

# **FINAL REPORT**

# 4<sup>th</sup> International Space Forum at Ministerial Level – The Mediterranean Chapter

"Space Technology and Applications meet Mediterranean Needs"

Reggio Calabria, Italy 5 September 2019

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# CONTENTS

- 1. Welcome Message .....
- 2. Participating Countries and International O
- 3. Statements of Participating Countries ......
- 4. Statement of Participating International Org
- 5. Keynote Speeches Presentations .....
- 6. The Reggio Calabria Page .....
- Visit to the Italian Space Agency "Giuseppe Space Geodesy Centre in Matera

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	4
rganizations	5
	7
ganizations and Space Agencies	20
	44
	56
Colombo"	58





Reggio Calabria, Italy | 5 September 2019

# **1 WELCOME MESSAGE**

On behalf of the International Astronautical Federation (IAF), the Italian Space Agency (ASI) and the University Mediterranea of Reggio Calabria, it is a great honour for us to present the final report of the International Space Forum (ISF) at Ministerial Level – The Mediterranean Chapter, ISF 2019 that took place in Reggio Calabria on 5<sup>th</sup> September 2019.

Launched in 2015, under the auspices of the IAF Vice President for Science and Academic Relations, the International Space Forum represents an annual gathering at Ministerial Level aiming to encourage a global discussion and debate on the necessity of promoting a greater involvement of Universities and national Academies into space activities.

Following the successful meetings held in Trento, Nairobi – the African Chapter, and Buenos Aires – the Latin American and Caribbean Chapter, this fourth edition of the Forum represented the logical continuation of last year's regional forums. The 2019 edition, held in Reggio Calabria, Italy, brought together major actors of the Mediterranean region to discuss the great opportunities space has to offer for the socio-economic advancement of the area.

The success of such a meeting begins with its preparation, but can be truly measured only by its participation and the engagement of the attending delegations. In this respect, this year was truly remarkable, and we would like to express our sincere thanks to all the delegates who joined us in Reggio Calabria and Matera. A total of 13 countries from the Mediterranean region, and 20 Space Agencies and International Organizations from all over the world, took part in the Forum. The involvement of various actors from government, space agencies, universities and technical institutions shows that these entities are well aware of the major role that space has to play in supporting the further development of the region.

As emerged during the Forum, by touching upon the three main topics - Maritime Surveillance, Space and Blue Economy and Space Education, Cooperation and Scientific Knowledge - the need to protect and preserve the Mediterranean region and its magnificent Sea is a shared goal. Its unique geographical location and natural richness represents an exceptional resource that needs to be preserved. For this reason, the employment of space technologies and their application can be crucial in providing countries with the means to ensure said protection. Now more than ever, the dialogue and scientific exchange between policy-makers and key stakeholders is of vital importance in order to preserve this unique region of the world.

In order for space technologies to have a true worldwide impact, international partnership is key. For this reason, we are particularly glad that so many different countries from the area gathered in Reggio Calabria, giving the opportunity to all to exchange ideas and points of view. Space Education and International Cooperation are a first, important step to develop and spread the technologies that could help the Mediterranean region to face major challenges.

These and many more topics, were widely discussed during the Forum and were brought to light by the statements of the delegations. To give you all the opportunity of continuing with the reflection on those essential aspects, we have gathered in this booklet all the interventions made during the Forum as well as the final declaration, the Reggio Calabria Page. We hope that this will contribute to keep alive the spirit of the Forum, and that it will inspire new forms of cooperation and partnership, not only in the Mediterranean region, but throughout the whole world.

Enjoy the reading!



Jean-Yves Le Gall President

International Astronautical Federation (IAF)



**Giorgio Saccoccia** President Italian Space Agency (ASI)



Santo Marcello Zimbone Rector University Mediterranea of Reggio Calabria

# 2 PARTICIPATING COUNTRIES AND INTERNATIONAL ORGANIZATIONS

### **COUNTRIES**













Reggio Calabria, Italy | 5 September 2019

### **INTERNATIONAL ORGANIZATIONS & SPACE AGENCIES**

Agenzia Spaziale Italiana

cnes

ECSL

**7EMSA** 

esa

ESPI

eurisy

ASI (Agenzia Spaziale Italiana)

CNES (Centre National d'Etudes Spatiales)



COSPAR (Committee on Space Research)

DLR (German Aerospace Center)

ECSL (European Centre for Space Law)

EMSA (European Maritime Safety Agency)

ESA (European Space Agency)

ESPI (European Space Policy Institute)

EURISY

### **OBSERVERS**

Magna Græcia University of Catanzaro National Institute of Geophysics and Volcanology (INGV) Planetarium Pythagoras of Reggio Calabria POLIMI (Politecnico di Milano) POLITO (Politecnico di Torino) SIOI (Società Italiana per l'Organizzazione Internationale) University of Calabria University of Catania University of Messina

IAF (International Astronautical Federation)

> IISL (International Institute of Space Law)

GSA (European GNSS Agency)

ISA (Israel Space Agency)

ISU (International Space University)

SGAC (Space Generation Advisory Council

Office for Outer Space Affairs)



UNITED NATIONS











وكالة الإمارات للفضاء UAE SPACE AGENCY

e for Outer Space Affairs

### STATEMENTS OF PARTICIPATING COUNTRIES 3

### **Statement of Cyprus**

By Vassiliki Anastasiadou **Minister of Transport, Communications and Works** 

Dear Distinguished Guests, Ladies and Gentlemen,

It gives me great pleasure to address you today on this important event. Furthermore, I would like to thank to the organizers and the speakers of the 4<sup>th</sup> International Space Forum (ISF) 2019 for the great effort put in organizing such an important event.

Ladies and Gentlemen

The sea has always been important to Cyprus as a source of growth and progress in sectors such as maritime and coastal tourism, merchant shipping, fishing and aguaculture, and more recently with the emerging prospects of the development of sectors such as offshore extraction of oil and natural gas. Therefore, Blue Growth significantly impacts the economy of Cyprus.

The Blue Economy sectors in Cyprus employ over 20,000 people and generate around 623 million euros, representing the 3.2% of the national economy and the 5.4% of the jobs, with coastal tourism accounting for 74% of Blue Economy-based jobs. The sectors in Maritime and coastal tourism show a significant upward trend, which corresponds to 85% of total employment demand of the blue economic sectors. The second biggest blue economic sector, also exhibiting a significant upward trend, is Maritime transport, which corresponds to 13% of total employment demand of the blue economic sectors. These trends are related to the strategic objective of Cyprus for further promotion of merchant shipping as well as the pursuit for exploiting hydrocarbon deposits in the Exclusive Economic Zone of the Republic of Cyprus.

At the same time, Cyprus's location and climate provide optimal conditions for satellite communications, especially in the South Mediterranean, Middle East, Asia and Africa. As a result, there have been multi-million-euro investments in Cyprus from various satellite companies.

Cyprus is actively engaged in space technology services. To date, Cyprus has granted 10 licenses to organizations to launch telecommunication satellites using space that Cyprus has secured through ITU. The Government of Cyprus has focused on creating a more efficient communications landscape through the development of digital infrastructures and policies. Due to global demand for increased bandwidth and the growth of data centres and IP traffic, there is a demand for networks that will ensure seamless and secure communications. Cyprus can capitalize on these demands, as a result of its geographic position between Europe, Asia and Africa.

Space Technology is a unique resource to promote Blue Growth in Cyprus and in the Mediterranean. Space technology can be used through satellite images, data and communications for applications such as disaster management, water quality, agricultural monitoring, environmental monitoring, natural resource management, sustainable land use, urban development, refugee migration surveillance, coordination of emergency responses and humanitarian assistance. Among the technologies available for Blue Growth, Copernicus Marine Service provide Earth Observation data needed in the fields of Ocean Monitoring, Oil & Gas and Renewable Energy. The Copernicus Marine Environment Monitoring Service provides services to support all marine applications, including marine safety, marine resources and coastal and marine environment. Earth observation data from satellites can be used for large area monitoring, mapping, exploration, calibrating existing activities and helping improve planning activities. Marine Earth observation data can benefit maritime exploitation, ship navigation, fisheries management, ocean surveillance, development of renewable energies and oil & gas exploration.



UAESA (UAE Space Agency)

University Mediterranea Of Reggio Calabria

**UNOOSA** (United Nations

















Reggio Calabria, Italy 5 September 2019

In addition, Earth observation for environmental monitoring is an important tool for Cyprus, due to environmental issues affecting our region. Combining Earth observation tools with in-situ modelling will be a significant asset for Cyprus, the region and the Mediterranean area. Earth observation and modelled data can support most domains in the maritime and marine field and help to provide effective solutions to often complex problems in the blue economy. Earth Observation data can be used to support the growth of renewable energy by providing information that can reduce production costs, improve profitability and thus lead to a competitive advantage.

Cyprus has recently taken steps forward for the establishment of two Centres of Excellence that will contribute into the research and development of Blue Growth activities in Cyprus. Both will be co-funded by European Commission and Cyprus.

- A) The first centre is the Eratosthenes Centre of Excellence project focuses on creating an inspiring environment for conducting basic and applied research and innovation in the areas of the space technology and remote sensing for monitoring the environment. It is expected to create 200 new jobs and place Cyprus as a key player in terms of research and innovation in space technology.
- B) The second centre is the Marine and Maritime Research, Innovation, Technology Centre of Excellence, which focuses on the promotion of scientific and business innovation in maritime and marine life in the broader eastern Mediterranean. This substantial initiative is expected to support of Blue Growth and contribute to upgrading the services offered in the broader area of Blue Economy.

There are also various running initiatives and programs that focus on blue growth, such as:

- A) The Maritime Institute of Eastern Mediterranean which undertakes strategic actions and initiatives in coherence with relevant EU and national strategies and policies such as the Blue Growth Strategy and the Integrated Maritime Policy of the EU as well as the Smart Specialisation Strategy of Cyprus.
- B) The Cyprus-Ireland Blue Growth Initiative, where two EU island nations, both with strong marine and maritime sectors, worked together to explore marine litter, blue growth, marine renewable energy, entrepreneurship within the blue economy.
- C) The THAL-CHOR project developed a methodology for Maritime Spatial Planning to resolve spatial conflicts between different uses of the sea.
- D) The Cyprus Foundation of the Sea (FOS) promotes marine and maritime research, knowledge and innovation towards a sustainable blue economy.

Also, Cyprus, among other international organizations and associations, is a member of the United Nations Committee on Peaceful uses of Outer space (known as COPUOS). In addition, we have strong relations with ESA as an ESA (European Space Agency) Cooperating State, since 2016. Several Blue Economy projects are funded already by national funds through the ESA PECS (Plan for European Cooperating States) programme under ESA guidance and project management.

Therefore, as an island nation, Cyprus has a vested interest in Blue Growth and seeks to cooperate with other Mediterranean countries in order to develop a common Blue Economy. As the Mediterranean countries share to a great extent similar goals, objectives and priorities for the Blue Economy, they can develop strong synergies in terms of economic growth, environmental protection and space economy.

In conclusion, Cyprus has started building a Blue Economy that maximizes the potential of all maritime and coastal resources to improve the lives of all, by using space technologies and innovations to build prosperity and conserve marine resources for future generations.

Thank you.

### **Statement of France** By Jean-Yves Le Gall President, CNES

Dear Ministers, Dear colleagues and friends,

It is a great pleasure for me to be here today, speaking as the French representative, and the topic of this Space Forum is particularly close to French hearts. The Mediterranean region is indeed a cornerstone of France's history and identity in at least three ways. At national level, the cultural, economic and ecological influence of the Mediterranean basin on France has been tremendous, starting with the first Greek settlements in my hometown Marseille. At European level, France has always been a bridge between the Mediterranean part of our continent and northern Europe. And at international level, France has always advocated closer cooperation between nations on both shores of the Mediterranean Sea.

For obvious societal, ecological and economic reasons, the Mediterranean region has to be considered a common good for all surrounding states. This is clearly one of the key challenges to be tackled in the Euro-Mediterranean relationship, and space is a vital tool to address the issues at stake. Indeed, space can foster progress, enhance protection and strengthen freedoms.

First, as a knowledge-driven and innovation-intensive sector, space is making a big contribution to individual and collective progress. Space can enhance our scientific knowledge, which is particularly valuable in the case of a complex ecosystem like the Mediterranean Sea. Space is also providing tangible services on Earth, in areas such as telecommunications or transportation. Here again, economic activities in the Mediterranean basin are strongly benefiting from space applications, be it through ship communications, vessel tracking for the management of shipping routes, port management or urban and natural coast management. The economic potential of space applications for the Mediterranean will be further improved in the future by new innovations using artificial intelligence for vessel tracking or the widespread uptake of GNSS applications for cargo management or port operations. More generally, space has the unique capability to merge data from different sources to create applications and products tailored to the needs of users in and around the Mediterranean Sea.

