



Università
Ca' Foscari
Venezia
Presidio della Qualità
di Ateneo

2019 Annual Research Report

Department of Environmental Sciences, Informatics and Statistics

Reference period 2016-2018

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About this document

This document reports on the research activity of the Department of Environmental Sciences Informatics and Statistics (DAIS), with focus on the quality of the research products, as requested by the “Assegnazioni Dipartimentali per la Ricerca” (AdiR) regulations.

This document was authored by the DAIS Research Committee with the following goals:

- to monitor the quality of the research products published by DAIS researchers;
- to evaluate future internal and external evaluations DAIS is subject to;
- to design supporting actions to improve the research environment of the department;
- to measure the effectiveness of the initiatives by the Research Committee.

PART I: Research objectives

Section A - Statement of the Department research objectives and indicators

The **Department of Environmental Sciences, Informatics and Statistics (DAIS)** was created in 2011 after joining three departments: environmental sciences, informatics and statistics. DAIS is engaged in multidisciplinary research produced by the recognized experience of the researchers in the analysis of environmental systems, in the management and modelization of environmental and informatic systems, in climate studies, in complexity, in the preservation of cultural heritage and in sustainability. The research activity generates significant impact on educational activities through a complete degree programme (Bachelor's, Master's and PhD programmes) in Environmental Sciences and Informatics, a Master's degree programme in Conservation Science and Technology for Cultural Heritage, multidisciplinary PhD in Science and Management of Climate Change and a PhD in Polar Sciences.

DAIS research focuses on the following areas: biology and ecology, chemistry (environmental, analytical and for the conservation of cultural heritage), environmental engineering, computer science, earth science and statistics. Transversal topics of research include climate and the socio-economic effects of its transformations, complexity, preservation of cultural heritage, monitoring, risk, environmental and computer security and sustainability. Research is developed in collaboration with public bodies and local firms. This synergy together with the multidisciplinary approach allows the department to exploit a wide spectrum of expertises and to develop truly innovative research.

The objectives of the Department are formalized in the (triennial) Department Development Plan 2016-2018 (DDP)¹, which is indeed based on the University Strategic Plan. We report below the research objectives as in the triennial DDP:

DDP-1 Amount of research funding:

- Indicators and targets:
 - i EU funding \geq 3.3 M €
 - ii Other funding \geq 2 M €

DDP-2 Extent of interdisciplinary research:

- Indicators and targets:
 - i Staff members actively involved in the Global Challenges Teams² \geq 50%

DDP-3 Number of ERC grantees / Marie Skłodowska-Curie fellows:

- Indicators and targets:

¹

https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DAIS/documenti/Dipartimento/AssicurazioneQualita/Piani/DocProgrammatici/PianoTriennale_DAIS_2016-2018.pdf

² <https://www.unive.it/pag/11651/>

- i Number of ERC grantees or MSC fellows per year ≥ 1

DDP-4 Research infrastructures and estates:

- o Indicators and targets:
 - i Epsilon Building (70% progress) and departmental shared resources.

DDP-5 Overall research output:

- o Indicators and targets:
 - i Increase quality of research output without decreasing its volume.

Note that the plan for the 2019-2020 period was approved recently. This will be discussed in the next research report 2017-2019. We anticipate that the targets of the above research objectives were not significantly modified, with a slight increase in the amount of funding.

DAIS must undergo several evaluation processes within the University and within the Ministry of Education, University and Research (MIUR). Each process exploits different indicators and enforces different requirements. Most of those process share the VQR³ scheme for the evaluation of scientific publications.

The focus of this document is on the DDP-5 Overall Research Output. In this regard, **DAIS aims at improving the quality of its research output** without decreasing its volume. To do so, the departmental Research Committee (CdR⁴) defines the goals described below, which are the subject of the analysis reported in this document. These goals were defined by keeping in mind the many evaluation procedures the department must undergo and previous programmatic documents.⁵

Aiming at improving the research output of the department, DAIS pursues the following objectives:

O1.High Quality of Research Output

- o Most of the evaluation the department must undergo are based on the ANVUR research product scoring system. The quality of research product is classified as Excellent, High, Average, Fair, Limited, unclassified. Several indicators are computed on the basis of these scores for the evaluation of large institutions rather than individual researchers. The most relevant indicators are given by the average score of the research products by an institution, and the fraction of research products classified as either Excellent or high quality.

O2.Interdisciplinary Research

- o DAIS is multidisciplinary by nature. It is in the interest of the department to exploit the several expertises in different scientific areas so as to improve the quality of its research.

O3.High Quality Recruiting

- o The ANVUR evaluation of the publication record of newly recruited and promoted staff plays an important role in the evaluation of the department. DAIS aims at recruiting top-level researchers and allowing them to successfully conduct their research from the very first day in the department.

O4.Internationalization

³ V.Q.R. is a national evaluation process of research quality <http://www.anvur.it/attivita/vqr/>

⁴ The acronym CdR comes from its name in Italian language "Comitato della Ricerca".

⁵ DAIS Assicurazione della qualità <https://www.unive.it/pag/27538/>

- DAIS supports exchanges with international institutions so as to foster collaborations and research of international relevance.

For each objective, we identified a set of key performance indicators. Nevertheless, as we believe indicators alone cannot provide an exhaustive picture of the plenty of research activities and efforts, this document also takes into account additional indicators that are deemed useful for the sake of monitoring. Part II provides a quantitative analysis of the department productivity.

To achieve the objectives above, DAIS undertakes both supporting and incentivizing actions, the latter being the focus of our interest. Indeed, the CdR is also interested into actions that do not have a direct impact on a specific indicator but that are considered useful for an “healthier” research environment. DAIS draws on the following instruments to co-support the department research activities:

- an annual support to individual researchers (up to € 3000, on the basis of their productivity) (ADIR⁶);
- post-doc positions and equivalent (“assegni di ricerca”) may receive up to 50% co-funding;
- co-funding of so called “joint” post-doc positions, up to 75% (an initiative started in 2019 and discussed later on in this report);
- IRIDE, which provides two kinds of support (<€5000): *i*) newly recruited researchers receive an “installment” fund, and *ii*) small individual research initiatives receive funding to support incoming and outgoing visits for short-term stays;
- financial support to seminars by visiting scholars.

Part III of this documents discusses in greater detail these incentive instruments.

Part IV of this document discusses key-performance indicators for each of the above objective and sets targets to be achieved in the next future.

⁶ Research Support Department Funds “Assegnazioni Dipartimentali per la Ricerca” (AdiR)

PART II: Human resources and scientific production

Section A – Human resources

Subsection A.1 – Research Personnel

STAFF

ROLE	2016	2017	2018
Full Professors	16	19	17
Associate Professors	26	21	24
Researchers	12	11	9
Fixed-Term Researchers (of which with tenure track [“Ric. t.d. art.24 c.3-b”])	5 (2)	7 (3)	16 (8)
TOTAL	59	58	66

Detected at 31 December of every year

The total number of staff members increased of about 10% in 2018, which is mainly due to new Fixed-Term Researchers increasing from 7 to 16 units. Among these 16 units, 8 hold a tenure track [Ricercatore Tempo Determinato art.24 c.3-b]. We consider as positive the increment of Fixed-Term Researchers, which was very low in the previous years. We highlight that the department is also increasing its teaching activities that need to be supported by new personnel. This also means that the number of associate professors might significantly increase in the next 3 years.

The number of Associate Professors in 2018 (24 units) is similar to that of 2016 and 2015. The number of Full Professor is below the 50% of total Professors (Full+Associate) (44% in 2018) as requested by University hiring restrictions. The slight decrement in the number of Full professors is due to retirements. Finally one personnel unit was lost between 2017 and 2018 and not replaced due to a researcher moving to a different department.

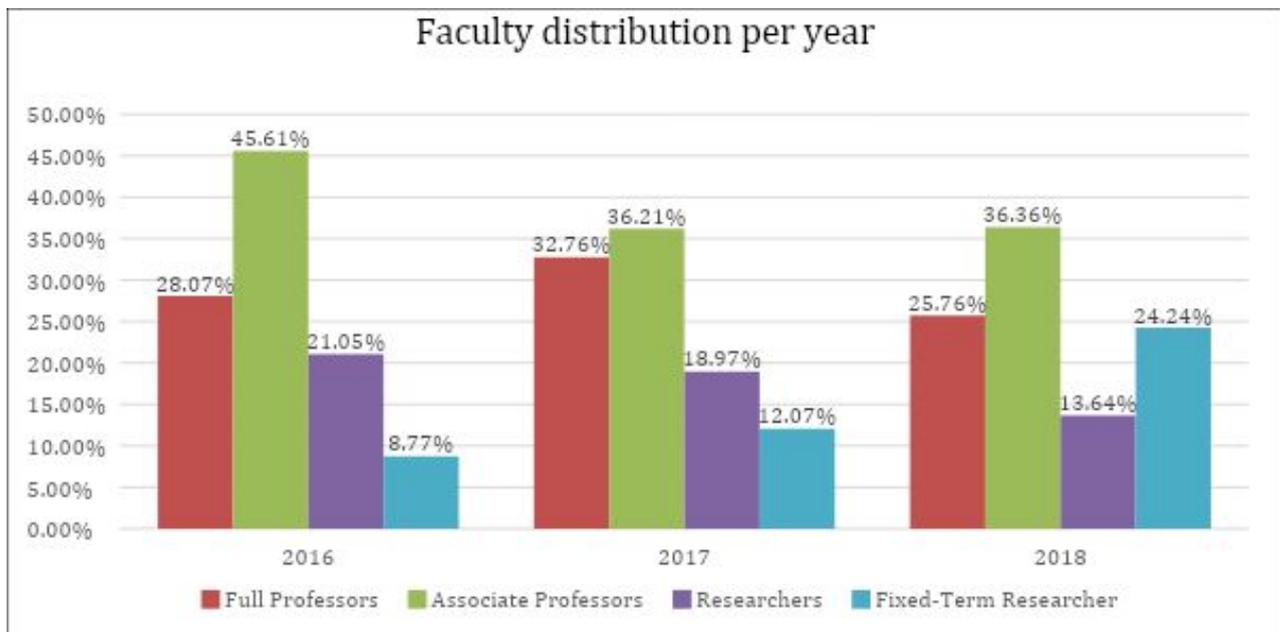
POST-DOCS AND PHD STUDENTS

ROLE	2016	2017	2018
Post-doc positions [Assegnisti]	53	55	47
PhD students	73	75	72

Post-doc positions / PhD course starting year

The number of PhD students is about the same across the three years considered, almost evenly spread along the three PhD programmes of the department. In the next future, we expect an

increment in the number of PhD students due to the activation of the PhD in Polar Sciences. The number of post-doc positions holders in 2018 (47 units) decreased to a level similar to the one in 2015 (49 units). We believe it is important to foster high quality research to be attractive for the best post-doc positions candidates. In this regard, we will consider the possibility of monitoring the quality of the research output of PhD students and post-docs. We observe that the decrease of post-doc positions holders is not due to a decreasing trend, rather to the large number of new fixed-term researcher positions.



STAFF MEMBERS - ACADEMIC DISCIPLINE

CUN SCIENTIFIC AREA	ITALIAN SSD - DESCRIPTION	2016	2017	2018
01 - MATHEMATICS AND INFORMATICS	INF/01 - INFORMATICS	19	18	21
	MAT/02 -ALGEBRA	1	0	0
	MAT/08 - NUMERICAL ANALYSIS	1	1	1
03 - CHEMISTRY	CHIM/01 - ANALYTICAL CHEMISTRY	6	6	7
	CHIM/06 - ORGANIC CHEMISTRY	2	2	2
	CHIM/12 - CHEMISTRY FOR THE ENVIRONMENT AND FOR CULTURAL HERITAGE	6	5	7
04 - EARTH SCIENCES	GEO/02 - STRATIGRAPHY AND SEDIMENTOLOGY	1	1	2
	GEO/08 - GEOCHEMISTRY AND VOLCANOLOGY	2	3	3
	GEO/12 - OCEANOGRAPHY AND PHYSICS OF THE ATMOSPHERE	1	1	2
05 - BIOLOGY	BIO/01 - GENERAL BOTANY	0	0	1
	BIO/02 - SYSTEMATIC BOTANY	0	1	1
	BIO/03 - ENVIRONMENTAL AND APPLIED BOTANY	1	1	1
	BIO/05 - ZOOLOGY	1	1	1
	BIO/07 - ECOLOGY	7	7	6
08 - CIVIL ENGINEERING AND ARCHITECTURE	ICAR/02 - HYDRAULIC STRUCTURES, MARITIME ENGINEERING AND HYDROLOGY	1	1	1
	ING-IND/11 - BUILDING PHYSICS AND BUILDING ENERGY SYSTEMS	0	0	1
	ING-IND/25 - CHEMICAL PLANTS	2	2	2
13 - ECONOMICS AND STATISTICS	SECS-P/05 - ECONOMETRICS	1	1	1
	SECS-S/01 - STATISTICS	7	7	6
	TOTAL	59	58	66

The staff members are distributed across 6 Scientific Areas as shown in the table above, where the areas of Computer Science and Chemistry are the largest. The size of most areas increased by 1 unit (2 for Area 03, 3 for Area 04) during the reporting period, but for Area 13 which is experiencing a reduction, confirming an opposite trend (9 units in 2011). We highlight the hiring of a new unit in the area of Building Energy System witnessing the plan of the department to expand its expertise.

