



The Quarterly Bulletin of the

# CEAS

COUNCIL OF EUROPEAN AEROSPACE SOCIETIES

3AF – AIAE – AIDAA – DGLR – FSAE – FTF – HAES – NVvL – PSAS – RAeS – SVFW – TsAGI



Issue 3 - 2010  
October



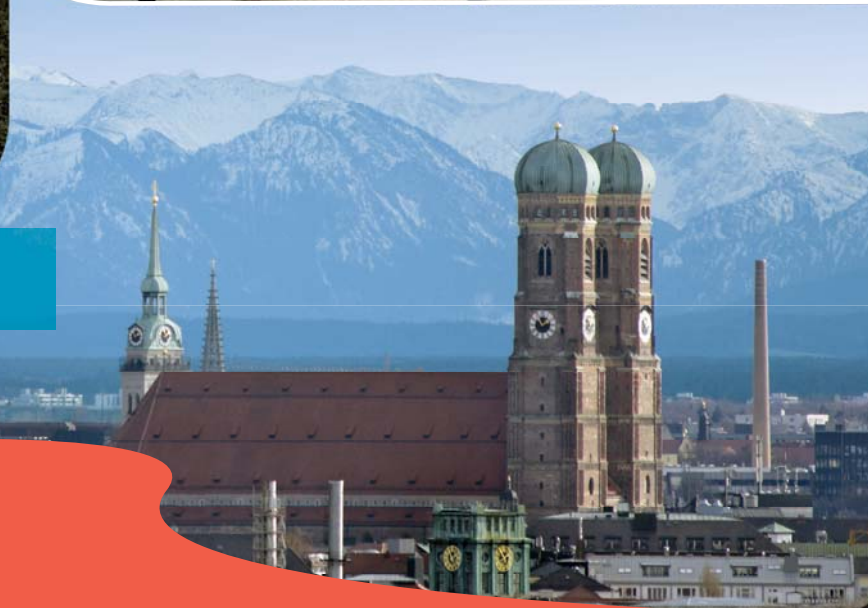
• 1<sup>st</sup> - 2<sup>nd</sup> December 2010: ASD/CEAS CONFERENCE, BRUSSELS – AEROSPACE FOR EUROPE: MORE THAN JUST FLYING Change – Innovation – Towards a vision for 2050



• 17 – 20 October 2011: 3<sup>rd</sup> CEAS EUROPEAN AIR & SPACE CONFERENCE, VENICE  
Technology & Innovation for Aerospace in a Changing World



• 13 – 15 April 2011: 1<sup>st</sup> CEAS SPECIALIST CONFERENCE ON GUIDANCE, NAVIGATION & CONTROL, MUNICH



# CEAS:

## THREE MAJOR UPCOMING EVENTS



## WHAT IS THE CEAS ?

The Council of European Aerospace Societies (CEAS) is an International Non-Profit Association, with the aim to develop a framework within which the major Aerospace Societies in Europe can work together.

It presently comprises eleven Member Societies: 3AF (France), AIAE (Spain), AIDAA (Italy), DGLR (Germany), FSAE (Finland), FTF (Sweden), HAES (Greece), NVvL (Netherlands), RAeS (United Kingdom), SVFW (Switzerland), TsAGI (Russia).

Following its establishment as a legal entity conferred under Belgium Law, this association began its operations on January 1<sup>st</sup>, 2007.

Its basic mission is to add value at a European level to the wide range of services provided by the constituent Member Societies, allowing for greater dialogue between the latter and the European institutions, governments, aerospace and defence industries and academia.

The CEAS is governed by a Board of Trustees, with representatives of each of the Member Societies.

Its Head Office is located in Belgium:  
c/o DLR – Rue du Trône 98 – 1050 Brussels.

[www.ceas.org](http://www.ceas.org)

## WHAT DOES CEAS OFFER YOU ?

### KNOWLEDGE TRANSFER:

- A well-found structure for Technical Committees

### HIGH-LEVEL EUROPEAN CONFERENCES

- Technical pan-European events dealing with specific disciplines and the broader technical aspects
- The CEAS European Air and Space Conferences: every two years, a Technical oriented Conference, and alternating every two years also, a Public Policy & Strategy oriented Conference

### PUBLICATIONS:

- Position/Discussion papers on key issues
- CEAS Aeronautics Journal
- CEAS Space Journal
- CEAS Quarterly Bulletin

### RELATIONSHIPS AT A EUROPEAN LEVEL:

- European Commission
- European Parliament
- ASD (AeroSpace and Defence Industries Association of Europe), EASA (European Aviation Safety Agency), EDA (European Defence Agency), ESA (European Space Agency), EUROCONTROL
- Other European organisations

### EUROPEAN PROFESSIONAL RECOGNITION:

- Directory of European Professionals

### HONOURS AND AWARDS:

- Annual CEAS Gold Medal to recognize outstanding achievement
- Medals in technical areas to recognize achievement

### YOUNG PROFESSIONAL AEROSPACE FORUM

### SPONSORING

## THE CEAS MANAGEMENT BOARD

### IT IS STRUCTURED AS FOLLOWS:

- General Functions: President, Director General, Finance, External Relations & Publications, Awards and Membership.
- Two Technical Branches:
  - Aeronautics Branch
  - Space Branch

Each of these two Branches, composed of specialized Technical Committees, is placed under the authority of a dedicated Chairman.

### THE OFFICERS OF THE BOARD IN 2010:

President: **Prof. Dr-Ing. Joachim Szodrich** – [joachim.szodrich@dlr.de](mailto:joachim.szodrich@dlr.de)

Vice-President, Finance: **Pierre Bescond** – [pierre.bescond@laposte.net](mailto:pierre.bescond@laposte.net)

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Vice-President, Awards and Membership: **Kaj Lundahl**  
[klundahl@bredband.net](mailto:klundahl@bredband.net)

Director General: **Ms Mercedes Oliver Herrero** (including Financial Management)  
[mercedes.oliver@military.airbus.com](mailto:mercedes.oliver@military.airbus.com)  
[mercedes.oliver@coiae.es](mailto:mercedes.oliver@coiae.es)

Chairman of the Aeronautics Branch: **Christophe Hermans**  
[christophe.hermans@nlr.nl](mailto:christophe.hermans@nlr.nl)

Chairman of the Space Branch: **Constantinos Stavriniadis**  
[constantinos.stavriniadis@esa.int](mailto:constantinos.stavriniadis@esa.int)

Chairman of the Programme Coordination Committee: **François Gayet**  
[francois.gayet@asd-europe.org](mailto:francois.gayet@asd-europe.org)

Editor-in-Chief of the Quarterly Bulletin: **Dr-Ing. Jean-Pierre Sanfourche**  
[jpsanfourche@dbmail.com](mailto:jpsanfourche@dbmail.com)

Quarterly Bulletin, Design & Page Setting  
**Sophie Bougnon**  
[soboo@club-internet.fr](mailto:soboo@club-internet.fr)

# EDITORIAL

## THE CEAS Euro GNC 2011 CONFERENCE



Jean-Pierre Sanfourche  
Editor-in-Chief,  
CEAS Quarterly Bulletin

**H**osted by DGLR, the German Society for Aeronautics and Astronautics, the CEAS Euro GNC Conference 2011 will take place in Munich on 13-15 April 2011. Since its setting up in January 2007, this is the first time the CEAS organises a scientific and technical specialized Conference, which therefore constitutes a very important mark in the life of our Council.

The theme chosen for this event is *Guidance, Navigation and Control*. The objective of the conference is double: to promote scientific and technical excellence in these fields for aeronautical and space applications, and also to establish at a European level a platform for communication and information exchange between experts directly contributing to this sector of activity.

The European countries host a significant number of people working in Aerospace GNC: this is the reason why many scientists and engineers from EU's industry, research institutes and university involved are expected to attend. They will share the wealth and multitude of presentations beyond the borders of the nations and stimulate cross-discipline synergies.

The Conference, scientific and technical depth oriented, is structured around four main parts: lessons learnt from in flight testing experiments, applications – atmospheric on the one hand, space on the other hand –, theory and development procedures, special sessions.

Within the framework of applications:

- The atmospheric ones will cover manned fixed-wing aircraft, manned helicopters, unmanned aerial vehicles (UAV) and missiles;
- Space ones will deal with re-entry, attitude control, orbit control, multi-spacecraft applications and high performance satellite control.

Theory and development procedures will consider the different aspects of:

- Guidance and control (innovative methods and algorithms, systems and architecture, etc.);
- Sensors, data fusion and navigation (sensor data fusion and estimation, sensor technology, inertial and coupled navigation, systems, fault detection and isolation).

The special sessions will be devoted to robustness in control and optical navigation.

Organised by an international technical committee composed of twenty-one high level experts, there is no doubt that it will be a great success, from the science and technology point of view but also regarding the creation of a European GNC community. From this achievement, it will be possible to establish a close link with the AIAA GNC Committee, which organises every year a GNC Conference.

Euro GNC 2011 will be held at the Technische Universität München city campus in Munich. Located in the heart of the city, in the proximity of major cultural and touristic attractions, this venue is ideal for such an event.

The success of 'Munich' will undoubtedly encourage and even compel other CEAS Technical Committees to follow the initiative from DGLR and TU München.