Second, space can protect by helping to meet the global challenges we are facing. Tackling climate change and its consequences is the first of these challenges. The vast majority of Essential Climate Variables or ECVs can only be measured from space. In addition, Earth-observation data are essential to mitigate the consequences of climate change, or during the recovery phase after natural disasters. The link with the Mediterranean Sea is obvious, as it is unfortunately one of the most endangered marine ecosystems on our planet.

Space can also be a tool for fostering international solidarity, as for example with the transnational issue of migrations, of which the Mediterranean has sadly become a patent illustration. Satellite applications can help to track vessels at sea, as well as their points of departure, thus accelerating the rescue process. More broadly, space can help to monitor shared resources like water, forests or endangered coastal areas. As such, space could contribute to nurturing a comprehensive approach towards the preservation of resources around the Mediterranean Sea. This could in turn have a defusing effect on tensions and potential conflicts between Mediterranean stakeholders. All in all, space can be a powerful tool for Euro-Mediterranean solidarity, especially building on the European flagship Galileo and Copernicus programmes.

Finally, space can also contribute to protecting freedoms, which is one of Europe's core values. By facilitating access to data and information through Earth-observation and telecommunications applications, space promotes transparency and openness. At the same time, space plays a role in strengthening European sovereignty, which is the essential condition to preserve freedoms in and around our continent. Space applications will also lay the foundation for an inclusive security and defence community for Europe and its partners in the Mediterranean area. Indeed, several important European cooperation programmes in this area involve Mediterranean nations, such as Athena-Fidus for telecommunications or Helios for Earth observation.

In conclusion, no overall Euro-Mediterranean strategy can be built without space. Thanks to its state-of-the art capabilities, both at national and European level, our continent can provide space applications for virtually all the challenges facing the Mediterranean. Here again, space can bring tangible benefits to make our planet a better place.









Reggio Calabria, Italy | 5 September 2019

## Statement of Greece

By Stamatios Krimigis Adviser to the Minister, Ministry of Digital Governance

Honorable Ministers and Delegates, Representatives of International Agencies, Ladies and Gentlemen,

My name is Stamatios Krimigis and I serve as Councilor to the Minister of Digital Governance, Mr. Kyriakos Pierrakakis, of the newly formed Government of Greece. The Minister asked me to convey his warmest regards and appreciation to all the national delegations and officials, and his full support for the Mediterranean Chapter of the 4<sup>th</sup> International Space Forum.

Greece shares fully all six objectives of the Forum, from Maritime Surveillance, to the Blue Economy, and to Space Education, Cooperation, and Scientific Exchanges. Maritime surveillance in particular is of great interest to our country and, as the Rector of the University noted in his statement in the program, it would have come handy to Ulysses (Odysseus, as we say in Greek) to navigate the nearby straits of Scylla and Charybdis! Well, joking aside, navigation is central to Greece's economy, as commercial shipping, along with tourism, represent the biggest industry in our country. It is estimated that Greek-owned and operated ships carry well over 20% of the world's trade. So, as Mr. Leendert Bal, the head of European Maritime Safety Agency (EMSA) told us a few minutes ago, improving maritime security through space surveillance and operations is an absolutely essential capability that Greece values highly.

We endeavor to be able to make key contributions in this field, as we organize and build up our country's nascent space capabilities through cooperation with ESA and our Mediterranean neighbors, not only in enhancing the space sector but also the ground-based applications component that is essential to the full utilization of the avalanche of new data.

As I mentioned above, Greece appreciates very much and supports fully the totality of the Reggio Calabria Page, as currently formulated, to be added to the Trento Space Statement. This means that we support all six main objectives and it is our full intent to contribute to each, to the extent that our capabilities and knowledge permits. In particular, and in the context of the Blue Economy, we are very sensitized to objective #4 stating "Promotion and use of satellites to safeguard and protect infrastructure and activities and to discourage threats and illegal activities (underline added) through or around the sea". We note that one of the Mediterranean countries not participating in this Forum is not only conducting illegal activities as we speak, but also threatening its neighbors with violence. Such behaviour is unacceptable in the Mediterranean and must be condemned by all. The use of satellites is ideally suited to document and discourage engagement in such activities.

We in Greece are looking forward to working with the IAF, ESA, and the national space agencies in furthering the implementation of the objectives stated in the Reggio Calabria Statement on Space.

Thank you very much.







### By Giuseppe Valditara

# Head of the Department of High Education and Research, Ministry of Education, University and Research (MIUR)

Honorable Ministers, Excellencies, Heads of Space Agencies and representatives, Rectors, Professors, All Authorities, Distinguished Delegates,

It is for me an honor to be with you today at the opening session of the 4<sup>th</sup> International Space Forum 2019 – The Mediterranean Chapter

First of all, let me thank the organizers of this event:

- the International Astronautical Federation (IAF), here represented by its President, Dr. Jean-Yves Le Gall, and his Vice President for Science and Academic relations, Dr. Gabriella Arrigo;
- the Italian Space Agency (ASI), here represented by its President, Eng. Giorgio Saccoccia;
- the University Mediterranea of Reggio Calabria, here represented by its Rector, Prof. Santo Marcello Zimbone

and the local Authorities that believed in and contributed to organizing this Forum:

- the President of the Regional Council of Calabria, Dr. Nicola Irto;
- the Mayor of the Metropolitan City of Reggio Calabria, Avv. Giuseppe Falcomatà.

I also wish to thank all the delegations of the Countries that have accepted the invitations of the Italian Minister and of the Forum' organizers.

This gathering of the International Space Forum – The Mediterranean Chapter - follows the one held in Trento in 2016, the second regional edition in Nairobi in 2017 (The African Chapter) and the third edition in Buenos Aires in 2018 (The Latin American and Caribbean Chapter). The main goal of this initiative is the promotion of space programs through the involvement of a growing number of Academicians and Universities.

I am delighted that this edition of the Forum is hosted in Reggio Calabria, a city of southern Italy that stands at the center of the Mediterranean. We wish to encourage and support dialogue among the Countries of the region by enhancing the common commitment in favor of space, research and innovation.

Italy has always played a leading role in the Mediterranean dialogue. Its geographical collocation at the crossroads between Europe and Africa, western and eastern routes, places us in a privileged position; we benefit from historical flows of people and ideas; from the exchange of goods that has generated wealth and progress; from a stimulating intellectual environment that has been the backbone of European innovation for centuries. The present Mediterranean region has grown in size: as the sea has taken over large parts of the hinterland and has gone beyond the northern and southern shores, at the same time it has produced different, fragmented interests and needs

However, the Mediterranean remains a global platform for dialogue between Europe and Africa, Middle and Far East. The Mediterranean stands at the center of several global challenges; it is a unique microcosm that once again bares great potential for generating wealth and progress.

For years the Italian Ministry of Foreign Affairs and International Cooperation has been hosting in Rome the "MED-Mediterranean Dialogue", attended by distinguished speakers, experts and political Authorities of the Countries of the region and outside. This event has become a global Hub for debating the centrality of the Mediterranean in the international arena. The Mediterranean Chapter of the Space Forum has been inspired by the same fundamental wish to discuss and identify ways and means for exploiting the great potential present in coordination between countries on the shores of our beautiful sea. This sea has a remarkable past, but it also projects us towards the future: there is nothing more innovating and fascinating than space.









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Reggio Calabria, Italy | 5 September 2019

The title of the International Space Forum 2019, "Space technology and applications meet the Mediterranean needs", is not only a contribution made by Italy to dialogue in this region, to its security and prosperity; but it also represents a challenge and a work program for the present and the future. Furthermore, it intends to be as a contribution to the United Nations 2030 Agenda for sustainable development.

The Mediterranean makes daily headlines because of crises and conflict. Space technology and its applications can turn emergencies into prevention, management and efficient planning. Space technology can bridge gaps and contribute to meet the needs of different peoples. It is a valuable tool for promoting peace and harmony in the Mediterranean.

Today, we will discuss technical and scientific aspects of three main topics: Maritime Surveillance, Space and Blue Economy, Space Education, Cooperation and Scientific Research. Three topics that can turn contemporary human tragedies into opportunities of growth for the young generations of the Mediterranean, of Europe and beyond.

I am not a space expert. Other speakers will depict the activities and programs in which Italy is engaged, often in a leading position. However, from my role and perspective I fully share and support the central objective of this Forum: to increase the number of Universities involved in space activities.

Our Universities, the Universities in the world, are the "Treasurer" of our future, of our culture, of our identities. Space research in Italian universities has stood out as a national priority since the 1960s, when Italy became the third country, after the United States and the Soviet Union, to launch a satellite into orbit. The Italian School of Physics and Engineering has a long-standing tradition; it annually provides excellent young professionals to the international space community. However, space activities requires also economists, managers and legal experts. For this reason several prestigious Italian universities offer Study and Master Courses in space engineering and technology, in economics and space law, in international space relations and institutions.

These courses are systematically linked to other European and international Degrees and Master courses; this interaction demonstrates that the space system is, by its own nature, transnational. Effective international cooperation is thus needed in all areas of space activity: in infrastructures; in coordinating space operators; in gathering resources; in identifying global challenges in connection to the exploration of the Universe; in the observation of the Earth; in monitoring the environment, so that better control over our coasts and seas may be achieved; in evaluating the trends of land and sea cultures, that are strictly connected global warming and other phenomena of our times; in gathering data on landscape and archeological heritage; in fine tuning applications that contribute more accurate weather forecasts. It is therefore an extremely wide range of activities that we are looking at, and that we should target together.

The Università Mediterranea of Reggio Calabria is developing a curriculum of space studies to respond to the needs of the Mediterranean region. In this regard, later today, the Italian Space Agency and the Università Mediterranea will sign an agreement which outlines a roadmap to be implemented together, with all of you.

Recently, Italy has adopted a new space governance. The President of the Council of Ministers is now responsible for coordinating space and aerospace policies, supported by the Ministries involved in our national space endeavor, as well as by the Italian Space Agency, which is both the "architect" and the "operator" of the system. The Ministry of Education, University and Research is in charge of financing the bulk of our national space activities, as well as of promoting space science and culture in schools and universities. Therefore, this Ministry, and my Department, in particular, are indeed most willing to cooperate with you in view of enhancing synergies and developing space projects.

Finally, I thank again the International Astronautical Federation, the Italian Space Agency, the Università Mediterranea and local Authorities for inviting me to chair this Forum.

I wish all of you a fruitful day of work and a pleasant and instructive visit to the ASI Geodesy Space Centre in Matera tomorrow, for which I would like to also warmly thank the Italian Air Force for its generous contribution.

### Statement of Montenegro By Darko Petrušić Director General, Ministry of Science, Education and Technology

The desire for space travel is as old as human civilisation - we all remember the story about Icarus. Modern space exploration is reaching the areas once only dreamed about. Space technology has become a unique challenge for many nations and succeeded to unite the knowledge of human kind and efforts to create the International Space Station in 1998.

As many times in history, wars bring the utmost destruction and disrespect for human life. However, that destructive energy, in some cases, is directed at mobilising all resources and speeding up technological development, as was the case during WWII. A couple of major scientific and technological breakthroughs were created during WWII, including space technology, and all of them were created right here, in Europe.

Nowadays we are witnessing the rapid expansion of different stakeholders accessing space, with commercial space activities accounting for over 75%. It is obvious that private sector has become a major player in the field.

Space technologies play an important role in achieving goals of three major international frameworks such as the Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction and the Paris Agreement on Climate Change. It also plays an important role in Earth observation and supporting the developments in Blue economy, especially with regard to the environment preservation i.e. helping protect coastal communities from the climate change impact.

Water bodies such as the oceans, seas, rivers and lakes collectively hosts about 2.2 million plant species and other life forms that represent over 50% of life on Earth. The sea water is fundamental to the life on earth, covering three guarters of our planet. It produces more than half of the oxygen that we breathe. Yet our oceans and seas are moving deeper into the ecological crisis caused by us.

Our actions are largely impacting climate change - one of the examples is this year's Amazon fires. In recent years we have realized that hurricanes are becoming stronger and stronger, such as Hurricane Dorian, which is just reaching the North America.

Satellite observations provide information highly valuable for climate simulations. It is widely used to create different mathematical model in an attempt to simulate natural processes and monitor changes on the ground. We should use these modern technologies to protect the Mediterranean Basin that we are proud to be a part of. The Mediterranean Basin has been the cradle of the world civilization since the first settlements in 9000 BC. This sea has always been an environment that has brought forth outstanding people who have made great contributions to the development of history in philosophy, art, music, literature, science and technology. Among the 44 oldest universities, 25 were founded in the Mediterranean Basin, the Italian Peninsula being the leading region with 13 universities. Eight of the top ten oldest universities in the world that have operated continuously until the present day are in the Mediterranean area. The oldest university in the world is the University of Bologna, established in 1088.