Section B - Scientific production (2016-2018)

Subsection B.1 – Overall scientific production

TOTAL SCIENTIFIC PRODUCTION⁷

ARCA CLASSIFICATION	2016	2017	2018	TOTAL
Books	3	1	0	4
Journal articles	207	176	163	546
Book chapters	27	19	15	61
Conference proceedings	52	37	41	130
Book editing activities	1	6	6	13
Patents	0	0	0	0
TOTAL	290	239	225	754

DEPARTMENTAL SCIENTIFIC PRODUCTION DETAILS

	2016	2017	2018	TOTAL
Scopus publications ⁸	270	228	214	712
Publications in English ⁹	245	197	179	621

The total scientific production varies significantly across years. In the previous report we observed similar numbers for 2015 and 2017, which are again confirmed in 2018. This suggests that 2016 was an exceptionally productive year and that the productivity of the department has remained otherwise rather constant over the years. Most of the publications are indexed in scopus (e.g., 214 out of 225 in 2018) and therefore widely available to the scientific community. This largely matches the will of the University of increasing the fraction of indexed publications.

Given that the number of staff members increased in 2018, mostly through new fixed-term researchers, we expect an increasing trend in the upcoming years. We finally observe that there was no patent approved in the last three years despite several active industrial collaborations.¹⁰

Additional Indicators: ADIR Score Distribution

As recommended by the assessment board, each member of the department is informed yearly about the ADIR evaluation of her/his own products. We remark that the ADIR scoring can provide a measure of the department's overall research quality, still its outcome is different from ANVUR-like evaluations.

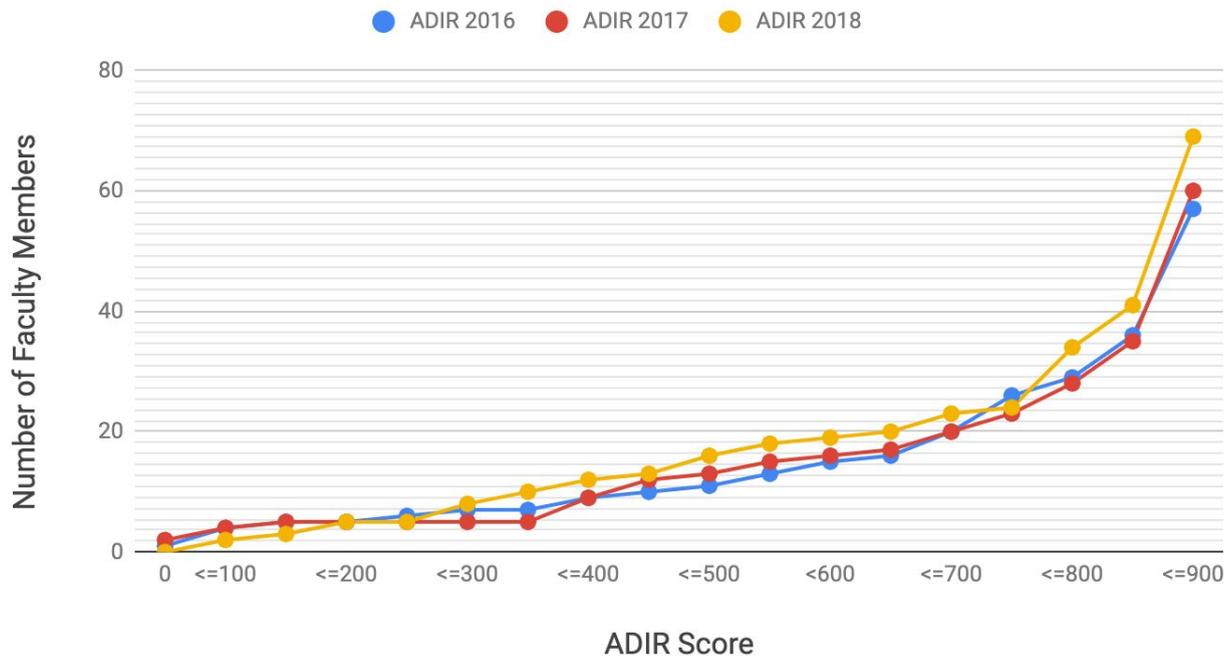
⁷ Source: [University Repository ARCA](#). Only publications with an ISBN/ISSN code have been considered. Conferences abstracts and posters have been **excluded** from the count of Conference Proceedings. Date of recognition: 28.10.2019

⁸ Source: **Scopus**, all document type.

⁹ Source: **ARCA**.

¹⁰ We note that the "Total Scientific Production" and "Departmental Scientific Production Details" report data from different source, respectively the university database ARCA and scopus, which might result in slightly different figures.

ADIR Score Cumulative Distribution



The Figure above reports the ADIR score distribution from 2016 to 2018. More details about the ADIR scoring is given in Part III. The trend is similar throughout the reporting period. The year 2018 shows a larger number of researchers in the high end of the distribution compared to previous years, with a score larger than 800. This increment is attributed to new recruitments. Overall, the number of staff members with a low score is very small: this is partially due to the ADIR scoring mechanism, which is not very discriminative.

At the time of writing, we are considering improvements to the ADIR scoring mechanism with the goal of rewarding more those products published in venues of very high quality, and of evaluating different scientific areas according to their expected productivity at an international level. In particular, we would like to take into account the different publication patterns (e.g., more/less products) in different scientific areas.

We recall that the latest ADIR evaluation considered the 2019 staff members of the department and their publications in the 2016-2018 timeframe. We keep the same evaluated personnel in the following section.

Additional Indicators: Research Quality, VQR-Like and ASN

In the following we make use of the Scientific Production Evaluation Support Tool provided by the University of Basilicata and CRUI (Italian University Rectors Board). This automatic tool simulates AVNUR evaluations with some limitations. Firstly, the ANVUR evaluations are nontrivial as they involve a peer review process for some publications, which is obviously not included in the tool. Then, the tool provides information only for willing universities, which can also manually suggest modifications so as to fix errors on the indexing of research products. The fact that the tool exploits Scopus SJR information is a substantial limitation for the assessment of Area 01, and especially

computer science, for which conferences are considered as relevant as journals whereas Scopus indexes only a handful of conferences. Also, the data reported below need to be considered with caution as they are partial and might include inaccuracies. We thus use the tool only for a prospective analysis. We use the most up-to-date available data, including the most recent publications and the current staff members. Note that a new evaluation by ANVUR is going to take place in 2020, therefore this analysis may help in providing an estimate of the evaluation outcome.

On the positive side, this tool allows to evaluate the DAIS productivity within each single scientific areas normalized with respect to other Italian university, therefore allowing a weighted comparison of productivity rates across different disciplines. This provides a more detailed and more accurate insight into the DAIS scientific production and allows to compare it with other national universities within the context of each scientific area. We again highlight that this is not yet the best and most accurate setting. Consider the case of Area 01 Mathematics and Informatics¹¹: DAIS includes mostly computer scientists and comparing the department skills with the average performance in the area, which also includes mathematicians, is inaccurate.

We finally remark that this ANVUR-based scoring system is largely used for the external evaluation by the Ministry of Education and Research and for internal resource assignments within the University of Venice.

Research Quality (FFABR Indicators ¹²) [staff 2019, publications 2016-2018]										
	# Staff members	Avg. # Prods DAIS	Avg. # Prods across Univ.s	Ratio	%Prods class A-B DAIS	%Prods class A-B across Univ.s	Ratio	%Prods w/ intl. Authors DAIS	%Prods w/ intl. Authors across Univs.	Ratio
Area 01	23	5,30	4,87	1,09	32%	38%	0,84	42%	26%	1,64
Area 03	17	10,71	10,67	1,00	45%	46%	0,98	53%	27%	1,99
Area 04	7	9,29	8,75	1,06	46%	31%	1,50	63%	25%	2,52
Area 05	10	10,50	8,76	1,20	40%	44%	0,91	28%	22%	1,25
Area 08b	1	N/A ¹³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Area 09	4	9,00	8,76	1,05	39%	36%	1,08	39%	23%	1,66
Area 13	8	7,25	6,26	1,16	48%	25%	1,93	42%	13%	3,16

The above table reports on the research products quality in the different scientific areas where the department is active. It allows to compare the department's performance with average figures

¹¹ Areas are defined as follows: Area 01 - Mathematics and Informatics, Area 03 - Chemistry, Area 04 - Earth Sciences, Area 05 - Biology, Area 08 - Civil Engineering and Architecture, Area 09 - Industrial and Information Engineering, Area 13 - Economics and Statistics.

See https://www.cun.it/uploads/storico/settori_scientifico_disciplinari_english.pdf

¹²<http://www.anvur.it/attivita/ffabr/>

¹³Not Available: due to privacy concerns, the tool does not report statistics about groups of less than 3 people.

within the same area from other Italian universities. The number of products per researcher is in line with other universities, and we think it an increase in the volume of the research output shall be fostered. The quality of such publications, measured as the percentage of products in the top two quality classes, varies significantly across areas. As for the previous reporting period, the best performing areas are Area 13 and Area 04, both above the average of other universities. The other areas have a performance in line with the Italian Universities average, improving the results of the previous reporting period. This improvement is most apparent in areas with a smaller number of researches and can be explained by new recruitments. Given that all areas exhibit large international collaborations and a good volume, we encourage a better focus on high quality venues.

Research Quality (VQR-Like ¹⁴) [staff 2019, publications 2016-2018]							
	# staff members	Avg. product score DAIS	Avg. product score across Univ.es	Ratio	%Prods class A-B DAIS	%Prods class A-B across Univ.s	Ratio
Area 01	23	0,52	0,56	0,92	39%	46%	0,85
Area 03	17	0,74	0,72	1,04	71%	68%	1,04
Area 04	7	0,74	0,64	1,15	57%	52%	1,10
Area 05	10	0,79	0,66	1,20	60%	60%	0,99
Area 08b	1	N/A	N/A	N/A	N/A	N/A	N/A
Area 09	4	0,81	0,64	1,26	75%	55%	1,36
Area 13	8	0,79	0,54	1,47	81%	39%	2,08

The above Table is similar to the previous, but the evaluation is limited to 2 publications per author as in the VQR evaluation process. In this case, results are comparable with other universities, meaning that DAIS researchers are able to produce the two high-quality publications required by VQR. We observe a performance in line with other Italian universities across all areas, with figures in Area 1 slightly below the reference. We highlight that in this evaluation setting Area 13 performs largely better than other areas, followed by Area 09.

Results are generally better than in previous reporting period, which suggests a possible improvement in the next VRQ evaluation.

¹⁴ <http://www.anvur.it/attivita/vqr/>

Research Quality (ASN) [staff 2019, publications 2004-2019]							
	# staff members	#Researchers	#Associate Prof.s	#Full Prof.s	#Researchers with Associate Prof. Req.s	#Associate with Full Prof. Req.s	#staff members with Full Prof. Req.s
Area 01	23	9	7	7	6	6	16
Area 03	17	8	4	5	3	2	8
Area 04	7	3	3	1	2	3	6
Area 05	10	2	7	1	N/A	7	9
Area 08b	1	0	1	0	N/A	N/A	N/A
Area 09	4	1	2	1	N/A	N/A	3
Area 13	8	3	3	2	3	2	5

The ASN evaluates some publication productivity requirements (h-index, citations, journal) for a becoming Associate or Full Professor (note that these are different for each scientific area). For privacy reasons, the tool yields a Not-Available datum if less than 3 researchers are included in a category for an area. We highlight that this data accounts for the quantitative requirements (e.g., h-index, number of journals, etc.) and that some of them may not own the necessary scientific qualifications (e.g., project coordinator, member of the Phd board, patents, etc.). This nonetheless provides a tentative prospective picture of future scientific qualification and “promotion opportunities” in different areas.

