

# SPACE NEWSLETTER

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UNI@VERSO LO SPAZIO

*University Mediterranea of Reggio Calabria*



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*University Mediterranea of Reggio Calabria*



# IN THIS ISSUE

To our readers,

Autumn teaches us to adapt to change, never losing sight of what we have been and looking at the personal and shared challenges that allow us to evolve.

In the last few months, we played a leading part in various challenges. In July, we welcomed the President of the Italian Space Agency at our University during the "Webinar on the follow-on activities of the IV International Space Forum (ISF) 2019 - The Mediterranean Chapter", which involved seventeen countries from the Mediterranean Region.

This event has highlighted the enthusiasm in collaborating for the Mediterranean future's: one of our missions. As also highlighted by the President of the Med-Or Foundation, Marco Minniti, interviewed in this edition, dialogue, trust and cooperation between the countries, cultures, and economic systems of the Mediterranean area are crucial, as well as and the role of universities and young researchers in this process.

Also, for this reason, we dedicated a section of this edition to students and researchers who invest their energy and skills in this sector. To them, the proper task of never abandoning their dreams, above all of not ceasing to have faith in themselves and to fight, just as Patrizia Caraveo tells us through her story, which you will have the opportunity to read in the following pages.

Finally, with a heart full of expectations for all the stories we will share with you in the future editions, we thank you for your support and interest in this project!

Sending you our warmest regards,

*Space Newsletter Editorial Staff*

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***THE MEDITERRANEAN CHAPTER***

**VIRTUAL CONFERENCE ON THE  
INTERNATIONAL SPACE FORUM 2019  
FOLLOW-ON ACTIVITIES**

by the Editorial Staff

On 5 July 2021, representatives of Albania, Algeria, Bosnia-Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Lebanon, Malta, Montenegro, Morocco, Slovenia, Tunisia, Turkey, and Italy gathered to resume the “space dialogue” launched in Reggio Calabria (Italy) in 2019 with the Mediterranean Chapter of the International Space Forum (ISF).

During the event, jointly organized by the Italian Space Agency (ASI) and the Mediterranea University of Reggio Calabria, Representatives of Ministries, Embassies, Research Institutions, and Space Agencies of the Mediterranean area have presented their activities on the space fields by dealing with the following strategic topics:

- Natural disasters with particular focus on flood risk and forest fire emergency, where the high-resolution satellite imagery is used to identify, monitor, quantify and analyze forest fires. Furthermore, nanosatellites featuring high-resolution cameras provide almost real-time videos devoted to early warning for natural disasters and EU and the Mediterranean region protection.
  - Environment preservation with particular focus on the maritime scenario, where the impact of land-based pollution in the Mediterranean coastal and sea areas is investigated, and new applications are studied to preserve the environment and monitor coastline changes.
  - Intelligent ship routing, depending on the weather and surface conditions.
  - Climate observation to protect the Mediterranean, early understand and mitigate the climate change by promoting satellite data sharing.
  - Remote sensing and hyperspectral data from space to improve advanced and precise agriculture and monitor water quality.
- Space and green economy, prioritizing urban and spatial planning, renewable energy projects, and infrastructures.
  - Socioeconomic development, where high-resolution satellites are dedicated for population growth analysis, activity resource and risk management, planning, and urban control.
  - Earth observation, meteorology, and astrophysics through small satellite technologies and applications.
  - Others, including space access technologies, nanosatellite constellation architectures, CubeSat manufacture and application, electronic equipment for space applications, spatial image processing, and many other areas.

Furthermore, many space projects have been illustrated. Among them was the interest in exploiting the space technology for disaster management (i.e., forest fire and flood early warning), the impact of climate change on water resources, and the optimization of water resource use in agriculture development.

Finally, all delegates have shown considerable enthusiasm to open new collaborations for:

- building a network about space research to promote the role of the Mediterranean Countries in the space sector;
- contributing to the development of new space skills and technologies by focusing on the protection of the Mediterranean, the early understanding and mitigation of climate change, cybersecurity and secure connectivity, space safety, and space mission sustainability.



# ***MEDITERRANEAN REGION***

We are looking for stories and projects coming from the Mediterranean Region. Do you have any of these to tell us? Write an email to [universospazio@unirc.it](mailto:universospazio@unirc.it) or reach out to us on our social media!

**"Dialogue, trust, cooperation and a more innovative defence and security sector can turn distance into something that will bring us together."**



## MARCO MINNITI

*Domenico Marco Minniti is the Chairman of the Med-Or Foundation. Born in Reggio Calabria in 1956, he graduated in Philosophy from the University of Messina. A politician with more than 20 years' experience in security and defence, in 1998 Marco Minniti was appointed Undersecretary to the Prime Minister under the 1st D'Alema administration; in 1999, Undersecretary to the Prime Minister, responsible for secret services, under the 2nd D'Alema administration; in 2000, Undersecretary for Defence under the Amato administration; and from 2006 to 2008, Deputy Minister of the Interior under the Prodi administration. From 2013 to 2016, he was Undersecretary to the Prime Minister, responsible for secret services, first under the Letta administration and then under the Renzi administration. From 2016 to 2018, he was Minister of the Interior under the Gentiloni administration. From 2001 to 2021, he was a Member of Parliament of the Italian Republic (Chamber and Senate).*

## What is the essence and calling of the Med-Or Foundation?

«The Med-Or Foundation was created by leading aerospace, security and defence company Leonardo in the spring of 2021. International relations are rapidly evolving, with the digital age affecting the future of globalization. In the context of technological innovation, the pandemic and its aftermath, changing economies and value chains highlight the need for multilateral channels of cooperation. In this context, the Mediterranean region, Africa, the Near and Far East do not just represent a geographic horizon – they are also an extraordinary challenge.

Med-Or Foundation's mission is to seek innovation, global collaboration, and cooperation by combining the skills and capabilities of industry and academia for the development of geo-economic and socio-cultural partnerships between Italy and countries in the Med-Or area, which spans the Mediterranean, the Sahel, the Horn of Africa and the Red Sea, as well as the Near and Far East. The Foundation collaborates with experts and professionals with longstanding national and international experience in the institutional, industrial, and academic fields.

At a time when competition is strong and change relentless, Med-Or works to promote dialogue, cooperation and exchanges between different socio-economic and cultural systems so as to identify shared interests and initiatives which could lead to the development and strengthening of long-term partnership. Dialogue, trust, cooperation and a more innovative defence and security sector can turn distance into something that will bring us together. This is the challenge facing Italy and Europe, whose destinies are increasingly intertwined with those of the Med-Or region. And this is the mission the Med-Or Foundation is setting itself.»

«La Fondazione Med-Or è stata creata nella primavera del 2021 dalla società leader nel settore aerospaziale, della sicurezza e della difesa, Leonardo. Le relazioni internazionali sono in rapida evoluzione, con l'era digitale che influenza il futuro della globalizzazione. La pandemia e le sue conseguenze, il cambiamento delle economie e delle catene del valore, nel contesto dell'innovazione tecnologica, evidenziano la necessità di canali di cooperazione multilaterali. In questo contesto, la regione Mediterranea, l'Africa, il Vicino e l'Estremo Oriente non rappresentano solo un orizzonte geografico, ma sono anche una sfida straordinaria.

La missione della Fondazione Med-Or è ricercare innovazione, collaborazione globale e cooperazione combinando le competenze e le capacità dell'industria e del mondo accademico per lo sviluppo di partnership geo-economiche e socio-culturali tra l'Italia e i paesi dell'area Med-Or, che abbraccia il Mediterraneo, il Sahel, il Corno d'Africa e il Mar Rosso, così come il Vicino e l'Estremo Oriente. La Fondazione collabora con esperti e professionisti di lunga esperienza nazionale e internazionale in ambito istituzionale, industriale e accademico.

In un momento in cui la concorrenza è forte e il cambiamento è incessante, Med-Or lavora per promuovere il dialogo, la cooperazione e gli scambi tra i diversi sistemi socio-economici e culturali, così da identificare interessi e iniziative condivise che potrebbero portare allo sviluppo e al rafforzamento di partenariato a termine. Il dialogo, la fiducia, la cooperazione e un settore della difesa e della sicurezza più innovativo, possono trasformare la distanza in qualcosa che ci unisca. Questa è la sfida per l'Italia e l'Europa, i cui destini sono sempre più intrecciati con quelli della regione Med-Or. Ed è questa la missione che la Fondazione Med-Or si pone.»

