



REGIONE BASILICATA

Overview of the involvement of local Research Organisations, Enterprises, Universities in national and international projects on Earth Observation applications and services.

(Earth Observation, Satellite Navigation and Telecommunication)

CNR- IMAA

National Research Council - Institute of Methodologies for Environmental Analysis (IMAA)

ORGANISATION PROFILE AND EXPERIENCE

Section 1 - Contact details

Organisation Name (full name)	CONSIGLIO NAZIONALE DELLE RICERCHE –ISTITUTO DI METODOLOGIE PER L'ANALISI AMBIENTALE	<u>Contact person:</u>	
Organisation acronym (Abbreviation)	CNR-IMAA	Title	Dr.
Address	C.da S. Loja Z.I.	First Name	Vincenzo
Postal code	85050	Family Name	Lapenna
City	TITO (PZ)	Telephone	+39 -0971 427 229
Region	BASILICATA	Fax	+39 – 0971 427 271
Country	ITALY	Skype	
www address	www.imaa.cnr.it	E-mail	lapenna@imaa.cnr.it

Section 2 – Type of organisation

If you are an Enterprise

Enterprise type	<input type="checkbox"/> Private <input type="checkbox"/> Non profit <input type="checkbox"/> Public <input type="checkbox"/> Other	Is your Company a Small-Medium sized Enterprise (SME)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
		if YES, Number of Employees	<input type="checkbox"/> < 10 <input type="checkbox"/> > 10 and < 50 <input type="checkbox"/> < 250
According to Article 2 of the annex of Commission Recommendation 2003/361/EC of 6 May 2003, which applies from 01 January 2005, an SME (Micro, Small or Medium-sized Enterprise) is an enterprise which: <ul style="list-style-type: none"> • has fewer than 250 employees, • has an annual turnover not exceeding 50 million euro, and/or • an annual balance-sheet total not exceeding 43 million euro. 			
Owned by a non SME:		<input type="checkbox"/> YES <input type="checkbox"/> NO	
Description of the organisation (max 1.000 characters):			
Staff information			
Actual Staff profiles involved in Earth Observation activities (e.g. engineers, physicists, computer scientists, mathematicians, administrative, etc.):			

If you are a Research Organisation

Research Organisation type	Research Organisation (<input type="checkbox"/> Private <input checked="" type="checkbox"/> Public) High Education School / University / Institute (<input type="checkbox"/> Private <input type="checkbox"/> Public) <input type="checkbox"/> Other, please specify:
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Description of the organisation (max 1.000 characters):

The Institute of Methodologies for Environmental Analysis (IMAA) is part of the Department of Earth and Environment of the Italian National Research Council (CNR). To-date, IMAA is the only institute of the CNR network with its headquarter in the Basilicata Region.

The IMAA research activities have been devoted to the development and integration of satellite, airborne and in-situ "Earth Observation" technologies in order to study environmental and geophysical processes.

IMAA covers the whole spectrum of satellite-based technologies both for the study of atmospheric and earth surface processes and the natural risk mitigation as well as ground-based remote sensing techniques for environmental studies. Furthermore, the research activities concern the integration of in-situ chemical-physical, geochemical and geophysical methods for soil and subsoil characterisation, the new strategies for energy-environmental planning and modelling and ICT technologies (i.e. web-sensors, grid computing) for data management and the interoperability of satellite and geospatial data.

This approach fits both the main strategic actions of GMES (Global and Monitoring and Environmental Security) Programme and the GEOSS (Global Earth Observation System of Systems) implementation plan.