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## GLOBAL DEVELOPMENT OF AEROSPACE SCIENCES

By Mark Maurice, Vice President-International, American Institute of Aeronautics and Astronautics (AIAA)

Aerospace science today covers a broad spectrum of the world's total science and technology (S&T). It includes aeronautics and astronautics, of course, but also chemistry, materials, biotechnology, info-technology, physics, electronics, and on and on. And, while the United States is a significant contributor to the world's S&T, we certainly do not have a monopoly. The growth and shift of worldwide S&T investment is illustrated in Figure 1. The sizes of the countries or regions of these maps are in proportion to their share of S&T investment, in purchase price parity (PPP) dollars, adjusted for inflation. From 1998 to 2008, real investment in S&T worldwide nearly doubled. Some countries such as Russia, Korea, and India held their share of the total, while China grew significantly from 3% to 11%. The European Union held almost steady at 25%, but Japan dropped from 17% to 13%, and the U.S. dropped significantly from 42% to 35%.

Results are very similar looking at the number of S&T publications over these same ten years. Shown in Figure 2, the number of articles has risen by 57%, but the total share of S&T publications from the U.S. has decreased from 36% to 27%. Why? Quoting Thomas L. Friedman, "The World is Flat". Students that would come to the U.S. to earn their PhDs no longer need to stay in the U.S. to find opportunities for innovation and success. They can return to China, India, Korea, and elsewhere, and thrive. Furthermore, they remain connected worldwide through the Internet. They

can be working for anyone in the world, while enjoying the comfort of their own culture. Does this mean that the U.S. is "losing"? Of course not. Published science that is created anywhere in the world, benefits the world. However, to take advantage of this, countries that want to remain on the cutting edge need to reach out to the world, and work cooperatively together.

Professional societies help fill this need in several ways. They create enthusiasm among participants and collaborators. They stimulate friendships (and competitions) between those working on similar problems. They generate networks of individuals that are able to share in their understanding of the problems and their acquired knowledge of solutions and approaches. Essentially, they harness individual energy into collaborative or competitive energy, thereby creating momentum towards the goal.

The "Aerospace Societies Directory" at [www.astronautics-directory.com/societies.ddd](http://www.astronautics-directory.com/societies.ddd) lists 160 aerospace societies worldwide. Sixty-seven of these listed are in the U.S. The two largest societies with a focus on aerospace S&T are the American Institute of Aeronautics and Astronautics (AIAA), with about 30,000 members, and CEAS, with about 35,000 members. About one-sixth of AIAA members reside outside of the U.S. That stimulates some natural questions. Why would someone outside the U.S. join an "American" society like AIAA? Why would an "American" society invite outside membership?

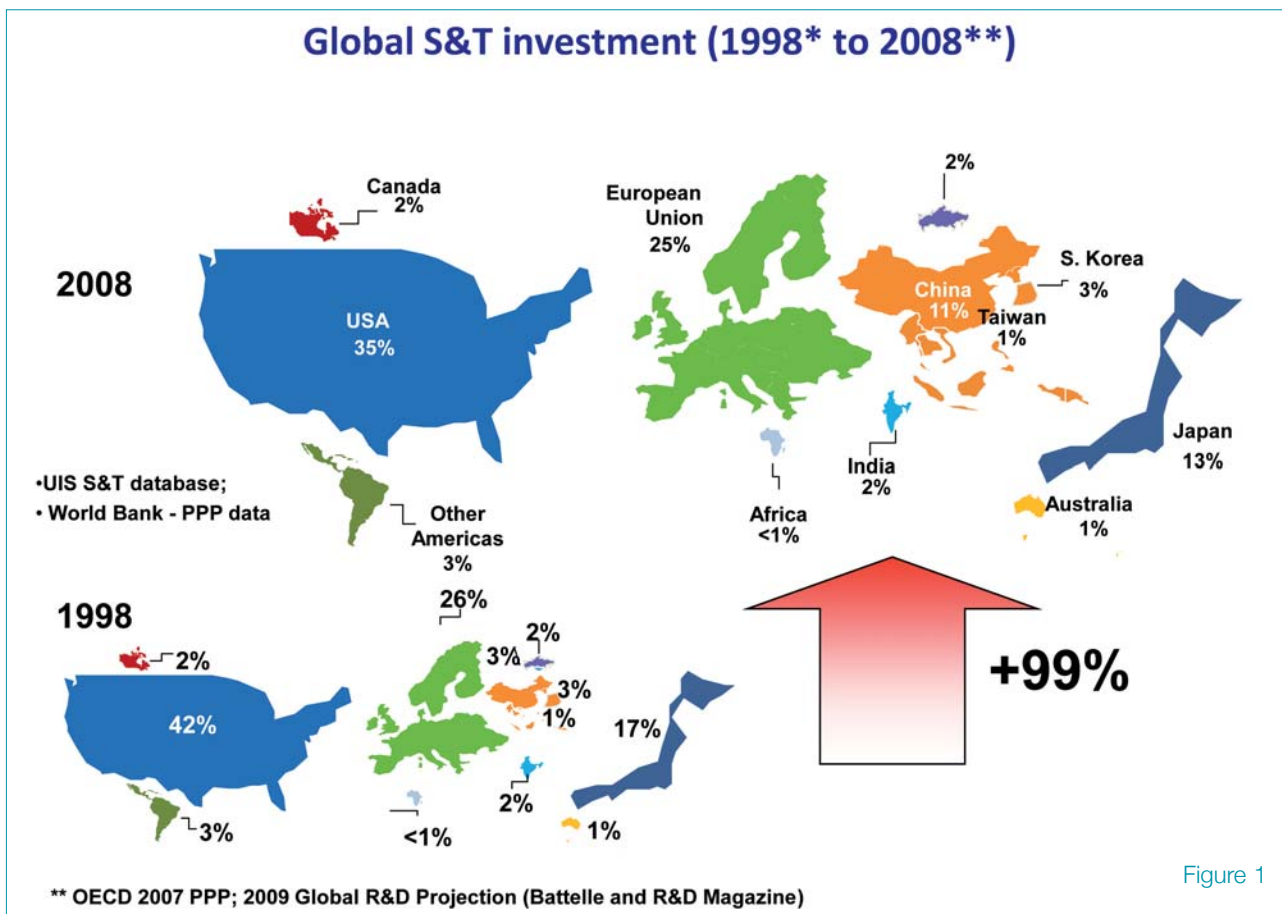
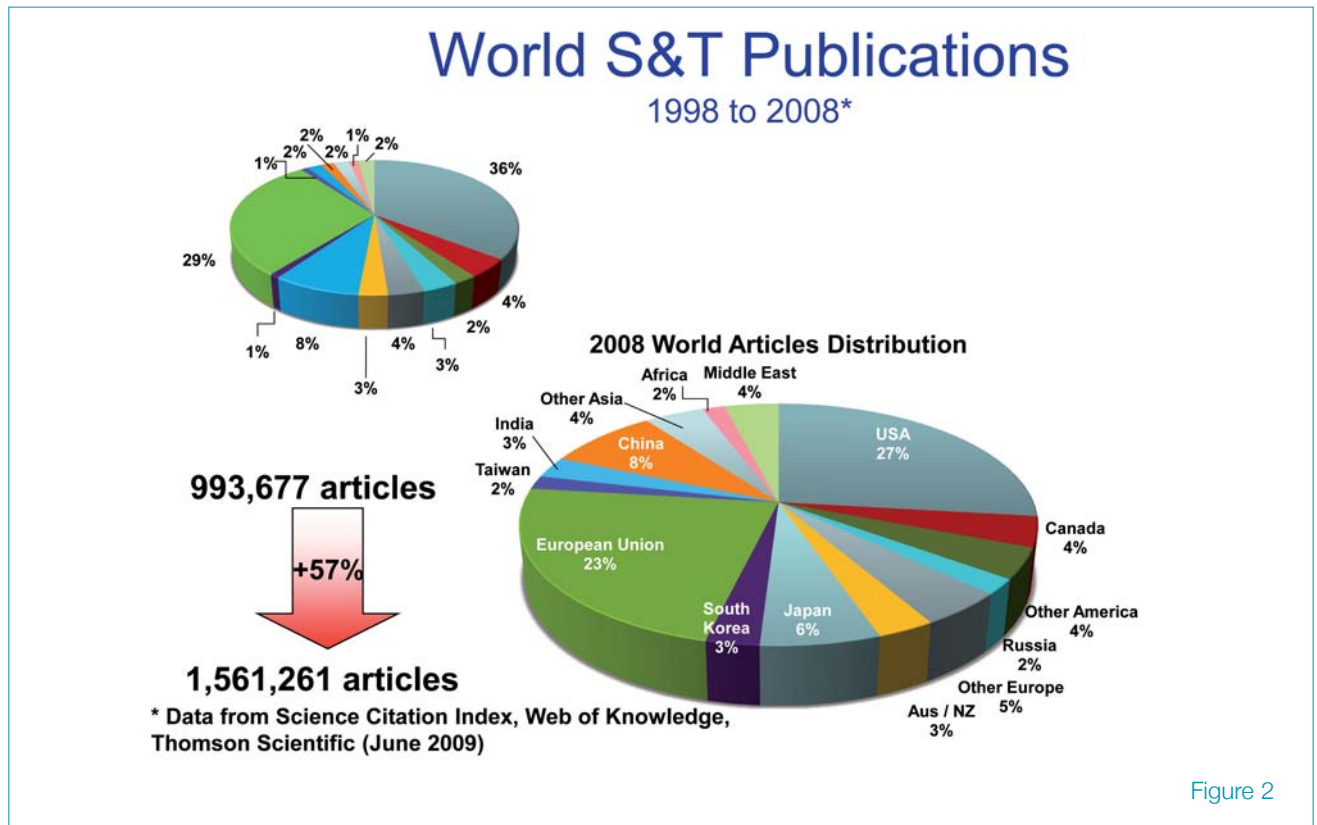


Figure 1



The answers lie in the resonance developed with the substantial quid pro quo achieved between technical problem-solvers working on common problems. Although AIAA is an American society providing professional development for the benefit of the profession within the U.S., we believe that this development is greatly enhanced with the inclusion of international members in all of its activities. The additional perspectives and the stimulation created by both collaboration or competition all serve to increase the momentum and to move the whole of the profession ahead faster than if pursued individually.