Discover more about the Foundation [here](#)

## Which are the Foundation's objectives and priority projects?

«The wider Mediterranean region, and many parts of the African continent, are often perceived in Europe as carriers of geopolitical risks. The reality is much more nuanced and diverse, with significant opportunities waiting to be seized. A widespread problem in much of the region is a skill gap in key professional areas, affecting innovation, attracting investments, and retaining better educated young citizens.

Med-Or Foundation is indeed committed to developing cultural and training programmes, supporting partnerships with academic and research institutions at a national and international level. Furthermore, the organization of events and workshops aimed at promoting studies to identify shared areas of interest to bolster dialogue and partnership is among foundations' priorities.

We strongly believe that the Med-Or foundation can provide a new dialogue framework across national borders primarily devoted to reducing misunderstandings and creating mutual confidence. Thanks to this intersection and synergy between industry and the academic world, it is possible to support and promote constructive dialogue between countries, cultures and economic systems in the wider Mediterranean area.»

«La più ampia regione mediterranea e molte parti del continente africano sono spesso percepite in Europa come portatrici di rischi geopolitici. La realtà è molto più sfumata e diversificata ed esistono grandi opportunità che aspettano di essere colte. Un problema diffuso in gran parte della regione è il divario di competenze nelle principali aree professionali, che incide sull'innovazione, sulla capacità di attrarre investimenti e di trattenere i giovani cittadini più istruiti.

La fondazione Med-Or è infatti impegnata nello sviluppo di programmi culturali e formativi, sostenendo partnership con istituzioni accademiche e di ricerca a livello nazionale, oltre che internazionale. Tra le priorità delle fondazioni, inoltre, l'organizzazione di eventi e workshop volti a promuovere studi per identificare aree di interesse condivise per rafforzare il dialogo e la partnership.

Crediamo fermamente che la fondazione Med-Or possa fornire un nuovo quadro di dialogo attraverso i confini nazionali principalmente dedicato alla riduzione delle incomprensioni e alla creazione di fiducia reciproca. Grazie a questa intersezione e sinergia tra industria e mondo accademico, è possibile sostenere e promuovere un dialogo costruttivo tra paesi, culture e sistemi economici nella più ampia area Mediterranea.»



## Will the Foundation also deal with space activities?

«Med-Or sets out to work with local partners to grow competencies and know-how among the most dynamic sections of the population. Leonardo is at the forefront in the space and security sector and is constantly looking for talents in the country where the company operates in order to give them the tools to develop their skills and knowledge. For this reason, Med-Or will be close to the world of universities and research to allow students interested in the aerospace sector to develop their abilities and support them through partnerships with national academic and research institutions of the Mediterranean region.»

## How can universities and in particular University Mediterranea be involved?

«Med-Or Foundation is committed to developing cultural, training and study programmes through partnerships with academic and research institutions in Italy and abroad. Med-Or aims at a close relationship with the world of academia to give students the chance to improve their skills and knowledge and the opportunity to develop their potential through traineeship programs.»

«La Fondazione Med-Or è impegnata nello sviluppo di programmi culturali, formativi e di studio attraverso partnership con istituzioni accademiche e di ricerca in Italia e all'estero. Med-Or mira a una stretta relazione con il mondo accademico per dare agli studenti la possibilità di migliorare le proprie capacità e conoscenze e l'opportunità di sviluppare il proprio potenziale attraverso programmi di tirocinio.»

«Med-Or si propone di lavorare con partner locali per far crescere competenze e know-how tra le fasce più dinamiche della popolazione. Leonardo è all'avanguardia nel settore dello spazio e della sicurezza ed è alla continua ricerca di talenti nel Paese in cui l'azienda opera per fornire loro gli strumenti per sviluppare le proprie competenze e conoscenze. Per questo Med-Or sarà vicino al mondo dell'università e della ricerca, per dare agli studenti interessati al settore aerospaziale l'opportunità di sviluppare le proprie capacità e supportarli attraverso partnership con istituzioni accademiche e di ricerca nazionali della regione Mediterranea.»



The entrance of the Med-Or Leonardo Foundation



The Coastal Zone Land Cover/Land Use product

# SUSTAINABLE COAST MANAGEMENT: THE NEW EUROPEAN COASTAL ZONE DATASET

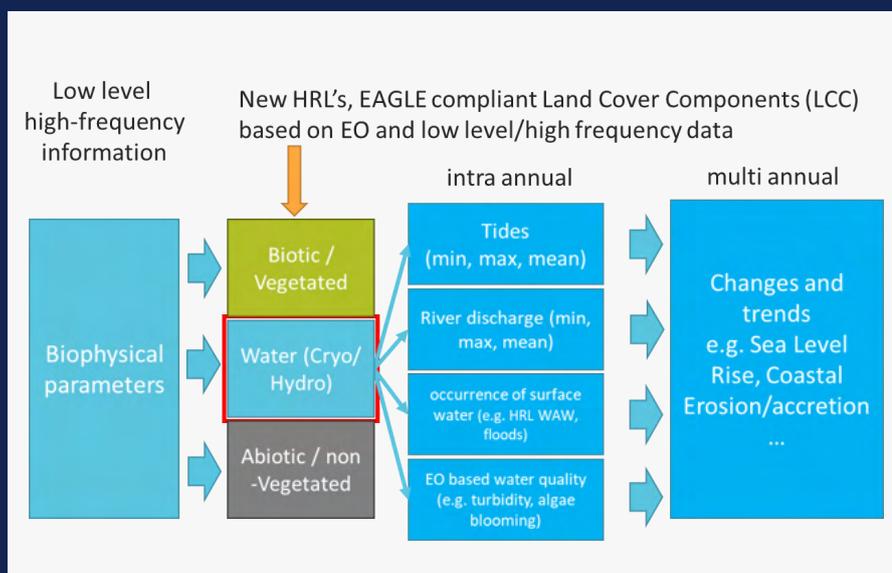
by Claudio La Mantia,  
Senior Technical Manager Geoservices, Planetek Italia

Coastal zones are highly vulnerable to natural processes and climate forcing and, under high pressure from anthropogenic activities. Where land and sea meet is characterized by mutual influences from and between the two domains, it is highly dynamic. Events in such areas need to be correctly understood to improve their management and preserve ecosystems while remaining functional for human activity.

The management of coastal zones must rely on a balanced approach to sustainability to allow economic growth while supporting the implementation of environmental legislation within the context of integrated spatial management for coastal resilience. Such sustainable management requires effective coastal zone monitoring, which must be built on a reliable and relevant geospatial reference base such as that provided by very high spatial resolution (VHR) land cover and habitat mapping. In addition, the EU requires monitoring for coastal vulnerability (addressing climate change impacts and adaptation), compliance with the Biodiversity Strategy (ecosystem/habitat assessment and restoration), and the Water Framework Directive (land-based pressure on transitional and coastal waters).

In this framework, the Coastal Zones (CZ) product, tendered by the European Environment Agency to map the 38 EEA member countries plus the United Kingdom, is an excellent starting point.

The CZ product is the fourth local component within the Copernicus Land Monitoring Services (CLMS) and is complementary to pan-European and global components. CZ consists of three geospatial datasets, two status layers for 2012 and 2018, and a change layer from 2012 to 2018. The mapping specification is based on VHR Earth Observation data to record land cover/land use classes with a minimum mapping unit of 0.5 ha and a minimum mapping width of 10 m. Before the project entered production, all sectors of the coastal zone community have been involved in providing feedback to refine the technical specifications of the product, such as the final area of interest to be mapped and the nomenclature definition to reach the last set of 71 thematic classes. The service provider consortium led by Planetek Italia completed the specified mapping in 1.5 years. The production workflow was based on visual interpretation of the VHR imagery from 2012 and 2018. Multitemporal images and additional ancillary data (i.e., Urban Atlas, Natura 2000, Riparian Zones, Open Street Map data) were also used to support object classification and identify changes.



The CZ product is only a starting point in providing the required knowledge to ensure social and ecosystem resilience in these areas. A key feature of the product is that it is produced consistently across the region of interest, allowing future comparisons. Further product expansion over all the Mediterranean regions could represent a giant leap forward when assessing environmental policies and constitute an essential foundation for reporting (e.g., Sustainable Development Goals).

Outlook of CLMS in Copernicus 2 (2021-27)

In addition, considering the highly dynamic nature of coastal zones, it would be justified to improve the product update frequency. Finally, the integration of Artificial Intelligence in the production process could help, at least for some specific thematic classes.