Staff information

140 people are currently working at IMAA, 110 of these are in charge of Earth Observation Technologies (EO, Sat navigation, Telecommunications)

Actual Information (e.g. professors, researchers, technicians, administrative, PhDs, etc.):

46 Researchers

19 Technicians and Administrative staff

15 Post-graduated fellows

14 PhD students

15 Associate Researchers

40 Other post-graduate collaborators

Section 3 - Description of your main expertise and activities in the field of Earth Observation Technologies

Areas of expertise (max 2.000 characters)	<p>The IMAA know-how is mainly targeted to the analysis of optical satellite and airborne data in the spectral range from Visible to Far Infrared; Passive Microwaves sensors data are also used for meteorological and environmental research activities and applications.</p> <p>IMAA expertise mainly concerns: i) the research and development of original satellite data analysis strategies and techniques for the study, monitoring and the early warning of the main natural, environmental and technological hazards from space; ii) the study of surface processes, the optical properties of surface materials and land cover mapping applications through the use of airborne hyperspectral technologies ranging from the VNIR to the LWIR. Specific expertises are in the field of data integration from multi-platform, multi-frequency and multi-sensor EO technologies to observing systems, including both passive and active ground-based systems. A specific know-how is also devoted to the use of high temporal resolution satellite systems (both in polar and geostationary orbit) as well as the research and development of multi-temporal techniques for satellite data analysis in the space-time domain. The main research infrastructures operating at the IMAA laboratories are: the CIAO-CNR-IMAA Atmospheric Observatory which is one of the worldwide sites within the GRUAN network for the study of the high atmosphere; a system for receiving, processing and storing satellite images (NOAA, MSG, EOS-AQUA, EOS-TERRA), which is capable of providing near real time geospatial information for environmental and geo-hazard monitoring; mobile laboratories consisting of a Lidar system, a system for interferometric and radiometric measurements, a system for non-invasive chemical-physical and geophysical measurements, a system for geochemical and mineralogical measurements and hyperspectral sensors for airborne platforms.</p>
Keywords describing the activities performed by the organisation (if needed more than one)	<ol style="list-style-type: none"> 1. Remote sensing 2. Sensor synergy 3. Algorithm development, data retrieval and modelling 4. Environmental and geo-hazard monitoring

Section 4 – List of Projects implemented in the last 5 years

Project	GMES services for Management of Operations, Situation Awareness and Intelligence for regional Crises – FP7
Title	GMES services for Management of Operations, Situation Awareness and Intelligence for regional Crises
Project Acronym	G-MOSAIC
Source of funding / Programme	EU FP7
Status	In progress
Role of the organisation	Partner
Responsible	Stefano Nativi
Duration	2009-2011 (36 months)
Content	Project aims: to provide the European Union with intelligence data that can be applied to early warning and crisis prevention as well as crisis management and rapid interventions in hot spots around the world. It aims both at identifying and developing products, methodologies and pilot services for the provision of geo-spatial information in support to EU external relations policies and contributing to define and demonstrate the sustainability of GMES global security services.
Website	http://www.gmes-gmosaic.eu/home/g-mosaic-presentation.html

Project	Services and Applications For Emergency Response – FP7
Title	Services and Applications For Emergency Response
Project Acronym	SAFER
Source of funding / Programme	EU FP7
Status	In progress
Role of the organisation	Partner
Responsible	Stefano Nativi
Duration	2009-2011 (36 months)
Content	Project aims: 1) to implement preoperational versions of the Emergency Response Core Service; 2) to reinforce European capacity to manage emergency situations such as fires, floods, earthquakes, volcanic eruptions, landslides, humanitarian crisis. 3) to upgrade of the core service and the validation of its performance with 2 priorities: a) a short term improvement of response when crisis occurs, with the rapid mapping capacity after disastrous events, including the relevant preparatory services (reference maps); b) an extension to core service components before and after the crisis.
Website	http://www.emergencyresponse.eu/site/FO/scripts/myFO_accueil.php?lang=EN

Project	Integrated System for Transport Infrastructures surveillance and Monitoring by Electromagnetic Sensing – FP7
Title	Integrated System for Transport Infrastructures surveillance and Monitoring by Electromagnetic Sensing
Project Acronym	ISTIMES
Source of funding / Programme	EU FP7
Status	In progress
Role of the organisation	Third Party of TeRN Consortium (Coordinator)
Responsible	Vincenzo Cuomo
Duration	From (07/2009) to (06/2012)
Content	Project aims: to design, assess and promote an ICT-based system, exploiting distributed and local sensors for non-

	destructive electromagnetic monitoring in order to make the critical transport infrastructures more reliable and safe. This has the overall aim of developing a high situation awareness in order to provide real time and detailed information and images of the infrastructure status so as to improve decision support for emergency and disasters stakeholders.
Website	www.istimes.eu