Similarly, the international members benefit themselves through the networking, leveraging, and collaboration with other international and U.S. members. We find that international members bring complimentary perspectives to conferences, technical committees, and other activities. For example, when the Iron Curtain came down in the early 1990s, scientists on both sides discovered a whole new world of friends and collaborators to share ideas, different approaches, and results. Many of those initial friendships continue today, and can be seen by the large number of co-authored papers at aerospace meetings.

The current economic recession has been a challenge for many professional societies, and in terms of cooperation, it raises a critical question: How can societies leverage each other's activities and membership to the mutual benefit of each other? An aerospace professional cannot afford to be a member of 160 societies: they have limited time to participate in society activities, and they likely have limited funds for travel and registration fees. At the moment, both AIAA and CEAS are moving to encourage international collaboration. AIAA, for instance, has MOUs expressing a

desire to work together with AAAF, CASI, CPIAyE, CSA, DGLR, KSAS, JSASS, and RAeS, in addition to its MOU with the CEAS.

Focusing here between AIAA and CEAS, we currently work together on the biennial AIAA/CEAS Aeroacoustics Conference. What more should we do? How do we further increase AIAA's perspectives and stimulate collaboration through international membership without hurting the membership of a sister society? How do we better use today's social and interactive media technology to give access to activities to those who simply cannot afford to participate in person? How do we better understand the different professional priorities and interests around the world to better tailor products and services? How do you take a product useful to a professional and make it of equal value to a member who makes \$1000/yr? \$75,000/yr? \$300,000/yr? AIAA, CEAS, and other societies are actively seeking approaches to these questions. If you have any thoughts on these, or other related subjects, please contact Megan Scheidt at [megans@aiaa.org](mailto:megans@aiaa.org) and let's see if we can begin something together.

Aerospace science is truly a global, integrated activity, at least between the scientists, engineers, and other technical practitioners. Returning to the fall of the Iron Curtain: It was truly amazing to see first-hand how quickly 50 years of the Cold War was forgotten. The technical community is integrated and wants to collaborate to solve larger scale problems that are not manageable by individual entities, even nations. So the challenge now is for our various societies to be innovative and more aggressive in collaborating on a worldwide scale to solve global problems together. Please join us in this effort.

## SHORT REPORT ICAS 2010



**The ICAS 2010 Congress was held in Nice, France 19 – 24 September 2010 hosted by Association Aeronautique et Astronautique de France (3AF). In an opening speech the French Minister of Industry Mr**

**Christian Estrosi welcomed the participants to Nice, the city for which he also is the mayor.**

The Congress was one of the more successful in the ICAS history and the number of registered participants was about 720 excluding accompanying persons. The Call for Papers for the 27<sup>th</sup> Congress attracted over 720 submissions from around 40 countries. In total about 440 papers were presented orally in 11 parallel session tracks together with a good number of poster presentations.

A number of very high quality invited General Lectures, listed below, were also presented.

- ICAS DANIEL & FLORENCE GUGGENHEIM MEMORIAL LECTURE:

M. Laroche, Safran, France:

IMPROVING ENGINE DEVELOPMENT THROUGH GLOBAL MODELING

- Y. Barbaux, EADS, Germany & M. Ganz, The Boeing Company, United States:  
AVIATION AND ENVIRONMENT

- S. Chernychev, TsAGI, Russia:  
PROGRESS IN RUSSIAN AVIATION - PROBLEMS AND SOLUTIONS

- K. Zhao, COMAC, China:  
THE ARJ21 REGIONAL JET PROGRAMME

- ICAS HENRI FABRE LECTURE FOR INNOVATION IN AERONAUTICS:

J.-C. Hironde, Dassault, France:

INNOVATIVE SHAPE AND CONTROL CONFIGURATIONS

- P. Hotham, SESAR JU, Belgium & M. Romanowski, FAA, United States:  
FUTURE AIR TRAFFIC MANAGEMENT - SAFE AND EFFICIENT

- VON KARMAN LECTURE:

J. Szodrich, Germany & F. Quentin, France:

ACARE – ADVISORY COUNCIL FOR AERONAUTICS IN EUROPE

- A special invited lecture was presented by U. Schumann, DLR, Germany:  
VOLCANIC ASH CLOUD OBSERVATIONS DURING AIR SPACE CLOSURE IN EUROPE IN APRIL/MAY 2010

These lectures can be downloaded from the ICAS Web-site [www.icas.org](http://www.icas.org).

The ICAS 2010 Proceedings (on CD Rom) containing 519 full papers can be purchased (120 EUR including postage) from the ICAS Secretariat [secr.exec@icas.org](mailto:secr.exec@icas.org)

#### AWARDS

As usual a number of awards were presented at the congress. Among these can be mentioned the following:

#### ICAS – Award for Innovation in Aeronautics



Its purpose is to recognize contributions of an individual or a team in effectively integrating a suite of advanced technologies, combined with new design and/or manufacturing processes, to create a new aeronautical system with significant worldwide impact. The award was this time presented to Mr Jean-Claude Hironde, Dassault Aviation, France in recognition for “introduction of innovative flight control concepts in both military fighters and business jets”. Mr Hironde presented the Innovation Award lecture listed above.

#### ICAS – von Karman Award for International Cooperation in Aeronautics



François Quentin

Joachim Szodrich

ACARE was represented by its co-chairmen Mr François Quentin and Prof. Joachim Szodrich, who jointly presented the von Karman Award lecture.

Its purpose is to acknowledge exceptional achievement in international cooperation in the field of aeronautics, being awarded to a project or programme in which two or more countries are major participants and which is characterised by substantial technical achievement, scientific or technological advance or benefit to society. The award was this time presented to ACARE (Advisory Council for Aeronautics Research in Europe) in recognition of “creating a common and shared European view, combining public and private interests, into a strategic research agenda for European aeronautics R&T”.

**ICAS - Maurice Roy Medal**

Its purpose is to honour persons of distinction who have an exceptional record in fostering international cooperation between scientists by their personal participation and involvement in aeronautics. The award was this time presented to Prof. Walter Kröll, Germany in recognition of "his tireless promotion of international cooperation within the aeronautics R&T community".



Walter Kröll

**CHANGE OF ICAS FUNCTIONARIES:**

Detlef Müller-Wiesner



Ian Poll

At the congress Dr. Detlef Müller-Wiesner from Germany was elected as ICAS president for 2011-2012 succeeding Prof. Ian Poll from UK.

It was also announced that Mr. Anders Gustafsson, who has been the ICAS Executive secretary for the past eight years, will step down at the end of 2010 and be succeeded by Mr. Axel Probst from Germany.



Axel Probst (left) and Anders Gustafsson

**NEXT ICAS CONGRESS** will be held in Brisbane, Australia 23-28 Sept. 2012. General information will soon be available at [www.icas2012.com](http://www.icas2012.com) and Call for Papers will be published in February 2011. Further information can be obtained from the ICAS Secretariat [secr.exec@icas.org](mailto:secr.exec@icas.org) and on [www.icas.org](http://www.icas.org).

**Anders Gustafsson**  
**4 October 2010**

## ACARE: A EUROPEAN COOPERATION WITH INTERNATIONAL IMPACT

**Within the framework of the ICAS 2010 von Karman Award Lecture, Joachim Szodruch and François Quentin presented ACARE: its history, its present activities and a number of future considerations. A short abstract of this lecture is given here below.**

**HISTORICAL BACKGROUND**

ACARE (Advisory Council for Aeronautics Research in Europe) was born in June 2001 at Le Bourget Air Show. Its mission derived from the work performed by a Group of High Level Experts whose results were edited in the Report entitled 'European Aeronautics: a Vision for 2020'.

**36 Members of European Organisations of Stakeholders:** European Commission, Member States, ASD (European Aerospace Industry), EREA (European Research Establishments), EUROCONTROL (Air Traffic Management), JAA/EASA (Certification), EASN/Pegasus (Universities), AirTN (Ministries/Agencies), Airlines and Airports.

