



COSMOS2020 NEWSLETTER #30

06 July 2017



"Space App Camp" - Registration until 24th of July!

Frascati (Rome), Italy, 11-18 September 2017

Apply now to spend one week at the European Space Agency (ESA) by showing the best apps you've developed so far. To get selected to participate at the Space App Camp, your work needs to be remarkable in terms of:

- content creativity
- usability
- design
- underlying business concepts

Use your chance to win! For the 6th time, ESA is inviting 20 developers to their ESRI location in Frascati, Italy, including travel expenses and accommodation, and you can be one of them!

Register now and choose from various categories. Apply either as a single person or as a team of up to four people. Registration is open now until 24 July 2017 at www.app-camp.eu.

Questions? Just drop an email to: sonnika.gutarra@azo-space.com



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The European Mars Conference 2017 (EMC17)

Innsbruck/ Austria, 22-24 September 2017

The annual meeting of the [European Mars Societies](#) focusing on human and robotic exploration of the Red Planet.

The 17th EMC offers a communication and discussion platform for disciplines ranging from engineering, science, mission programmatics and space operations, space policy and arts. As in the past years scientists and people with a passion for Mars exploration will meet in order to learn more about Mars and exchange experience, information and views.

Highlights include updates on current and future Mars missions, expert panels, a [student forum](#) and the science and operations behind the major international Mars analog simulation "[AMADEE-18](#)" in Oman.

This year's EMC17 is hosted by the [Austrian Space Forum \(OeWF\)](#) and the [University of Innsbruck](#).

[Register here now!](#)



Conference on Big Data from Space - BiDS'17

Centre de Congrès Pierre Baudis, Toulouse, 28-30 November 2017

Big Data from Space refers to the massive spatio-temporal Earth and Space observation data collected by space-borne and ground based sensors, and to synergetic use of data coming from other sources and communities.

This domain is currently facing sharp development with numerous new initiatives and breakthroughs ranging from intelligent sensors to data science. These developments are empowering new approaches and applications in various and diverse domains influencing life on Earth, from sensing cities, monitoring human settlements and urban areas to climate change and security.

The objective of this conference is to stimulate interactions and bring together researchers, engineers, users, infrastructure and service providers, interested in exploiting Big Data from Space.

The BiDS'17 Conference is co-organised by the European Space Agency (ESA), the Joint Research Centre (JRC) of the European Commission, and the European Union Satellite Centre (SatCen). BiDS'17 will be hosted by the Centre National d'Études Spatiales (CNES) in Toulouse.

[Read more and register here!](#)



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HAPS4ESA - Towards an ESA Stratospheric High Altitude Pseudo-Satellites (HAPS) programme

ESA/ESTEC, The Netherlands, 09-10 October 2017

Capitalizing on these developments, the European Space Agency is reaching out to the Earth Observation, Telecommunication and Navigation communities to present and discuss synergies between satellites and HAPS as well as to collect feedback and recommendations regarding a potential ESA HAPS programme.

High Altitude Pseudo Satellites (HAPS) are stratospheric platforms that stay over a fixed point on Earth from weeks to months. Compared to ground-based systems, towers or aircraft, HAPS operate quasi-stationarily at an altitude of approximately 20 km. This allows them to complement or extend the capabilities of satellites in the domains of Earth Observation, Telecommunication and Navigation with the potential to further integrate with ground-based infrastructure. The European industry and research community is committed to develop HAPS systems while the advancing miniaturisation of sensor and communication technologies provides compact payloads compatible with the weight and power limitations of these platforms. Integrating HAPS into satellites systems offers new opportunities to provide improved products and services.

[Read more and register here!](#)



15th Reinventing Space Conference Glasgow, Scotland, 24-26 October 2017

The 15th Reinventing Space Conference will be held between Tuesday 24 and Thursday 26 October 2017 at the Strathclyde University Technology & Innovation Centre in Glasgow, Scotland.

The focus of the 2017 conference will be on the novel applications that are becoming commercially viable as space technology improves. These include space tugs; space tourism; satellite refueling; debris removal; debris exploitation; manufacturing in orbit; real-time video from space; space mining; etc.

We also anticipate animated discussion on "The Norms of Behaviour in Space", which are becoming increasingly important as we move towards the era of mega-constellation, the need for Space Traffic Control, and hence the requirement for significantly enhanced space situation awareness.

RISpace brings together industry, agency, government, financiers, academia and end users. The conference and exhibition is organized by the British Interplanetary Society.

Confirmed 2017 keynotes

- **Peter Marquez**, Vice President for Global Engagement, Planetary Resources
- **Elliot Pulham**, Chief Executive Officer (1998 – 2016), Space Foundation
- **Kay Sears**, VP Strategy and Business Development, Lockheed Martin Space Systems

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International Workshop on fiducial reference measurements for satellite - derived surface temperature

National Physical Laboratory, Hampton Road, Teddington, 16-18 October 2017

The objective of this ESA sponsored workshop is to bring together the worlds expertise in Earth surface (Land, Water, Ice) temperature measurements under the auspices of Committee on Earth Observation Satellites (CEOS) to review the current state of the art in measurement accuracy for satellite validation.