In Montenegro, we have become aware of the vital importance of environment protection and that has been reflected in our Smart Specialisation Strategy, adopted in June this year. We are proud to say that we are the first non-EU country to adopt the S3. Also, the Geological Survey of Montenegro was in charge of CARDS project: CORINE Land Cover (CLC) mapping in Montenegro which provided information on the biophysical characteristics of the Earth's surface. The CORINE Land Cover program is the result of the European Environment Agency collaboration with the ESA and the European Commission (EC) on the implementation of a fast track service on land monitoring.

In addition, based on the data provided from Sentinel 2 - Multispectral Imagery Satelite, we have created a STUDY AND PROPOSAL SOLUTION FOR THE REVITALIZATION OF PETROVAC BEACHES (Adriatic coast).











Reggio Calabria, Italy | 5 September 2019

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Moreover, Faculty of Architecture of University of Montenegro was in charge of the HERITAGE IMPACT ASSESSMENT of Boka Kotorska bay – *a UNESCO World Heritage Site* and it used spatial data to create this report.

We are now focusing on knowledge sharing and technology transfer in order to strengthen our participation in international initiatives related to space technology.

It is important to encourage greater involvement of Universities, research institutes and national Academies into space activities and to strengthen cooperation between academy and industry sector, in order to enable faster space technology development and its adoption, for the benefit of planet Earth and for the benefit of future generations.













### **Statement of Portugal** By Chiara Manfletti President, Portugual Space Agency

Good morning honourable guests,

It is with great regret that I cannot be there with you this morning to discuss "the Mediterranean Chapter" as I am currently with students in the hope of convincing them to join our ranks in tackling global challenges through space activities.

Water is one of our most precious resources, a gift of the universe, whose origin we have not yet discovered. Our latest effort through the Rosetta mission has taught us that the water on Earth is not from this one specific comet. The search continues and space is part of the answer.

To preserve, manage and optimise the use of all bodies of water should be one of the highest priorities of our time.

The economy of these bodies remains greatly unexplored and our scientific knowledge about them and the ecosystems they host is still far from being exhaustive.

It is for this reason that Portugal has defined as its vision to become by 2030 a widely recognised global authority in the science and economics of space-oceans-climate interactions for the advancement and well-being of all humankind. Through the founding of the AIR CENTER and its new national space agency, Portugal Space, Portugal has clearly indicated its commitment – political and financial – to this goal through assets in space and on ground and through a multi-disciplinary and multi-national approach. This summer has seen much news around our seas and oceans: from migration, to illegal maritime activities and piracy, to a 150 km2 area covered with volcanic rock discovered in the middle of the Pacific, to the landing of Sargasso in Mexico, to the death of marine life due to plastic waste, and more.

The Mediterranean is one of the busiest bodies of water and a treasure and great responsibility for all countries that boast a piece of it as a part of their national territory. But water flows and ignores national boundaries and it would be overly simplistic to define the challenges of the Mediterranean a problem of those countries alone. It is a joint responsibility and activities should be a common effort.

Beyond and to complement the on-going activities in all countries that are around the table today, Portugal puts forward the proposal of a joint-effort in observing and monitor our bodies of water with a joint constellation of small satellites co-owned by different countries and their interested entities to provide data and services to different end-users. Direct receiving stations in different participating nations would give each country the autonomy of organising their own institutional needs and users independent of other partners in this joint endeavour.

I take this opportunity to reach out to you with this proposal in the hope that you will reach back to us and that we may start on this endeavour before the end of this year.

I wish you a fruitful conference and look forward to a common positive future together.

\*please note that this statement was provided electronically as the Portugal delegation could not attend















Reggio Calabria, Italy | 5 September 2019

### Statement of Slovenia

By Slobodan Šešum Economic Counsellor, Embassy of Slovenia to Italy

Dear Ministers, Dear Head of Delegations, Dear colleagues,

- it is my pleasure to be here today at the "Fourth International Space Forum Mediterranean Chapter" focusing on "Space • Technology and Applications Meet Mediterranean Needs".
- We all agree that Space Technology and its applications can contribute to solve societal challenges.
- I am very proud to say space sector is rapidly developing in Slovenia. There are many companies and institutions, with their innovative solutions positioning themselves among global market leaders.
- Slovenia will position itself on the map of the countries with its satellites in Space. Namely, the first two Slovenian satellites in the field of Earth observation are expected to be launched this year:
  - NEMO-HD micro satellite capable of remote sensing with high precision that will enable the acquisition of multispectral images of the Earth's surface and also HD (high definition) video recording.
  - TRISAT a nano satellite with a moderate ability to observe Earth on the basis of multispectral capture of images in a short-wave infrared spectrum with innovative miniaturised instruments.
- Slovenia has recognised the importance of Earth Observations for different societal and economic benefits.
- Data and information from space is successfully and increasingly used in public services for environmental monitoring, emergency situations and spatial planning, as well as in different private sectors like energy and agriculture.
- Vast amount of data with a rapid development in digital technologies offer huge new opportunities for science and businesses.
- And considering the environmental challenges that we face today, it has never been more important to have reliable data on the state of our planet.

#### Ladies and gentlemen,

- Maritime surveillance is essential for responding to the needs of a wide range of maritime policies irregular migration/ border control, maritime security, fisheries control, anti-piracy, environmental hazards such as oil pollution, etc.
- Currently, some national authorities responsible for different aspects of maritime surveillance collect data separately and often do not share them between each other.
- It is important to ensure effective data exchange between actors across sectors and across borders. Space data can provide additional data that can increase the security and safety on the sea.
- Currently Slovenia is involved in 'Maritime Adaptive GNSS Safety concept', a project study that aims at increasing maritime safety at harbor entry and also preparing a feasibility study on the use of GNSS based navigation.
- Marine oil and chemical pollution is one of the major threats to the sea environment. With participation in the 'Clean Sea Net' programme Slovenia is monitoring – identifying and tracking oil pollution on the sea surface, accidental pollution – and contributing to the identification of polluters (i.e. developing backtracking application).

#### Regarding the SPACE AND BLUE ECONOMY,

- Slovenia is one of the countries supporting the Initiative for Blue Growth and Jobs in the Mediterranean (signed a Venice Declaration on Mediterranean Sea Cooperation in 2015).
- We believe the co-operation among countries in the Euro-Mediterranean Region, engaging both public and private stakeholders, including SMEs, in research and innovation actions tackling the challenges is of vital importance.
- For Slovenia, the following priority actions to be implemented in co-operation with international partners are:
- understanding pollution impacts, mitigation and remediation in the Mediterranean Sea,



- greening vessels, facilities and services
- proper governance of maritime space.
- There are many ways in which Earth observation can contribute to those goals. Having reliable data is a foundation for all the policies being developed.
- different topics (geoinformatics, remote sensing, surveying, navigation, transport, satellite communications,...).
- modelling, astrophysics and astronomy).

#### Ladies and gentlemen,

as you can see there are still many opportunities to strengthen the co-operation among stakeholders and international partnerships. In this sense, Slovenia looks forward to create new partnerships and to use space technology for the benefit of all of us.

Thank you for your attention.













Space-related topics are ALSO integrated into Slovenian public education system at all levels. However, education related to European space programs is still sporadic at the lower levels, but there is a strong public interest, in particular by primary and secondary school youth. Within higher education, the role of the Copernicus and Galileo programs is taught within

Space-related research is being carried out in various ways at all Slovenian higher education institutions as well as at Research Centre of Slovenian Academy of Sciences and Arts. Slovenia is promoting and supporting space-related research. The key topics are Earth observation, geoinformatics and astrophysics (microsatellites, optical remote sensing, satellite imagery registration and analytics, the use of high-resolution multispectral satellite imagery, satellite imagery ecosystem







Reggio Calabria, Italy | 5 September 2019



### Statement of Tunisia

By Kamel Besbes, Director-General, Centre for Research on Microelectronics & Nanotechnology,

### The representative of Minister of Higher Education and Scientific **Research of Tunisia**

Thank you very much, Mrs. President and thanks to the government of Italy, to the International Astronautical Federation (IAF), and to the organizing committee of this great event ISF2019. Distinguished Ministers, Distinguished Heads of Delegations, Dear Colleagues, ladies and gentlemen,

The Republic of Tunisia subscribes to the principles of exploration and the use of outer space for peaceful purposes, in the interest of humanity; and in particular for achieving the Sustainable Development Goals, SDG2030 of UN.

The government is actively engaged in defining and developing a coherent strategy in collaboration with the United Nations and friendly countries.

To contribute to this, the Tunisian Commission for Outer Space (CNEEA) is working to coordinate the activities of the different departments and agencies concerned with outer space and to raise awareness of the benefits by exploiting the possibilities offered by space technologies and its applications.

Recently, an ambitious program of space accessibility was launched in March 2018 by the Ministry of Higher Education and Scientific Research with strategic departments such as the Ministries of Defense, Agriculture, Environment and the Digital Economy.

The program began with a strategic event entitled "Towards a Tunisian Space Strategy". Among the guests that participated: a high and prestigious representative of UNOOSA, ESA, CNES, ISRO, a delegation from CAST and of course the representative of Italian Space Agency.

The conference served to convince political decision-makers and to bring together several actors and beneficiaries of space products in order to propose a new strategy, in the short and medium terms, taking into account the means and the applicable policy.

Space education is very important. In addition to the teaching of space technologies and applications in some universities and support to the activities of youth associations, the National School of Agricultural Engineers has launched a new master's degree in 2019, on space applications to agriculture, called "Erasmus + GEOMAG". In addition, recently, we are conducting a collaborative project to develop our capabilities in space technology training, with a project to build our first CubeSat satellite in 2021.

To implement some applications of space, we are currently working on the launch of a new national collaborative development program under the responsibility of the Ministry of Higher Education and Scientific Research. The SAMA Tunisia program currently consists of 7 technical groups, which define strategic actions that can improve the results of this phase of the strategy: legal and regulatory aspects, space technologies, space communications, Earth observation, astronomy and space weather, GNSS and GIS, space culture and the media.

The ambition of Tunisia today is to be part of the new international collaborative movement, particularly with its Mediterranean and African neighbors, to better exploit the products of space in order to benefit from it in the framework of its national sustainable development policy.

As a country associated to the European H2020 program, we are trying to integrate the European approach in the implementation of our Innovation and Research policy also in the space field.

Applications in agriculture, monitoring and control of energy and water resources, better management of land and cities,



optimization of logistics and transport fleets, as well as the digital and industrial transition, are the main goals.

sustainable development, the blue economy and climate change prevention.

illegal immigration, small boat control and rescue at sea after multiple accidents endangering many people.

Mrs President. Distinguished delegates, I thank you all for your kind attention.













- We therefore encourage programs that allow us to use all the information generated by the community from space to support
- In addition, we support collaborative projects to be jointly developed on security in the sub-Saharan region, protection against











## 4 STATEMENTS OF PARTICIPATING INTERNATIONAL ORGANIZATIONS & SPACE AGENCIES

Statement of ASI (Agenzia Spaziale Italiana)

By Giorgio Saccoccia President, ASI



Ministers, Authorities, Distinguished Delegates and colleagues,

It is with great pleasure that I welcome you today in the beautiful city of Reggio Calabria for the 4<sup>th</sup> edition of the **International Space Forum 2019 – The Mediterranean Chapter** - in my capacity of President of the Italian Space Agency (ASI), co-founder with the International Astronautical Federation (IAF) of the International Space Forum initiative since the first edition in 2016 in Trento followed by Nairobi in 2017 and Buenos Aires in 2018. Different chapters for different regions of the world to increase the relations and the number of the Academicians and Universities in the space programs.

At the outset, I would like to warmly thank the Rector of the University Mediterranea of Reggio Calabria, Prof. Santo Marcello Zimbone, and all his Team for the excellent work in organizing this international Forum as well as the President of the Regional Council of Calabria for hosting today this event in this prestigious Regional Council Hall and the Mayor of the Metropolitan City of Reggio Calabria for his availability to welcome the international space community.

This year edition of the International Space Forum is focused on the Mediterranean needs and perspectives, aiming at developing a greater cooperation network among Universities, Research Centers and Academia in general of the region. We are all aware that space provides a precious contribution for the sustainable development of the Mediterranean region: from maritime surveillance to the blue economy, from space knowledge and space education, cooperation, the three main topics of our discussion today. Let me briefly present some programs and activities that ASI is pursuing in the above three topics.

**Maritime surveillance:** satellites for Earth observation provide precious and unique information on "objects" at sea as ships, boats, people, harmful materials and threats.

The geo-localization data monitoring represents an important contribution for the commercial activities, civil and illegal movements, security operations to guarantee safe and controlled activities at sea.

In this field, the Italian Space Agency since 2010 has coordinated the **BLUMASSMED** project of the European Commission for the maritime surveillance in the Mediterranean, followed by the new **EUCISE 2020** project that represented a test bed for the creation of a maritime Common Information Sharing Environment in the 2020 perspective. EUCISE 2020 is part of the Action Plan of the European Maritime Security Strategy, it finished in March 2019 and involved 60 partners, including maritime authorities, universities, research centers and oceanographic institutes of 16 different European Countries. As an in-kind contribution to this project, ASI provided satellite data of the Italian COSMO-SkyMed radar satellite constellation, which allowed near real time satellite services for maritime surveillance.

