúbal, Março 2008): MM Neves (G1) H Bacelar-Nicolau(G14) and A Sousa Ferreira (G14) were members of the Scientific Committee and MM Neves (G1) organized a thematic session on "Extremes and Applications"; MI Fraga Alves (G1) presented an Invited talk.

Outreach activities during the year of 2008

CEAUL played an important role in promoting Statistics in Science, Society and Schools. Namely:

- ME Graça Martins has a prominent role in ALEA project (<http://alea-estp.ine.pt/>), jointly with INE), and her activity is recognized as a landmark in improving the teaching of Statistics at secondary schools level. Also, several members (F.Oliveira, L. C. Castro, Amaral-Turkman) were responsible for the revision of basic and secondary school books of Mathematics (Probability and Statistics) and several members visited schools, to address teachers and students on the role of Statistics in Society and full citizenship.

- Aside from the regular International Seminar program (extensive list of regular International Seminar program can be found in <http://www.ceaul.fc.ul.pt/cs.html>), several conferences for general audiences were organized, namely the

1- Advanced course: Hierarchical Modelling and Analysis for Space-Time Data, by Professor Alan Gelfand, from Duke University, USA. March 2008, CEAUL, Faculdade de Ciências da Universidade de Lisboa, Portugal. This 2 days course was organized by KF Turkman was attended by more than 50 participants.

2- Curso Prático e Avançado em Análise de Sobrevidência: Teoria e Aplicações em Saúde. Lecturers: Valeska Andreozzi and Marília Sá Carvalho (Fiocruz, Brasil). July 2008 CEAUL, Faculdade de Ciências da Universidade de Lisboa, Portugal. This 3 days course was organized by Valeska Andreozzi.

- A Sousa Ferreira (G14) is member of the Project GERLINDES - Managing and handling indiscipline in schools -Coordinator: J Amado and I Freire (FPCEUL), Project financed by FCT, 2007/2009.

- O Dias (G14) is member of the Project "Implementation and Dissemination of Active Learning and Cooperative Learning Methodologies in Engineering Education: Developing a tool to monitor student activity so as to promote the development of active, autonomous learners" coordinated by I Carvalho (ISEL), a cooperation with ESTBarreiro/IPS and ISEL, 09-2008 to 2010, Project financed by FCT.

- Several members of CEAUL act as reviewers for a big set of International Peer Review Journals:

- Journal of Applied Statistics

- Mathematical Reviews

- Revstat

- Acquaculture

- AISM (Annals of the Institute of Statistical Mathematics)

- Bernoulli

- CSDA (Computational Statistics and Data Analysis)

- European Series in Applied and Industrial Mathematics Probability and Statistics (ESAIM: P&S)

- Extremes

- J. Korean Statistical Society

- JABES (Journal of Agricultural, Biological, and Environmental Statistics)

- Journal of Applied Statistics

General Indicators

	2004	2005	2006	2007	2008	Total
Balance	0,00	0,00	0,00	0,00	0,00	0,00
No. of Researchers Hired (Ciência Programme)	0,00	0,00	0,00	0,00	1,00	1,00
No. of Researchers (FTE) (*)	30,00	34,00	36,00	41,00	43,00	
Training Masters (Master thesis completed)	10,00	13,00	14,00	4,00	34,00	75,00
Training PhDs (PhD thesis completed)	12,00	5,00	9,00	16,00	11,00	53,00

Researchers Hired

Name	Start Date	End Date	Other Institution
Jorge Miguel Diamantino Miranda	01-04-2009	30-03-2010	

Technical Personnel Hired

Name	Start Date	End Date	Other Institution
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No technical personnel found...

Additional Comments

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Jorge Miguel Diamantino Miranda has been appointed by Ciência2008 Programme, which gave the opportunity to bilateral collaboration with another I&D Unit from FCUL, through a basic level BII_Project "Spatial Heterogeneity of soil surface characteristics", announced in July 2008, with the objective of studying which soil characteristics are influential to the vegetation of the soil.

The Hired Grant Researcher Student BII_2008 has been integrated in G13 for one year, J Miranda, through the Ciência2008 Programme and he is supervised by V Andreozzi (G13), who interacts also with Centre for Environmental Biology (Professor C Cruz, CBA) FCUL, in Initiation to Research with Multidisciplinary activities Statistical Modelling and Environmental Biology.

Research Groups

Reference	Title / Principal Investigator
RG-MATH-LVT-Lisboa-6-948	Order Statistics, Extremes and Applications (MARIA IVETTE LEAL DE CARVALHO GOMES)
RG-MATH-LVT-Lisboa-6-949	Probability, Modelling and Data Analysis (Dinis Duarte Ferreira Pestana)
RG-MATH-LVT-Lisboa-6-951	Statistical Modelling in Environmental and Life Sciences (Maria Antonia Conceição Abrantes Amaral Turkman)
RG-MATH-LVT-Lisboa-6-1519	Applied Multivariate Data Analysis and Modelling (Maria Helena Bacelar Valente da Costa Nicolau)