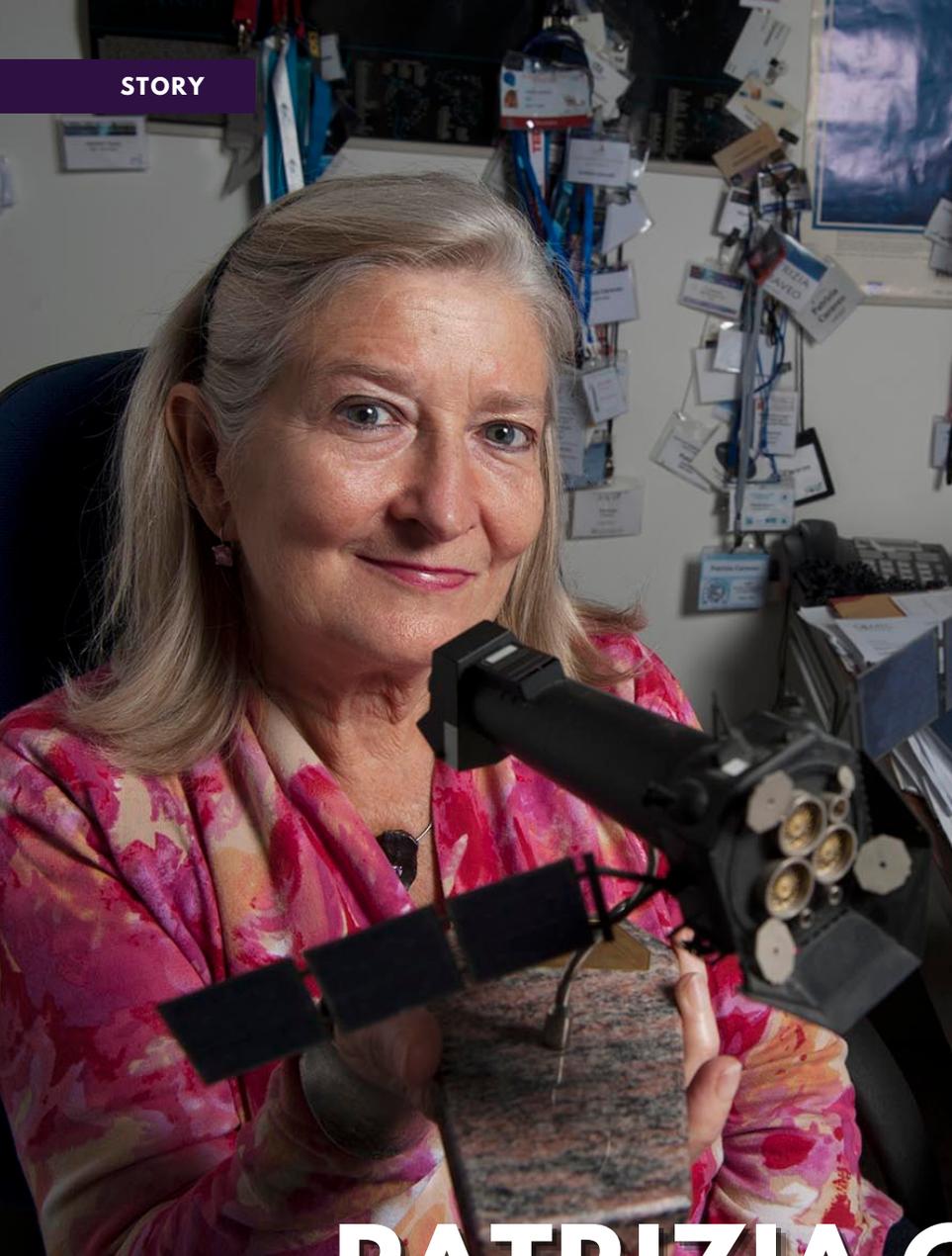
Finally, another challenge would need to be met: to move from mapping to monitoring and to deal with dynamic rather than static features. This would require a restructuring of the portfolio of mapping products in the coastal zones in line with the EAGLE data model approach to better address the processes to be monitored. So, there will, for instance, be the need for continuous / near real-time monitoring of the hydrosphere extent (e.g., surface water), tides (min, max, mean, etc.), shoreline position, erosion/accretion (sediment balance), river water discharge, also in relation with the climate change to evaluate the impact of extreme events.

Future CZ products could better support governmental and commercial applications (e.g., civil protection, urban planning, insurance, oil and gas, and so forth).

FURTHER INFORMATION IS AVAILABLE [HERE](#)



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**"I have been lucky. I started my career on a runaway train and have never stopped since."**

## **PATRIZIA CARAVEO**

*Patrizia Caraveo graduated in Physics at the physics department of the University of Milan in 1977. After a period abroad, in 1982 she began working at the Institute of Cosmic Physics in Milan. In 2002 she became Director of Research and from 2011 to 2017 she was director of the Istituto di astrofisica Spaziale e Fisica Cosmica in Milan. She has worked on several international space missions dedicated to particle physics, starting with the European mission Cos-B. She is currently involved in the European INTEGRAL mission, the NASA Swift mission, the Italian AGILE mission and the NASA Fermi mission, all of which are now in orbit and fully operational.*

*Her main field of interest is the behavior of neutron stars at different wavelengths. She was among the first to understand the fundamental role of neutron stars in particle physics. After years of efforts to explain the first unidentified pulsar radio emission, she identified the neutron star Geminga. She has developed a multi-wavelength strategy for the identification of galactic gamma-ray sources. She is a member of the International Astronomical Union. Since 1997, Caraveo has worked as an adjunct professor at the University of Pavia. She was married to the physicist Giovanni Bignami.*

«I have been lucky. I started my career on a runaway train and have never stopped since.

The first train was called COS-B and I found myself on board during my dissertation (in 1976-77), without even realising how great an opportunity I was being offered. It was the first satellite of the newly formed European Space Agency that was dedicated to gamma astronomy. A spark chamber made for outer space would bring Europe (and me) into the major league of space research. After my graduation, with COS-B I went to France to work in the CEA in Saclay, then I went back to Italy with a National Research Council (CNR) scholarship. After a few years, in 1982, I obtained a research post at the CNR, where, over time and through competitive exams, I became First Researcher and then Research Director. Then the CNR Institutes of Astrophysics were moved to the National Institute for Astrophysics (INAF). In July 2011, I was appointed Director of the Institute of Space Astrophysics and Cosmic Physics in Milan. I held this position for two mandates, the maximum duration allowed by the INAF Statute, until December 2017.

After this brief summary of my career, I should go back to 1982, when COS-B had just finished its long and fortunate life in orbit, and I got on my second train: the Einstein Express. Again, I don't think I fully realised what was happening. A lot was changing before my eyes: the type of photons we observed, the physics we used to study them, and the entire paradigm of the management of space missions. With the Einstein Observatory, the era of Guest Observers began. We, i.e., my husband Nanni Bignami and myself, were the first to propose to observe in X-rays a handful of gamma sources that had been found by COS-B and had not been identified yet.»

**"I got on my second train: the Einstein Express. Again, I don't think I fully realised what was happening."**

«Sono stata fortunata. Ho cominciato la mia carriera su un treno in corsa e, da allora, non mi sono mai fermata. Il primo treno si chiamava COS-B e mi sono trovata a bordo durante la tesi (nel 1976-77), senza avere modo di apprezzare la grande opportunità che mi veniva offerta. Era il primo satellite della neonata Agenzia Spaziale Europea, dedicato all'astronomia gamma. Una camera a scintille, fatta per lo spazio, che avrebbe traghettato l'Europa (e me) nella serie A della ricerca spaziale. Dopo la laurea, con COS-B sono andata in Francia al CEA di Saclay, poi sono tornata in Italia con una borsa di studio del CNR. Dopo qualche anno, ho vinto un concorso e, nel 1982, sono diventata ricercatore del CNR dove, con il passare del tempo, ho avuto modo di fare i concorsi per le progressioni di carriera come primo ricercatore e poi come dirigente di ricerca. A quel punto gli istituti di astrofisica del CNR sono transitati all'INAF e dal luglio 2011 sono stata nominata direttore dell'istituto di Astrofisica Spaziale e Fisica Cosmica di Milano. Posizione che ho ricoperto per due mandati, la durata massima prevista dallo statuto INAF, fino al dicembre 2017. Dopo questo breve riassunto della mia carriera, direi che è il caso di tornare al 1982: a quel punto COS-B aveva finito la sua lunga e fortunata vita orbitale ed io ho cambiato treno e sono salita sullo Einstein Express. Anche in questo caso non credo di aver capito a fondo quello che stava accadendo. Sotto i miei occhi stavano cambiando non solo il tipo di fotoni osservati e la relativa fisica, ma anche il paradigma della gestione delle missioni spaziali. Con lo Einstein Observatory è iniziata l'era dei Guest Observers e, insieme a mio marito Nanni Bignami, siamo stati i primi a proporre di osservare in X una manciata di sorgenti gamma viste da COS-B e rimaste senza identificazione.»