**The Strategic Research Agenda (SRA)** was established in conformity with the five main challenges and associated goals assigned to ACARE:

- Quality and affordability;
- Environment (CO<sub>2</sub> reduced by 50%, NO<sub>x</sub> reduced by

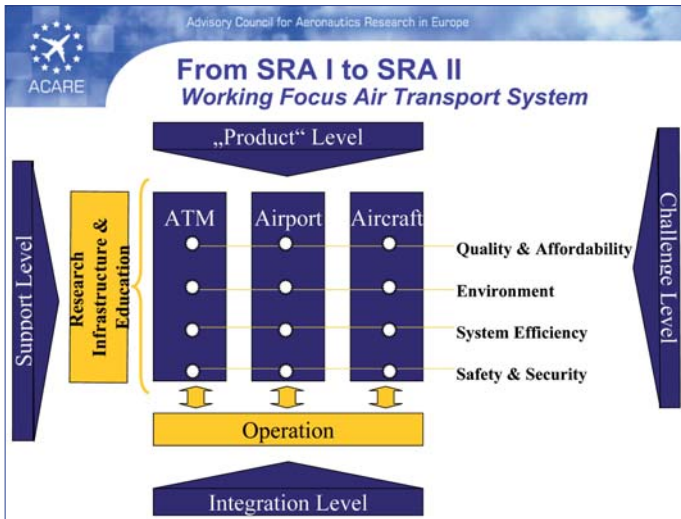
80%, external noise perceived reduced by 50%, substantial progress towards 'green aviation');

- Safety (accidents rate reduced by 80%, drastic reduction in human error and its consequences);
- System efficiency (3X capacity increase, 99% of flights within 15' of schedule, less than 15' in airport before short flights);
- Security (airborne – 0 hazard from hostile action, airport – 0 access by unauthorised persons or products, air navigation – no misuse, safe control of hijacked aircraft).

Two SRA were issued: SRA-1 in October 2002, SRA-2 in October 2004, with an addendum in 2008.

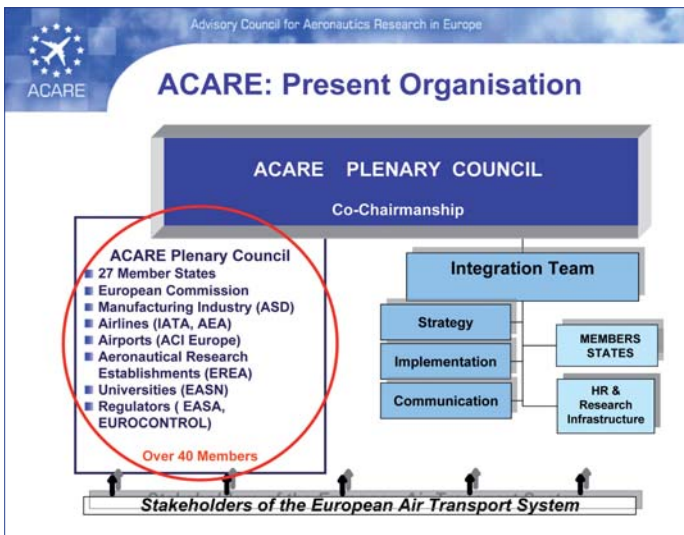
**From SRA-1 to SRA-2: Working Focus ATS - Air Transport System.** SRA-2 introduced the 'High Level Target Concept' (very low cost, ultra green, customer oriented, highly time efficient, ultra secure, 22<sup>nd</sup> century vision).

The 2008 addendum introduced some changes of emphasis (environment, security operations, alternative fuels and international collaboration) and asked for considering four points: airspace use and ATM aspects of potential air taxi and personal air transport business, the role of rotorcraft and the progress on autonomous air vehicles in the future air transport system, development of key aeronautical facilities, increase of technological progress and effectiveness.



**PRESENT ACTIVITIES**

The present organisation is shown in here below.



ACARE in 2010: the Air Transport System is now acknowledged as the relevant scope for optimization, FP 6 and 7 have integrated ATS as designated area of strategic importance, new tools have been designed and implemented to accommodate special needs (SESAR and CLEAN SKY JUs), co-operation is now the rule of the game between stakeholders (even between competitors), national programmes are fully aligned with the SRA recommendations, a recent assessment of the research conducted within the framework of the SRA is giving good reasons to believe that in 2025 new aircraft will deliver the objective level of performance set in 2000.

**About the international co-operation**

The international co-operation is being managed from a number of criteria for selection: technology and capabilities, political support, strategic benefits, ease of business and exchange of scientists. Some examples of co-operation are given here after.

	Technology Domain some examples only
USA	alternative fuel
Singapore	technologies for flow control,
Russia	Flight physics, unconventional aircraft concepts
India	design process modelling,
China	flow control,
Brazil	alternative fuel
South Korea	vision assisted tracking
South Africa	natural fibers,
Canada	Flight Mechanics, nano technologies

**FUTURE CONSIDERATIONS**

Since 2000, society's perception of Air Transport has changed due to 11th September 2001, growing environmental awareness, the rise in oil prices in 2008, and the recent financial crisis.

In the future, aviation is likely to face even more radical changes. Europe needs to play its part in helping to meet stringent goals in order for Europe's Air Transport sector to maintain its lead and its acceptability to society.

The need for knowledge and solutions has never been greater, international co-operation is a key issue.

Air transport will have to find innovative ways to meet the future needs of society for mobility and Europe, with its unique infrastructure, is able to develop multimodal transport solutions. This will be driven by the need for more fuel-efficient and eco-efficient vehicles as well as for important changes in infrastructure and operations.

**THREE RECOMMENDATIONS**

- ACARE recommends that for Europe to remain at the heart of the global aviation sector, policy makers must build on the substantial results the sector has achieved since setting the 2020 Vision.
- In view of the changing landscape of challenges facing Air Transport since 2000 and with the prospect of new and greater challenges emerging in the future, the formulation of a timely new Vision for the horizon towards 2050 is essential.
- The need for new knowledge and solutions has never been greater. Hence, a new European vision is vital if Europe is to play its part in helping to meet the needs of society and in order for Europe's Air Transport sector to maintain its leading position.

J.-P.S - Abstract written from www.icas.org



# CLEAN SKY : SUCCESSFUL CONFERENCE ON 18 JUNE

**Over 300 aviation professionals attended on 18 June 2010 the first Clean Sky conference entitled: "The aviation goes green".**



The first meeting of the General Forum took place on 18 June 2010 in Brussels.

This event aimed at giving stakeholders an update on the latest developments of the Clean Sky programme, highlighting the major technical steps to take in the near future by each ITD (Integrated Technology Demonstrator):

- three of them are covering all types of commercial aircraft: large aeroplanes, regional and midsize aeroplanes and helicopters;
- three of them are covering transversal and multiple purposes: engines, systems and eco-design;
- and in addition, a special tool called the TE (Technology Evaluator), is dedicated to assessing the environmental impact of the studied technologies when implemented in flight operations.

## SOME EXCERPTS FROM THE OPENING MESSAGE DELIVERED BY MARC VENTRE, CHAIRMAN OF THE GOVERNING BOARD

“Clean Sky differs from other Framework projects on key features:

- its size, with a total activity of 1.6 B€, a true record for European research in Aeronautics, of which 50% (800 M€) will be funded by the Commission,
- its structural organisation through a Governing Board and a Joint Undertaking JU,
- its operational organisation gathering 86 members (12 leaders and 74 associates) and a growing number of partners selected through 4 yearly recurring Calls for Proposals.” [...]

“Each stakeholder, whatever links or stakes with Clean Sky, active actor or simple observer, must be convinced of two things: the absolute necessity of the success and the promising first steps of Clean Sky.” [...]



Marc Ventre, Chairman of the Governing Board.

“More than ever indeed, the European Aeronautics needs a strong European support. The challenges and the threats are numerous: Environment, Sustainable Growth and fierce competition. In addition to our “traditional” competitors, we have now to take very seriously into account the new entrants from emerging countries. We Europeans can overcome them mainly thanks to our ability to developing and implementing novel technologies in our products and systems.”

## ERIC DAUTRIAT, EXECUTIVE OF THE CLEAN SKY JU, DECLARED:

“Clean Sky is itself a demonstrator. As a Joint Technology Initiative it brings together the private and the public, the big and the small, the industry and the academics, in one programme.”

## ADVISING THE JU

- **The General Forum** is a statutory assembly composed of all members and partners of the Clean Sky programme. It meets once a year and is chaired by the Chairman of the Governing board of the Clean sky JU.

- **The Scientific and Technological Advisory Board (STAB)** composed of high level scientists and engineers aims at advising the JU on matters to scientific and technological analysis, environmental effects forecast, and societal aspects and economics. It meets twice a year and is currently chaired by David Ewins, Professor at the Faculty of Engineering, Bristol University. The first meeting took place on 1 July in Brussels.

- **The National States Representative Group (NSRG)** is the focal point on Clean Sky at the national level. It operates as a network of national representatives of each EU Member State and of each other country associated to the Framework Programme. It ensures the organisation and the outcome of the calls are transparent and fair, assists with the organisation of Info days and dedicated technical workshops, reviews information and provides opinions on the programme process to the Clean Sky JU, contributes



The open rotor, a flagship of Clean Sky.

to the update of the strategic orientation of the programme and the involvement of SMEs in Clean Sky. It is currently chaired by Jim Lawer, it meets several times a year.

### ABOUT THE MAIN DEMONSTRATORS

The main demonstrators will be run between 2013 and 2015.