**Space and Blue Economy:** The so-called "blue economy" comprises all the economic and commercial activities related to oceans, seas and coasts that cover a wide range of sectors (fisheries, coastal tourism, maritime transport, coastal and environmental protection, etc).

Space has a crucial role for the development of this essential economy in the Mediterranean. In fact, Earth observation data, integrated with positioning and Communication data and technologies, can be considered as an intelligent tool in the implementation of a sustainable blue economy in the Mediterranean.

As mentioned before, the Italian **COSMO-SkyMed** constellation is a unique dual system composed of four Synthetic Aperture Radar (SAR) satellites, with very-high revisit time, capable to acquire data, night and day, under any atmospheric condition, thanks to the high-resolution X-band radars.

Next December, Italy will launch the fifth satellite of the constellation, the first of the **Second-Generation** to ensure the operational continuity of the system, while achieving a generational step ahead in terms of functionality and performances.

Let me recall here that COSMO-SkyMed stands for *COnstellation of small Satellites for Mediterranean basin Observation*, originally conceived in 2007 for the observation of the Mediterranean region and then extended to worldwide observation and applications.

In more than 10 years of activity, COSMO-SkyMed has acquired a tremendous amount of data all over the world including the Mediterranean area. To encourage the scientific utilization of such data, in 2015 ASI issued an "Open Call", with no expiry date, addressed to the national and international scientific community. For the projects selected within this Call, ASI provides COSMO-SkyMed data free of charge. I warmly invite the scientific progress and to the international cooperation in the Mediterranean region.

COSMO-SkyMed is also a contributing mission to the European Union Earth observation program **Copernicus** and to its services to monitor the environment and its natural resources and for the management or disaster risk mitigation.

In addition, with the launch of the **PRISMA** hyperspectral satellite, in March this year, ASI has acquired another important tool to improve its capability to observe the maritime environment. PRISMA is the first European Earth Observation system with innovative hyperspectral optical instrumentation able to perform chemical and physical analysis from Space. In fact, one of the main fields of application of hyperspectral data regards inland and coastal waters, such as water quality, chlorophyll monitoring, alga bloom, etc.

Finally, you are all invited to view the exhibition with pictures of COSMO-SkyMed set up in front of this Hall.

**Space Education, Cooperation and Scientific Knowledge** means to contribute to the culture for the new generations. Academia and Universities are called to play a key role in the dissemination of space knowledge and education, in the development of new space curricula, Courses and disciplines linked to the new space applications and products. Among its missions, ASI promotes and financially support research and academic projects all over Italy, courses of studies for students in Italy and abroad through agreements, fellowships, different contributions and, in particular, the expertise and knowledge of its personnel.

In this regard, I am particularly pleased to announce that just a few minutes ago ASI has signed an Agreement with the University Mediterranea of Reggio Calabria to support the project to offer a new Space curriculum dedicated to the Mediterranean needs for which every contribution is welcome.

Thank you for your kind attention.











4<sup>th</sup> International Space Forum at Ministerial level
The Mediterranean Chapter
Reggio Calabria, Italy | 5 September 2019



### Statement of CNES (Centre National d'Etudes Spatiales) By Jean-Yves Le Gall President, CNES



Dear Ministers, Dear colleagues and friends,

It is a great pleasure to be here with you today for the fourth edition of the International Space Forum at Ministerial Level to engage stimulating discussions on the "Mediterranean Chapter". Characterized by a cultural diversity nurtured by a rich history, the Mediterranean region is becoming a key player in the space sector. The benefits of the development and utilization of space in a region facing tremendous challenges are undeniable. As the government agency of a Mediterranean spacefaring nation, France, CNES is focused on providing space solutions to three real-world challenges: innovation, climate and exploration.

First, innovation. Encouraging the uptake of space solutions is an effective way to meet the challenges that Mediterranean societies are facing today and will do in the future. Healthcare, transport, agriculture and land planning are just some of the crucial applications for which space affords excellent and cost-effective solutions. Through our efforts, CNES aims to encourage collective emulation to boost creativity and keep up with the pace of change. Innovation is also vital for launching ambitious missions enabling crucial scientific advances. For example, CNES has developed world-renowned expertise in oceanography with the Jason series of altimetry satellites developed in partnership with NASA. Regarded as a vital resource by the world's oceanographers, the Jason satellites have helped scientists better understand the vast system of deep and surface ocean currents. They have also revealed that the global sea level is rising at an average rate of 3.4 mm per year, a phenomenon that directly affects the Mediterranean region.

This example leads to our second critical challenge, which is the climate. The time has come to seriously tackle global warming and its impacts, to which the Mediterranean countries are particularly exposed. Nations need indicators tailored to their needs, so they can gauge the effects of these impacts and devise solutions. With the SCO, the Space Climate Observatory, which was created last June at the 53rd International Paris Air Show, CNES is calling on its partners to provide an effective tool to tackle climate change. Mediterranean partners have shown a strong commitment to this initiative, which is a great step forward we should be proud of.

The third challenge I would like to address is exploration. By gaining new insights into the Universe and our galaxy, we also learn more about our home planet and ourselves. With science missions enabling us to explore the surface of Mars and land on an asteroid, we are advancing knowledge for all humankind. But to do so, international cooperation is a necessity.

And it is on this last point that I would like to conclude. Through the years, CNES has forged a wide range of European and international partnerships spanning the full spectrum of space activities, from studies and joint missions to exchanges of personnel, information and data. Among CNES's numerous international partners, numbering close to 70, Mediterranean countries have a special place. A big effort is made to forge ties not only with established space nations but also with new space powers. To illustrate this, some of our most active cooperations should be mentioned.

CNES has developed a historic partnership with Italy, whose space programme has many similarities with the French programme: this may be why our cooperation is so intense. The ASI and CNES together developed the Athena Fidus mission: a secure telecommunication satellite for civil security in Italy and France. The ASI became a founding member of the Space Climate Observatory by signing the Joint Declaration of Interest with 22 other space agencies throughout the world at a ceremony during the last Paris Air Show in the presence of the French President Emmanuel Macron. CNES and the ASI are jointly developing the Majis instrument for ESA's JUICE (Jupiter Icy moon Explorer) mission.

Spain is another key partner of CNES in the region, with its strong involvement in Earth observation optical satellites for defence

and security. This cooperation is also active at the level of ESA, since Spain chairs the ESA Council at ministerial level and will organize the next meeting in Seville on 27 and 28 November, co-chaired by Portugal and France. CNES has also recently strengthened its cooperation with Greece, Portugal and Malta. Let me remind you that CNES and the Portugal space agency signed a cooperation agreement on 17 June 2019 on launcher expertise, Earth observation data, NewSpace and nanosatellites. This is the first agreement between the two agencies since Portugal Space's inception in March 2019. A cooperation agreement was also signed in October 2017 between CNES and the Malta Council for Science and Technology to boost the development of Malta's space sector.

But CNES is also paying close attention to its partners on the other side of the Mediterranean Sea. Indeed, cooperation with the Israel Space Agency (ISA) is very active, in particular through the Venµs (Vegetation and Environment observation on a New Micro Satellite) joint satellite project orbited in August 2017 by a Vega launcher. ISA also became a founding member of the Space Climate Observatory, demonstrating that the east side of the Mediterranean is just as active as the west as far as climate change is concerned.

With Morocco, CNES, CRTS and CRERS signed a Framework Agreement in 2015 on space. Climate change is very high on our common agenda and our cooperation is very much oriented towards the applications of space in water resources, agriculture, oceanography and coastal areas, all of which are very relevant to the topic of this conference. Copernicus data is proving to be very powerful for this wide range of applications. Our Moroccan partner has also been very active in promoting and setting up the Space Climate Observatory, which has potential benefits for Africa. A joint nanosatellite demonstrator is under consideration with our Moroccan colleagues for applications in climate change.

More recently, our cooperation with Jordan was formalized in 2017 with the Crown Prince Foundation to allow internships for Jordanian students with the CNES teams working on nanosatellites.

These affordable space projects are not only a powerful educational goal but, thanks to technology miniaturization, they are delivering interesting scientific and societal outcomes that clearly demonstrate the benefits of space technology.

To conclude, these examples of cooperation illustrate how players with very different backgrounds and capabilities can combine their energies to take practical steps to meet the needs of Mediterranean populations and help them develop their space capabilities. And I have no doubt that this forum will help serve this common objective.















### Statement of CONAE (Comisión Nacional de Actividades Espaciales) By Raúl Kulichevsky Executive and Technical Director, CONAE



Honorable Government Ministers Distinguished Heads of Delegations

On behalf of CONAE, it is a pleasure to attend this 4<sup>th</sup> International Space Forum at Ministerial Level, the Mediterranean Chapter. As some of you may know, CONAE hosted the 3rd Forum, the Latin American and Caribbean Chapter, that took place in Buenos Aires in November 2018.

I can proudly tell you that the 3<sup>rd</sup> Forum was a complete success. As a result, the dialogue of the Ministerial representatives of our Region regarding the importance of the space based information has been deeply enhanced.

That success motivated me to attend this Fourth Chapter. But also because we, at CONAE, believe it is not only important to consider the significant impact of the space activities for a certain region but globally.

CONAE can contribute to meet the Mediterranean needs.

This contribution can be provided by means of the information of the SIASGE Constellation. The SIASGE constellation is the result of the partnership of ASI and CONAE with the Cosmo-Skymed and the SAOCOM satellites. The SIASGE Constellation have the unique capability to provide, not only X or L Band SAR Instruments information but also the result of the combination of these two complementary bands.

In addition, in the near future, we will be able to contribute with the information provided by the SABIAMar Mission.

The main objective of the SABIAMar mission is the study of the coastal and oceanic biosphere, focusing on monitoring the Oceanic Waters and the Coastal Waters. SABIAMar is going to be an important source of information for the Argentina's Pampa Blue Project, for example, for a rational management of fishery resources in Argentina but also in the analysis of climate change at global level.

For sure, the SIASGE Constellation and the SABIAMar Mission can make a significant contribution to the objectives of Maritime Surveillance, Blue Economy and Scientific Knowledge in the Mediterranean.

Thank you very much for your attention.





### **Statement of COSPAR (Committee on Space Research)** By Pietro Ubertini President, COSPAR

Good afternoon, Ministers, Local Authorities, Heads of Delegations, IAF President and Executive Director, ASI President, Industry Representative, Distinguished Guests,

Ladies and Gentlemen,

It is an honor and a special pleasure to be here in Reggio Calabria at the **International Space Forum – The Mediterranean Chapter** - dedicated to "Space technology and applications meet Mediterranean needs".

COSPAR, the Committee on Space Research, comprising more that 10,000 associates, mainly scientists active in space research, as well as industrialists, has the objective to promote on an international level scientific research in space, with emphasis on the exchange of results, information and opinions, and to provide a forum, open to all scientists, for the discussion of problems that may affect scientific space research.

COSPAR is then particularly committed to improve the scientific environment and impact of the *Mediterranean Countries* and clearly resonants with this Forum discussion and the interests of the Mediterranean Chapter.

Yesterday, thanks to the possibility to visit the "Museo Archeologico di Calabria" we have seen the exquisite reminiscence of the top artists, actually anatomists, that were able, 2500 years ago to imagine the

astonishing athletic bodies of the two "Bronzi di Riace". Perfect muscles that Leonardo, Michelangelo and other sculptors were able to reproduce in marble artefacts only 2000 years later. In fact, these unknown anatomists, or body-artists if you wish, would have not been able to produce these incredible statues without the leading-edge technology available at that time: metal fusion technique, use of copper, iron, silver, gold mixed together, etc. We still do not know how they managed, yet we should learn from their efforts: our most talented scientists should imagine future space missions that will enable us to better understand the evolution of the universe by means of space observatories, manned and robotics missions, and finally decipher the evolution of life that resulted in our civilization.

Many examples can be made: recently we detected the gravity waves emitted by neutron stars coalescing together, measuring minuscule space-time variations, 100 years after Einstein imagined a completely new Universe, and in real time we detected with the INTEGRAL and FERMI satellites the origin of the gravity waves and, in turn, heavy metal production: gold, europium etc.

Europe, the US, and Japan are designing the largest ever planned X-Ray space observatory, ATHENA, with cryogenics detectors cooled to a fraction of a Kelvin degree, to observe the edge of the Universe and finally understand its birth and evolution.

**COSPAR** and the **IAF** have now a similar role to that of the people that produced the "Bronzi di Riace": younger scientists are designing future space experiments that need cutting edge technologies, conceived by scientific institutions, and then developed and implemented by space industries in the following decades.

**COSPAR** and the **IAF**, along with other international institutions, need to work in synergy to foster and boost space science and technology and in turn to give space industry a chance to develop technologies and tools, in the next 10-20 years, for a better day-by-day life: **The Space Economy is already started**.