XMM/Newton mirrors.

«One of the sources that we immediately asked to study was Geminga. This source became our trademark (for a complete account of the story of Geminga, see Bignami & Caraveo ARAA 34,331, 1996). Thanks to Einstein, we were able to find an interesting X-ray source that lacked an optical counterpart. We had already understood that, among the objects in our galaxy, only neutron stars could produce gamma radiation, generally accompanied by a strong radio emission, but without a significant emission in optical wavelengths. Could Geminga be a neutron star with no radio emission? We were convinced of it, but the proof had to come from very deep optical images. And then another train came – or, better, a plane: to European telescopes in Chile. Over time I think I used almost all of them, looking for the very weak emission of my favourite source. Geminga became such an integral part of our life that, when our daughter was born, Nanni and I seriously considered calling her Geminga. Luckily, we resisted the temptation: Giulia would have never forgiven us.

The 90s began with the launch of the Hubble Space Telescope (in which we put a lot of hope). ROSAT began surveying the X-ray sky, and NASA launched the Compton Observatory, the new gamma-ray mission.»

«Una delle sorgenti che abbiamo subito chiesto di studiare è stata Geminga, una sorgente che è diventato un nostro marchio di fabbrica (per un racconto completo della storia di Geminga, si veda Bignami & Caraveo ARAA 34,331, 1996). Grazie ad Einstein siamo riusciti a trovare una sorgente X dall'aria interessante perché non aveva una controparte ottica. Avevamo già capito che, tra gli oggetti della nostra galassia, solo le stelle di neutroni sono in grado di produrre radiazione gamma, accompagnata in genere da forte emissione radio ma senza una emissione ottica degna di nota. Geminga era forse una stella di neutroni senza emissione radio? Noi ne eravamo convinti, ma la prova doveva venire da immagini ottiche veramente profonde. Ed ecco un altro treno, meglio un aereo, per i telescopi europei in Cile. Con l'andare del tempo credo di averli usati quasi tutti, alla ricerca delle debolissima emissione della mia sorgente preferita. Geminga è diventata parte integrante della nostra vita tanto che, quando è nata nostra figlia, Nanni ed io abbiamo seriamente considerato l'idea di chiamarla Geminga. Per fortuna abbiamo resistito alla tentazione: Giulia non ce lo avrebbe mai perdonato. Iniziano gli anni '90, parte lo Hubble Space Telescope (sul quale abbiamo molte speranze), ROSAT fa la survey del cielo X e la NASA lancia il Compton Observatory, la nuova missione gamma. »

«The combination between ROSAT and the EGRET instrument aboard the Compton Observatory gave the push that we had been waiting for so long: Geminga was pulsing in the X- and gamma-ray bands with a period of about a quarter of a second. Our X-ray source really was the counterpart of the gamma source. In addition, the comparison of the optical images we had collected over the years showed that the very faint optical source we had detected was moving, just as one would expect in the case of a very close neutron star. How close? HST would tell us a few years later: Geminga was practically around the corner.

Meanwhile, ESA was building its cornerstone mission dedicated to X-ray astronomy, and our institute played a crucial role in it. We also participated in developing and building INTEGRAL. In particular, I was part of the team that built the SPI Spectrometer.

In December 1999, XMM was launched, becoming XMM-Newton, and we were granted observation time: we decided to invest it in neutron stars, including, of course, Geminga. We knew that we could do great things, even if we didn't know exactly what these things would be. Geminga did not let us down: a long observation with XMM produced two articles in Science. The first (Caraveo et al., Science 301, 1345, 2003) was dedicated to the discovery of Geminga's X-ray tails (on the cover of that issue of Science was a photo of the XMM mirrors); the second (Caraveo et al, Science 305, 376, 2004) was focused on measuring the emitting surface of the star. The EPIC instrument on XMM was so sensitive that it showed us a hot spot the size of a football field appearing and disappearing with the star's rotation. The results had a strong public impact, and the American Biographical Institute (ABI) nominated me "Man of the Year". No comment.»

**"When our daughter was born, Nanni and I seriously considered calling her Geminga. Luckily, we resisted the temptation: Giulia would have never forgiven us."**

«L'accoppiata tra ROSAT e lo strumento EGRET (a bordo del Compton Observatory) dà la spallata che tanto avevamo aspettato: in X e in gamma di Geminga pulsa con un periodo di circa  $\frac{1}{4}$  di secondo. La nostra sorgente X è proprio la controparte della sorgente gamma. In più, il confronto tra le immagini ottiche, che avevamo accumulato nel corso degli anni, mostra che la debolissima sorgente ottica che avevamo individuato si muove, proprio come sarebbe logico aspettarsi se fosse una stella di neutroni molto vicina.

Quanto vicina? Ce lo dirà qualche anno dopo HST, mostrando che Geminga è praticamente dietro l'angolo. Intanto, l'ESA costruisce la sua missione cornerstone dedicata all'astronomia X e il nostro istituto è in primissimo piano. Partecipiamo anche alla definizione ed alla costruzione di INTEGRAL. Io faccio parte del Team che costruisce lo Spettrometro SPI. Nel dicembre 1999 viene lanciato XMM che diventa XMM-Newton e noi cosa facciamo? Abbiamo del tempo di osservazione garantito e decidiamo di investirlo in stelle di neutroni e, naturalmente, su Geminga. Sappiamo che potremo fare grandi cose anche se non sappiamo ancora bene che cosa. Geminga non ci delude: una lunga osservazione di XMM produce due articoli su Science: il primo (Caraveo et al. Science 301, 1345, 2003) è dedicato alla scoperta dello "strascico X" della sorgente (e Science mette in copertina la foto degli specchi di XMM) mentre nel secondo (Caraveo et al, Science 305, 376, 2004) è focalizzato alla misura della superficie emittente della stella. Lo strumento EPIC su XMM è così sensibile che riesce a farci vedere una macchia calda grande come un campo da calcio che appare e scompare durante la rotazione della stella. I risultati hanno una forte eco sulla stampa e l'American Biographical Institute (ABI) mi nomina "man of the year". No comment.»

«Meanwhile, I was invited to work on two NASA missions that saw highly qualified scientists from Italian institutions. The first was SWIFT: a mission with three telescopes – a gamma-ray one, an X-ray one and an optical one – which was initially conceived as a complete instrument for the study of gamma-ray bursts, but which became an extraordinary observatory of all types of variable sources. In addition to revolutionising the study of gamma-ray bursts, SWIFT inaugurated a new policy of accessing the data of a space mission by making the data readily available to the entire astronomical community around the world. This way of maximising the use of data was highly appreciated, and NASA decided to apply it to the Large Area Telescope aboard the GLAST mission, renamed Fermi immediately after its launch in June 2008. The year before, the Italian Space Agency had launched AGILE, a small scientific mission dedicated to high-energy gamma astronomy, just like Fermi. Despite being a small mission with a minimal budget, Agile was able to make its way into the very competitive world of high-energy astrophysics.

Thanks to these new missions, we saw the number of gamma sources rise significantly. Fermi immediately began to discover neutron stars similar to Geminga: now its family counts about fifty members. Our work to understand Geminga's nature has been widely recognised. In 2009 I was proud to receive the Italian National Presidential Prize from the hands of President Napolitano, in 2017, I was appointed "Commander" by President Mattarella, and I am grateful to the Italian Physical Society for awarding me the Enrico Fermi Prize in 2021.»