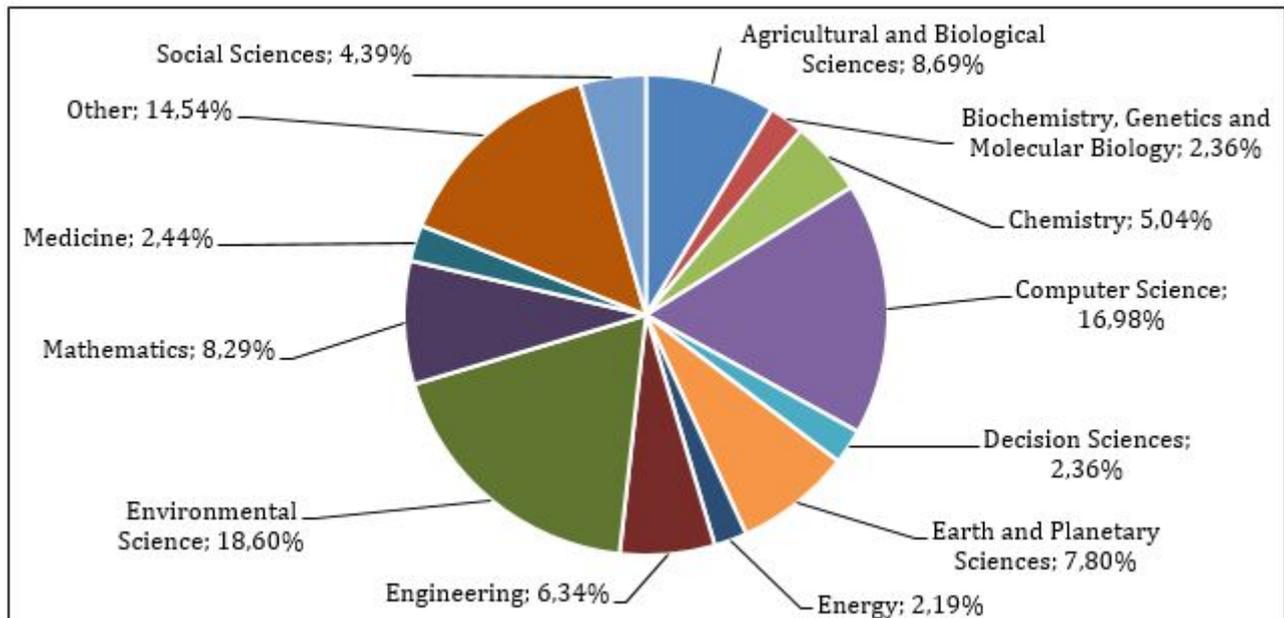
Generally, the number of staff members with sufficient productivity for promotion is large. For instance, almost every Associate professor fulfills the productivity requirements for the role of Full professor. Again, this demonstrates the good level of productivity of the department members.

We also highlight that research areas with a small number of researchers may suffer scarcity of resources in the next future. We hope newly recruited researchers can enrich the smaller areas so as to provide a positive outlook of future promotion and growth.

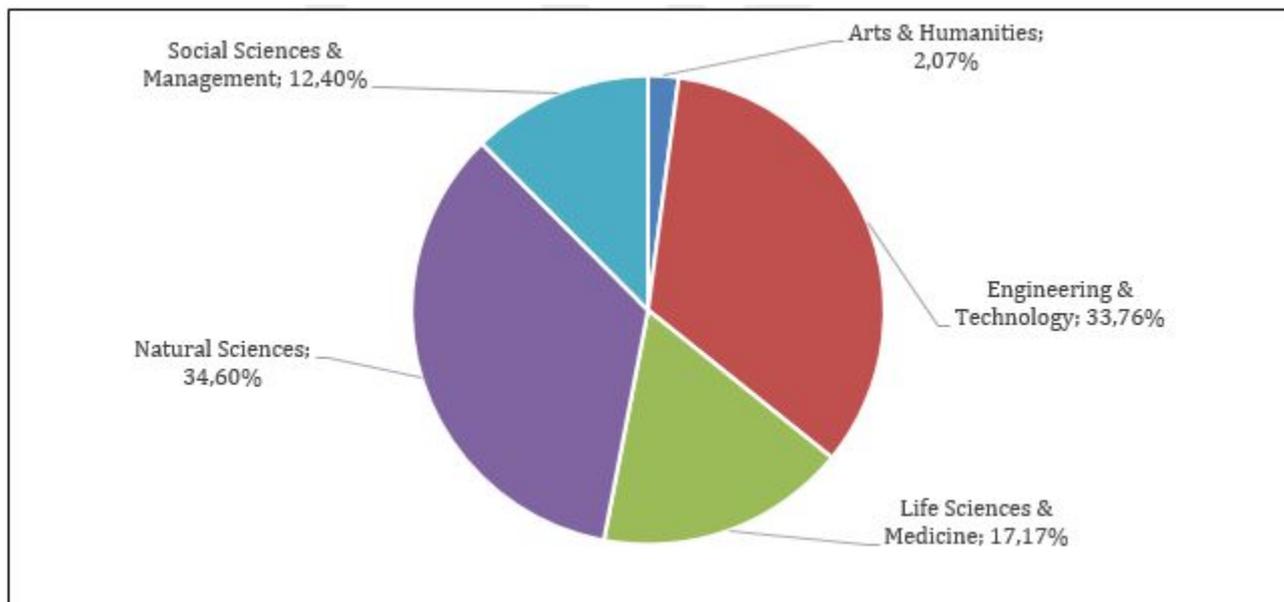
Subsection B.2 - Overall Research output by Subject Area and Collaboration

By SciVal – Overview module. All document type. Staff members detected at 31.12.2018

ASJC Subject Category distribution 2016-2018



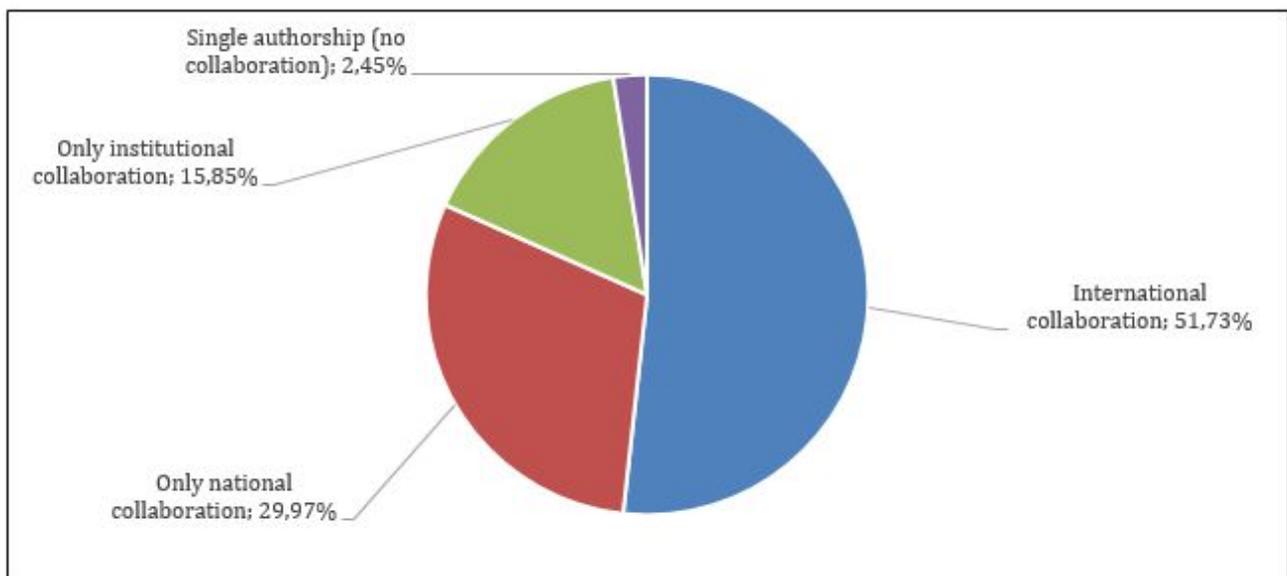
QS Subject Category distribution 2016-2018



The Subject Areas and QS category distributions reflect the multi-disciplinary nature of the department, which we think it should be supported.

Scopus scholarly output by amounts of international, national and institutional collaboration

Collaboration	%	Scholarly Output 2016-2018	Citations	Citations per Publication	Field-Weighted Citation Impact
International	51,73%	359	3739	10,4	1,94
Only national	29,97%	208	1206	5,8	1,38
Only institutional	15,85%	110	543	4,9	1,06
Single authorship	2,45%	17	62	3,6	0,51



As expected, outputs of international collaborations are more likely to have a larger visibility in terms of citations. To this end, we aim at increasing the international collaborations, especially through the IRIDE program, which funds both incoming and outgoing short-term visits. Nevertheless, it is difficult to evaluate these numbers due to the multidisciplinary nature of the department, where different scientific areas may have different healthy collaboration patterns. We highlight that, as reported in the *Table Research Quality (FFABR Indicators)*, the number of international collaborations across different scientific areas is from 25% to 216% larger than the average of Italian universities.

Subsection B.3 – Bibliometric analysis by role

By SciVal – Benchmarking Module. Document type: Articles; Books; Book chapters; Conference papers; Reviews

Staff detected at: 31.12.2018

Scientific production: three-year period 2016-2018

Role	In staff	In Scopus	Scopus scholarly output (avg.)	Citation count	Citation per publication	FWCI (2016-2018)	Top 10 SJR (%)	Top 10 CiteScore (%)	Top 10 Snip (%)	Top 10 citation percentile (%)
Full Professors	17	17	270 (16)	1851	6,9	1,39	46,2	62,7	39,5	18,5
Associate Professors	24	24	342 (14)	2706	7,9	1,67	35,7	51,0	32,8	22,2
Researchers	9	9	54 (6)	325	6	1,13	28,9	51,3	38,5	16,7
Fixed-Term Researchers	16	16	157 (10)	1668	10,6	1,73	43,4	51,2	20,0	23,6
TOTAL	66	66	650	5285	8,1	1,62	40,0	52,5	31,8	21,2

Staff detected at: 31.12.2018

Scientific production: 2018

Role	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI	Top 10 SJR (%)	Top 10 CiteScore (%)	Top 10 Snip (%)	Top 10 citation percentile (%)
Full Professors	17	17	86	308	3,6	1,88	51,7	71,2	39	18,6
Associate Professors	24	24	99	326	3,3	1,42	35,5	48,1	26	22,2
Researchers	9	9	16	63	3,9	1,21	58,3	83,3	50	25
Fixed-Term Researchers	16	16	52	142	2,7	1,36	44,2	58,1	20,9	13,5
TOTAL	66	66	194	664	3,4	1,66	43,0	54,7	28,5	19,6

Staff detected at: 31.12.2017

Scientific production: 2017

Role	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI (2016-2018)	Top 10 SJR (%)	Top 10 CiteScore (%)	Top 10 Snip (%)	Top 10 citation percentile (%)
Full Professors	19	19	77	401	5,2	1	46,2	69,2	44,2	18,2
Associate Professors	21	21	96	808	8,4	2,04	38,6	51,4	30	20,8
Researchers	11	11	30	88	2,9	0,69	29,4	47,1	35,3	6,7
Fixed-Term Researchers	7	7	17	183	10,8	2,27	23,1	53,8	15,4	29,4
TOTAL	58	58	180	1294	7,2	1,63	40,3	57,3	33,9	20

Staff detected at: 31.12.2016

Scientific production: 2016

Role	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI (2016-2018)	Top 10 SJR (%)	Top 10 CiteScore (%)	Top 10 Snip (%)	Top 10 citation percentile (%)
Full Professors	16	16	84	1001	11,9	1,32	48,40	57,8	39,1	21,4
Associate Professors	26	26	139	1499	10,8	1,48	34,30	47,5	39,2	23
Researchers	12	12	31	252	8,1	1,14	5,00	19	23,8	12,9

Fixed-Term Researchers	5	5	26	118	4,5	0,62	9,50	14,3	9,5	3,8
TOTAL	59	59	219	2364	10,8	1,39	35,80	45,9	35	21,5

Production as indexed in scopus is quite stable across years for the different roles. We highlight that Full Professors and Associate Professors have the largest productivity with about 16 and 14 products per person, with similar figures in terms of visibility. It is not possible to compare indicators based on citations across different years as citations increase over time. Yet, we highlight that the productivity is quite stable across all roles with a peak for Associate Professors in 2016 with 139 products.