The workshop will consider the outputs and results from the recent CEOS comparison of fiducial reference measurements/instruments and will look to conclude with the development of an internationally coordinated strategy to ensure that the global reference measurement infrastructure is adequate to meet the future needs and aspirations of all users.

- **Session 1:** Science requirements for LST, IST and SST applications: Climate, Meteorology and Oceanography
- **Session 2:** The space based element: current and future sensors capabilities and challenges
- **Session 3:** Metrological framework: Traceability and uncertainty, sampling and scaling, representativeness
- **Session 4:** Post-launch validation: performance, traceability and uncertainty of field/aircraft deployed radiometers
- **Session 5:** Post-launch validation: non-returnable measurement systems
- **Session 6:** Establishing a sustainable framework of measurements to ensure fit for purpose data to meet the needs of society.

Find out more <http://www.frm4sts.org/>

Free to attend, **but registration is essential!**

[Register here!](#)



Space forum 2017- Save the date!

Luxembourg 15-16 May 2018

"From Space application to Space exploration"

Space Forum is a conference based on the impact of space technologies on the earth's businesses.

It gathers European Space Clusters & Tech Valley representatives, Space business angels, satellites operators, satellite industry suppliers etc. and gives the opportunity to discuss different key topics including: financing, technology, entrepreneurship, competitiveness, exploration, the conquest of space as well as space mining.

[Read more about!](#)



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EANA2017 European Astrobiology Network Association

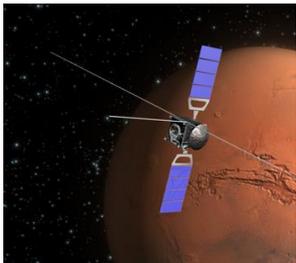
Aarhus, Denmark, 14th of August

The conference will take place 14-17 August, 2017 in Aarhus, Denmark. Among the many interesting and relevant topics for astrobiology, EANA17 emphasizes "Exoplanets", a new and exciting field in the search for extraterrestrial life.

AbGradE (Astrobiology Graduates in Europe) is an independent association with the main goal of promoting scientific networking among early-career astrobiologists. It was initiated by EANA and it is managed by an enthusiastic group of PhD students and post-docs that are responsible for organizing activities that foster networking as well as give a broader background in the different disciplines that Astrobiology comprises.

A bi-annual symposium based in Europe is the main gathering for this purpose. In the years between the two symposia, AbGradE organises a one-day workshop in line with EANA`s topic. Everyone is welcome to join and participate in AbGradE!

[Read more and register here!](#)



Window to a watery past on Mars

70 km-wide crater and its surrounds offer a window into the watery past of the Red Planet.

The scene, captured by ESA's Mars Express, is a composite of two images taken in March 2007 and February 2017.

It focuses on a large crater in the [Margaritifer Terra](#) region in the southern hemisphere of Mars, and includes a portion of Erythraeum Chaos to the north (right in the main colour image below).

The region is located at the northern edge of [Noachis Terra](#), which at 3.7–4 billion years old, represents some of the oldest and most heavily cratered terrain on Mars.

'Chaotic terrain' is visible both inside and outside the crater, marked by randomly oriented blocks separated by troughs.

In general, chaotic terrain is associated with the collapse of the surface above regions where large amounts of subsurface water have been released, for example by the sudden melting of ice. As such, outflow channels often begin in chaos terrains.

[Read more!](#)



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Magnetic space tug could target dead satellites

Derelict satellites could in future be grappled and removed from key orbits around Earth with a space tug using magnetic forces.

This same magnetic attraction or repulsion is also being considered as a safe method for multiple satellites to maintain close formations in space. Such satellite swarms are being considered for future astronomy or Earth-observing missions – if their relative positions can stay stable they could act as a single giant telescope.

To combat space debris, interest is growing in plucking entire satellites from space. The biggest challenge is to grapple and secure such uncontrolled, rapidly tumbling objects, typically of several tonnes. Multiple techniques are being investigated, including robotic arms, nets and harpoons.

Now researcher Emilien Fabacher of the Institut Supérieur de l'Aéronautique et de l'Espace, part of the University of Toulouse in France, has added another method to the list: magnetic grappling.

"With a satellite you want to deorbit, it's much better if you can stay at a safe distance, without needing to come into direct contact and risking damage to both chaser and target satellites," explains Emilien.

"So the idea I'm investigating is to apply magnetic forces either to attract or repel the target satellite, to shift its orbit or deorbit it entirely."

The strong magnetic field required by the chaser satellite would be generated using superconducting wires cooled to cryogenic temperatures.

Similarly satellites could also keep multiple satellites flying in precise formation, comments Finn Ankersen, an ESA expert in rendezvous and docking, formation flight.

"This kind of contactless magnetic influence would work from about 10–15 m out, offering positioning precision within 10 cm with attitude precision 1–2°."

For his PhD research, Emilien has been researching how the resulting guidance, navigation and control techniques would work in practice, combining a rendezvous simulator with magnetic interaction models, while also taking account of the ever-changing state of Earth's own magnetosphere.

His research has been supported through ESA's [Networking/Partnering Initiative](#), which supports work carried out by universities and research institutes on advanced technologies with potential space applications. Emilien also visited ESA's technical center in the Netherlands, to consult with Agency experts.

[Read more!](#)