Project	The Uncertainty Enabled Model Web – FP7
Title	The Uncertainty Enabled Model Web
Project Acronym	Uncertweb
Source of funding / Programme	EU FP7
Status	In progress
Role of the organisation	Partner
Responsible	Stefano Nativi
Duration	2010-2012 (36 months)
Content	<p>UncertWeb will create the Uncertainty enabled Model Web by facilitating an interoperability between data and models with quantified uncertainty, built on existing open, international standards. In particular UncertWeb will develop encoding standards, service interface profiles, discovery and chaining mechanisms and open source implementations, and generic tools to realize a 'model Web' that takes uncertainty in data and models fully into account.</p> <p>The developments in UncertWeb will be validated by scenarios from four environmental application domains: biodiversity and habitat change, land use and policy modelling, local air quality forecasting, and individual activity in environment. In each application domain prototype service chains will be built using UncertWeb technology. To further evaluate the discovery and chaining mechanisms UncertWeb will integrate the air quality and activity modelling to produce novel service chains that quantify individual exposure and the effects of individual's activity choices on emissions with quantified uncertainty.</p>
Website	http://www.uncertweb.org/

Project	Ground Deformations Risk Scenarios: an Advanced Assessment Service – FP7
Title	Ground Deformations Risk Scenarios: an Advanced Assessment Service
Project Acronym	DORIS
Source of funding / Programme	EU FP7
Status	In progress
Role of the organisation	Coordinator with IRPI and IREA
Responsible	Vincenzo Lapenna
Duration	From (10/2010) to (09/2013)
Content	<p>Detection, mapping, monitoring and forecasting of ground deformations at different temporal and spatial scales and in various physiographic and environmental settings. DORIS integrates traditional and innovative Earth Observation (EO) and ground based (non-EO) data and technologies both to improve the understanding of the phenomena that result in ground deformations, including mass movements and land subsidence, and foster the ability of Civil Defence authorities to manage the risks posed by ground deformations.</p>

Website	http://www.doris-project.eu/
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Project	Global Earth Observation System of Systems – FP7
Title	Global Earth Observation System of Systems
Project Acronym	EUROGEOSS
Source of funding / Programme	EU FP7
Status	In progress
Role of the organisation	Partner
Responsible	Stefano Nativi
Duration	2009-2011 (36 months)
Content	The project builds an initial operating capacity for a European Environment Earth Observation System in the three strategic areas of Drought, Forestry and Biodiversity. It then undertakes the research necessary to develop this further into an advanced operating capacity that provides access not just to data but also to analytical models made understandable and useable by scientists from different disciplinary domains.
Website	http://www.eurogeoss.eu/default.aspx

Project	Model driven soil probing, site assessment and evaluation – FP7
Title	Model driven soil probing, site assessment and evaluation
Project Acronym	MODELPROBE
Source of funding / Programme	EU FP7
Status	In progress
Role of the organisation	Partner
Responsible	Vincenzo Lapenna
Duration	2008-2012 (46 months)
Content	Conventional techniques for site characterization are time consuming, cost intensive, and do not support any decision making. Therefore, new techniques for step-by-step site characterization strategy with smart feed back loops are necessary. These will be able to support a future soil framework directive. Advanced geophysical site characterization techniques combined with new types of vegetation analysis will be developed.
Website	http://www.ufz.de/index.php?en=16925

Project	Aerosols, Clouds, and Trace gases Research Infrastructure Network – FP7
Title	Aerosols, Clouds, and Trace gases Research Infrastructure Network
Project Acronym	ACTRIS
Source of funding / Programme	EU FP7
Status	In negotiation
Role of the organisation	Coordinator
Responsible	Gelsomina Pappalardo
Duration	48 months
Content	Integrating the key ground-based facilities for a long-term observation of aerosols, cloud-aerosol interactions, and trace gases in Europe (if more than one, indicate their order of importance to the project)
Website	Not available yet