Subsection B.4 - Scientific production of newly recruited and promoted researchers
in the three-year period

NEWLY RECRUITED RESEARCHERS

ENTRY ROLE AT CA' FOSCARI	Number	ARCA products ¹⁵ (avg.)	Indexed in Scopus ¹⁶ (avg.)
Full Professors	0	-	-
Associate Professors [of which in CUN Area 13 – Economics]	5 [1]	90 (18.0)	91 (18.2)
Fixed-Term Researchers [of which in CUN Area 13 – Economics]	13 [2]	161 (12.4)	129 (9.9)

PROMOTED RESEARCHERS

ACQUIRED ROLE AT CA' FOSCARI	Number	ARCA products (avg.)	Indexed in Scopus (avg.)
Full Professors [of which in CUN Area 13 – Economics]	5 [1]	83 (16.6)	78 (15.6)
Associate Professors	1	25 (25)	24 (24)
Fixed-Term Researchers/Type B	3	41 (13.6)	39 (13.0)

¹⁵ Source: **ARCA** Repository. Only publications with an ISBN/ISSN code have been considered. Conferences abstracts and posters have been **excluded** from the count of Conference Proceedings. Date of recognition: 28.10.2019

¹⁶ Source: **Scopus**.

NEWLY RECRUITED AND PROMOTED RESEARCHERS - BIBLIOMETRIC ANALYSIS

By SciVal – Benchmarking Module. Document type: Articles; Books; Book chapters; Conference papers; Reviews

Newly recruited researchers in the three-year period 2016-2018

Scientific production: three-year period 2016-2018

Role	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI (2016-2018)	Top 10 SJR (%)	Top 10 CiteScore (%)	Top 10 Snip (%)	Top 10 citation percentile (%)
Full Professors	-	-	-	-	-	-	-	-	-	-
Associate Professors	5	5	91	689	7,57	1,69	42,1	56,1	43,9	20,9
Fixed-Term Researchers	13	13	129	1499	11,62	1,85	44,1	50	21,4	26,4
TOTAL	18	18	220	2188	9,95	1,78	43,4	52,2	29,4	24,1

Promoted researchers in the three-year period 2016-2018

Scientific production: three-year period 2016-2018

Role	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI (2016-2018)	Top 10 SJR (%)	Top 10 CiteScore (%)	Top 10 Snip (%)	Top 10 citation percentile (%)
Full Professors	5	5	78	424	5,44	1,23	47,1	56,9	33,3	10,3
Associate Professors	1	1	24	61	2,54	0,82	0	0	0	0
Fixed-Term Researchers (Type "B")	3	3	39	248	6,36	0,91	50	56,7	16,7	15,4
TOTAL	9	9	138	720	5,22	1,07	41,6	49,4	24,7	10,1

We first highlight that newly recruited Associate Professors have high productivity indicators in terms of number of products and their visibility: larger than Promoted Associate Professors and larger than Full Professors. We believe that collaborations with newly recruited staff can be very fruitful for the whole department.

Overall, promoted researches have larger performance figures than average researchers, thus witnessing a healthy selection mechanism. Interestingly enough, promoted associate professors are on average better performing than promoted full professors. This trend was observed also in the former Annual Research Report. We also highlight that no Full Professor was recruited during the reporting period.

Subsection B.5 - Staff members with no scientific production¹⁷

STAFF MEMBERS WITH NO SCIENTIFIC PRODUCTION

Full Professors	Associate Professors	Researchers	Fixed-Term Researchers [Ricercatori t-det]
0	0	0	0

STAFF MEMBERS WITH NO SCIENTIFIC PRODUCTION RECRUITED/PROMOTED IN THE THREE-YEAR PERIOD 2016-2018

Full Professors	Associate Professors	Researchers	Fixed-Term Researchers [Ricercatori t-det]
0	0	0	0

COMMENTS CONCERNING THE CRITICAL ISSUES (IN PARTICULAR AS REGARDS RESEARCHERS WITH NO SCIENTIFIC PRODUCTION)

No inactive staff members are present. Nonetheless, we believe that staff member with a reduced research output can strongly benefit from collaborations, internal or external. This would significantly impact positively all the evaluation procedures the department is subject to. Accordingly, the IRIDE and “joint grants” actions were designed to provide support in this direction. Concerns regarding underperforming staff are discussed in more detail in the final section of this document.

Section C - International projects (2016-2018)

As reported in the Table below, DAIS was involved in 39 International projects. Several projects were funded within the H2020 programme. Among the many projects we highlight the ERC Starting Grant by prof. Renata Soukand (a new recruitment in BIO/01) and the ERC Advanced Investigator Grant by prof. Carlo Barbante (CHIM/01). The record of projects is quite relevant, totalling about 11 million euros of funding to the department research. We remark the the participation to projects is very important for the sustainability of DAIS’s research, especially in areas such as BIO and CHIM. The department invests lots of efforts in fundraising, with about 40 international projects proposals submitted every year. We only mention here that about 30 national projects were funded during the

¹⁷ Researchers with no scientific publications in the three-year period (source: University Repository ARCA)

reporting period. In general national projects receive smaller interest by the staff members than international projects, both in terms of funds received and projects presented per year.

The department provides the possibility of a reduction of the teaching load for those researchers involved in large projects. This is anyway not easy to accomplish due to the necessity to find substitute lecturers. A reduced teaching load was acknowledged to 13 researchers, either because of project involvement or because of other institutional duties.

European Projects - DEPARTMENT OF ENVIRONMENTAL SCIENCES, INFORMATICS AND STATISTICS								
Project acronym	Project title	Call	Responsible	Status	Partner number	Duration (months)	Total of the Project	EU / MIUR contribution UNIVE
DiGe	Ethnobotany of divided generations in the context of centralization	ERC-2016-STG	Dott.ssa Renata Soukand	Principal Investigator	1	62	€1.496.675,00	€ 1.292.462,50
REFIND	Remote strategies for fossil finding: multispectral images and species distributional modelling applications for large-scale palaeontological surveys.	H2020-MSCA-IF-2017 Global Fellowship (GF)	Stefano MALAVA SI Supervisor di Elena Ghezzi (Applicant)	coordinator	1	36	€ 262.269,00	€ 262.269,00
GAIN	Green Aquaculture Intensification in Europe	H2020-SFS-2016-2017 Topic identifier: SFS-32-2017, two-stage	Prof. Roberto Pastres	coordinator	1	42	€ 5.998.795,00	€ 710.328,75
MILO	Mining, lobbying and efficient environmental policy	H2020-MSCA-IF-2016 - STANDARDEF	Carlo Carraro Supervisor di Pauli Antero Lappi (Applicant)	coordinator	1	22	€ 180.277,20	€ 165.254,10
MASTER	Multiple aspect trajectories representation and analysis	H2020-MSCA RISE 2017	Alessandra Raffaetà	partner	10	48	€ 504.000,00	€ 85.500,00

APPRODI	From ancient maritime routes to eco-touristic destinations	Adriatic-Ionian Programme INTERREG V-B Transnational 2014-2020	Prof.ssa Elisabetta Zendri	partner		24	€ 969.234,10	€ 148.695,00
Families_Share	Socializing and sharing time for work/ life balance through digital and social innovation	H2020-ICT-2016-2017, Topic: ICT-11-2017, Type of action: IA	Prof. Agostino Cortesi	coordinatore	1	34	€ 1.425.440,00	€ 215.952,50
BIORIMA	BIOMaterial Risk Management	H2020-NMBP-2016-2017, topic NMBP-12-2017, Id H2020-NMBP-2017-two stage	Prof. Antonio Marcomini	partner	42	48	€ 8.761.418,75	€ 195.387,50
BLUEGRASS	BLUEGRASS – Promuovere lo sviluppo di un agroalimentare verde mediante l'introduzione dell'acquaponica	INTERREG V-A Italia-Slovenia 2014-2020, Bando pubblico per la presentazione di progetti standard sull'Asse prioritario 3 n. 03/2016 6f	Dott. Daniele Brigolin	coordinatore	1	30	€ 758.976,44	€ 254.010,00
LIFE REDUNE	Restoration of dune habitats in Natura 2000 sites of the Veneto coast	LIFE2016 - LIFE NATURE AND BIODIVERSITY	Prof.ssa Gabriella Buffa	coordinatore	1	55	€ 2.005.384,00	€ 217.036,00

LIFE LAGOON REFRESH	Coastal lagoon habitat (1150*) and species recovery by restoring the salt gradient increasing the fresh water input	LIFE+ Nature and Biodiversity	Prof. Adriano Sfriso	partner		60		
LIFE GOAST	Green Organic Agents for Sustainable Tanneries	Life ENV	Prof. Antonio Marcomini	partner	4	36	€ 2.290.327,00	€ 314.536,20
	Specifiche Formali per Sistemi Software Sicuri	MAE IT-INDIA	Prof. Agostino Cortesi, parte indiana: Prof. Chaki Nabendu	Università Ca' Foscari Venezia coordinatore insieme a Università di Calcutta		36		
CLIMEFISH	Co-creating a decision support framework to ensure sustainable fish production in Europe under climate change	H2020-BG-2015-2	Prof. Fabio Pranovi	Partner	13	48	€ 5.000.000,00	€ 201.160,00
ECONAN OSORB	Ecological application of nanosorbents on the base of natural and synthetic ionites and carbons	Marie Curie Actions - IRSES	Prof. Antonio Marcomini	Partner	2	48		€ 45.600,00
EARLY HUMAN IMPACT	How long have human activities been affecting the climate system?	Support for frontier research (ERC)	Prof. Carlo Barbante	Coordinatore	1	60		€ 2.370.767,00
RECAP	Renland Ice Cap Project		Prof. Carlo Barbante	Partner	2	36		
SUN	SUSTAINABLE NANOTECHNOLOGIES	SP1-Cooperation - Collaborative Project - Large-scale integrating project	Prof. Antonio Marcomini	Coordinatore	1	42		€ 1.434.614,55

NanoERA	Nanomaterials Ecological Risk Assessment: A study of the long-term effects and risks of nanoscale Iron Oxide used in plastic composites in the aquatic environment		Prof. Antonio Marcomini	coordinatore	1	24		€ 180.277,20
EMERISDA	Effectiveness of methods against rising damp in buildings: European practice and perspectives		Prof.ssa Elisabetta Zendri	Partner	5	36		€ 42.000,00
VEIL	Visualising Engineered Landscapes: an archaeological approach to unlock environmental resilience and sustainability in antiquity		Prof. Andrea Torsello	coordinatore	1	24		€ 180.277,20
VOICES OF VENICE	The Voices of Venice. Anthro-Ecological Perspective on the Making of Medieval Europe.	Marie Curie Actions—International Outgoing Fellowships (IOF)	Prof.ssa Elisabetta Zendri	coordinatore	1	36		€ 350.669,80
	Robust procedures to predict length of stay and costs of hospital admissions // Metodi robusti per la previsione del costo e della durata della degenza ospedaliera		Parte italiana: Claudio Agostinelli/Cristiano Varin; parte argentina: Yohai Victor Jaime		3			

MIUR-DA AD	Client-side Security Enforcement for Mobile and Web Application		Parte italiana: Riccardo Focardi, parte tedesca: Matteo Maffei (Saarlän d Universit y)	Coordinato r	2			€ 7.828
PREFAC E	Enhancing prediction of tropical Atlantic climatic and its impacts	SP1-Coop eration - Collaborat ive Project - Collaborat ive project (generic)	Prof. Angelo Rubino	Partner	11	48		€ 387.187,20
SEREST O	SERESTO: Habitat 1150* (Coastal lagoon) recovery by SEagrass RESTOration. A new strategic approach to meet HD&WFD objectives (n° LIFE12 NAT/IT/000331)		Prof. Adriano Sfriso	coordinato r	1			€ 926.281,00
CLARITY	Uncovering information in fluctuating Climate systems: An oppoRtunity for solving climate modeling nodels and asslst local community adaption measures		Prof. Angelo Rubino	coordinato r	1	24		€ 180.277,20
SCouT	Sparse Composite Likelihood Inference in Count Time Series		Prof. Cristiano Varin	coordinato r	1	24		€ 168.277,20
NANORE START	Nanomaterials for the restoration of works of art		Prof. Antonio Marcomi ni	partner	11	42		€ 324.437,50

MEDCIS	Support Mediterranean Member States towards coherent and Coordinated Implementation of the second phase of the MSFD		Prof. Antonio Marcomini	Associated Entity to CORILA		24	€ 1.249.871,00	€ 24.834,00
WATER DROP	Droughts and Water Scarcity in the EU: Economic Impact, Adaptation, Policy Implications and Integrated Assessment Modelling		Antonio Marcomini Supervisor David Garcia Leon (Applicant)	coordinator	1	12		€ 42.069,30
EQUAL-IST	Gender Equality Plans for Information Sciences and Technology Research Institutions		Prof. Agostino Cortesi	Partner	2	36		€289.850,00
MEDIUM	New pathways for sustainable urban development in China medium-sized cities		Prof. Andrea Critto	partecipazione gratuita docente (Progetto gestito da ECLT in qualità di partner)		36		
ACTRIS2	Aerosols, Clouds, and Trace gases Research InfraStructure Network		Prof. Andrea Gambaro	Partner associato di CNR				
NANOFASE	Nanomaterial Fate and Speciation in the Environment		Prof. Antonio Marcomini	partner	30	49		€ 121.068,75
ECOMOBILITY	“ECOMOBILITY -- ECOlogical supporting for traffic Management in cOastal areas By using an InteLLigenT sYstem”		Andrea GAMBARO	coordinator	1	18		€ 365.000,00

ScolaMAR	Innovative training for Smart coastal management and Sustainable blue growth		Prof. Roberto Pastres	Partner coordinator: Université de Bretagne Occidentale	8	36		€ 32.640,00
caLIBRATE	Performance testing, calibration and implementation of a next generation system-of-systems Risk Governance Framework for nanomaterials		Prof. Antonio Marcomini	Partner	17	42		€ 158.525,00
RESURBIS	RESources from URban Blo-waSTE		Prof. Paolo Pavan	partner	6	36		€ 200,457,50

TOTAL € 11.695.072,45

Section D - Research Topics (2016-2018)

We shortly report below the main research topics covered by the DAIS department and some future interesting research directions.