Reggio Calabria, Italy | 5 September 2019

Finally, I wish to mention that COSPAR has engaged into a strategic effort to enhance its influence and impact, aiming at revamping its relationship with the younger generation and with industry and extending its scope to the social sciences, through the formation of two new Panels - on Innovative Solutions and on Social sciences and Humanities respectively - and the renewal of its categories of Associated Supporters.

COSPAR is also pursuing efforts in realigning its communication – a new web site, a new electronic bulletin you will soon receive, increased presence on social networks, closer links to journalists and media, new book series, etc.

Regarding the Mediterranean aspect. I wish also to highlight the upcoming 4th COSPAR Symposium on "Small satellites for sustainable Science and Development", and Capacity Building Workshop to be held in November in Herzliva (Israel), including a Space Agencies roundtable, the 2022 General Assembly in Athens, the recent membership of Cyprus, and the Capacity Building program which is open to countries in the Mediterranean region.

Thank you for your kind attention.









### Statement of ECSL (European Centre for Space Law) **By Sergio Marchisio** Chairman, European Centre for Space Law (ECSL)

Excellencies, Distinguished Delegates, Friends and Colleagues

As Chairman of the European Centre for Space Law, I would like to thank you for the opportunity to address the participants to the Mediterranean Chapter of the 4<sup>th</sup> International Space Forum at Ministerial Level. We recognize with appreciation that this Forum represents a valuable annual gathering aiming at encouraging a global and local debate on the necessity of promoting a greater involvement of Universities and national Academies in space activities. We appreciate that one of the main topics of this year's Forum is space education, cooperation and scientific knowledge, which is of particular interest to my institution.

The European Centre for Space Law, established in 1989 in Paris under the auspices of the European Space Agency, has the mandate to promote the awareness, knowledge and development of space law at the European level. Space Law grew out of the need to create norms to govern the expanding scientific and technological uses of outer space, new space applications, and the provision of new services on Earth. Current members of the ECSL include professionals working in a wide range of areas within the space sector, lawyers, university professors and students. As a federative mechanism, the ECSL strongly relies on a network of National Points of Contact, which are the interface between the ECSL and its members at national level. To date, there are 17 NPOCs set up in ESA Member States, a growing network instrumental to the achievement of the ECSL's goals. Distinguished delegates,

The ECSL organises a range of activities and events to encourage education, capacity-building and research in space law within Europe and beyond. We usually count students and professionals from several Mediterranean countries taking part in our activities, particularly in the two-weeks intensive Summer Course on Space Law and Policy, open to students as well as to young professionals already working in space-related sectors. The Course organised each summer in cooperation with a host university is now in its 28th year and boasts a large family of alumni around the world. This year, on the 30th anniversary of our Centre, it has been organised with the University of Messina, where the first ECSL Summer Course ever was organised in 1992, and is presently going on until the 12 of September. The theme of this year's Course mainly focusses on the use of outer space in managing and monitoring disasters, aiming to both refer to the peculiarity of the territory in which the Summer Course is taking place and to highlight the particular relevance of space technologies and resources in disaster mitigation.

#### Distinguished delegates,

As in Europe, the Mediterranean space sector is developing. The emergence of more accessible, cheaper and better technology means that more countries, universities and private companies are manufacturing and launching satellites. Overall, this implies many great opportunities, but also a need for law to regulate emerging activities. The UNISPACE+50 process launched in Vienna last year by the United Nations and its Committee on the peaceful uses of outer space has identified good governance and a sound regulatory framework as essential for ensuring the sustainable uses of outer space. To achieve this, knowledge and awareness of space law is essential. The ECSL will continue to support the UNISPACE+50 process, and the following SPACE 2030 Agenda, by ensuring capacity-building opportunities for student and professionals within the field of space law and policy. In this regard, we consider that the Mediterranean Chapter of the International Space Forum has a tremendous potential for fostering the development of space based services in this region and the related educational and research activities within the existing academic institutions. The ECSL is always happy to consider new ways of cooperating and sharing our experience and expertise. As Chairman of the ECSL, I therefore invite anyone interested in our activities or looking to develop new partnerships or initiatives to contact us and consult our webpage www.esa.int/ecsl.

Thank you for your time and attention.











4<sup>th</sup> International Space Forum at Ministerial level - The Mediterranean Chapter Reggio Calabria, Italy | 5 September 2019

# Statement of ESA (European Space Agency)

Head of Enterprise, Science, Applications and Climate Department

Distinguished colleagues

By Gordon Campbell

Thank you for the opportunity to participate in this important event. As an inter-governmental space agency, ESA is well placed to support the objectives of this meeting given complete range of space domains addressed by ESA and its international reach in support of our Member States

In the present circumstances, the primary ESA space capability of relevance to the Mediterranean region is Earth Observation and many delegates have already highlighted their interest in this domain. I would like to emphasize that the ESA Earth Observation contribution to moving forwards with the Mediterranean objectives highlighted today requires working with both "Traditional space" and "New Space"

Within traditional space, ESA is developing and operating a range of satellites such as SMOS, FLEX and BIOMASS that will provide unique measurements to better understand Earth system dynamics in the Mediterranean linked to disciplines such as land surface change/land degradation and water cycle processes. In addition, the development of satellites such as the Sentinels and increasingly meteorological missions such as MSG and MTG enable the combination of precision LEO measurements with fast revisit meteorological data to provide unique monitoring and assessment capabilities for environmental and security policies in the region. Finally in "downstream exploitation", ESA is at the forefront of developments (together with our international partners) to better use EO for the achievement and monitoring of the Sustainable Development Goals as well as embedding EO deeper into leading edge Earth science and stimulating the development of new applications and commercial services to complement our Member States activities in strengthening the Mediterranean economy

Working with NewSpace partners ESA is fostering innovation, supporting sustainable development and stimulating the growth of innovative industrial capabilities for the entire space value chain for the Mediterranean region. In particular, within ESA we have on-going and planned activities directly targeting Mediterranean issues including:

- Fragile habitats and ecosystems, developing systems and applications to support enhanced characterization of climate and anthropogenic stress and support their sustainable management
- Security in its widest sense, where both new small satellites, developments in AI techniques and advances in data analytics and processing (including multi-source fusion) are enabling step advances in civil protection (eg exposure to natural hazards,), environmental security (management of land degradation, natural resources extraction) and law enforcement (eg environmental crime and counter-proliferation)
- Economic development where space and non-space sensor integration, cloud based processing and platform based access to data, information and support tools enable seamless embedding of EO into the working practices within a range of economic sectors including maritime transport, urban development, natural resources management, tourism and cultural heritage and infrastructure management

The primary focus of activity for the Mediterranean region is the ESA Mediterranean Regional Initiative. This is starting now and is structured as three main elements:

- A science element targeting enhanced use of EO to address the regional Earth science priorities, in particular water cycle, oceanographic processes and the response of the Mediterranean system to external forcing
- An applications element targeting environmental protection, public health, security and economic growth

Customized platform and processing resources optimized for Mediterranean priorities able to support the science and of new ICT capabilities and applications

Complementing this dedicated initiative, ESA has started a range of activities to better support initiatives that address Mediterranean challenges. Examples include the development of processing infrastructure for faster access (ie within minutes) to satellite imagery and stimulating the development and testing of small satellite constellations and associated infrastructure (eg transportable ground stations) to expand satellite information content, availability, coverage and persistence. In addition ESA is developing new processing paradigms building on state of the art AI and big data analytics capabilities (eg super-resolution, combined parametric and non-parametric analyses) to ensure EO can address a wider range of application scenarios as well as providing a more accessible framework to stimulate EO related business developments within the various innovation clusters around the Mediterranean region. These developments have started over the last 18 months and we are proposing to expand them under the upcoming ministerial council in November 2019.

I hope I have been able to provide visibility of how ESA is working with EO satellites, systems, scientists, application developers, ICT companies and start-up entrepreneurs to harness the capability and potential of current and planned European space capabilities to address Mediterranean priority issues. Thank you again for the opportunity to provide you all with this overview













applications developments, ensure effective integration of space and non-space datasets and stimulating the development







4<sup>th</sup> International Space Forum at Ministerial level
The Mediterranean Chapter
Reggio Calabria, Italy | 5 September 2019

AONAUTICA 4

### Statement of ESPI (European Space Policy Institute) By Marco Aliberti Senior Research Fellow, ESPI



Distinguished delegates, Dear colleagues,

It is a honour and a special pleasure to be at the 4<sup>th</sup> edition of this space forum and deliver a statement on behalf of the European Space Policy Institute.

ESPI is an independent public think-tank based in Vienna focusing on European and international space affairs. As per our mission statement, the objective of ESPI is to provide decision-makers with informed views on mid- to long-term issues relevant to Europe's space activities. In this context, ESPI acts as an independent platform for developing positions and strategies.

The Institute fulfils its objectives through various multidisciplinary research activities leading to the publication of books, reports, executive briefs, proceedings and position papers as well as to the organisation of conferences and events, including our annual Autumn Conference.

The Institute is supported by 17 members including the European Space Agency, the European Commission, national space agencies and major satellite operators and manufacturers. Located in Vienna, the centre of international space diplomacy, ESPI has developed a close relationship with many international partners, from both established and emerging space actors.

The topics that are being discussed today are deemed of key importance by ESPI. As a matter of fact, over the past few years, ESPI has conducted a number of research projects and organised several workshops and conferences along such topics as space solutions to tackle regional and global challenges, capacity building in emerging countries, engaging stakeholders in the context of UNISPACE+50, space for supporting Africa and the role of space within the sustainable development efforts.

Through this latter research and its related activities, for instance, ESPI has been mapping possible space involvement onto the priorities defined in the Sustainable Development Goals, and, in this context, it has been seeking to reinforce a dialogue between space stakeholders and SDGs stakeholders.

A key focus of the Institute has in particular been to look beyond the space infrastructure issues to applications that optimize the usefulness of space infrastructure. We have hence highlighted how space can be central for improved agriculture, water management, the fight against desertification, protection of cultural heritage, or the establishment of renewable energy facilities. And we have also shown that more can be done on space-enabled telemedicine, e-health and tele-learning, especially in terms of making key actors, such as NGOs, aware of the possibilities. Indeed, what we ESPI been underlining through its research, are not simply the potentialities offered by space solutions, but also how to promote the uptake of better space solutions.

In this context, we shall not deny that a perennial problem of the space community has been how to communicate its potentialities to society and non-space decision makers. Often this has led to unproductive '*push*', where stimulation of the 'pull' would have been societally preferable. However, pull sometimes presupposes technology understanding which seems to justify a degree of push. A sort of Catch 22, it may be argued... A main duty for the space community is hence to establish proper modes of dialogue with the diverse stakeholder groups. The dialogue should be continuous and bi-directional so that the space community can inform about the *potential of space* and stakeholders can express their needs and expectations in a more effective and realistic manner.

Beyond this much-needed dialogue, another important enabler that will greatly help to meet societal needs – be them of the people in the Mediterranean region or in other emerging countries – is offered by the expansion of cooperation efforts among scientific and academic institutions. In this respect, ESPI believes that mechanisms for an increased level of sharing of data & scientific discoveries among the scientists of the Mediterranean region could be envisaged. The overarching aim would be

to achieve an expanded quality and availability of, and accessibility to, the respective space science data as well as optimise exploitation of these data.

In light of the unfolding global shifts in the very way of doing scientific research in the 21<sup>st</sup> century – as *inter alia* evidenced by the progressive opening of the research processes and globalisation of the scientific community, the surge of producers and consumers of scientific data and, ultimately, by the emergence of the so-called Space 4.0 dynamic – there not only appears to be much scope to harvest this objective but also a necessity to enhance open-source cooperation between international partners. Among other things, this objective could be for instance achieved by making use of centralised analytics that can expand the exploitation of scientific data by the different user communities and lead to the faster advancement of knowledge.

In this context, initiatives such as the one launched by ASI and UNOOSA with Open Universe must be lauded, for they also provide an outstanding model to be explored for expanding regional cooperation among Mediterranean countries; a regional space cooperation, that, in turn, may act as a catalyst for fostering closer political ties as well as economic and cultural cross-pollination.

Understandably, ESPI considers that these initiatives must also be accompanied by active diplomatic efforts from all the countries involved. Space diplomacy – in its dual connotation of *diplomacy for promoting space and of space for promoting diplomacy and cooperation* – has a major role to play here.

Incidentally, these two intertwining dimensions of space diplomacy will be the overarching theme of our 13th Autumn Conference, which will take place in Vienna on the 18-19 September to discuss ways to promote international cooperation, and explore the contributions of space diplomacy to harvest opportunities in the industrial, political, security and defence realms.

In the hope many of you will be able to attend this forthcoming event, I kindly thank you for your attention.



















4<sup>th</sup> International Space Forum at Ministerial level – The Mediterranean Chapter Reggio Calabria, Italy | 5 September 2019



### **Statement of EURISY** By Dominique Tilmans President, EURISY

Thank you, Madam Chair, Dear friends of space, Dear space enthusiasts,

For my introduction allow me to get off the beaten track.