Project	QUALity aware Visualisation for the Global Earth Observation system of systems – FP7
Title	QUALity aware Visualisation for the Global Earth Observation system of systems
Project Acronym	GEOVIQUA
Source of funding / Programme	EU FP7
Status	In negotiation
Role of the organisation	Partner
Responsible	Stefano Nativi
Duration	2010-2013 (36 months)
Content	The GEOSS Common Infrastructure provides clearinghouses and portals that facilitate discovery and visualisation of data in an integrated way. GEOVIQUA will extend the GEOSS infrastructure by adding well-defined data quality indicators and quality-enabled search and visualisation tools. These GEOVIQUA components will be implemented so as to be accessed on the basis of existing geo-portal standards and in the mass market "Google-like" map tools and other 3D viewers, as well as on mobile devices. The design and development of GEOVIQUA components will be undertaken in collaboration with the relevant GEO committees, the Open Geospatial Consortium Architecture Implementation Pilots and other relevant standards committees.
Website	Not available yet

Project	Downstream Observatory organized by Regions active in Space network – FP7
Title	Downstream Observatory organized by Regions active in Space network
Project Acronym	DORIS -NET
Source of funding / Programme	EU FP7
Status	In negotiation
Role of the organisation	Partner through the participation to TERN Consortium
Responsible	Nicola Pergola
Duration	24 months
Content	DORIS_Net suggests a Downstream Observatory organised by Regions which are all members of NEREUS (Network of European Regions Using Space Technologies) and potentially users of GMES downstream services. The Downstream Observatory will facilitate links between both regional and European level GMES stakeholders. The regional users and service providers will be supported by dedicated interfaces as well as a network of Regional GMES Contact Offices (RCOs) to create the European GMES Downstream Service Platform - the heart of DORIS_Net.
Website	Not available yet

Project	Coordinating Earth and Environmental cross-disciplinary projects to promote GEOSS – FP7
Title	Coordinating Earth and Environmental cross-disciplinary projects to promote GEOSS
Project Acronym	EGIDA
Source of funding / Programme	EU FP7
Status	In negotiation

Role of the organisation	Partner
Responsible	Stefano Nativi
Duration	24 months
Content	EGIDA will prepare a sustainable process promoting coordination of activities carried out by: the GEO Science & Technology (S&T) Committee; S&T national and European initiatives; and other S&T Communities. This will be done by supporting broader implementation and effectiveness of the GEOSS S&T Roadmap and the GEOSS mission through coherent and interoperable networking of National and European projects, and international initiatives. EGIDA will deliver evaluation processes, tests and assessment indexes, expertise databases, a "GEO Label" concept, surveys, and other instruments that will link relevant European S&T communities to GEOSS and ensure it is built using state-of-the-art science and technology. Through co-ordination with the GEOSS S&T Committee (five co-chairs are involved in EGIDA), these deliverables will contribute strongly to the GEO S&T Roadmap implementation.
Website	Not available yet

Project	GEOSS Inspire and GMES an action in support – FP7
Title	GEOSS Inspire and GMES an action in support
Project Acronym	GIGAS
Source of funding / Programme	EU FP7
Status	Completed
Role of the organisation	Partner
Responsible	Stefano Nativi
Duration	2008-2010 (24 months)
Content	The GEOSS INSPIRE and GMES an Action in Support (GIGAS) promotes the coherent and interoperable development of GMES, INSPIRE and GEOSS initiatives through their concerted adoption of standards, protocols and open architectures. Given the complexity and dynamics of each initiative and the large number of stakeholders involved, the key added value of GIGAS is that of bringing together the leading organisations which are able to make a difference and achieve a truly synergistic convergence of the initiatives.
Website	http://www.thegigasforum.eu/project/project.html