- DAIS has several computer science labs working on Machine Learning foundational approaches for computer vision, information retrieval, etc. Other relevant topics of research include security both in cryptography and, interestingly, also in Machine Learning as security becomes very relevant when machine learning systems get into our daily life.
- DAIS chemistry labs are working in conservation technologies for cultural heritage, now aiming at developing on invasive imaging application for heritage science. In the area of environmental chemistry, an interesting topic is that of climate change multi-risk assessment and management. We observe here that a huge impact is expected from Machine Learning both in the area of computer vision for cultural heritage, and in the area of climate risk adaptation and planning with clear opportunities of collaboration and cross-contamination within the department. In the area of analytical chemistry DAIS is conducting research in paleoclimatology investigations aiming at reconstructing the climate and the greenhouse content of the past 1.5 million years.
- Regarding industrial engineering, and related to environmental safeguard, DAIS is investigating biological CO₂ capture from industrial gas emissions and wastewater treatment, also leading to the conversion of secondary carbon streams in biofuels and bioplastics materials.
- Researchers in the BIO area tackle several aspects of the environment management, evolution and pollution effects. Future research directions include echo-sounding analysis, bioaccumulation of emerging contaminants and conservation biology.
- Research in the GEO area encompasses experimental oceanography, paleoclimatology, and the study of decadal climate variability and predictability. Strong interest is on natural phenomena that can impact and mitigate anthropogenic climate change.
- Research in the statistics area mainly contributed to the development and application of statistical methods for the solution of real-world problems through interdisciplinary research. Applied research fields included environment, paleoclimatology, epidemiology and sociology.
- Finally we mention research activities in the areas of high-dimensional spatial and temporal datasets, riverine ecosystems and cultural and climate use of energy in residential buildings.

Research at DAIS spreads over several topics, with a clear common interest over phenomena with impact on climate and environment, and with huge collaboration opportunities between supposedly far away research areas thanks to the machine learning and data analysis expertise present in the department.

PART III: Resources, incentives, actions

The following sections reports on the funding initiatives of the department. The table below shows the expenses related to the different initiatives. We highlight that the total spending is decreased due to the decreased number of applications. The CdR will evaluate possible strategies to revise current regulations to design initiatives that better fit the necessities of staff members.

	Conferences	Post-doc positions [“Assegni di Ricerca”]	IRIDE	AdiR	Total
2016	14,294.81	179,921.71	19,372.81	139,093.91	352,683.24
2017	21,042.07	126,543.66	8,120.00	125,104.01	280,809.74
2018	8,000.00	134,482.28	6,347.24	149,999.98	261,276.22

Section A – Departmental research funding

AdiR evaluation takes place every year in November and considers the scientific production of the past three years of all the staff members, including the RTD-A and RTD-B. The evaluation of the articles in venues indexed by Scopus or WOS is carried out automatically according their ranking. Each article receives a score in the range 30-100 which is proportional to the decile associated with the venue (decile 10 identifies the top). Non bibliometric works are evaluated by members of the Research Committee based on criteria such as international visibility, quality of the contribution. Each work receives a score in the range 0-100 where the top level can be reached only by books. All the products in the 3-year period are evaluated but only the best nine contribute to the evaluation of the staff member. The results of the evaluation are verified by each single staff member, presented during a plenary meeting of the Department and then approved. The total funding consists in about €150,000 every year.

We refer to the Part II of this for a detailed analysis of the outcomes of this process and a comparison with the different years.

Section B – Funding for post-doc positions or equivalent

	Number of co-funded post-doc positions (“Assegni di Ricerca”)	Number of supervising researchers	Total amount granted (per fiscal year)	Amount (%) co-funded by Dept.
2016	16	15	373,295.48	48.20
2017	15	16	370,983.79	34.11
2018	11	10	276,039.71	48.72

The Department co-funds annual post-doc positions (or equivalent) for an amount that usually cannot exceed 50% of the minimum gross amount (see: https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DAIS/documenti/Dipartimento/AssicurazioneQualita/Piani/RegolamentiDip/RegolamentoCofinanziamentoAssegniRicercaDottorato_DAIS_2017.pdf). The amount available is established on a yearly basis using predictive budget estimates; two calls are open yearly to request the co-funding. The Department does not provide funding for those positions that are (even partially) covered by on-going external projects, with the goal of supporting research activities that are not already funded. We stress the will of the department to take actions toward improving the co-funding scheme, particularly regarding the number of applicants.

To monitor the quality of the co-funded research activities, recipient must deliver to the CdR a final report discussing their scientific results and their publications. Lack of publications should be properly justified. In addition, recipients must present their results through a public seminar.

Below we report break down of the the number of co-funded positions across the different scientific sectors of the department staff. The positions are spread across many sector in proportion to the number of permanent staff members and to the involvement in collaborative projects.

CO-FUNDED POST-DOC POSITIONS OR EQUIVALENT (ASSEGNI DI RICERCA)

Year	SSD												Grand Total
	BIO /02	BIO /07	CHIM /01	CHIM /06	CHIM /12	GEO /08	GEO /12	ICAR /02	INF /01	ING-IND /25	SECS-P /05	SECS-S /01	
2016		1	1		2	1	1		5	1	1	3	16
2017		3	2	1	1	1			3	2		2	15
2018	1			1	3			1	4	1			11
Grand Total	1	4	3	2	6	2	1	1	12	4	1	5	42

Research scholarships (<1 year duration, eligible also for BsC students), according to the University regulations, must be funded with external financing sources, and therefore there is no internal co-funding available. For the sake of completeness, we report some detail on co-funded post-doc positions and research scholarships in Appendix 1.

Section C – Other departmental actions for research support

IRIDE is successful funding program funded of the department aiming at promoting individual research activity by tenured staff members. This initiatives also supports newly recruited researchers with a *starting grant* which can be used to cover travelling, dissemination, hardware expenses. The initiative is described in larger detail in the following sections.

Section D – Other incentives

Co-funding of post-doc positions is one of the most impactful actions of the department. For this reason in 2019 we added an additional co-funding opportunity named “Joint Research Grant”. While external collaboration is supported through the IRIDE founding, internal collaboration was not specifically supported. We are well aware that external collaborations are more relevant for the sustainability of the department (networking for participation in funded international projects). Still we believe that internal collaboration is useful in the following case. The department provides a 75% co-funding of post-doc positions lead by two staff members, where one of the two has an ADIR score in the lowest quartile. We believe that a researcher having a limited productivity, which may happen for several reasons, may significantly benefit from a new collaboration with another colleague so as to start a possibly new research line, opening new external collaborations. Also, as limited productivity often results in limited resources, a co-funding of 75% widens the number of potential applicants. The co-funding is limited to two positions per year. This new form of co-financing started in 2019, therefore it too early to evaluate its impact.

Section E – Internationalization actions

IRIDE is successful funding program funded of the department aiming at promoting individual research activity by tenured staff members. The applicants must submit a 18-month project research proposal about a new line of research in an international context. The key points of the program are:

- a. to promote mobility, both incoming and outgoing, by covering expenses associated with implementing collaborations with scholars working in renowned foreign research institution;
- b. to help new tenured staff members start and accelerate their individual scholarship.

Expected results of the program are:

1. create, or contribute to, new international research networks;
2. publication of joint papers with the international scholars involved in the project.

Year	Number of recipients	Annual funding amount	Average Individual funding amount
2016	6	19,372.81	3,228.80
2017	3	8,120.00	2,706.67
2018	3	6,347,24	2,115.75

Note that the different individual funding, year by year, reflects the different mix of short, medium and long incoming and outgoing mobility. The number of applications is less than expected, especially considering that IRIDE can fund incoming-only visits. A review of this instrument is required in order increase the number of recipients.

Subsection E.1 – Incoming and outgoing scholars and professors

Scholarly visits are promoted by the department, and they are funded with different instruments (including non departmental funds). A detailed list is provided in Appendix II, below we report some summary statistics:

- Visiting Scholars: 6
- Visiting Researchers: 7
- Visiting Fellows: 12
- Visiting Professors: 7

No sabbatical leave occurred.

Subsection E.2 – Other actions or internationalization incentives

The Department financially supports the organisation of conferences and workshops with the aim to improve the visibility of the Department and to promote the creation of scientific network. Member of the Department are invited to apply for the requests of fundings in two calls (April, October) each year. The following table summarises the total amount of funds devoted to this activity support.

Year	Total Amount	Number of Events
2016	14,294.81	10
2017	21,042.07	13
2018	15,500.00	13

The number of the events organized by the Department is about constant during the reporting period. National and international events receive a different amount of funding, which explains the cost variation over time. The involvement in the organization of national and international event is a good index of the visibility of the staff member in their respective community.

PART IV: Assessment

Section A – External evaluation of Research activity

Subsection A.1 - Evaluation Unit

Evaluation provided by the Ca' Foscari Evaluation Unit (*Nucleo di Valutazione*)

DAIS was subject to an evaluation by the Assessment Board (*Nucleo di Valutazione*) and by the *Presidio della Qualità* on April 20 2018. Note that the subject of the visit was AVA system (<http://www.anvur.it/attivita/ava/>) which evaluates the solutions adopted by the department for the design, management, self-evaluation and improvement of its scientific activities. The full report of the evaluation is available online¹⁸. We summarize and discuss the most relevant remarks below.

Requirement R4.B.1: Agreement between the university and the department research management strategy.

Comment Summary: The department plan is in agreement with the university strategic plan.

Requirement R4.B.2: Evaluation of results and incentive actions.

Comment Summary: Monitoring efforts are recommended.

Requirement R4.B.3: Definition and advertisement of incentives and awards.

Comment Summary: A wide spectrum of actions is recognized, but a better documentation of such efforts is recommended.

Requirement R4.B.4: Personnel and infrastructures supporting research activities.

Comment Summary: Actions within the department and beyond university initiatives should be evaluated.

Finally, in its last report, *Presidio della Qualità* recommended to inform yearly each staff member about the evaluation of his productivity.

Regarding R4.B.1, there is nothing to be commented as the board acknowledged the goodness of the Department Development Plan, which is going to be updated in the next future.

Regarding R4.B.2., the department adopted the UniBas-CRUI platform discussed in Part II of this document. This tool is being used to actively monitor the productivity of the department. Part of this monitoring is described in this document.

¹⁸

https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DAIS/documenti/Dipartimento/AssicurazioneQualita/Azioni/NucleoValutazione/Verbale_audit_DAIS_Sienze_Ambientali_20-04-2018.pdf.

Regarding R4.B.3, the CdR is reviewing all the regulations related to the various initiatives and supporting actions. Also, the CdR will evaluate different information sharing mechanisms toward increasing the awareness among staff members about the department's initiatives, awards and incentives.

Regarding R4.B.4, the department plans to investigate flexible contractual options to deal with work overloads in specific periods of the year.

Finally, DAIS informs each researcher on the results of evaluation of each single product considered for the ADIR initiative on a yearly basis.

Review of Departmental policies according to:

- the evaluation provided by the Ca' Foscari Evaluation Unit :
- the Ca' Foscari Advisory Board comments on "2018 Annual Research Report on Research activities"

The Advisory Board provided comments and feedback on the 2018 Annual Research Report on 30 Oct. 2018. We summarize below their scoring and comments:

- Assessment of the Research Environment: 3 (out of 4)
- Planning of activities and personnel: 1 (out of 4)

The Advisory Board also suggested to address the following issues:

- AB-1.* Discuss staffing plan and research areas to be developed
- AB-2.* Report significant research achievements
- AB-3.* Report measures of impact, e.g., citations
- AB-4.* Consider new mechanisms of research incentivization (including under-performing staff)
- AB-5.* Increase focus on international collaboration and funding

Most of the comments raised by the Advisory Board are due to lack of information included in the previous report. We therefore enriched this report in order to answer those concerns.