«Intanto io sono stata invitata a collaborare a due missioni NASA per le quali abbiamo ottenuto una forte e qualificata partecipazione italiana. La prima è SWIFT, una missione con un telescopio gamma, uno X ed uno ottico, nata come strumento completo per lo studio dei lampi gamma, ma ora diventata uno straordinario osservatorio di tutti i tipi di sorgenti variabili. Oltre a rivoluzionare lo studio dei lampi gamma, SWIFT inaugura una nuova politica di accesso ai dati di una missione spaziale rendendo i dati subito disponibile per tutta la comunità astronomica mondiale. E' un modo di massimizzazione lo sfruttamento dei dati che raccoglie unanimi consensi nel mondo degli astronomi e che la NASA applica al Large Area Telescope a bordo della missione GLAST, ribattezzata Fermi subito dopo il lancio, nel giugno del 2008. L'anno prima era partito AGILE, piccola missione scientifica dell'Agenzia Spaziale Italiana dedicata all'astronomia gamma di alta energia, proprio come Fermi. Nonostante sia una piccola missione, gestita con un budget molto limitato, Agile ha saputo farsi largo nel panorama mondiale molto competitivo dell'astrofisica delle alte energie. Grazie alle nuove missioni abbiamo visto lievitare il numero di sorgenti gamma. Fermi ha iniziato subito a scoprire stelle di neutroni simili a Geminga, adesso la famiglia conta una cinquantina di componenti. Il lavoro che noi avevamo fatto per capire la natura di Geminga viene ampiamente riconosciuto. Nel 2009, sono stata orgogliosa di ricevere dalle mani del

Presidente Napolitano il Premio Nazionale Presidente della Repubblica, nel 2017 il Presidente Mattarella mi ha nominata Commendatore e sono grata alla Società Italiana di Fisica per avermi assegnato il premio Enrico Fermi per il 2021.»

January 2010, Quirinal. After having received my award by the President of the Republic. Together with my husband Giovanni Bignami, we celebrate with President Napolitano.



«Research in high-energy astrophysics is not only carried out from space. For example, thanks to the Cherenkov light emitted by particles created by gamma rays in the atmosphere, it is possible to detect gamma photons even with instruments on the ground. In this field, too, we are at the forefront: Italy is in the leading carriages of the new train of the CTA collaboration, and I have the honour of representing INAF.»

## WHAT MORAL CAN BE DRAWN FROM MY CAREER?

«I have certainly worked a lot, but my job has always given me great satisfaction. Receiving recognition is obviously gratifying, but I have always thought that I should be the first to be satisfied with what I was doing. I have never stopped feeling privileged. I was also lucky: my scientific life has always been intertwined with my personal life, and I have shared interests, passions, my life, and my office with an extraordinary man. It would be not easy to give advice based on my experience. Contingent situations change so rapidly that what was important to me may be irrelevant to others in different contexts. What you always need is absolute determination. If you have to grit your teeth, it means it's worth it. I can guarantee that studying the sky is the best job in the world.»

**"Posso garantire che studiare il cielo è il lavoro più bello del mondo."**

«L'astrofisica delle alte energie non si fa solo dallo spazio. Sfruttando la luce Cherenkov emessa dalle particelle create dai raggi gamma nell'atmosfera, è possibile rivelare fotoni gamma anche con strumenti a terra. Anche lì, siamo in prima linea e, nel nuovo treno della collaborazione CTA, l'Italia è nelle carrozze di testa ed io ho l'onore di rappresentare l'INAF.

Che morale posso trarre dalla mia carriera? Ho sicuramente lavorato molto, ma ho sempre trattato grande soddisfazione dal mio lavoro. Certo, è bello ricevere riconoscimenti, ma ho sempre pensato che la prima a dover essere soddisfatta di quello che facevo dovevo essere io. Non ha mai smesso di sentirmi una privilegiata. In più, sono stata fortunata: la mia vita scientifica si è intrecciata da subito con quella privata e ho condiviso gli interessi, le passioni, la vita e l'ufficio con un uomo straordinario.

Difficili dare consigli sulla base della mia esperienza. Le situazioni contingenti variano così rapidamente che quello che è stato importante per me potrebbe essere irrilevante per altri/e in contesti diversi. Quello che ci vuole sempre è una determinazione assoluta. Se bisogna stringere i denti, vuol dire che ne vale la pena. Posso garantire che studiare il cielo è il lavoro più bello del mondo.»

# GIANCARLO LA ROCCA

## "May we live in interesting times"



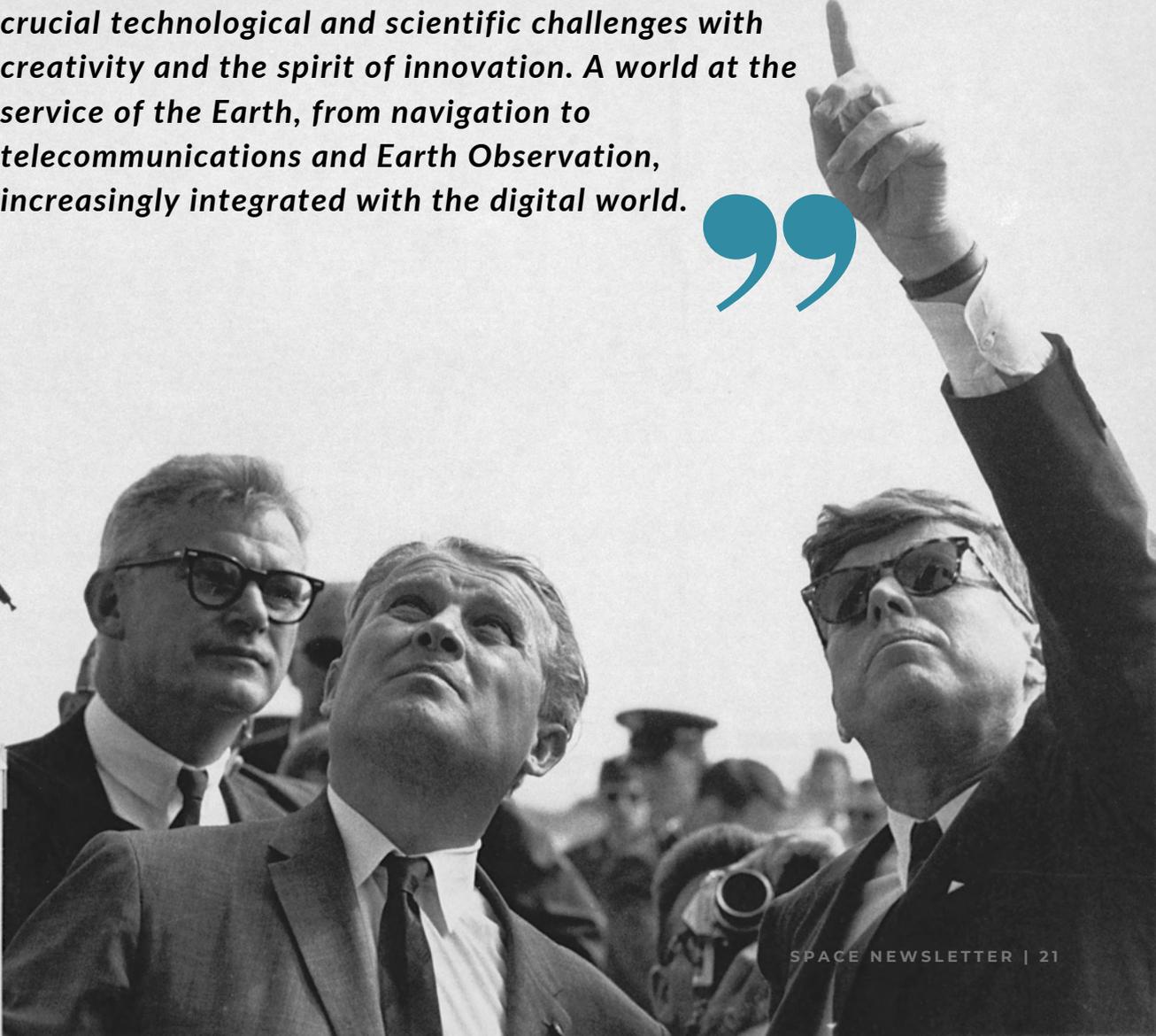
Bob Kennedy concluded with these words one of his most famous speeches, "The Day of Affirmation". Dangerous, uncertain times, but the most creative in the history of humankind. This exhortation, which is actually supposed to be interpreted as a curse, has always encouraged me in the face of the complexity of the contemporary world as a student of Political Sciences and International Relations. Growing up in Potenza, Lucania, I studied at Roma Tre University.