A flagship of Clean Sky is the **open rotor** demonstrator. Because of the large CO<sub>2</sub> improvements expected, it is a game changing technology. It is scheduled first on ground, in two different versions corresponding to two subprojects of the SAGE (Sustainable And Green Engine) ITD, SAGE 1 led by Rolls-Royce and SAGE 2 led by Safran. Then, the in-flight demonstration is foreseen on an Airbus A340-600: the target date for this demonstration is confirmed as 2015.

Another important in-flight demonstration is the full scale laminar wing test, on an Airbus A340-300 in the high speed range, whereas in the low speed range laminarity will be tested on a business jet airplane (Dassault Falcon F2000 or F7X) or on an Airbus A320. The flight tests are planned at the end of 2014 and 2015.

### GREEN REGIONAL AIRCRAFT – LOW WEIGHT CONFIGURATION DOMAIN (LWC)

The Clean Sky – Green Regional Aircraft LWC challenge aims at demonstrating and validating specific technologies and concepts for a new future generation “green” regional aircraft at reaching ACARE environmental goals.

Composite materials are one of the most promising technologies able to deliver substantial aircraft structure weight savings that directly produce a proportional fuel consumption reduction with subsequent strong reduction of CO<sub>2</sub> and NOX emissions. Unfortunately, when composite materials are applied to smaller vehicles in the size of regional aircraft, a simple scale-down of existing materials and

processes is not possible due to some unfavourable properties (i.e. electrical conductivities, impact resistance) that may require undesirable technical adjustments, producing further weight increase instead of reduction. Therefore regional aircraft new technologies are required to retain all the promising weight saving of composite structure. In this direction, an attractive opportunity – already demonstrated by previous research conducted in laboratory – is to **improve the performances of composite materials by the introduction of dispersed nanoparticles** that can give peculiar mechanical and functional properties to the resulting charged material.

**Nanocomposites**, called in this way the composite material where nano-charged polymeric materials may be used as the matrix, are globally known as the 21<sup>st</sup> century emerging technology in advanced materials engineering.

In Clean Sky – Low Weight Configuration, the nanotech activities are developed mainly in the work package named **“Enabling Technologies for Nanomaterial”** where Alenia (Work Package leader), EADS-CASA, Fraunhofer Institute, CIRA+, AIR GREEN and ONERA co-operate.

The main objective is to design and produce an innovative nanocomposite utilising nano-filled thermosetting resin and carbon fibre for the manufacturing of composite panels with increased structural behaviour and improved functional and/or improved thermo-mechanical properties. One of the most outstanding objectives of this research activity is to increase the electric conductivity of the composites. It has been demonstrated that Carbon NanoTubes (CNT) dispersions in the resin are able to improve the electric conductivity of the composite material providing innovative solutions for the design of aeronautical structures. So, the scope of the nano-tech activities in Green Regional Aircraft is to mature and apply a CNT based matrix in the development of the Full Scale Ground Demonstrator to contribute together with the other materials to the expected weight saving and though this, to contribute to the reduction of the fuel consumption and the carbon emissions.

J.-P.S - Abstract written from [www.sesarju.eu](http://www.sesarju.eu)



## SESAR : WHAT IS “AIRE” ?



Captain Godel

**AIRE : Atlantic Interoperability Initiative to Reduce Emissions. It is an agreement between the European Commission and the FAA (Federal Aviation Administration) launched in 2007 which aims to improve energy efficiency and aircraft noise by taking advantage of air traffic management best practices and mature technologies. It is expected to accelerate the implementation of environmental friendly procedures for all phases of flight and to validate the benefits of these improvements. The SESAR JU is responsible for the management of AIRE from a European perspective.**

**In 2009, the SESAR JU (SJU) supported 1,152 green flights under the AIRE umbrella. 18 partners in 5 locations participated in the trials.**

**These flights were very successful, so, it was decided that the “Initiative” would not only be continued but considerably enlarged in 2010/2011. The SJU selected 18 projects involving 40 airlines, airport, ANSP and industry partners support this expansion. A first wave of trials has already been conducted.**

### AIRE 2: MORE PARTNERS, MORE LOCATIONS, MORE TRIALS FOR MORE RESULTS

Through a call for tenders, new project proposals were selected to perform integrated flight trials and demonstrations validating solutions which allow accelerate the pace of change. The AIRE 2 call has brought in more partners with new trials in additional locations such as Austria, Belgium, the Czech Republic, Germany, Canada, Morocco, the Netherlands, the United Kingdom and Switzerland. “We will demonstrate that green flights operations can be applied everywhere immediately, when partners agree to work together with a common goal. This is not the future, this a SESAR reality”, said Patrick Ky, Executive Director of the SJU. Other new features of the programme are for instance gate-to-gate flight trials performed between European city pairs as an addition to complete green transatlantic flights. Demonstrations will be conducted in the most congested European airspaces and on the busiest European airports (e.g. Schipol). Some projects will focus on vertical and speed optimisation, while partners which have already participated in 2009, will expand on the results achieved so far with a strong link to deployment and routine use of previously tested procedures. AIRE will build the first blocks of the SESAR Concept of Operations

by testing SESAR 4D trajectory-based operations and SESAR’s concept of performance-based navigation.

Another highlight of AIRE 2 will be the performance of a series of transatlantic green flights with the Airbus A380.

### KEY GREEN PROJECTS

- Two proposals were selected for **green surface trials**, one of them being the project “Greener airports operations under adverse conditions”, executed by DSNA in partnership with Aéroports de Paris and Air France.
- Out of the five projects selected for **terminal operations**, one is conducted in Madrid by INECO, Aena, Iberia, Air Europa and Crida. The partners will perform Continuous Descent Approaches (CDA) with the introduction of SESAR 4D trajectory based operations.
- For **en-route oceanic**, four projects are selected covering five new locations: Portugal, Canada, Morocco, UK and USA.
- Seven **gate-to-gate** projects will be conducted, among others VINGA( Validation and Improvement of Next Generation Airspace), an green shuttle flights between Paris and Toulouse.

### A PILOT’S AIRE EXPERIENCE

On 6 April 2010, Captain Claude Godel was pilot in command on the first green transatlantic flight performed by Air France from Paris Charles de Gaulle to Miami airport. On the occasion of an interview with him conducted by SESAR magazine (issue 3, June 2010), he declared in particular:

“The AIRE flight is the almost flight for a pilot. On a normal flight [...] you are sure that you will fly level at non optimal altitudes, have to beg ATC for better speed, better lateral track; in one word, you spend your time negotiating or accepting non optimal compromises. The AIRE flight needs pre-flight preparation but, once off-block, the pilot can expect to fly the best track from beginning to end, at the best speed and the best altitude.

The whole principle of green flights is a virtuous circle: by optimising the path, the pilot shortens the flight time, burns less fuel, produces less CO<sub>2</sub>, reduces the costs, leaves fewer place for contingencies, is in line with the modern passenger’s aspiration and finally finds a new interest and a new pleasure in his job.

The first green transatlantic [...] needed serious preparation and coordination but showed clearly that most of today’s green procedures could be used already now in day-to-day operations [...]. ”

JPS – Article written from information provided by SESAR JU.  
[www.sesarju.eu](http://www.sesarju.eu)  
[www.sesarju.eu/environment](http://www.sesarju.eu/environment)

## THE 5<sup>TH</sup> AVIATION & ENVIRONMENT SUMMIT: GENEVA, 16-17 SEPTEMBER 2010



Over 300 delegates from all parts of the aviation industry met with representatives of civil society, governments and suppliers. The focus at this summit has been to assess progress towards the industry-wide targets to reduce aviation carbon emissions. Aviation is the only industry to present a set of global targets to the world's governments. The targets are:

1. to improve its fuel efficiency by an average of 1.5% per annum from now to 2020;
2. to stop the growth of its net carbon emissions from 2020 (carbon-neutral growth from 2020);
3. and to halve its net emissions by 2050 compared to 2005 levels.

The greatest areas of industry for emissions reductions are new technologies, air traffic management improvements and the use of sustainable aviation biofuels.

- Delegates reiterated industry calls to speed up the delivery of streamlined air navigation systems including the Next generation system in the USA and the Single European Sky the two of which would introduce significant carbon reductions.
- Aviation biofuels are expected to receive full certification for use on commercial flights within the next six months. Delegates turned to the challenges of commercialisation and securing sufficient supply whilst ensuring that such fuels meet agreed sustainability criteria. A team from across the industry and Cranfield University announced the start of the **SURF initiative** to support the development of sustainable aviation **biofuels from algae**.
- A plan announced at the previous Aviation & Environment Summit to introduce continuous descent approaches at 100 airports across Europe by 2013 has already resulted in 83 airports committed and carbon emissions already being reduced, well on the way to saving half a million tonnes of CO<sub>2</sub> a year. Pioneered by ACI Europe, over 22 airports in Europe have also signed up to the Airport Carbon Accreditation programme moving them towards carbon neutral airport status: over 400,000 tonnes of CO<sub>2</sub> have already been saved due to this project. In addition IATA launched **iFlex**, a project aimed at providing maximum efficiency with **flexible flight routings** over ultra long-haul sectors that could reduce fuel burn by as much as 2%.
- Delegates heard from their industry partners about the multitude of ways that teams from airports, airlines, air navigation service providers and manufacturers are working together on projects to reduce carbon emissions. They encouraged each other to continue working together and extend existing partnerships to further drive efficiency measures underway and explore new opportunities.
- The need for a comprehensive global policy framework was reiterated throughout the discussions.
- Delegates turned their attention to the 37<sup>th</sup> triennial ICAO Assembly and the UN climate negotiations, urging States

to summon the political will to endorse the industry targets for reducing emissions and establish the necessary global framework to deliver them.