Regarding AB-1 and AB-2, future research areas and achievements in fundraising are discussed in Part II Subsections C and D, while comments about staff planning is provided in Part IV Subsection B.2. Regarding AB-3, new data on average citations per publications is included and discussed in Subsection B.2 Part II. A new mechanism of research incentivization (especially for under-performing staff) was introduced in 2019 and discussed in Part III Section D of this document, thus addressing point AB-4. Concerning AB-5, International collaboration and funding are discussed in Subsection B.2 Part II and in Subsection B.2 Part IV, showing that the Department has a good internationalization in terms of paper co-authorship and that it is very active in international fundraising activities.

Section B – Self-evaluation of Research activity

Subsection B.1 - Indicators

In this section, for each of the Objective of the department introduced in Part I, we define below a set of Key Performance Indicators aimed at monitoring the department research output and validating of the supported initiatives. Finally, we draw some concluding remarks.

O1 - High Quality of Research Output

KPI-1.1: ANVUR X score: fraction of products in ANVUR Class A or B (Excellent or High quality) normalized by scientific area; **Target ≥ 1**

KPI-1.1	Area 01	Area 03	Area 04	Area 05	Area 08b	Area 09	Area 13
2018	0.85	1.04	1.10	0.99	N/A	1.36	2.08
2017	0.87	0.93	1.03	0.68	N/A	0.33	2.34

This KPI is indeed quite relevant in several internal and evaluation schemes. Performance of the department varies across different scientific areas. Area 01 is stable despite 3 new Fixed-term researchers, suggesting the performance of the newly recruited researchers is in line with the rest of the staff members. Area 3 show a 10% improvement, and even in this case 3 new fixed-term researcher were hired. Area 4 is quite stable, including 2 new fixed term researchers. Area 05 shows a significant improvement due also to the hiring of a new Associate Professor. Data is not available for Area 08 for privacy concerns of the CRUI tool (there is only one member). Area 09 also shows a remarkable improvement, to which the hiring of a new Associate Professor contributed. Area 13 is stable and with a remarkable score >2 , also considering that the two Full professors retired and one researcher was replaced by 2 new fixed-term researchers. As discussed previously, the new recruitments are bringing new energies and new opportunities to the research activities of the department. With a main focus on internationalization, we hope that internal collaboration with the newly recruited researchers may bring a benefit to the performance of the department.

KPI-1.2: Fraction of staff members with at least 2 products indexed in WoS/Scopus in the last 3 years; **Target = 100%**.

This KPI is both related to the minimum number of publications to be presented for VQR-like evaluations. It might also be considered as an inactivity warning.

There are 3 out of 66 staff members with less than 2 products indexed in WoS/Scopus in the last 2016-2018 time-frame. Even if this indicator account only for the number of published work, we highlight it is important to evaluate also the quality of those publications.

Supporting and Incentive Instruments:

- ADIR: supporting mechanism providing a small research fund (<€3000) each year on the basis of researchers' productivity
- Co-funding of research fellowships (<€13000) is used by the department to support several research projects.
- Reduction of teaching load is allowed for those researchers involved in large international research projects.
- IRIDE provides a small research fund (<€5000) for new staff members, that complements university funds which are reserved to "external" staff.

New initiatives and correcting actions:

- In addition to the incentives mentioned above, we devised a new tool for supporting low performing researchers that consists in funding 75% of a research fellowship supervised by two colleagues, one of them being in the lower quartile of the ADIR score. This measure is expected to help low-performing personnel, like those identified by indicator KPI-1.2, to boost their research productivity through internal collaboration. It is clear that we are asking more productive researchers to provide an additional contribution to the department. These Joint Grants are active since 2019, therefore it is not yet possible to evaluate their impact.

O2 - Interdisciplinary Research

KPI-2.1: Fraction of research products having as co-authors staff members of different scientific areas; **Target = 5%.**

	2016	2017	2018
KPI-2.1	1.2%	4.7%	2.8%

This KPI measures collaborations among authors belonging to different areas. Given the multidisciplinary of the department, such collaborations are an added value and they could boost high-quality research. Area 13 and Area 01 can more easily start interesting collaborations. We would like to confirm the positive results achieved in 2017.

Supporting and Incentive Instruments:

- Seminars from incoming visitors are supported, and other seminar activities are regularly advertised.

New initiatives and Correcting actions: Possible new actions that will be considered include supporting publication fees to top-level multidisciplinary journals, such as Nature, Science.

O3 - High Quality Recruiting

KPI-3.1: Fraction of products in the top 10% SNIP score ranking of newly recruited researchers; Target >= Equivalent permanent staff.

KIP-3.2: Fraction of products in the top 10% SNIP score ranking of promoted researchers; Target >= Equivalent permanent staff.

KPI-3.1 and KPI-3.2 Fraction of products in the top 10% SNIP score ranking	Permanent staff	Newly Recruited	Promoted
Full Professor	39.5%	--	33.3%
Associate Professor	32.8%	43.9%	0%
Researcher	38.5%	--	--
Fixed-Term Researchers <i>[Ricercatori t-det]</i>	20.0%	21.4%	16.7%

Newly recruited staff shows a large productivity which will raise the quality level of the department research output. This indicator is largely exploited in both internal and external evaluation.

Supporting and Incentive Instruments:

- IRIDE provides a small installment fund (<€3000) for new staff members, that complements university funds which are reserved to “external” staff.

New initiatives and Correcting actions: However, the department might consider to carefully monitor the productivity staff members aiming at promotions and the productivity of post-docs and PhD students and to consider awarding actions for them that might increase the attractiveness of the department for the most promising young researchers.

O4 - Internationalization

KPI-4.1: Fraction of publications with international co-authors normalized by scientific area; Target >= 1

KPI-4.1	Area 01	Area 03	Area 04	Area 05	Area 08b	Area 09	Area 13
2018	1.64	1.99	2.52	1.25	N/A	1.66	3.16
2017	1.96	1.88	2.77	1.24	N/A	1.79	3.13

The target is largely achieved by all areas. The department conducts high quality research which naturally translates into solid international collaborations. We highlight that the Areas with largest

international collaborations also have a general better performance according to multiple indicators.

Supporting and Incentive Instruments:

- IRIDE provides a small research fund (<€5000) for incoming and outgoing scholarly visits so as to foster international collaborations.
- Seminars from incoming visitors are also supported.

New initiatives and Correcting actions: No corrective actions are envisaged.

Subsection B.2 – Review of the Departmental Research activity

Most of the monitoring indicators were commented in detail in the previous section. In the following we provide an overall review of the department research activities by highlighting some strengths and weaknesses.

International Collaborations.

Indicators show that DAIS research activities are supported by a very good network of international collaborations. DAIS is involved in several international collaborative projects, with a fundraising activity by far larger than other departments of the University. This provides a number of benefits for the research activity of the department. Participation to competitive calls for EU projects (or similar) requires staff members to confront with the evolving research activities of other groups in Europe, it increases the chance of international collaborations, and it supports the sustainability of the department thanks to the additional funds gained. When compared with other Italian Universities, the fraction of products with international coauthors is larger by a factor ranging between 25% and 200% depending on the scientific area. In fact, products with international collaborators have better visibility and larger impact in the research community. We highlight the achievement of one ERC Starting Grant by prof. Renata Soukand (a new recruitment in BIO/01) and the ERC Advanced Investigator Grant by prof. Carlo Barbante (CHIM/01), with a total fundraising activity of 11 million euros thanks to participation to European projects.

In terms of International Collaborations, the department performs well and no corrective actions are envisaged. Fundraising activities are quite effective. In the long term, it is important to keep this positive trend. In this regard, researchers of the department actively collaborate with the ARiC University Research Office which provides support in identifying interesting calls for collaborative projects or companies for technological transfer activities.

Quality of Research.

By looking at the VQR- and FFABR-like indicators we can compare DAIS with the average performance of other Italian universities. Besides the very good performance of Area 13, all other areas are above the average or rather close. The quality and productivity of the department is quite stable, but we should make sure not to decrease the quality of the department research. To this end, it is important to target top-quality venues rather than increasing the number of products published.

Support the staff members is provided in the following ways:

- 50% co-funding of research fellowships. This is by far the most used tool by researchers: it allows to significantly reduce the cost of post-doc fellowships in a research group. Still, the access to this co-funding is limited to researchers that already have a good amount of resources.
- IRIDE-A funds incoming and outgoing visits, which may bootstrap new international collaborations and high quality research products.

To increase the impact of the above tools, we will consider to slightly increase the co-funding rate of research fellowships, so as to increase the accessibility of this instrument. Also, in order to make researchers more aware of the importance of high quality venues, we might consider some adjustments to the ADIR scoring scheme so as to give a larger weight to high impact publications.

Recruitment and Staff planning.

In 2018 DAIS had a significant change in the department staff. Two full professors retired, one researcher moved to a different department, and one fixed-term researcher is not member of the department anymore. These 4 units were replaced by 12 new hirings, two of which as associate professors and five as “tenure track” researchers. Considering that the department now includes 66 members, newly recruited staff currently amounts to 18% of the whole personnel.

We recall that the recruitment strategies must fulfill several University constraints. Shortly, promotions are allowed only in scientific areas with high productivity and new hirings to fulfill increasing teaching loads. Within these boundaries, the department aims at hiring high performing staff, supporting excellent research areas and opening new research directions.

As witnessed by KPI-3.1, newly recruited researchers and associate professors have on average a better performance than the average department in the corresponding role. Maintaining this trend will be important to increase the quality of the department research. The department supports newly recruited staff with small installment fund through IRIDE-B, which starting 2019 is implemented as an open call.

We highlight that the two associate professors were recruited in the new scientific sectors of General Botany and Energy Building Systems with the clear goal of complementing the current research activities and widening their scope towards novel topics of future impact.

In the near future, the department is planning to increase its teaching load through the participation to new courses. This involves most research areas of the department, thanks to its multi-disciplinary nature, and especially computer science because of the pervasiveness of ICT across many research fields. In this last regard, the department is planning to increment its personnel in the area of ING-INF/05 Information Systems. In the short term, getting involved in new courses will increase the overall teaching load with an impact on research, e.g., reducing the opportunity for a reduced teaching load. On the contrary, in the long term we expect new recruitments to empower the possibility of the department to participate to collaborative international research funding including multidisciplinary research. In fact, to avoid a teaching overload, new hirings will be preferred instead of promotions.

Lower-performing staff.

The average performance of the Department is satisfying, but, as monitored by KPI-1.2 there are 3 members of the personnel with only 1 publication indexed in Scopus in the last 3 years. This number grows to 10 if we consider members with only 3 publications. Recalling that there is no inactive personnel, still some action is required to increase the productivity of lower-performing staff. In particular, especially with a limited number of products, it is important to evaluate not only the number of published works, but also their quality. Designing a proper instrument is not easy,

as, for instance, it is very likely that the researchers we want to address do not have enough resources to take advantage of 50% co-funding for research fellowships. IRIDE is a very valuable instrument that allows even incoming-only visits of international researcher so as to foster novel collaborations. But IRIDE is not sufficient.

In 2019 we introduced a “Joint” research fellowship co-funding of 75%. This requires that two researchers join in supervising a research fellowship affording only 25% of the cost with the constraint that one researcher should be in the lower quartile of the ADIR ranking. The goal is to exploit a collaboration within the department to bootstrap new research lines and activities that can improve the productivity of both researchers. The instrument is too young to provide any evaluation. It is clear this instrument calls for a form of the contribution from all staff members, and we remark that most evaluation the Department is subject would benefit more by an incremented productivity by researchers in the bottom of the ADIR ranking rather than in the top.