Do you know what is appealing in such an organization dedicated to space, in this case maritime?

The diversity of participants. Gathered here today are: Decision- makers, PHD's, Researchers, Space Authorities, Scientific and Academic institutions as well as Heads of Space Agencies and representatives of International Space Organisations.

Great! But let us note that meetings like this attract only people from the Space Sector and people with an interest in this area. But I want to underline, the presence Ministers and Local Authorities, already convinced that space is a lever to develop their Country and cities.

But why the diversity of participants is so interesting?

l'll tell you...

Because space needs advocates! Because space still lives too much in isolation Because space is not popular enough. Because space is not well-known enough on the services it brings!

Allow me to explain: Everybody loves to see rockets, new spacecrafts, movies on space, astronauts and pictures of the Earth from space.

But people are unable to identify 10 services even 5 services provided by space! And worse they thing that space is too expensive and the money invest in space will be better invest on earth! A fundamental problem! A dilemma! Reasons why we need advocates!!

For my point of view, we have 3 major roles to play:

- Adapting our communication to the public. Most of the time the communication is too technical to be attractive. Space must be closer to civil society!!
- Convincing more Politicians, which shape public policy and allow funding's at all level (national, regional and local), that space is a super tool to help them in their daily management.
- To make Space more in support in Academics initiatives unrelated to space.

As someone who has spent a career of 27 years in national politics in Belgium, I can say from my experience that we do not enough to convince politicians, who are unconnected with Space and the benefits that it can bring. This effort of conviction, Eurisy is doing it now for 30 years. We do it of course with our members which are public institutions

and mainly Space Agencies- in particular Italian Space Agency that I would like warmly thank for the co-organization of this conference.

Let me turn now to our subject: what satellite applications may do in the Mediterranean?

We have seen, in the keynote speeches and statements some great examples of how applications derived from national



programmes and the space programmes of the European Commission provide services in the field of Maritime Surveillance, and monitoring the state and health of the Mediterranean Sea.

At Eurisy, most of the countries of our members have access to the sea, reason why we dedicated recently one of our staff on maritime questions.

In recent years Eurisy has collaborated at the concept of "satellite solutions for smarter islands", focussing on user needs in field such as transport, water management, offshore energy, marine farming, and offshore pollution.

None of these fields is traditionally related to space, but all benefit greatly from the incorporation of satellite applications aimed at monitoring and managing activities.

This kind of actions can help decision makers to develop dedicated policies in civilian sectors which will take advantage of the benefits of satellite services.

Y last example is the "European Smart Islands Initiative" of which many Mediterranean Islands are members. This is an initiative that "seeks to convey the significant potential of islands to function as laboratories for technological, social, environmental, economic and political innovation". Again, it does not mention satellite applications specifically anywhere, but it is clear from Eurisy's work on Smart Islands that satellite applications play already a role and can play a more important role in all of these areas.

As you see, Eurisy is already working with a number of associations or networks representing different communities in civil society. By engaging with these communities, we help the user-needs to identify their needs and communicate it back to the Space Sector to help to develop satellite application solutions.

I conclude,

Forget, forget that space is just the world of high-level engineers and technicians working on propulsion, new materials or engines and robots for space missions!

Space also becomes the world of end-users, serving civil projects, helping for example entrepreneurs and farmers with new technologies, facilitating the life of the citizens at home, in the traffic, on sea but also for taking care of their heath with telemedicine, emergency call and many many others services without forgetting the monitoring of pollution and climate change. Yes, we can say that space definitively is a support, an opportunity and a chance for all of us on earth!!















### Statement of GSA (European GNSS Agency) By Carlo des Dorides **Executive Director, GSA**

uropean **G**lobal Navigation **S**atellite Systems Agency

Dear President of the Regional Council of Calabria, Dear Mayor of Reggio Calabria

Dear Heads of Delegations, Dear colleagues,

It is a pleasure for me as Executive Director of the European GNSS Agency, GSA, to be here today at this "International Space Forum 2019- The Mediterranean Chapter". The focus on "Space Technology and Applications meet Mediterranean Needs" could not be more relevant for GSA. The Agency is the EU user interface for business, institutions and user communities wanting to implement innovative and effective solutions - leveraging the European Global Navigation Satellite Systems (GNSS) Galileo and EGNOS - to respond to emerging economic, societal, and environmental challenges.

The core mission of GSA is to provide accurate positioning service worldwide with Galileo, and with EGNOS at European region level, augmenting GPS and specifically addressing the civil aviation world. Our current mission includes the safe and secure operation of these two complex satellite systems, to deliver high quality services accessible to all in the most cost-efficient manner. In the near future, according to the recently approved EU Space Programme Regulation, GSA will be endorsed also with responsibilities for the other European flagship space programme Copernicus, for Earth Observation, to maximise its use and create synergies among EU Space Programmes, for the benefits of business, institutions and society.

But before we move on, let me share a story.

For years I used to start my speeches explaining why Europe needed to invest in Space. The most frequently asked question was: "Why does Europe need Galileo?"

Fast forwarding to 2019, slowly everybody is understanding that we are already in the SPACE age. It is no longer a question of IF space applications - including satellite navigation - are going to change the way we live, but rather the question is HOW they will shape our societies. In this HOW lie uncertainties of course, but most importantly opportunities, opportunities for job creation, for innovation, for sustainable growth, for resource efficiency, for social inclusion.

So today I am NOT here to tell you why we need space, or satellite navigation, but HOW space, and satellite navigation in particular, is contributing to the present and future of the delicate ecosystem we are surrounded by and how it is empowering the maritime segment with cost-effective solutions.

Space driven innovation is shaping all segments, from smart-mobility to smart agriculture, to emergency response. Today 90% of the apps running on our smartphones requires location data, and 50% of them use positioning provided by satellites navigation systems.

Ladies and gentlemen,

#### One third of the world's shipping passes through the Mediterranean.

Again, the guestion is not IF but HOW can Galileo and EGNOS help manage such a volume. WHAT applications are already in place or can be developed to manage such a fleet, using the provision of extremely precise Position, Navigation and Time, for navigation, for traffic management, for search and rescue etc.

And there is more, it is estimated that in the Mediterranean ships discharge between 100,000 and 150,000 tonnes of crude oil each year. What can the European Space Programme do to monitor and contain the damage, identify responsibilities and prevent eco-tragedies?

And I am not talking about the future I am talking about right now! YES, we already have the capacity to act. To give you an example, it is estimated that by 2025 thanks to Galileo and EGNOS the EU will save 15 million tonnes of CO2 emissions, 3.5 billion litres of fuel. With smart-farming thanks to EGNOS and Galileo we will be saving 1.5 million tonnes of fertilisers and 4,500 tonnes of pesticides. How can we transfer the lessons learned in aviation, automotive and other domains to the Mediterranean context, and develop smart solutions leveraging space? How can EU space programmes support the preservation of the Mediterranean, and secure growth and sustainability in one of the world's most populated and developed areas in the world.

To name but one of the roles that GNSS can take up in maritime, IALA, the International Association of Marine Aids to Navigation and Lighthouse Authorities, is providing guidance to maritime authorities in relation to the obsolescence problem of their Differential GNSS (DGNSS) infrastructure. One of the options preferred is the use of Satellite-Based Augmentation Systems (SBAS), which for Europe is EGNOS, to complement the DGNSS service.

The planned evolutions of this system include not only to fully benefit from Galileo on top of GPS, but also to provide a Maritime Safety of Life service.

In addition to the core contribution of GNSS to the maritime world and the blue economy, I would like to mention other less known usages:

- . reports for **Traffic management** and situational awareness
- (VMS) used in **Fisheries monitoring**
- assistance of Cospas-Sarsat.

Time does not allow me to give you a full picture of EU GNSS contributions to respond to the needs of the Mediterranean, but this speech would be incomplete if I were not to mention the other flagship European Space programmes, Copernicus.

Copernicus, "Europe's eyes on Earth" is the European Earth Observation programme that provides (free of charge, as is the case for GNSS) essential information for six main domains: Atmosphere monitoring, Marine environment monitoring, Land environment monitoring, Climate monitoring, Security services and Emergency services.

As you can see I did not come here with any readymade answer, but rather with a toolbox of satellite-based services which I hope are relevant to the challenges that you and your communities are facing. These instruments are already available to you all, at no cost.

Ladies and gentlemen,

We are at the cusp of a revolution powered by space technologies and applications. Galileo, EGNOS and Copernicus are European assets that need to be translated into advantages, benefits, growth, and sustainability. We need your help in understanding how to accelerate progress in the convergence and deployment, and really get the biggest return on investment from European space infrastructures and services.

I look forward to making GNSS for marine and maritime a European success story and a business case that can be exported across the world.

Thank you for your attention.





GNSS is the enabler of Automatic Identification System and Long Range Identification and Tracking (AIS & LRIT) position

GNSS (potentially with position authentication) is the enabler for position reporting (Blue box) in Vessel Monitoring System

The Galileo Search & Rescue (SAR) service is an important contributor to the Global COSPAS / SARSAT service. Galileo SAR reduces the detection time from 4 hours to 10 minutes and improve the position of the distress signal from a radius of 10 Km down to 2 Km, hence saving lives and reducing the exposure to risk. On average, six lives are saved every day with the 4<sup>th</sup> International Space Forum at Ministerial level - The Mediterranean Chapter Reggio Calabria, Italy | 5 September 2019



### Statement of IAF (International Astronautical Federation) **By Jean-Yves Le Gall** President, IAF



Distinguished Ministers, Distinguished Heads of Delegations, Dear Colleagues,

It is a real pleasure for me, as President of the International Astronautical Federation, to address you today at this fourth edition of the International Space Forum at Ministerial Level – The Mediterranean Chapter, focusing on the theme of "Space Technology and Applications meet Mediterranean Needs".

Since its creation in 1951, the IAF has proudly cherished its central mission of connecting all space people by continuously fostering international cooperation worldwide, by encouraging the advancement of space knowledge and by nurturing dialogue between scientists, engineers and policy-makers for the benefit of humanity.

Thanks to the tireless efforts of its founding fathers and all the zealous volunteers who followed, the Federation is today the world's leading space advocacy body with 366 members, including all key space agencies, companies, societies, associations and institutes across 68 countries. Over 40 administrative and technical committees support the Federation in its mission.

In order to successfully answer the needs of the space sector for an optimal global cooperation, the IAF focuses on six leading missions:

- Promoting cooperation: the IAF's International Astronautical Congress and various IAF committees provide unique 1. collaborative platforms for experts from space agencies, industry and research.
- 2. Advancing international development: the IAF is building a future of cooperation, development and international friendship, bringing together experts from developed and emerging space nations.
- Sharing knowledge: the Federation has many well-established channels to disseminate information within its global 3. network and the wider space community.
- 4. Recognizing achievements: the Federation's prestigious awards are presented annually to individuals and groups who have distinguished themselves in the global space arena.
- Preparing the workforce of tomorrow: to nurture new talent, the Federation has many activities targeting students and 5. voung professionals.
- Raising awareness: the global network of the IAF, and IAF publications, help promote the public appreciation of space 6. activities worldwide.

When taking over the Presidency of the Federation in 2016, I made it my firm intention and my obligation together with the experienced team of Vice-Presidents, to guarantee a sustainable development of the IAF, taking into account and responding to global challenges ahead of us. Convinced that the scientific and academic expertise represents an essential element for a longterm sustainable development of the future space activities and under the auspices of the IAF Global Innovation Agenda 2016 - 2019, we decided to focus our efforts on better involving worldwide universities in the IAF and space community.

With the guidance of the, at the time, IAF Vice President for Science and Academic Relations, Roberto Battiston, Former President of the Italian Space Agency, the Federation created in 2016 the International Space Forum at Ministerial Level – ISF, with the aim of encouraging a global discussion on the need of promoting a greater involvement of Universities and national Academies into space activities.

The successful series of International Space Forums at Ministerial Level, was initiated in Trento in 2016, thanks to the cooperation

of the International Astronautical Federation – IAF and the Italian Space Agency – ASI. The series continued in 2017 and 2018 with two new regional editions: the African Chapter that took place in Nairobi Kenya, and the Latin American and Caribbean Chapter, that took place in Buenos Aires, Argentina. During these past editions, representatives from the two regions engaged in interesting discussions about the role space technologies could play in facing some of the challenges in the respective areas, and the opportunities for their countries' socio-economic development that could be facilitated by the development of the space sector.

Today, we are gathered here in Reggio Calabria for the 4th edition of this Forum - The Mediterranean Chapter, jointly organized by the IAF, the Italian Space Agency and the University "Mediterranea" of Reggio Calabria, which, I am happy to report, has recently applied to become a Member of the Federation.

Ladies and gentlemen,

Why focusing on the Mediterranean region for this edition of the ISF?