Delegates supported the cross-industry resolution that has been sent to ICAO and will be submitted to the UNFCCC, sending the following message to governments:

### AVIATION INDUSTRY RESOLUTION ON CARBON-NEUTRAL GROWTH FROM 2020 AND A GLOBAL FRAMEWORK TO MANAGE AVIATION EMISSIONS

#### Introduction

The civil aviation industry, represented by ACI (Airports Council International), CANSO (Civil Air Navigation Services Organisation), IATA (International Air Transport Association), IBAC (International Business Aviation Council) and ICCAIA (International Coordinating Aerospace Industries Association), takes its environmental responsibilities seriously and has an unsurpassed record of improving its environmental performance over time. It is committed to improve its fuel efficiency by an annual average of 1.5% from now through 2020, stop the growth of its net carbon emissions from 2020 (carbon-neutral growth from 2020) and to halve its net emissions by 2050 compared to 2005 levels, subject to governments incentivising technological research and development for airframes and engines and the commercial development of alternative low-carbon fuels while also providing modern airport and airspace infrastructure.

Policy responses must be cost-effective, equitable and globally coordinated through ICAO, providing open access to carbon markets. Governments must recognize that the industry's capability to invest in new aircraft, currently the most effective tool for lowering CO<sub>2</sub> emissions, is threatened by increasing and costly regulatory burdens, including taxes, charges and economic measures.

Cooperation between industry and ICAO provides a solid foundation for implementing a global framework based on the industry's targets and four-pillar strategy.

#### Resolution

The civil aviation industry:

1. Strongly endorses the continuing efforts of governments to develop a comprehensive global carbon emissions management framework under ICAO as opposed to a patchwork quilt of unilateral national and/or regional plans.
2. Agrees that such a framework gives due consideration to the special needs of developing countries and the maturity of aviation markets, while ensuring a level playing field amongst operators.
3. Encourages ICAO and governments to gain endorsement at the 37<sup>th</sup> triennial ICAO Assembly for a global framework (or globally accepted approach) to limit and reduce aviation emissions consistent with industry's proposals.

J.-P.S - From ATAG Communiqué [www.sesarju.eu](http://www.sesarju.eu)  
[www.enviros summit.aero/](http://www.enviros summit.aero/)

## THE EDA-EC CONFERENCE ON UNMANNED AIRCRAFT SYSTEMS (UAS)

**On 1 July 2010, the European Defence Agency (EDA) and the European Commission (EC) co-organised a Conference dedicated to Unmanned Aircraft Systems. Over 450 senior government officials and industry representatives gathered to discuss the potential of UAS for European users, their economic, technological and industrial impact, as well as a common European way forward.**

- Presentations by senior representatives of European stakeholders' groups outlined the dual use nature of UAS, both for defence and civilian security purposes. Financial savings and environmental benefits through reduced fuel consumption as well as CO<sub>2</sub> emissions were highlighted, in addition to the multiple possibilities UAS already offer in reducing the risk to human life in high risk missions.
- Military and civil UAS markets are highly interdependent, with technology developments inevitably driving both. The EC and the EDA are committed at the European level, to closely observe, support and contribute to the evolution of UAS technologies for dual-use purposes. To underline this commitment, EDA's Chief Executive Alexander Weis announced ongoing work under the "**European Framework Cooperation**", a pragmatic approach by the EC, the EDA and the ESA to synchronise

systematically Research and Technology investment in their respective frameworks. A "**Joint Investment programme on UAS**" is under preparation. Its target is "to address the remaining technological challenges for UAS Air traffic Insertion as well as exploitation of their capabilities to support seamless flying of UAS in Europe by 2015", Alexander Weis said.

- Several senior officials called for a joint European approach to develop common UAS capabilities in order to maximise efficiency in public spending and to ensure that alternative European platforms are available within the coming years.
- The Conference recommended the establishment of a **High Level Group on UAS**, providing a discussion platform to European Stakeholder communities in order to ensure coherence whilst improving sustainability and competitiveness, notably building on input and ongoing initiatives from research areas such as the "European Framework Cooperation".
- Alexander Weis called for an "open discussion among all stakeholder communities to prevent duplication of effort, ineffectiveness and a fragmented market".

More on this Conference:  
[www.eda.europa.eu:newsitem.aspx?id=634](http://www.eda.europa.eu:newsitem.aspx?id=634)

## EUROPEAN AIR TRANSPORT FLEET (EATF)

**In February 2008, the EDA Steering Board in Capabilities formation decided to establish a Project Team to study viable models for the development of a European Air Transport Fleet (EATF). In November 2008, Defence Ministers of twelve EU Member States (Belgium, Czech Republic, France, Germany, Greece, Italy, Luxembourg, the Netherlands, Portugal, Romania, Slovakia and Spain) signed an EATF Declaration of Intent (DoI) to express the critical European airlift shortfalls. Significant progress was achieved in 2009**

### THE MAIN OBJECTIVES OF THE EATF:

- to improve the airlift provision within the EU;
- to develop concrete solutions for better use of existing and future airlift assets made available by the pMS for military needs to meet operational requirements;
- to develop means for optimisation of interested existing and future air transport organisations and structures;
- to be able to transport any personnel/equipment by any asset with a minimum of constraints;
- in fine, to establish a **robust network** linking various European air transport capabilities made available by the pMS for military needs regardless of type or origin.

### FROM "DoI" TO "LoI"

Significant progress was achieved in 2009 in defining the EATF framework, building a solid EATF work plan, describing the EATF model and finalising the list of the different work strands. In addition, the project team achieved the description of the landscaping study (strengths and weaknesses of the current environment, ways to optimise the EATF structure), and the Diplomatic Clearances study aiming at harmonising the existing diplomatic clearances mechanism. Contacts have been established with different institutions and organisations with a view to avoiding duplication of work and to combine efforts to alleviate the critical shortfalls in the air transport area.

The signature of the EATF LoI, on 17 November 2009, by 14 Ministers of Defence – Belgium, Czech Republic, Finland, France, Germany, Greece, Italy, Luxembourg, the Netherlands, Poland, Portugal, Slovakia, Spain and Sweden – and by the Minister of Defence of Romania a few months later expressed the clear political will to move forward and to enhance efforts to increase the military airlift provision within Europe.

JPS. – Article written from information data provided by EDA.  
[www.eda.europa.eu](http://www.eda.europa.eu)

## THE IMAGE OF THE QUARTER : EARTH FROM ENVISAT SATELLITE : GREENLAND GLACIER GIVES BIRTH TO GIANT ICEBERG

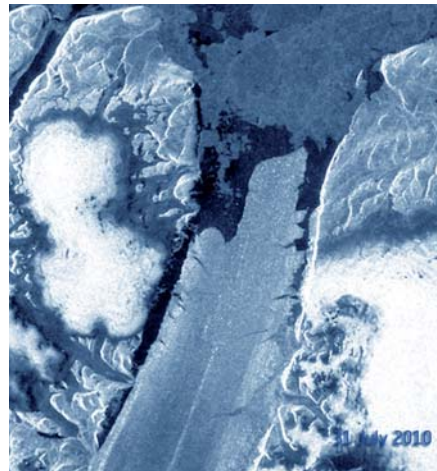
**9 August 2010.**

Envisat has been observing a rare event in the Arctic since early August: a giant iceberg breaking off the Petermann glacier in North-West Greenland.

The Petermann glacier is one of the largest glaciers connecting the Greenland inland ice sheet with the Arctic Ocean. Upon reaching the sea, a number of these outlet glaciers extend into the water with a floating ice tongue.

The ice tongue of the Petermann glacier was the largest in Greenland, with an extension of about 70 km until early August. This tide-water glacier regularly advances towards the ocean 1 km per year. During the previous months, satellite images revealed that several cracks had appeared on the glacier surface, suggesting that a break-up event was imminent.

In the Envisat radar image taken on 3 August, the ice tongue was still intact but, on 4 August, a large part of the floating ice tongue was separated from the glacier, giving birth to what is currently the largest iceberg in the northern



hemisphere. Such a process of detachment, called ‘calving’, occurs regularly on the Petermann glacier, with smaller calving events in summer 2008 and 2009. However large calving events are rare, with the last such significant event being documented in 1991 by ESA’s ERS-1 satellite.

## EARTH EXPLORERS : THE LIVING PLANET PROGRAMME

**The Earth Explorer missions conducted by the European Space Agency focus on the atmosphere, biosphere, hydrosphere, cryosphere and the overall emphasis on learning more about the interactions between these components and the impact that human activity is having on natural Earth. Designed for research purposes, they fall into two categories: ‘Core’ missions on the one hand, addressing specific areas of great interest, and on the other hand ‘Opportunity’ missions to address areas of immediate environmental concern. This paper gives an overview of the latest news about three missions: GOCE (‘Core’), SMOS (‘Opportunity’) and Cryostat (‘Opportunity’).**

### GOCE (Gravity field and steady-state Ocean Explorer)

ESA launched GOCE in March 2009 to map Earth’s gravity with high accuracy and resolution. This satellite (figure 1) orbits at an exceptionally low altitude – 254, 9 km – skimming the fringes of our atmosphere. The first model (figure 2), based on only two months of data, November and December 2009, has been presented at the ESA’s Living Planet Symposium held in Bergen, Norway, 27 June-2 July 2010. The image shows the capability of the satellite to map tiny variations in Earth’s gravity.