Appendix 1: Co-funded post-doc positions and Research scholarships

Co-funded post-doc Positions

Supervisor	Recipient	Start	End	Co-Funding	Total Cost	SSD
Pelillo Marcello	VASCON SEBASTIANO	10/01/2018	09/01/2019	5.491,53	23.786,55	INF/01
Zendri Elisabetta	IZZO FRANCESCA CATERINA	10/01/2018	09/06/2019	9.436,64	23.591,59	CHIM/12
Aricò Fabio	MUSOLINO MANUELE	01/03/2018	28/02/2019	11.800,00	28.543,57	CHIM/06
Zendri Elisabetta	LUCERO GÓMEZ DELIA PAOLA	17/05/2018	16/05/2019	23.786,55	23.786,55	CHIM/12
Critto Andrea	FURLAN ELISA	01/03/2018	28/02/2019	11.893,28	23.786,55	CHIM/12
Torsello Andrea	BERGAMASCO FILIPPO	09/03/2018	31/10/2018	12.607,88	28.699,35	INF/01
Bertuzzo Enrico	MARCHI GIACOMO	04/04/2018	03/04/2019	11.893,28	23.786,55	ICAR/02
Albarelli Andrea	GASPARETTO ANDREA	02/07/2018	30/11/2018	11.893,28	28.699,35	INF/01
Cortesi Agostino	DEB NOVARUN	15/12/2018	14/12/2019	11.893,28	23.786,55	INF/01
Buffa Gabriella	FANTINATO EDY	05/10/2018	04/10/2019	11.893,28	23.786,55	BIO/02
Pavan Paolo	GOTTARDO MARCO	01/09/2018	31/08/2019	11.893,28	23.786,55	ING-IND/25
Poli Irene	DISTEFANO VERONICA	06/12/2017	05/12/2018	9.436,64	23.657,44	SECS-S/01
Pastres Roberto	FORCHINO ANDREA ALBERTO	01/12/2017	30/11/2018	9.436,64	23.591,59	BIO/07
Marcomini Antonio	GIUBILATO ELISA	22/10/2017	21/10/2018	5.491,53	28.543,57	CHIM/12
Gambaro Andrea	MORABITO ELISA	01/08/2017	31/07/2018	9.436,64	23.591,59	CHIM/01
Aricò Fabio	MUSOLINO MANUELE	01/03/2017	28/02/2018	9.436,64	23.591,59	CHIM/06
Pavan Paolo	PIOVESAN STEFANO	01/02/2017	31/01/2018	5.491,53	23.591,59	ING-IND/25
Franzoi Piero	SCAPIN LUCA	10/10/2017	09/10/2018	9.436,64	23.657,44	BIO/07
Cavinato Cristina	SCARPONI PAOLINA	01/09/2017	31/08/2018	11.797,09	23.657,44	ING-IND/25
Focardi Riccardo, Orlando Salvatore	SQUARCINA MARCO	19/09/2017	18/03/2019	9.436,64	35.486,16	INF/01
Rampazzo Giancarlo	VALOTTO GABRIO	02/02/2017	01/02/2018	9.436,64	23.591,59	GEO/08
Slanzi Debora	VASCON SEBASTIANO	09/01/2017	08/01/2018	5.491,53	23.591,59	SECS-S/01
Barbante Carlo	VILLOSLADA HIDALGO MARIA DEL CARMEN	03/08/2017	02/08/2018	9.436,64	23.591,59	CHIM/01
Sfriso Adriano	WOLF MARION ADELHEID	24/10/2017	23/10/2018	5.491,53	23.657,44	BIO/07
Albarelli Andrea	ZAVATTA GIULIO	01/02/2017	31/01/2018	11.795,80	23.591,59	INF/01
Cortesi Agostino	ZOLLO FABIANA	16/01/2017	15/01/2018	5.491,53	23.591,59	INF/01

Critto Andrea	ANZOISE VALENTINA	01/07/2016	30/06/2017	11.731,24	23.462,47	CHIM/12
Battistel Dario	ARGIRIADIS ELENA	01/03/2016	28/02/2017	11.795,79	23.462,47	CHIM/01
Rubino Angelo	ARISIDO MAEREGU WOLDEYES	05/04/2016	04/04/2017	11.795,79	23.462,47	GEO/12
Torsello Andrea	BERGAMASCO FILIPPO	03/11/2016	02/11/2017	11.731,24	28.308,34	INF/01
Orlando Salvatore	COLETTI MAURO	07/11/2016	06/11/2017	11.731,24	23.462,47	INF/01
Carraro Carlo	DASGUPTA SHOURO	01/12/2016	30/11/2017	3.824,02	23.591,59	SECS-P/05
Cortesi Agostino	DEI ROSSI GIAN LUCA	01/12/2016	30/11/2017	11.731,24	23.462,47	INF/01
Stenni Barbara	DREOSSI GIULIANO	01/09/2016	31/08/2017	11.731,24	23.462,47	GEO/08
Torsello Andrea	GASPARETTO ANDREA	01/09/2016	31/08/2017	11.731,24	23.462,47	INF/01
Pavan Paolo	GOTTARDO MARCO	01/09/2016	31/08/2017	11.731,24	23.462,47	ING-IND/25
Gaetan Carlo	LOPEZ PARAGES JORGE	11/01/2016	10/07/2017	11.666,68	35.000,04	SECS-S/01
Poli Irene	LUNARDON NICOLA	01/03/2016	13/11/2016	11.795,79	23.462,47	SECS-S/01
Slanzi Debora	MAMELI VALENTINA	07/04/2016	06/04/2017	11.731,24	23.462,47	SECS-S/01
Critto Andrea, Marcomini Antonio	PIZZOL LISA	18/05/2016	17/05/2017	11.731,24	28.308,34	CHIM/12
Pelillo Marcello	SCANTAMBURLO TERESA	13/09/2016	12/09/2017	11.731,24	23.462,47	INF/01
Sfriso Adriano	WOLF MARION ADELHEID	01/10/2016	30/09/2017	11.731,24	23.462,47	BIO/07

Research Scholarships

Project / Funding Souce	SSD (if available)	Research Topic	Amount
"VoicesOfVenice. Anthro-Ecological Perspective on the Making of Medieval Europe" Project	LM-2, LM-15, LM-89, LM-11, LMR/02, L-43, L-1, L-10, L-42		€ 5.750,00

Istituto per la Dinamica dei Processi Ambientali CNR	CHIM/01	Caratterizzazione chimica di matrici ambientali (acqua, sedimento) e delle diverse classi dimensionali (comprese le ultrafini) dell'aerosol atmosferico in aree sottoposte a diverso grado di antropizzazione	€ 11.893,28
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Microsoft S.r.l.	INF/01	Data Science: formazione e ricerca	€ 19.367,00
CNR - IPDA	CHIM/01	Studio dei processi di accumulo di elementi in traccia in organismi vegetali	9.683,00
Progetto FSE "SI ² - Sostenibilità integrata e innovazione sociale", Cod. n. 2120-2-1267-2017 CUP H73C17000500005 - Prof. Fabio Pranovi	BIO/07	"Implementazione di modelli di sostenibilità integrata in aziende bioagricole"	20.000,00
Progetto "Groundtruthing VEiL" Dott.ssa Arianna Traviglia		'Ricognizione Aquileia – Archeologo esperto di cultura materiale da contesti indagati tramite ricognizione di superficie - Borsa Senior'	1.200,00
Progetto "Groundtruthing VEiL" Dott.ssa Arianna Traviglia		'Ricognizione Aquileia – Archeologo esperto di cultura materiale da contesti indagati tramite ricognizione di superficie - Borsa Senior'	1.200,00

Progetto "Groundtruthing VEIL" Dott.ssa Arianna Traviglia		'Ricognizione Aquileia – Archeologo esperto di cultura materiale da contesti indagati tramite ricognizione di superficie - Borsa Senior'	1.200,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Tipo B		Scavo Archeologico Torcello 2018 - Borsa Senior	2.475,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Tipo B		Scavo Archeologico Torcello 2018 - Borsa Senior	2.475,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Tipo B		Scavo Archeologico Torcello 2018 - Borsa Senior	2.475,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo C		Scavo Archeologico Torcello 2018 -Archeometra	2.200,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo D		Scavo Archeologico Torcello 2018, Comunicazione e Archeologia Pubblica	2.500,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo E		Scavo Archeologico Torcello 2018, Archeologo e Catalogo Materiali Ceramici Tardo Antichi e Altomedievali	3.300,00

PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo E		Scavo Archeologico Torcello 2018, Archeologo e Catalogo Materiali Ceramici Tardo Antichi e Altomedievali	3.300,00
FSE "SI ² - Sostenibilità integrata e innovazione sociale", Cod. n. 2120-2-1267-2017 CUP H73C17000500005 Prof. Fabio Pranovi	BIO/07	Analisi e mappatura dei beni relazionali	12.000,00
Fondi di Progetto MRG2017MARCOMINI	CHIM/12	Contaminanti emergenti nella Laguna di Venezia	7.000,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A		Scavo Archeologico Torcello 2018 - Borsa Junior	900,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A		Scavo Archeologico Torcello 2018 - Borsa Junior	900,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A		Scavo Archeologico Torcello 2018 - Borsa Junior	900,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo C		Scavo Archeologico Torcello 2018, Archeometra	2.200,00
PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A		Scavo Archeologico Torcello 2018 - Borsa Junior	900,00

<p>PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A</p>		<p>Scavo Archeologico Torcello 2018 - Borsa Junior</p>	<p>900,00</p>
<p>PROGETTO "APPRODI" Prof.ssa Elisabetta Zendri - Dott. Diego Calaon Borsa Borsa Tipo A</p>		<p>Scavo Archeologico Torcello 2018 - Borsa Junior</p>	<p>900,00</p>
<p>Convenzione stipulata tra l'Istituto per la Dinamica dei Processi Ambientali del CNR e l'Università Ca' Foscari - Dipartimento di Scienze Ambientali, Informatica e Statistica, Rep. n. 210/2018, Prot. n. 42863 del 25/07/2018 CUP H76C18000400005 prof. Andrea Gambaro</p>	<p>CHIM/01</p>	<p>Caratterizzazione chimica di matrici ambientali (acqua, sedimento) e delle diverse classi dimensionali (comprese le ultrafini) dell'aerosol atmosferico in aree sottoposte a diverso grado di antropizzazione</p>	<p>11.893,28</p>
<p>Progetto Cod. 2120-13-11-2018, finanziato con D.D.R. n. 522 del 31/05/2018 e successive modifiche, nell'ambito del bando regionale 2018, D.G.R. n. 11/2018 - "La ricerca a sostegno della trasformazione aziendale. Innovatori in azienda" - POR FSE 2014-2020 - Ob. "Investimenti a favore della crescita e dell'occupazione" - CUP H76C18000190005.</p>	<p>BIO/07</p>	<p>Supporto da parte di ricercatore senior per l'assegno "Il Deep Learning come strumento abilitante per l'ispezione non metrologica</p>	<p>8.000,00</p>

Progetto Cod. 2120-13-11-2018, finanziato con D.D.R. n. 522 del 31/05/2018 e successive modifiche, nell'ambito del bando regionale 2018, D.G.R. n. 11/2018 - "La ricerca a sostegno della trasformazione aziendale. Innovatori in azienda" - POR FSE 2014-2020 - Ob. "Investimenti a favore della crescita e dell'occupazione" - CUP H76C18000190005.	BIO/07	Supporto da parte di ricercatore senior per l'assegno "Tecniche di Machine Learning per l'analisi predittiva dei malfunzionamenti e per la manutenzione programmata"	8.000,00
Progetto FSE "SI ² - Sostenibilità integrata e innovazione sociale", Cod. n. 2120-2-1267-2017	BIO/07	"Beni comuni e beni relazionali analizzati nelle aziende bio-agricole del Distretto Oltreconfìn"	14.000,00
Progetto FSE "SI ² - Sostenibilità integrata e innovazione sociale", Cod. n. 2120-2-1267-2017	BIO/07	"Analisi del ruolo dei beni relazionali in attività di impresa sociale"	10.000,00
Progetto Fondi Margini AIS MRG2017 MARCOMINI	CHIM/12	Contaminanti emergenti nella Laguna di Venezia	2.333,33
Progetto Fondi Margini AIS MRG2017 FRANZOI	BIO/07	Ingresso e distribuzione in laguna di Venezia di postlarve e analisi di tre serie annuali di dati e definizione dell'arte	5.600,00

Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, analisi della maturità digitale BORSA JUNIOR	5.000,00
Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, analisi della maturità digitale BORSA JUNIOR	5.000,00
Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, analisi della maturità digitale BORSA JUNIOR	5.000,00
Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, progettare l'innovazione digitale BORSA SENIOR	17.100,00
Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, analisi della maturità digitale BORSA JUNIOR	5.000,00
Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, progettare l'innovazione digitale BORSA SENIOR	17.100,00

Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, analisi della maturità digitale BORSA JUNIOR	5.000,00
Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, analisi della maturità digitale BORSA JUNIOR	5.000,00
Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, analisi della maturità digitale BORSA JUNIOR	5.000,00
Progetto "Impresa 4.0 e Digital Trasformation per le PMI di Venezia e Rovigo del Delta Lagunare – Training, accompagnamento e mentoring	INF/01	Impresa 4.0 e Digital Transformation per le Pmi, analisi della maturità digitale BORSA JUNIOR	5.000,00