The answer is simple: we need to protect and preserve this unique area of the world. Surrounded by three continents, Africa, Asia and Europe, the Mediterranean region's cultural and natural richness is exceptional. It is a region of constant change and it is today at the heart of great economic and social exchanges.

The IAF acknowledges that the Mediterranean basin has been, for the past decades, under tremendous pressure, in particular due to human activities. Climate change is an increasing concern and, over the last few decades, we have witnessed exponential growth in potentially catastrophic environmental changes. The constant threats of water shortages and fires, the yearly rising of the air and sea temperature, leading to a warmer and drier ecosystem, and the ongoing maritime traffic - legal and illegal - represent some of today's main challenges for the area. It is exactly for these and many more reasons, that space technology and its application can be crucial in providing countries the necessary information to carry out major operations both on land and at sea. Now more then ever, the dialogue and scientific exchange between policy-makers and key stakeholders is of vital importance.

In light of these reflections, this edition of the Forum aims at stimulating the discussions between Ministers and Authorities of the Mediterranean region on the opportunity to take common actions and launch joint initiatives to increase the participation of their scientific and academic institutions in space activities, to contribute to meeting the needs of the Mediterranean populations and develop their capacities and abilities. By focusing on topics such as Maritime Surveillance; Space and Blue Economy; Space Education, Cooperation and Scientific Knowledge, I am convinced that today will mark a new beginning of cooperation and collaboration between countries of the Mediterranean regions.

Distinguished participants,

Our world is facing many challenges, and it is our task and our duty to build a healthier and safer global society where the benefits of space technology can be appreciated by all humanity.

With this in mind, and following its motto" Connecting @Il Space People", the IAF will continue in the years to come, to help bridging the gap between established and emerging space nations, and will continue to offer a global network encouraging cooperation and promotion of international development.

The Federation will support the organization of further regional chapters of the International Space Forum, and will continue taking actions in fostering the dialogue between the scientific community, academic institutions and experts, on the need of expanding the discussion on space capabilities and technology opportunities for a greater socioeconomic development.

To reconfirm our commitment, it is my pleasure to announce that together with the Italian Space Agency, works have already begun to finalize the organization of the next International Space Forum at Ministerial Level, with that will take place in 2020 for a Southeast Asian Chapter.

I would like to thank once again the organizers of this Forum as well as the local authorities that welcomed us here today. Meetings like these are an invaluable asset to face the many challenges ahead of us.

Thank you for your attention.









### Statement of IISL (International Institute of Space Law) **By Sergio Marchisio** Member of the Board of Directors on behalf of Prof. Dr. Kai-Uwe Schrogl, President



#### Distinguished participants,

The International Institute of Space Law (IISL) very much appreciates the opportunity to address the International Space Forum as it had the opportunity to do so in the past years. By this, we recognize with appreciation your interest in the topic of space law, which is indeed a basic condition for successful space activities to the benefits and in the interest of all. IISL with its membership from almost 50 countries is the global association promoting space law and supporting all actors, be they governmental or non-governmental in understanding and applying international and national space law and related legal regimes as satellite telecommunications regulations. We clearly pronounce as our basic principle that the rule of law in outer space is in the very interest of all the governments, organisations and private actors, whose number is continuously growing. Disregard of international law inevitably leads to conflict and creates problems for the whole space community. IISL therefore organises a steadily extending set of activities, provides publications for raising the awareness of space law and supports the implementation of its principles and norms. We are glad that we can build in this on a long-standing, strong and fruitful partnership with IAF, IAA and of course UNOOSA.

#### Distinguished participants,

Addressing the Mediterranean Chapter of the ISF, IISL would like to confirm its statements during the past ISF meetings and stress one specific point, which might be relevant for your deliberations. It is, that the use of satellite data undergoes rapid developments and that further to existing basic international provisions, regulation has to develop in order to fully reap the benefits of Earth observation. International and national law, regulations and arrangements have to meet expectations of data providers and users alike and respond to growing needs in commercial as well as non-commercial fields as disaster management or climate observation.

#### Distinguished participants,

IISL would like to congratulate IAF and the Italian Government to bring ISF back to the country where it started off. We should mention that right at this moment, Italy is also hosting, in Messina, Sicily, the summer course of the European Centre for Space Law (ECSL) at which a number of IISL members participate as speakers. It is a pleasure to note that at this moment in such close proximity to the meeting place of ISF, the next generation of space lawyers is trained and prepares to support you, the ISF participating organisations, in applying space law for the benefit and in the interest of all.







### Chairman, Israel Space Agency

Israel is a small country.

Nevertheless, we decided to be independent in our space capabilities and have built and launched over 30 satellites since the first launch in 1998.

Approximately half of them have a civilian mission, for the sake of scientific research, economy, society etc.

#### We welcome any cooperation in space activity, especially in the context of Mediterranean countries, and especially in earth related scientific research.

Let me brief you shortly about our main activities in those areas.

First, let me mention that Israel has joined the Initiative of the Space Climate Observatory and signed on the agreement at Le Bourget in June 2019.

We are currently involved in some projects related to space and environment.

For example, the Venus satellite, which is a cooperative scientific earth observation mission between ISA and CNES, is already in orbit delivering images with high resolution, excellent photometric quality in 12 spectral bands and 2 days revisit time to 125 sites around the globe. Based on those images, precise agriculture, water quality, seashore preservation, and urban studies are being conducted by researchers from all over the world.

ISA and CNES are aiming to start additional cooperative missions for environmental research. In that context, we plan to use a Cluster of satellites for studying Cloud Evolution and Lightning imaging.

The SHALOM mission between Israel and Italy, which is a highly advanced hyperspectral earth observation mission with 250 spectral bands, is now completing phase B1 and is planned to start full scale development shortly.

Israel is also involved in cooperation regarding Basic Science. For example, the Israeli Space Agency is studying jointly with the Italian Space Agency, ASI, the effects of microgravity on various chemical, physical, biochemical and biological processes such as DNA transfer in bacteria, enzymatic reaction kinetics and more. These experiments will be launched this October on a nanosatellite manufactured by the Israeli company Space Pharma, enabling autonomous micro-gravity experiments in space.

ISA, NASA, and DLR collaborates to explore a radiation protection vest for astronauts (for long duration missions), developed in Israel. It will be launched shortly to ISS - the International Space Station, followed by a radiation protection experiments.

Israel has also initiated a new astrophysics mission, which we hope, will revolutionize our understanding of the hot transient universe and will have a broad scientific impact across the fields of Gravitational Wave sources, supernovae, variable and flare stars. This initiative is a joint international effort.

Finally, yet very important, let me talk about education, Particularly regarding STEM education. Israel already embarked on educational outreach programs, giving young high-school students the opportunity to develop, manufacture and deploy eight new nano-satellites (another two are already in orbit). They will be launched sometime during 2020.

ISA and CNES are planning jointly to execute educational program for high school kids, in a Mars Analogue Base that will take place in Israel on 2020.

Let me repeat what I've started with: We welcome any cooperation and collaboration in space activity.













4<sup>th</sup> International Space Forum at Ministerial level
The Mediterranean Chapter
Reggio Calabria, Italy | 5 September 2019



### Statement of SGAC (Space Generation Advisory Council) By Ciro Farinelli SGAC Executive Council Member

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Distinguished Participants,

The Space Generation Advisory Council, SGAC, would like to thank Consiglio Regionale della Calabria and La città metropolitana di Reggio Calabria for hosting us in these beautiful venues and of course IAF and ASI for the leadership in the preparation of the 4th International Space Forum at the Ministerial Level, the Meditearrenean Chapter. We deeply appreciate the opportunity of being part of this event.

SGAC was conceived at the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space in Vienna in 1999. SGAC has today over 15 000 members and alumni from over 150 countries, and it has successfully carried forward its activities of non-governmental, non-profit organisation and network. SGAC's mission is to represent university students and young space professionals in the age 18-35 years old, to the United Nations, States, space agencies, industries, and academia. This year we celebrate our 20<sup>th</sup> anniversary and the last 2 years were, in fact, extremely successful. Building on the sustained growth of the past, SGAC continued achieving its mission by:

- 1. Connecting the space generations by organising international events to enable the exchange of perspectives in the space sector, and networking senior space professionals;
- 2. Empowering of the youth: by enabling university students and young professionals to participate in international space conferences through scholarships, and
- 3. Creating opportunities: by giving our members a platform to grow professionally and develop leadership skills.

SGAC managed to bring industry leaders and our members together, through a series of international events and workshops.

SGAC also successfully hosted the 17<sup>th</sup> Space Generation Congress (SGC) in Bremen, Germany in conjunction with the 69th International Astronautical Congress (IAC), the most successful to date. This event showcased 150 delegates from 45 countries, with more than 50% of delegates supported by a scholarship.

These global events are just a few examples of SGAC successes, as they've been developed alongside regional and local events - for a total of 33 in 2018 only.

On top, SGAC further developed its hands-on activities towards the Sustainable Development Goals, with a particular attention to Climate Change. Our ten standing, volunteer-led, global based Project Groups. have today more than 400 members (young professionals and PhD students). In 2018 only, these project groups contributed to more than 30 publications. The project groups cover space related topics such as Small Satellites, Commercialization of Space, Space Exploration, Space Law and Policies and last but not least Remote Sensing and Earth Observation.

With respect to Remote Sensing and Earth Observation, on top of my role as executive member and Project Groups coordinator, with Emma Velterop and Swetha Kotichintala, I founded the Space Technologies for Earth Applications Project Group, which focuses on 3 major areas: 1) Artificial Intelligence, which deals with topics related to Earth Observation and Data Science, 2) Disaster Management, which deals with Early Warning and Hazard Mapping solutions using both optical and radar data, and 3) Global Navigation Satellite Systems.

We are currently organizing a hackathon, supported by Airbus, the U.S. State Department and the Brazilian National Institute for Space Research (Instituto Nacional De Pesquisas Espacial [INPE]), which will take place in Washington on Sunday October 20<sup>th</sup> 2019 just before the IAC. Shortly after, we will launch a call for new projects and, given our members professional background, Maritime will be one of the topics to focus our efforts on. In this regard, we are open to proposals and collaborations, and invite you to reach out to the Project Group and screen our partnerships portfolio.

The success of the SGAC's would not have been possible without the support of our International partners and sponsors, including UNOOSA, Lockheed Martin, Airbus, NASA, the UAE Space Agency, DLR, ESA, ASI, Secure World Foundation and many others. Thanks to our key partners and sponsors, and even more to our tireless and enthusiastic volunteers, SGAC continues to work hard in the space sector, collaborating with many other organizations around the world, proud of being the voice of students and young professionals in the space community. With this in mind, we look forward to the 18<sup>th</sup> edition of the Space Generation Congress, to be held in 2019 in Washington D.C., United States and the 70<sup>th</sup> edition of the International Astronautical Congress.

Our hope and goal is to see many young professionals and students from all over the world contributing to these events, and from these to the overall space sector, more and more every year.

Thank you.















Reggio Calabria, Italy | 5 September 2019



### **Statement of UAESA (UAE Space Agency)** By Talal Al Kaissi on behalf of Mohammed Al Ahbabi Director General, UAE Space Agency



وكالة الإمارات للفضاء

**UAE SPACE AGENCY** 

- I would also like to thank the city of Reggio Calabria for hosting and the wonderful hospitality.
- My name is Talal Al Kaissi...
- We are a small country but one with big ambitions in space
  - o Started in 2014 ... and since then:
  - o Mars mission launching next year like Mr. Le Gal mentioned space exploration plays a big role in helping understand and mitigate challenges we have here at home.
  - o Launched the Space Policy, Space Law (special), Space Strategy
  - o Signed MOUs with over 25 countries.
  - o Launched the National Plan for the Promotion of Space Investment
  - o Built and launched the first emirati satellite Khalifasat
  - o Became members of key organizations like the UN Copuous and ISECG
  - o Signed an agreement to participate in the steering committee of the SCO
  - o Astronaut this month going to ISS. Sustainable HSF Program
  - o Announced the Ambitious 100 year Mars 2117 plan
- We share similar challenges to those that are the focus of this Forum.
  - o Maritime surveillance we live in a tough neighborhood! Important passageway for global shipping and trade
  - o Building human capital
  - o  $\qquad$  Blue economy red tides that were mentioned by Ms. Sharafat from UNOOSA
- One thing im really proud to have played a small role in is the recently established Arab space cooperation group. This is
  symbolic but also tangible due to the UAE leaderships generous gift of a hyperspectral satellite that will be dedicated to this
  group.
- 3 main drivers, diversification, exploration, and geopolitical
- There should be plenty of opportunities to collaborate with Mediterranean countries and we would be delighted to explore potential opportunities.
- Lastly I would like to invite you to visit the UAE at any time, we will be hosting IAC2020 in Dubai.

Thank you.