I soon joined the Student Movement for International Organization (MSOI), the better-known Italian Society for International Organization (SIOI) youth branch. As a member of the MSOI group in Rome, I combined study with training and in-depth activities: an experience that made me live my university years to the fullest. I was able to organize orientation sessions for high school students in Rome, coordinate a trip to Strasbourg to the European Parliament for the biennial European Youth Event and participate in many conferences in the presence of Ambassadors and representatives of the political world and international organizations.

For my Master's thesis, I conducted a research period abroad, which took me to Reykjavik and Oslo. While studying the Arctic region, its regional governance and in particular the management of energy resources, I came across a small but fundamental component of the Italian strategy in the Arctic, the space one, based on the dual satellite constellation of Cosmo-SkyMed. This small detail of my thesis continued to fascinate me until I made a total return to SIOI, home of a unique Master in Space Institutions and Policies in Italy and Europe, organized in collaboration with the Italian Space Agency and several industrial partners.

At the end of the Master, I had the opportunity to do an internship at the European Space Agency. Unforgettable was the moment when I found myself in front of the former Director General Jan Woerner, to be assisted together with my manager in a bilateral meeting with the national delegations; or the moment when I could present my work to the current DG Josef Aschbacher. After three months of internship, I seized another incredible opportunity offered by the Italian Space Agency and SIOI, which brought me to Vienna for a year as a Resident Fellow of the European Space Policy Institute. For this think tank, I was tasked to work on several projects related to monitoring space activities, with a particular focus on Italy. Then I managed to deepen some relevant technological and industrial issues, and I was lucky to participate in the multi-ethnic life of a young and lively research institute. Despite the pandemic and the lockdown, working in Vienna was rewarding, and I had the opportunity to grow professionally and personally.

***Bob Kennedy's quote applies even more because space is a growing and changing world. New players are appearing, and many start-ups are rising, responding to crucial technological and scientific challenges with creativity and the spirit of innovation. A world at the service of the Earth, from navigation to telecommunications and Earth Observation, increasingly integrated with the digital world.***





2019, Discussion of my SIOI Master's Thesis in the presence of Gabriella Arrigo and my supervisor Sergio Marchisio.

Back in Italy, I started a collaboration with two online news platforms founded by university students and young professionals, Astrospace and Osservatorio Artico, to deepen and divulge the space world concerning the fragile polar environment. Furthermore, I continue to collaborate occasionally as a young expert on space issues for other research centres or newspapers, and I recently had the pleasure to moderate an event of the French Embassy in Italy on the new space economy. Since July, I have been part of the Istituto Affari Internazionali (IAI) as a Junior Researcher. I am ready to face this new challenge and continue working with dedication and confidence in the space sector.

*Are you a space young professional and enthusiast? Do you think your story can help students find their way to space?  
Send an email to [universospazio@unirc.it](mailto:universospazio@unirc.it) with your motivations!*

# THE ITALIAN SPACE STARTUP COMPETITION: A PLACE FOR SPACE IDEAS

by Antonio Scannapieco and Aureliano Rivolta,  
Space Generation Advisory Council - National Points of Contact for Italy

The space sector is living a profound transformation. The paradigms of the New Space Economy are constantly evolving and opening to the integration of space into society and economy, as the space sector becomes an enabler of growth in other sectors. Students and young professionals have become more and more aware of the role of space in society. The Space Generation Advisory Council (SGAC) recognizes that a new space generation moves its steps worldwide with the role of active actor and addresses their precise needs and views in the context of emerging space economy trends. In Italy, SGAC fosters the involvement of the young generation in this environment with the Italian Space Startup Competition (ISSC), now at its third edition, held in Milan on November 20-21, 2021. The ISSC, a two-day competition event, focuses on space-related ideas shaped into business and eventually pitched to a jury. The competition is dedicated to new graduates, students and young professionals interested in working in the space sector and are willing to take a challenge in a business context.

The interdisciplinary nature of the event allows people from any background, be it engineering, law, economics or else, to participate. The first two editions had participants from 8 and 10 countries, respectively, and provided them with the opportunity to interact with mentors from different fields of the space sector and the possibility to receive incubation time for the newly developed ideas or win internships at sponsors' facilities.

Quoting the winners of the first edition, "Being the winner of the first-ever ISSC was an amazing experience considering the emotional turmoil that I was going through then. The victory opened up the gates of PoliHub Incubation program to us!". The third ISSC opens its doors to students and young professionals.

And as Victor Hugo once wrote:

**"THERE IS NOTHING MORE POWERFUL THAN AN IDEA WHOSE TIME HAS COME"**



The first Italian Space Startup Competition teams and mentors.  
© Space Generation Advisory Council



The winners of First ISSC, Team Space-i (left), and Second ISSC, Team SOSpace (right).  
© Space Generation Advisory Council

# NATIONAL SPACE DAY IN ITALY

## 16 DICEMBRE

by the Editorial Staff

On 15 December 1964, the San Marco 1 satellite was launched from the launch area 3 of the American base of Wallops Island. In that precise moment, Italy entered the space age becoming the third country, after the United States and the Union Soviet, to have built, launched, placed in orbit, and controlled a satellite entirely with its personnel. San Marco 1 was also the first flying satellite built by a European country. Italy has come a long way since then. For this reason, on 16 December, Italy will celebrate its National Space Day to revive that great historical moment. This day will bring citizens' attention to this sector, inspire young people to contribute to scientific research, highlight how much this sector can positively affect many other economic sectors and our daily lives. Many events will be organized throughout Italy during this day: Uni@Verso lo Spazio will for sure organize one. So, stay connected.

SPACE IS CLOSE TO UNIRC



SAN MARCO ROCKET



### ... AND NOW ITALY

The countdown was in English, with Italian sotto voce commentary, when the first Italian-built satellite, named the San Marco, was launched 12/15/64 from Wallop's Island, Va. The 254-pound satellite, designed to investigate air density, was boosted into a perfect orbit by a U.S. Scout rocket (left), making Italy the third nation to launch its own spacecraft (U.S. teams have put up Canadian- and British-designed instruments).

# MARIA GRAZIA LABATE

## From University Mediterranea to building the World's largest Radio Telescope

I am Maria Grazia Labate, and I am the Engineer responsible for delivering the World's largest Radio Telescope at low-frequency.

There are mysteries of our Universe that have not yet been revealed, signals that reach us and contain a lot of surprising information but that we do not yet know how to capture and process. Therefore, as in a treasure hunt and crypto challenge, we are now working to unravel mysteries and see what we are part of.

My story and love for the Universe began as a child looking at the sky and wondering what God had put up there. This love continued with my passion for scientific topics and the natural choice to attend the Scientific High School. However, a difficult moment came when I had to choose the university: I was extremely divided between choosing Engineering to realize something concrete or Astrophysics to study the Universe. So I had to ask "up there, far beyond the stars" for help, and this came and suggested that I enter Telecommunication Engineering. I didn't know it at the time, but this choice of university was the best way to make my dream come true.

"The antennas can also be used to build the largest radio telescope in the world", a professor quickly mentioned during the antenna course.

**AND HERE I AM: BUILDING IT.**

The Square Kilometre Array (SKA) project is an international effort to build the world's largest radio telescope, consisting of two arrays (SKA-Low frequency and SKA-Mid frequency) of thousands of antennas spread over hundreds of kilometres in the Australia and Southern Africa desert. As one of the largest scientific endeavours in history, the SKA brings together over one thousand of the world's finest scientists, engineers, and policymakers to bring the project to fruition.