Chairman of the GOCE Mission Advisory Group and Head of the Institute for Astronomical and Physical geodesy at the Technische Universität München, Prof. Reiner Rummel

said: “The computed global gravity field looks very promising. We can already see that important new information will be obtained for large areas of South America, Africa, Himalaya, South-East Asia and Antarctica.”



Figure 1. GOCE in orbit

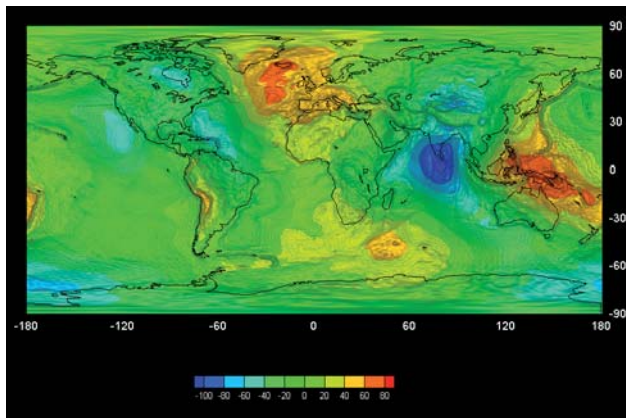


Figure 2. GOCE first global gravity model

Data from GOCE will result in a unique model of the 'geoid', which is the surface of an ideal global ocean at rest: this is a crucial reference for accurately measuring ocean circulation, sea-level change and ice dynamics, all elements affected by the climate change.

New GOCE models are offering a wealth of new information useful for many disciplines, ranging from geodesy, geophysics and surveying to oceanography and sea-level research. With each two-month cycle data, the gravity model will become more and more detailed and accurate.

### SMOS (Soil Moisture and Ocean Salinity)

Launched on 2 November 2009, SMOS is the second Earth Explorer Opportunity mission of the ESA's Living planet Programme. A novel instrument has been developed that is capable of observing both soil moisture and ocean salinity by capturing images emitted microwave radiation around the frequency of 1.4 GHz (L-band). SMOS is carrying the first-ever, polar orbiting, space-borne, 2-D interferometric radiometer. By consistently mapping soil moisture and ocean salinity, SMOS will advance our understanding of the exchange processes between Earth's surface and atmosphere – the water cycle – and help improve weather and climate models. In addition, these data will be of practical use for agriculture and water resource management.



Figure 3. SMOS in orbit

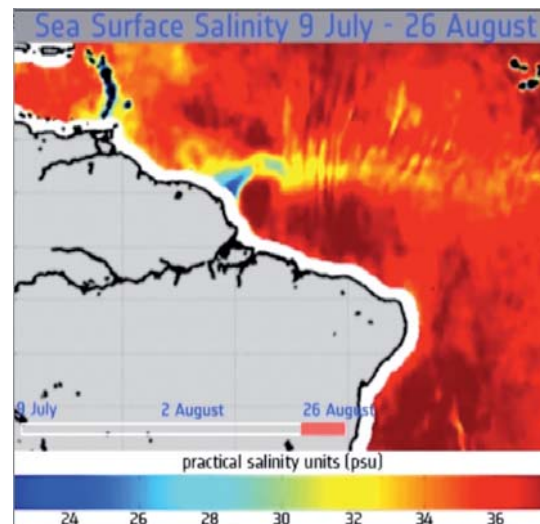


Figure 4. Amazon plume

SMOS has completed an intense phase of calibration and in May, it began its operational life by delivering data.

### Brightness temperature

Since mid-July, SMOS has been delivering observations of 'brightness temperature' to the science community. As a measure of radiation emitted from Earth's surface, this information is being used to derive global maps of soil moisture every three days and maps of ocean salinity at least every 30 days.

### Water mission reveals insight into Amazon Plume

Using preliminary data, scientists can clearly see how surface currents affect the 'Amazon plume' in the open sea (figure 4). They now have the ability to track the movement of low-salinity surface water resulting from this 'plume'. Observations between mid-July and mid-August have shown how the North Brazilian Current transports fresh water from the Amazon River as the current flows across the mouth of the river.

CRYOSTAT-2



Figure 5. The cryostat-2 satellite  
Credits: ESA/AOES Medialab

Cryostat-2 was launched in last April. The system determines variations in the thickness of floating sea-ice so that seasonal and inter-annual variations can be detected. The satellite also surveys the surface of continental ice sheets to detect small elevation changes: information on precise

variations in the ice thickness will improve our understanding of the relationship between ice and the climate change (figure 5). The first data were received on 20 July 2010, and they are very encouraging. About 150 scientists from approximately 40 research institutes now have access to the data. Cryostat-2 is entering the final part of the commissioning phase (the system will be commissioned in the end of 2010) and according to all experts, the mission has so far exceeded expectations: the satellite and instruments are in good health and the first data give an excellent level of detail. As an illustration, we give here two diagrams: profile of the Greenland ice sheet (figure 6) and the profile Arctic sea-ice (figure 7) acquired by Cryostat-2. Taking in situ measurements of ice and snow are an essential part of the calibration and validation programme of the mission (figure 8).

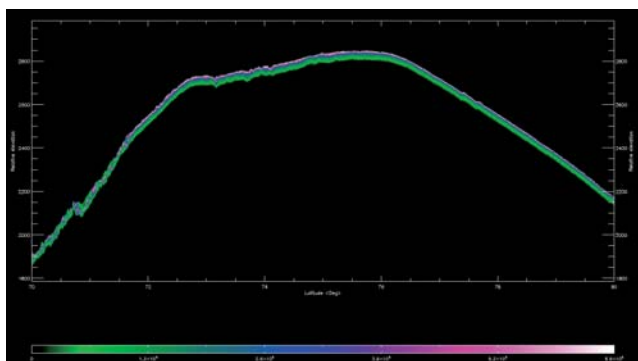


Figure 6. Profile of the Greenland ice sheet acquired by Cryostat-2: this profile shows an estimate of the ice-sheet elevation and variability of surface characteristics (colour-coded returned echo power levels) across a 2500 km transect from south to north. Credits: ESA

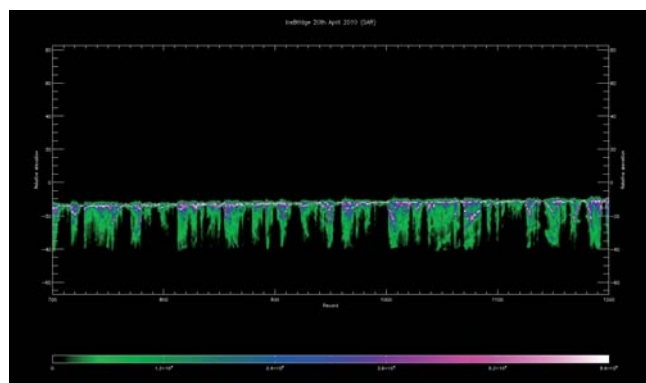


Figure 7. Profile Arctic sea-ice acquired by Cryostat-2. The profile shows complex characteristics of radar echoes acquired over sea ice and open water 'leads' across a 150 km transect of the Arctic Ocean previously unseen by radar altimeter. Credits: ESA



Figure 8. Here a neutron probe is lowered into a hole drilled in the ice. It collects essential data on snow and ice density layering to help understand the radar signals from the satellite and ultimately transform the height measurements into net change in ice mass, the main objective of Cryostat. Credits: Norwegian Polar Institute.



## THE MICROWAVE SKY AS SEEN BY PLANCK

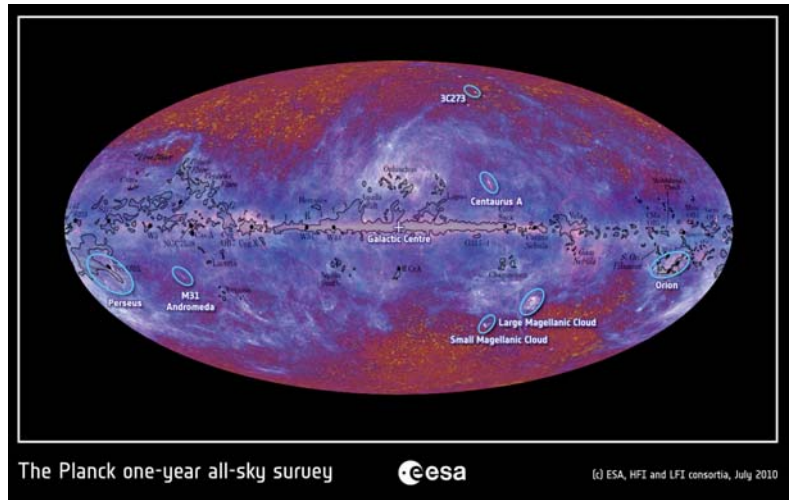
This multi-frequency all-sky image of the microwave sky composed using data from Planck covering the electromagnetic spectrum from 30 GHz to 857 GHz.