Appendix 2: Visiting scholars and professors

Visiting scholars

Period	Da maggio 2016 a ottobre 2016
Name	Alexander Aldoshin
Home institution	Centre of Ecotoxicometry D. Mendeleev – University of Chemical Technology of Russia
Research area	Fellowship on the synthesis of carbonate mustard analogues and their chemical properties
Seminar activities	None
Funding Sources	None

Period	01/09/2016 - 31/08/2017
Name	Hichem Lourguioui
Home institution	Département Ressources Vivantes (DRV) à l'ENSSMAL (Ecole Nationale Supérieure et de l'Aménagement du Littoral, Algeri)
Research area	Applicazione dell'analisi del ciclo di vita alla valutazione di impatto di prodotti da acquaponica e da maricoltura in Algeria" e "Valutazione dell'idoneità di siti da adibire alla molluschicoltura in Algeria
Seminar activities	The use of Life Cycle Assessment to develop sustainable mussel culture in Algeria
Funding Sources	None

Period	23/01/2017-03/03/2017
Name	Moreno Bevilacqua
Home institution	Departamento de Estadística Chile
Research area	Models for spatial and spatio-temporal discrete data

Seminar activities	None
Funding Sources	None

Period	12/11/2017 – 15/12/2017
Name	Nabendu Chaki
Home institution	Department of Computer Science & Engineering – University of Calcutta
Research area	Formal Specification for Secured Software System
Seminar activities	None
Funding Sources	“Formal Specification for Secured Software System”, under the “Indo-Italian Executive Programme of Cooperation in Scientific and Technological Cooperation” MIUR – MAE, Project number IN17MO07
Period	01/02/2018-05/03/2018
Name	NIKOLOULOPOULOS ARISTIDIS
Home institution	School of Computing Sciences University of East Anglia Norwich UK
Research area	Research Project Marie Curie “ScouT – Sparse Composite Likelihood Inference in Count Time Series”
Seminar activities	None
Funding Sources	€ 4.000,00

Funding Sources	NONE
Period	01/10/2018 30/11/2018
Name	OPITZ THOMAS
Home institution	BIOSP- INRA AVIGNON (France)

Research area	Beyond the Gaussian: Lévy-based dependence and regression modeling in spatial statistics
Seminar activities	Exceedance-based nonlinear regression of tail dependence
Funding Sources	IRIDE

Visiting Researchers/Visiting Fellows

Period	01/10/2015-31/08/2016
Name	LOURGUIOIU HICHEM
Home institution	ENSSMAL (Ecole Nationale Supérieure et de l'Aménagement du Littoral, Algeri)
Research area	"Valutazione dell'impatto ambientale della mitilicoltura mediante metodologie di Life Cycle Assesement"
Seminar activities	None
Funding Sources	Borsa di ricerca Università di provenienza

Period	20/01/2016 -20/02/2016
Name	ANISIMOV MAXIM
Home institution	VORONEZH STATE UNIVERSITY OF FORESTRY AND TECHNOLOGIES - G.F. MOROZOV
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None
Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004, max 1.691,00

Period	20/01/2016 -29/02/2016
Name	SVETLANA VASILEVA

Home institution	VORONEZH STATE UNIVERSITY OF FORESTRY AND TECHNOLOGIES - G.F. MOROZOV
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None
Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004, max 1.691,00

Period	20/01/2016-20/02/2016
Name	NOVIKOVA LIUMILLA
Home institution	VORONEZH STATE UNIVERSITY OF FORESTRY AND TECHNOLOGIES - G.F. MOROZOV
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None
Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004, max 1.691,00

Period	20/01/2016 – 20/02/2016
Name	STARODUBOV SERGEI
Home institution	VORONEZH STATE FORESTRY ENGINEERING ACADEMY
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None
Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004, max 1.691,00

Period	20/01/2016-20/04/2016
Name	ZHUKALIN DMITRII
Home institution	VORONEZH STATE UNIVERSITY
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None
Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004, max 1.691,00

Period	28/03/2016 – 27/04/2016
Name	BELOUSOV PETR
Home institution	VORONEZH STATE FORESTRY ENGINEERING ACADEMY
Research area	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004, max 1.691,00
Seminar activities	None
Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004, max 1.691,00

Visiting fellows

Period	21/01/2015-29/01/2015
Name	KRIZANC DAVID
Home institution	Mathematics Department, Wesleyan University - Middletown USA
Research area	Algoritmi in sistemi distribuiti e agenti mobili
Seminar activities	None
Funding Sources	Massimale di € 1.000 fondi ADIR/FRA Prof.ssa Luccio

Period	21/01/2015-29/01/2015
Name	KRANAKIS EVANGELOS
Home institution	Mathematics Department, Wesleyan University - Middletown USA
Research area	Algoritmi in sistemi distribuiti e agenti mobili"
Seminar activities	None
Funding Sources	Massimale di € 1.000 fondi ADIR/FRA Prof.ssa Luccio

Period	10/01/2016 - 20/01/2016
Name	ZHEN LI
Home institution	Chinese Academy of Science Cold and Arid Regions Environmental and Engineering Research Institute State Key Laboratory of Cryospheric Sciences
Research area	Ricerca " <i>Analysis of organic biomarker (levoglucosan) in ice core form Tibetan Plateau</i> " saranno svolte dalla dott.ssa Quanlian Li all'interno del Progetto Europeo EARLYhumanIMPACT - How long have human activities been affecting the climate system? - "Ideas" Specific Programme - European Research Council - Advanced Grant 2010 - Grant Agreement n° 267696
Seminar activities	The relationship between 18-O in precipitation and air temperature observed at high elevations on tibetan plateau
Funding Sources	MAX € 1.600 FONDI PROGETTO

Period	10/01/2016 - 20/01/2016
Name	QUANLIAN LI
Home institution	Chinese Academy of Science Cold and Arid Regions Environmental and Engineering Research Institute State Key Laboratory of Cryospheric Sciences
Research area	Ricerca " <i>Analysis of organic biomarker (levoglucosan) in ice core form Tibetan Plateau</i> " saranno svolte dalla dott.ssa Quanlian Li all'interno del Progetto Europeo EARLYhumanIMPACT - How long have human activities been affecting the climate system? - "Ideas" Specific Programme - European Research Council - Advanced Grant 2010 - Grant Agreement n° 267696
Seminar activities	Composition and source identification of polycyclic aromatic hydrocarbons (PAHs) in cryoconites of tibetan plateau glacier

Funding Sources	MAX € 1.600 FONDI PROGETTO
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Period	19/11/2016 - 31/01/2016
Name	KUZNETSOVA ELENA
Home institution	INSTITUTE OF PHYSICAL CHEMISTRY AND ELECTROCHEMISTRY RAS
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None
Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004 CHIEDI CONFERMA SE ANCHE GLOCOM

Period	19/11/2016 - 31/01/2016
Name	PYTSKIY IVAN
Home institution	INSTITUTE OF PHYSICAL CHEMISTRY AND ELECTROCHEMISTRY RAS
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None
Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004

Period	09/02/2016-23/02/2016
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Name	BAKALINSKA OLGA
Home institution	O.O. Chuiko Institute of Surface Chemistry of National Academy of Sciences of Ukraine, Kyiv – Ukraine
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None
Funding Sources	Rimborso dalla National Academy of Sciences of Ukraine in base agli accordi riportati nel Partnership Agreement di ECONANOSORB Project (Minutes of the Kick-off meeting, 27 th June 2012) European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004

Period	18/03/2016-26/03/2016
Name	BURYAK ALEKSEI
Home institution	Laboratory of Synthesis and Study of Sorbents, Institute of Physical Chemistry and Electrochemistry RAS
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None
Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004 A CARICO UNIVERSITA' DI PROVENIENZA

Period	18/03/2016-26/03/2016
Name	PETUKHOVA GALINA
Home institution	Laboratory of Synthesis and Study of Sorbents, Institute of Physical Chemistry and Electrochemistry RAS
Research area	Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons
Seminar activities	None

Funding Sources	European Project FP7-PEOPLE-2011-IRSES (Support for training and career development of researchers – Marie Curie – International Research Staff Exchange Scheme) Grant Agreement n°295260 – ECONANOSORB (Ecological application of nanosorbents on the base of natural and synthetic tonite and carbons) – CUP H71J12000960004 A CARICO UNIVERSITA' DI PROVENIENZA
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Period	05/05/2016-15/05/2016
Name	DUBOIS EMMANUEL
Home institution	Université de Paul Sabatier Toulouse III - IUT A - Département GEA
Research area	Activities on advanced interfaces and interaction design/Seminario "Towards a design process for the physical composition of devices"
Seminar activities	Towards a design process for the physical composition of devices
Funding Sources	Vitto e Alloggio massimale € 1.100,00 Fondi ADiR Prof. Celentano

Period	09/05/2016-14/05/2016
Name	BRUNO ANDRE' EUGENE BOMBLED
Home institution	Laboratory of the Sciences of the Climate and the Environment UMR CEA - CNRS in Gif sur Yvette - France
Research area	Surface sediment sampling and microprofiling, purposely designed for the application of a transient biogeochemical model of early diagenesis"
Seminar activities	None
Funding Sources	€ 2.000,00 Progetto di Ricerca IRIDE-Brigolin "DATi e Modelli per lo studio di HABitat marino - COstieri di fondi molli (DAMHACO)"

Period	09/05/2016-14/05/2016
Name	CHRISTOPHE PIERRE GUY RABOUILLE
Home institution	Laboratory of the Sciences of the Climate and the Environment UMR CEA - CNRS in Gif sur Yvette - France
Research area	Surface sediment sampling and microprofiling, purposely designed for the application of a transient biogeochemical model of early diagenesis"
Seminar activities	None

Funding Sources	€ 2.000,00 Progetto di Ricerca IRIDE-Brigolin "DATi e Modelli per lo studio di HABitat marino - COstieri di fondi molli (DAMHACO)";
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Visiting professors

Period	1/04/2016-30/04/2016
Name	CATUSCIA PALAMIDESSI
Home institution	COMPUTER SCIENCE INSTITUTE
Scientific area	Informatic Sciences
Teaching activities	Information flow, Anonymity, e Privacy
Funding Sources	€ 7.708,15 LORDO PERCIPIENTE BANDO DI ATENEO

Period	GEN/APR 2016
Name	ROBERT WALKER
Home institution	Department of Computer Science, University of Calgary, Alberta, Canada
Scientific area	Informatic Sciences
Teaching activities/Seminar Activities	Seminari a titolo gratuito Software Correctness, Security and Reliability, Corso di Laurea Magistrale in Informatica-Computer Science
Funding Sources	None

Period	01/07/2016-30/07/2016
Name	MONIKA HEINER
Home institution	INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET EN AUTOMATIQUE
Scientific area	Informatic Sciences
Teaching activities	BioModel Engineering: A Petri net perspective on Systems and Synthetic Biology
Funding Sources	€ 7708,15 LORDO PERCIPIENTE BANDO DI ATENEO

Period	05/06/2016-05/07/2016
Name	AMOS WINTER
Home institution	Earth and Environmental Systems, Indiana State University, Terre Haute, Indiana
Scientific area	
Teaching activities/Seminar activities	Studio della variabilità climatica tropicale negli ultimi 10.000 anni, basato su analisi ad alta risoluzione spaziale di depositi calcarei / "Coccolithophores, major primary producers in the ocean, are taking over polar regions previously occupied by diatoms", PhD Course in Environmental Sciences of the Ca' Foscari University of Venice on the following topics: "Increased rate of ocean acidification since 1970 determined by geochemical analyses of mixed-layer sclerosponges" and "The first 30kyr continuous record of tropical climate variability from a Mesoamerican speleothem"
Funding Sources	FONDI ADIR

Period	17/10/2016 – 16/11/2016
Name	IGOR LINKOV
Home institution	CARNAGIE MELLON UNIVERSITY
Scientific area	Environmental risks and decisions
Teaching activities	Environmental risks and decisions
Funding Sources	€ 15.800 LORDO PERCIPIENTE BANDO DI ATENEO

Period	31/03/2017 – 30/04/2017
Name	APOSTOLOS PAPADOPOULOS
Home institution	Department of Informatics, Aristotle University of Thessaloniki Greece
Scientific area	Informatic Sciences
Teaching activities	Mining of Massive Datasets
Funding Sources	€ 6927,34 LORDO PERCIPIENTE BANDO DI ATENEO

Period	20/09/2016 – 11/11/2016
Name	Alexandre Denis Allard

Home institution	Biostatistics & Spatial Processes (BioSP), National Institute for Agricultural Research (INRA), Avignon (France)
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