From the Headquarters (UK) of the SKA Observatory, the Intergovernmental

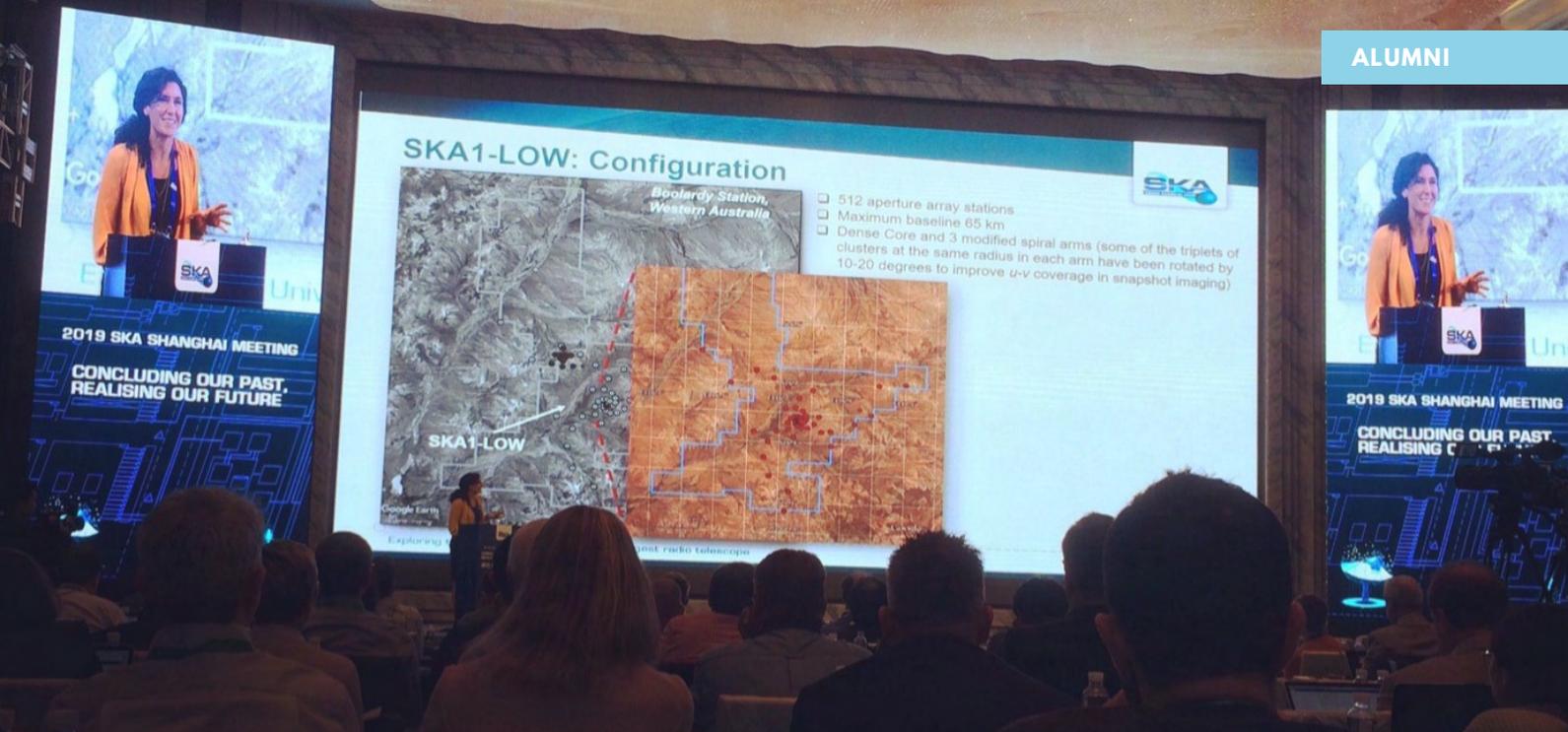
Organisation I work for, we oversee work in over 20 different countries. As a result, we have an increasingly diverse and international workforce currently finalizing the telescope's design before proceeding to its construction and operation in the next decade.

My path to the SKA was not immediately clear, but the university background allowed me to find my way. So, I confirm that, even if it is not always easy to find the job of your dream immediately after graduation, however, if you continue to aim for it, this can most likely happen.



After university, I started working as a consultant for Telecommunication Companies to get experience while looking for my dream job. Then, I found a job in the field I liked (Electromagnetics, Antennas, Phased Arrays, etc.), and, while working, I got my PhD in Electronic Engineering.

To get "closer to the Space", I joined the Antenna Centre of Excellence of Astrium UK (now Airbus Defence and Space), designing Antennas for satellites. Very soon, I had the opportunity to join the SKA.



I am now the Telescope Engineer responsible for delivering the SKA-Low Telescope: 131072 antennas spread across 65 kilometres in the Australian desert, whose signals are processed in a state-of-the-art computing facility that generates 300 petabytes of data per year. This data will be distributed in real-time to scientists worldwide for the new surprising discoveries: so, get ready for them!

p.s.: there is a lot to discover about this amazing project that cannot be summed up in a nutshell. You can find more at [www.skaobservatory.org](http://www.skaobservatory.org). There are also periodic job adverts, so check it out, and who knows, we will be working together in the near future.



Maria Grazia Labate received a Master's Degree in Telecommunications Engineering from the Mediterranean University of Reggio Calabria and a Ph.D. in Electronic Engineering from the Second University of Naples in 2008. She worked as System Integration & Technology Analyst for Accenture S.p.A, and joined the R&D division of Optel InP as a Phased Array Antenna Designer & Electromagnetic Field Expert. In 2009 she worked as Radar Antenna Designer in the Innovation Team of SELEX Integrated System S.p.A, a Finmeccanica Company, where she obtained the Innovation Award in 2010. In 2013 she joined the Antenna Centre of Competence of Astrium Ltd. (EADS), and later took part in the SKA Project, where she joined as System Engineer for the Aperture Arrays and is now the Telescope Engineer responsible for the design of the overall SKA Low-frequency radio telescope (SKA-Low). She is author or co-author of numerous technical papers, co-inventor of 3 patents and peer-reviewer for several journals and international conferences.

# Bringing Space to UNIRC

MEET OUR STUDENTS AND RESEARCHERS  
THAT DEAL WITH *SPACE*



**ALESSANDRO  
CONFIDO**

Maths and Space have always been two of my strongest areas of expertise. I earned a Master's Degree in Informatics Engineering at the University Mediterranea of Reggio Calabria: an interesting course providing the fundamentals in Computer Programming, Telecommunications and Machine Learning. After the period spent within the edges of my university, during the last year and a half of restrictions, I was seeking to enhance my experience in a broader approach to Deep Learning and Data Science, particularly for what concerns Cyber Security and Artificial Intelligence. So I decided to join European Space Agency's Call for Applications, sending my CV and cover letter! With great astonishment, I had the chance to take an interview with Marcus and Evidiki, the ones who were to become my project supervisors at ESA-ESOC in Germany. Co-operating together, we will publish a scientific paper for IEEE AeroConference about the integration of Reinforcement Learning in Penetration Testing.



EVERYTHING YOU NEED IS ALREADY INSIDE

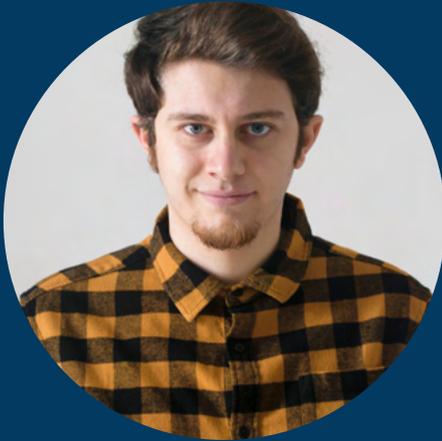
Viviana Cuzzola is an M.Sc. student in Computer Science and Telecommunication Systems Engineering at the University Mediterranea of Reggio Calabria, Italy, where she received the B.Sc. degree cum laude in ICT Engineering with a thesis entitled "Internet of Space Things: Cubesat virtualization through the OMA LwM2M standard". In this thesis, she has investigated the Internet of Space Things paradigm and analyzed a satellite scenario with miniaturized satellites known as Cubesats. The idea has been to design a global satellite network consisting of many Servers LwM2M on the ground and a single virtual counterpart of Cubesat (i.e., Virtual Cubesat) to optimize network interoperability and energy consumption and provided services. Future works will focus on the dynamic microservice to address the issue of lost access with the owner server caused by the limited Cubesat visibility time over a certain area due to the satellite motion along its orbit.



**VIVIANA  
CUZZOLA**



STAY HUNGRY, STAY FOOLISH



**GIACOMO  
D'AMICO**

I am Giacomo D'Amico, 24 years old, and I come from Catenanuova (EN). I am a M.Sc. student in Architecture at the University Mediterranea of Reggio Calabria, particularly passionate about public spaces and urban design. In recent years, my studies have met my passion for the space sector. For this reason, for my Master's degree thesis, I chose to study and design for a space habitat for humans' future colonization of space. Many challenges are present in my field. First, it is a brand-new area for architecture and bibliography, and there are few references available. After that, the habitat should be designed for an in-situ-resource-utilization (ISRU) construction for many logistical problems. It needs to accommodate 4-8 crew members for long-term missions. Finally, the structure must withstand strong temperature fluctuations due to the different atmosphere and intense exposure to cosmic rays.