4<sup>th</sup> International Space Forum at Ministerial level – The Mediterranean Chapter Reggio Calabria, Italy | 5 September 2019



# **5 KEYNOTE SPEECHES PRESENTATIONS**

### Keynote speech on Maritime Surveillance

Leendert Bal, Head of Department Operations, European Maritime Safety Agency (EMSA)







Provides technical and

operational support

to 28 EU Member States

and the Commission

Staff: ~ 250 people

EMSA

Annual Budget:

















### Use Case: Pollution monitoring

#### Detection of illegal discharges

- On 6 August 2019 EMSA's CleanSeaNe detected an oil spill in Italian waters
- Italian authorities received the CleanSeaNet alert report after 20 minutes
- Spill was more than 100km long
- Few hours later EMSA's RPAS flight over the spill area
- RPAS ventiled the satellite detection







Reggio Calabria, Italy | 5 September 2019



### Way forward Additional radar and optical capacity Way forward New data sources "small" radar missions detection Short term missions of "new space" initiatives **Classical radar missions** Under preparation by "old include: space" companies AIS emmitters New very high resolution optical missions (30 cm) Key players **EMSA** EMSA Way forward Additional value – integration of data Conclusions Further integration with non-EO data sources

15

- Exploiting further synergies with RPAS/HAPS
- Enhanced analysis capabilities
- Automatic vessel and oil spill detection/classificaiton using A.I.
- Extract knowledge from existing EO datasets (patterns of life)
- **EMSA**



- Space sources are heavily used, added value is proven
- (see use cases) · Satellite data capacity
- Sufficient SAR and optical constellations are needed (continuation and diversification needed)
- New data sources from space will improve quality of the maritime picture (important for verification/validation)
- Sea + Space = Perfect Partnership
- Space data is a necessity for the maritime picture

### **Keynote speech on Space and Blue Economy**

Sharafat Gadimova, Executive Secretariat, International Committee on Global Navigation Satellite Systems (ICG), United Nations Office for Outer Space Affairs (UNOOSA)







#### EO for monitoring of oil spills



verlaying the oil spill extent maps and the

ит.... 1000 100







#### SDG 14: Life below water

"Conserve and sustainably use the oceans, seas and marine resources for sustainable development"

- · Supports the conservation and protection of oceans and their resources;
- Considers the sustainable use of submarine resources and their respective habitats, as well as the increase of economic benefits to Small Island developing States and least developed countries from such use;
- Champions the promotion of scientific knowledge and the adoption of new technologies to deliver results towards the achievement of the global agendas.



UNITED NATIONS







### UNITED NATIONS

#### Satellite data for illegal fisheries monitoring



Global Navigation Satellite Systems onitoring commercial fishing ssels. The vessel monitoring syste Vessels. The Vessel within (VMS) employed universally within the European Union keeps track of vessels longer than 15m.

The vessels are required to emit a ies to track their operating

Reggio Calabria, Italy | 5 September 2019

# ONAUTICA

#### UNITED NATIONS Office for Outer Space Affairs

Satellite data for marine biodiversity monitoring





### Contract Matters office for Queer Space Affairs Unique Roles of UNOOSA





Development of international partnerships for integrated adoption of space technologies



#### The importance of synergies

 The combination of the two (Copernicus and EGNSS) will allow both the monitoring and the achievement of some of the targets that are associated with the

Goals: • Monitoring – enhancing the quality of data collected to help monitor the status of SDGs implementation;

 Achievement, which envisages direct support from EGNSS and Copernicus in achieving specific SDGs.

JNOOSA and the European GNSS Agency (ST/SPACE/71): European Global Navigation Satellite Systems and Copernicus: Supporting the Sustainable Development Goals

ttp://www.unoosa.org/res/oosadoc/data/documents/ 2018/stspace/stspace71\_0\_html/st\_space\_71E.pdf

#### UNITED NATION EGNSS and Copernicus supporting SDG 14 EGNSS Synergie 14.1 $\overline{)}$ 14.2 •• 00 14.3 00 00 14.4 .. ... ... ... . . 14.5 14.7 14.c 00 ... 00 Limited contribution Significant contribution United

1



# WITED NATION Office for Outer Space Attains International Committee on GNSS (ICG) UNOOSA serves as the executive secretariat of ICG

- UNDUSA serves as the executive secretariat of ICG
- The ICG promotes voluntary cooperation related to civil satellite-based positioning, navigation, timing, and value added services
- Encourages coordination among GNSS providers
- Promotes the introduction and utilization of GNSS services in developing countries



- Contributes to the sustainable development of the world
- Assure GNSS interoperability and compatibility among providers and users globally for enhanced services and applications









#### UNITED NATIONS Office for Outer Space Affa

#### STSC and LSC



The Legal Subcommittee (LSC) discuss legal matters related to the exploration and use of outer space. Topics include the status and application of the five United Nations treaties on outer space, the definition and delimitation of outer space, national space legislation, legal mechanisms relating to space debris mitigation, and international mechanisms for cooperation in the peaceful exploration and use of outer space

The Scientific and Technical Subcommittee (STSC) discuss matters related to the scientific and technical aspects of space activities. Topics for discussion include space weather, near-Earth objects, the use of space technology for socioeconomic development, or for disaster management support, global navigation satellite systems, and the long-term sustainability of outer space activities.



Side 13

49

#### UNITED NATIONS Office for Outer Space Affai

#### ICG: Programme on GNSS applications

- United Nations Regional Workshops/training courses on the use and applications of GNSS
   Building the capacity of developing countries in using GNSS technology for sustainable
- Reference frames and timing (WGD)

development

- To benefit operational geodesists or surveyors involved in positioning and measurement and potentially dealing with sea level changes. It is open to government, private sector, academic or graduate students in surveying or a related discipline (Ido, FIG, IGS)
- Space Weather and GNSS (WGC)
- Promotes the use of GNSS for scientific applications and space weather in developing countries
   Increased number of students and young scientists studying and using GNSS, including increasing participation by women, and many opportunities for research (improved imaging of

the ionosphere over the equatorial region, ionospheric effects on augmentation systems...)





### Keynote speech on Space Education, Cooperation and Scientific Knowledge

Santo Marcello Zimbone, Rector University Mediterranea of Reggio Calabria



































4<sup>th</sup> International Space Forum at Ministerial level
The Mediterranean Chapter
Reggio Calabria, Italy | 5 September 2019



































4<sup>th</sup> International Space Forum at Ministerial level – The Mediterranean Chapter Reggio Calabria, Italy | 5 September 2019































"...... starting point to identify proper ways and proposals to promote scientific knowledge, education paths and cooperation possibilities specific to the whole Mediterranean Region and the related needs for security and prosperity.

This with the target of building a productive and peaceful alliance among Peoples of the Mediterranean Countries....."

Reggio Calabria, Italy | 5 September 2019

### **REGGIO CALABRIA PAGE** 6 (to be added to the Trento Space Statement)

4<sup>th</sup> International Space Forum at Ministerial Level The Mediterranean Chapter "Space Technology and Applications meet Mediterranean Needs"

On September 5th, 2019, the Italian Minister of Education, University and Research, the Ministers and Authorities competent for Space in the Mediterranean countries, as well as the representatives and experts of national and international Space Agencies and Organizations met in Reggio Calabria (Italy) under the auspices of the International Astronautical Federation (IAF), the Italian Space Agency (ASI) and the University Mediterranea of Reggio Calabria for the 4th International Space Forum (ISF) 2019 - The Mediterranean Chapter.

After the first International Space Forum in Trento (Italy) and the following regional Chapters focused on Africa (Nairobi 2017) and Latin America and the Caribbean (Buenos Aires 2018), the Mediterranean Chapter triggered open and productive discussions on the wish to increasingly involve Academia and Universities of the region in space programs and activities in order to contribute to find space solutions that meet Mediterranean needs.

Governmental delegates and Space Agency representatives exchanged views, shared experiences and visions, and delivered statements, in which they declared and presented a wide range of valuable views, including:

- space technologies and related applications provide and contribute to find solutions to several challenges that affect human life on Earth; they are precious tools for implementing the goals of the United Nations 2030 Agenda for sustainable development;
- space activities require high-level scientific and technical knowledge, as well as a multidisciplinary approach;
- Academia and Universities are precious sources of knowledge and human capital; they are very well distributed throughout the world and characterized by a great propensity for international cooperation;
- their interaction with the international **space networks** and their involvement in space activities is highly beneficial and increase the chances to find better space solutions to global challenges;
- the Mediterranean region is an ideal meeting point to discuss a space agenda for stability, security, development, and identity.

Three keynote speeches were delivered by distinguished space experts on the following topics:

- Maritime Surveillance: improvement of maritime surveillance capabilities in the Mediterranean region through satellite systems; promotion of joint space projects and implementation of platforms for fast information exchange to increase security and stability in the region.
- Space and Blue Economy: bringing the blue-economy and space communities together; promoting the use of space applications among public and private actors who deal with the Mediterranean Sea for the provision of services and as a pivotal resource for the development of commercial related activities.
- Space Education, Cooperation and Scientific Knowledge: promotion of space capacity building in the Mediterranean region, expanding scientific and academic cooperation in the space as a key factor for social, economic, and cultural development.

All delegations noted that:

- since ancient times, the Mediterranean Sea has been a crossroad of communication, transportation, and development for enriched the peoples of the region;
- these uniting factors of Mediterranean peoples outnumber by far the dividing factors;
- some of the problems that affect the Mediterranean region are common to all of its Countries and may be solved jointly by elaborating common decisions and actions, also with the support of satellite information and related data;
- the Mediterranean region and its coasts are a source of wealth; their beauty, climate, agricultural products and marine fauna offer several opportunities that can be exploited at best with the support of space technologies;
- the Mediterranean region hosts some of the most advanced space-faring nations and is the cradle of relevant academic communities, with century-old traditions which contributed to the progress of humankind;
- greater interaction between academic communities and the international space actors would activate a potential innovative space knowledge in the Mediterranean region; this regional networking would enhance capacity building in space disciplines for specific expertise and perspective to be created in the region, in view of playing a greater role in the international space community.

Ministers, Diplomats, Heads of Space Agencies and all distinguished delegates present in Reggio Calabria welcomed the 4<sup>th</sup> International Space Forum - The Mediterranean Chapter and identified the following main objectives to be pursued in the following years:

- this regional networking;
- such as transport, food, energy, and tourism;
- constellation:
- ≻ and illegal activities through or around the sea;
- Nations 2030 agenda at regional level;
- > creation of a Space Curriculum focused on the Mediterranean needs.

Finally, the delegations of the Mediterranean Countries attending the International Space Forum 2019 in Reggio Calabria expressed the wish to work together for a prosperous and peaceful Mediterranean region by sharing common and challenging objectives, in which space technologies and related applications play a stimulating role for both regional cooperation and the expansion of the space economy.







Europe, the Middle-East, and North Africa. It has stimulated virtuous contamination among cultures, languages, religions, political and economic systems, and facilitated the dissemination of knowledge, ideas, inventions and technologies that

> promotion of a greater cooperation in space disciplines among universities of the region with the support of national and international space agencies and institutions; in particular, the International Astronautical Federation (IAF) will facilitate

promotion of a greater use of space-based data and information from telecommunication, earth observation, and navigation satellites to support the socio- economic development of all people in the region through several activities

promotion of a greater awareness of the usefulness for the Mediterranean region of space programs and satellite systems such as GALILEO, COPERNICUS and the ESA Sentinels, the GovSatCom satellites, as well as the COSMO-SkyMed

promotion of the use of satellites to safeguard and protect infrastructures and activities, and to discourage threats

> exploitation of the existing national and international space centers and infrastructures to contribute to the United

4<sup>th</sup> International Space Forum at Ministerial level – The Mediterranean Chapter Densis Celebric Itels J. 5 Centember 2010

Reggio Calabria, Italy | 5 September 2019



## 7 VISIT TO THE ITALIAN SPACE AGENCY "GIUSEPPE COLOMBO" SPACE GEODESY CENTRE IN MATERA

On 6 September 2019, in collaboration with the Italian Air Force, the ISF participants had the opportunity to visit the **ASI Space Geodesy Center in Matera**. The Space Geodesy Center in Matera was established in 1983 and dedicated to the famous Italian scientist "Bepi" Colombo. It is one of the key nodes of the global geodetic network and also an earth-observation facility for acquiring, archiving and distributing data. In particular, the Centre contributed to the design, integration and testing of the civil ground-segment of the Italian radar satellite constellation COSMO-SkyMed, for which it has been providing operation and maintenance services since the launch of the first satellite in 2007. Since 2012, the Matera Space Centre has been one of the four stations of the ESA Core Ground Segment for the reception and real-time processing of radar and optical data acquired from the Sentinel satellites within the Copernicus program.

































4<sup>th</sup> International Space Forum at Ministerial level – The Mediterranean Chapter Reggio Calabria, Italy | 5 September 2019























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Reggio Calabria, Italy | 5 September 2019



- Google Play store: https://play.google.com/store/apps/details?id=com.attendify.confbofn3r
- Apple Store: <u>https://itunes.apple.com/app/id1328269635</u>
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