Project	European Aerosol Research Lidar NETwork "Advanced Sustainable Observation System" – FP6
Title	European Aerosol Research Lidar NETwork "Advanced Sustainable Observation System"
Project Acronym	EARLINET-ASOS
Source of funding / Programme	EU FP6
Status	In progress
Role of the organisation	Coordinator
Responsible	Gelsomina Pappalardo
Duration	2006-2011
Content	Project aim: to contribute to the improvement of continuing observations and methodological developments that are urgently needed to provide the multi-year continental scale data set necessary to assess the impact of aerosols on the European and

	global environment and to support future satellite missions.
Website	http://www.earlinet.org/index.php?id=earlinet_asos

Project	Global Earth Observation and Monitoring – FP6
Title	Global Earth Observation and Monitoring
Project Acronym	GEOMON
Source of funding / Programme	EU FP6
Status	In progress
Role of the organisation	Partner
Responsible	Gelsomina Pappalardo
Duration	2007-2011
Content	Project aim: to sustain and analyze European ground-based observations of atmospheric composition, complementary with satellite measurements, in order to quantify and understand the ongoing changes. GEOMON is a first step to build a future integrated pan-European Atmospheric Observing System dealing with systematic observations of long-lived greenhouse gases, reactive gases, aerosols, and stratospheric ozone.
Website	http://www.geomon.eu/

Project	Prevention, Information and Early Warning pre-operational services to support the management of risks – FP6
Title	Prevention, Information and Early Warning pre-operational services to support the management of risks
Project Acronym	EURORISK/PREVIEW
Source of funding / Programme	EU FP6
Status	Completed
Role of the organisation	Partner
Responsible	Vincenzo Lapenna
Duration	2005-2008 (45 months)
Content	Project aim: to develop, at the European scale, new or enhanced information services for risk the management in support of Civil Protection Units and local or regional authorities, making the best use of the most advanced research and technology outcomes in Earth Observation. Services have been validated under pre-operational conditions
Website	http://www.preview-risk.com/site/FO/scripts/myFO_accueil.php?lang=EN

Project	GLOBAL MONITORING FOR SECURITY AND STABILITY – FP6
Title	GLOBAL MONITORING FOR SECURITY AND STABILITY
Project Acronym	GMOSS
Source of funding / Programme	EU FP6
Status	Completed
Role of the organisation	Associate partner
Responsible	Nicola Pergola
Duration	2004-2008 (48 months)
Content	Project aim: to integrate European civil security research so as to acquire and nourish the autonomous knowledge and expertise base needs and maintain an effective capacity for global monitoring by using satellite earth observation techniques.

Website	http://gmass.jrc.it/web/guest/home
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Project	Cyber-Infrastructure for civil protection operative procedures – FP6
Title	Cyber-Infrastructure for civil protection operative procedures
Project Acronym	CYCLOPS
Source of funding / Programme	EU FP6
Status	Completed
Role of the organisation	Partner
Responsible	Stefano Nativi
Duration	2006-2008 (24 months)
Content	Project aim: to bridge the gap between Grid and GMES communities making Civil Protection people aware of the services provided by Grid infrastructures, and, at the same time, letting Grid researcher be aware of Civil Protection specific requirements and service enhancement needs.
Website	http://www.cyclops-project.eu/

Project	Grid enabled Remote Instrumentation with Distributed Control and Computation – FP6
Title	Grid enabled Remote Instrumentation with Distributed Control and Computation
Project Acronym	GRIDCC
Source of funding / Programme	EU FP6
Status	Completed
Role of the organisation	Partner
Responsible	Valerio Tramutoli
Duration	2004-2007 (36 months)
Content	Project aims: to extend the state of the art of computing grid technologies by introducing the handling of real-time constraints and an interactive response to the existing Grid middleware; to build a geographically distributed system that is able to remotely control and monitor complex instrumentation, ranging over a large number of diverse environments. A set of geophysical sensors (electrical) for mapping water percolation phenomena in landslide area has been developed and installed.
Website	http://www.gridcc.org/viewnote.php?id=1812