**WILL YOU SHAPE THE FUTURE OF ARCHITECTURE,  
OR WILL IT SHAPE YOU?**

I'm an European PhD in Architecture (Tutors: Alberto de Capua, Gianfranco Neri; Marcus Knutagård) at UniRC and a member of the research group Me.TA++. The doctoral thesis, entitled *Abitare, Scenari*, deals with home design, emphasizing the typological-spatial aspect of the relationship man-domestic space. The theme, which suffers socio-cultural influences and political-economic impacts, emerges especially in the period of pandemic confinement from Covid-19. Following these questions, I carried out some research, focusing on Space Architecture and Design (certified by S.I.D.I.) and how we can dwell in Orbit. I also do seminar activities in the Design Bachelor's Degree (Unirc), where I am a tutor in Metodologie e Tecniche per il Design Course. For the current academic year, we are developing the issue of Space Design.



**ESTER R.  
MUSSARI**



**WITH THE FEET ON THE GROUND. AND THE NOSE IN THE AIR**



**FEDERICA  
RINALDI**

Federica Rinaldi is a Post-Doc Researcher at the University Mediterranea of Reggio Calabria, Italy, where she received the B.Sc. Degree in Telecommunication Engineering, the M.Sc. Degree (cum laude) in Computer Science and Telecommunication Systems Engineering, and the PhD degree in Information Engineering. In 2018, she was the speaker of the scientific publication "Exploiting Multicast Subgrouping for Multi-Layer Video Services in 5G Satellite Networks" at the 2018 IEEE GLOBECOM in Abu Dhabi. In 2019, she spent six months at Ericsson R&D, Finland, where she researched Non-Terrestrial Network in 5G and Beyond. Her important contributions to the space field can be quantified in 8 international scientific publications and a PhD thesis.

She is part of the Editorial Staff of the UNIRC Space Newsletter. Her current research interests focus on new procedures for feeder link switch-over and new radio resource management techniques for broadcasting innovative services over 6G Non-Terrestrial Networks



## TO INFINITY AND BEYOND

I am a PhD Candidate in Information Engineering at the University Mediterranea of Reggio Calabria, Italy, where in 2018, I obtained my Master's Degree in Telecommunication Engineering with honours. My research focuses on privacy and security, and during the last year of my PhD, I have been appointed as a Visiting Researcher at the European Space Agency in collaboration with the Radio Navigation Systems and Techniques Section, Directorate of Technology, Engineering and Quality (TEC-ESN). The goal of the research project developed with ESA was to define a new technique to provide proof of users' position in the time yet guarantee users' privacy by exploiting the global navigation satellite systems. Since 2020, I have been co-leading the Space Generation Advisory Council's Space and Cybersecurity Project Group; this role allows me to work with an international community every day. I recently won one of the three ASI-SGAC awards addressed to Italian PhD students to participate in two space conferences: IAC2021 and SGC2021. There I talked about my research and... about our Space Newsletter!



**ANTONIA  
RUSSO**

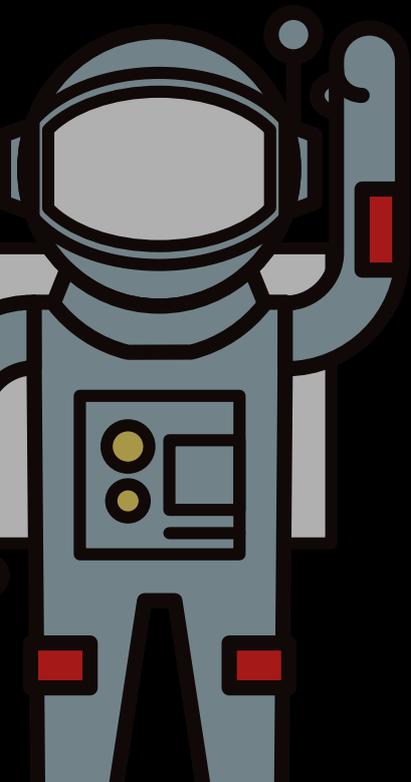


GREAT THINGS ARE DONE BY A SERIES  
OF SMALL THINGS BROUGHT TOGETHER



# SPACE EVENTS

**November 2021 - February 2022**



## NEW SPACE EUROPE

24 NOVEMBER 2021

There is an entire day of conference sessions, startup pitches, networking opportunities, and exclusive announcements with industry-leading startups, agencies, investors, and executives. The Pitching competition is organised in collaboration with the Space Generation Advisory Council, StartupLuxembourg and Luxinnovation.



[Read more here](#)

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## 1ST IAA AFRICAN SYMPOSIUM ON SMALL SATELLITES



1st **IAA** AFRICAN SYMPOSIUM ON SMALL SATELLITES  
29 NOV - 1 DEC 2021 | STELLENBOSCH | SOUTH AFRICA

*Space for Sustainable Development in Africa*

29 NOVEMBER - 2 DECEMBER 2021

Join the first IAA Symposium on Small Satellites in Africa. Three-day technical programme including poster sessions, panel sessions, a student mission competition, an exhibition, a specialised facility tour, and social networking opportunities will be an immersive cultural experience.

[Read more here](#)

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## LEAP 2021

1-3 FEBRUARY 2022

LEAP is a technology festival hosting the world's leading thinkers, futurists and visionaries to inspire a technology revolution. In addition, world-renowned technology gurus, senior enterprise representatives, and celebrities will contribute to the event in keynotes, talks, incubator clubs, startup pitches and more.



[Read more here](#)

## MARITIME RECONNAISSANCE AND SURVEILLANCE TECHNOLOGY

2-3 FEBRUARY 2022

Over the years, Maritime and Littoral Reconnaissance and Surveillance systems and platforms have become a critical component of naval capability. The conference will focus on space-based maritime surveillance and the relation between the Littoral and Maritime Domains and ISR capabilities. The aim is to assist the advancement and engagement of Naval practitioners and Programme Managers through briefings, panel sessions and focused discussion groups.

### MARITIME RECONNAISSANCE AND SURVEILLANCE TECHNOLOGY

2ND FEBRUARY TO 3RD FEBRUARY 2022,  
LONDON, UNITED KINGDOM

[Read more here](#)

## THE GLOBAL SPACE AND TECHNOLOGY CONVENTION

8-10 FEBRUARY 2022



This convention has become one of Asia's fastest-growing deep tech conventions, drawing close to 1000 delegates from 350 companies from over 50 countries. It is recognised in the space and deep tech industry as the gateway for companies interested in mining the breadth of space and deep tech innovations in the region – connecting global players to the region.

[Read more here](#)

## GOVSATCOM

24 -25 FEBRUARY 2022

The GOVSATCOM 2022 conference Luxembourg has become a key event on the agenda of the International SATCOM actors from the satellite, governmental, institutional and defence fields. With more than 500 participants gathered in 2020, this full-day event is an excellent opportunity to meet the key players and influencers from the area of Government Satellite Communications.



[Read more here](#)

## SPACE FOR BOOKS



We all are "attracted" by the Moon, the celestial body closest to us that we visited first with our imagination, then with the tools of technology. Now we want to return to creating a permanent community there. This book is dedicated to this special relationship that binds man to the Moon. Indeed, it analyses the history of the attraction that our satellite had always exercised on us, from when we were simple observers to the present day when its commercial exploitation is planned.

**"La Luna ci affascina e non ci stanchiamo mai di parlare di lei. La sua rassicurante periodicità, combinata con un pizzico di meccanica celeste, ci regala fenomeni che, pur nella loro assoluta normalità, vanno regolarmente sui giornali. La Luna rossa, la Superluna, la Luna blu non sono altro che momenti particolari dell'orbita descritta dalla Luna intorno alla Terra, che a sua volta la trascina nel suo moto intorno al Sole."**

Conquistati dalla luna - Storia di un'attrazione senza tempo. Patrizia Caraveo

## SPACE POSTCARD



On November 21, 2014

This massive cluster of galaxies is MACS J1149.6+2223. In this image, light from a distant supernova appears in four different places. The multiple supernova images are created as the exploding star's light is bent by the powerful gravity of a large galaxy in the cluster.



Galaxy Cluster MACS J1149.6+2223

Image Credits: NASA

**"What you  
always need is  
absolute  
determination.  
If you have to  
grit your teeth,  
it means it's  
worth it."**

**Patrizia Caraveo, Italian astrophysics**



UNI@VERSO LO SPAZIO

*University Mediterranea of Reggio Calabria*



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[@universolospazio](https://www.instagram.com/universolospazio)



UniVerso Lo Spazio -  
Mediterranea University