The mottled structure of the CMBR (Cosmic Microwave Background Radiation), with its tiny temperature fluctuations reflecting the primordial density variations from which today's cosmic structure originated, is visible in the high-latitude regions of the map.

The CMBR is the oldest light in the Universe, the remains of the fireball out of which our Universe sprang into existence 13.7 billion years ago.

The central band is the plane of our Galaxy. A large portion of the image is dominated by the diffuse emission from its gas and dust. The image was derived from data collected by Planck during its first all-sky survey, and comes from about 12 months of observations.

To the right of the main image, below the plane of the galaxy, is a large cloud of gas in our Galaxy. The obvious arc of light surrounding it is Barnard's loop – the expanding bubble of an exploded star. Planck has seen whole other galaxies. The great spiral galaxy in Andromeda, 2.2 million light-years from Earth, appears as a sliver of microwave light, released by the coldest dust in its giant body. Other,



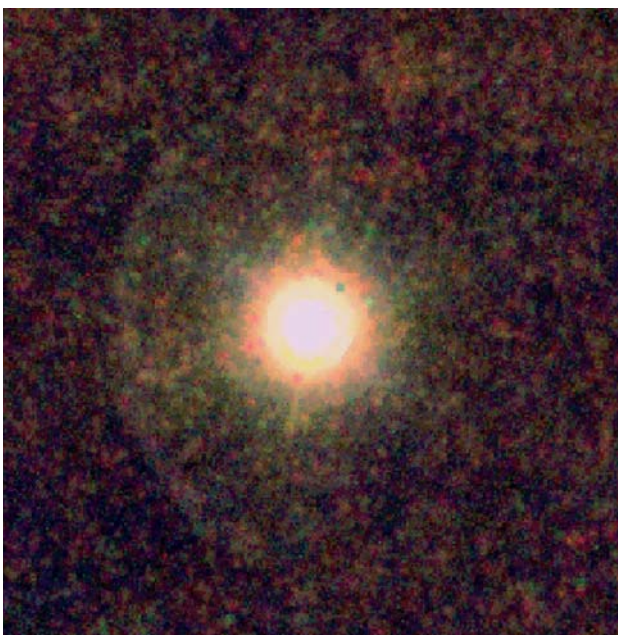
The Planck one-year all-sky survey (ESA/HFI&LFI Consortia (2010)/T. Dame (2001))

more distant, galaxies with super-massive black holes appear as single points of microwaves dotting the image. Derived from observations taken between August 2009 and 2010, this image is a low-resolution version of the full data.

Planck continues to map the universe. By the end of its mission in 2011, it will have completed 4 all-sky scans. The first full data release of the CMBR is planned for 2012.

## RECIPE OF WATER : JUST ADD STARLIGHT

2 September 2010



[www.esa.int/images/CWLeo\\_H.jpg](http://www.esa.int/images/CWLeo_H.jpg) / Credit ESA

### THE GIANT STAR IRC+10216

ESA's Herschel infrared telescope has discovered that ultraviolet starlight is the key ingredient for making water in space. It is the only explanation for why a dying star is surrounded by a gigantic cloud of hot water vapour.

IRC+10216 is a red giant star, hundreds of times the Sun's size, although only a few times its mass.

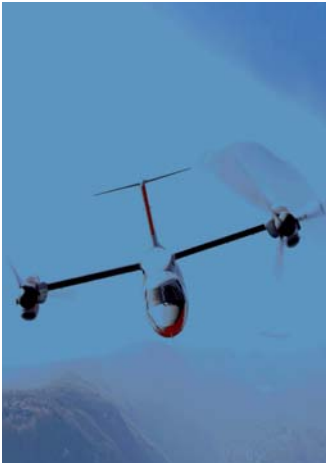
The Herschel water detection made the astronomers realise that ultraviolet light from surrounding stars can reach deep into the envelope between the clumps and break up molecules such as carbon monoxide, releasing oxygen atoms. The oxygen atoms then attach themselves to hydrogen molecules, forming water

J.-P.S - From ESA information  
[www.esa.int](http://www.esa.int)

# 37<sup>TH</sup> EUROPEAN ROTORCRAFT FORUM

SEPTEMBER 13-15, 2011

ITALY - Vergiate/Gallarate - Ticino Park



The European Rotorcraft Forum is one of the premier events on the rotorcraft community's calendar. It brings together manufacturers, research centres, academia, operators and regulatory agencies, to discuss about research, development, design, manufacturing, testing and rotorcraft operations.

This Forum will be the 37<sup>th</sup> in a series of meetings, which take place annually across Europe, rotating around the United Kingdom, Germany, France, Italy, The Netherlands and Russia. The first ERF was held in Southampton, England, in 1975, and the most recent in Paris, France, in 2010.

The 37<sup>th</sup> European Rotorcraft Forum will take place in Italy, from the 13<sup>th</sup> to the 15<sup>th</sup> of September 2011, in an area known as the Ticino Park, where the most important AgustaWestland facilities are located. The first day of the Forum will take place in the AgustaWestland auditorium in Vergiate, close to the Final Assembly plant. The following two days will be held in Gallarate (VA), in the MAGA (Museo

Arte GAllarate) congress center. Technical visits will be organized on the 16<sup>th</sup> of September.

The Ticino Park - the first Regional Park in Italy - was created in 1974 to protect and save the natural environment of one of the most beautiful territory in Lombardia. It protects the Ticino Valley and controls an area of more than 91 thousand hectares consisting of 47 Municipalities and 3 Provinces South of Lake Maggiore. Thanks to its nature, landscapes, arts and history, this park has been nominated as "biosphere's reserve" by UNESCO.

Apart from its natural beauty and the efforts to preserve it, this region is very important and famous for its historical background in the aeronautical field. Famous industries, such as Caproni, SIAI Marchetti, Agusta, now Agusta-Westland, and Aermacchi, now AleniaAermacchi, started their activities, grew and reached international successes here. Recently, aerospace industries, universities and research centres joined to create an Aerospace cluster, Distretto Aerospaziale Lombardo, to foster a further growth, not only for large companies but also for SMEs (Small and Medium Enterprises), and to achieve high standard of quality and specific excellence, operating worldwide.

AgustaWestland is involved in collaborative projects aimed at reducing the environmental footprint, to produce a "greener" rotorcraft both in terms of limiting noise and emissions, and developing new manufacturing concepts and designs. The choice of the Forum location is not casual also for the ever-existing link between the flight and its technology with the inspiration they provided to generations of artists and engineers. The Forum participants would be able to witness some of the artworks generated by the dream of human flight that became reality in Lombardia.

**The participants are invited to present papers on topics, technologies, solutions, and projects aimed at protecting nature, saving energy, and reducing pollution for the so-called eco-green future rotorcrafts. The Forum will have a special session dedicated to these subjects.**



## VENICE PRESENTATION



- The Foundation's Centre is composed by eight conference rooms of different sizes.
- The "Salone degli Arazzi" can hold up to 500 people.
- Seven more rooms, all remarkable in terms of architectural history, have different capacity and can hold from 30 to 300 people.
- Further spaces are available for exhibition area, registration desks, secretary, lunches and coffee breaks.

### CEAS Conference 2011

#### Host society: AIDAA

- Experienced team with history of running successful aerospace international congresses with more than 500 participants, such as the 13<sup>th</sup> AIAA/CEAS Aeroacoustics Conference in 2007, the 48<sup>th</sup> IAF congress in 1997 and the 20<sup>th</sup> ICAS Congress in 1996.
- Aeronautics and airspace biennial **national conference** (next in 2011 **going to be joined with CEAS Conference**) with more than 200 participants.
- Strong cooperation with national and international associations.
- Member of IAF (International Astronautical Federation), ICAS (International Council of Aeronautical Sciences) and CEAS.
- Connected with Italian Air Force and Public Institutions.
- Aerospace & Defense industries representatives are members of AIDAA Board of Directors.

#### Venue: Fondazione Cini

## Draft Program



**Monday 17<sup>th</sup> October**

- Opening Plenary
- Keynote Speech
- Press Conference
- Welcome Reception (TBD)

**Tuesday 18<sup>th</sup> October**

- Keynote speech
- Parallel Sessions
- Exhibition
- Civic Reception (TBD)

**Wednesday 19<sup>th</sup> October**

- Parallel Sessions
- Exhibition
- Keynote Speech (Padova)
- Gala Dinner (Padova)

**Thursday 20<sup>th</sup> October**

- Parallel Sessions
- Exhibition
- Closing Plenary

**Friday 21<sup>st</sup> October**

- Technical Tours

YEAR 2010

10-11 November • **RAeS** – Unmanned Air Systems Conference – **London, UK** [www.aerosociety.com/conference](http://www.aerosociety.com/conference)

17-18 November • **RAeS** – General Aviation Group Conference. [www.aerosociety.com/conference](http://www.aerosociety.com/conference)

23 November • **RAeS** – Autumn Flight Simulation Group Conference. [www.aerosociety.com/conference](http://www.aerosociety.com/conference)

30 Nov. - 2 december • **ASD - 'AEROWEEK'** – European parliament - Brussels, Belgium.  
Aerospace sector in Europe, today and in the future  
[www.asd-europe.org](http://www.asd-europe.org)

1 -2 December • **ASD-CEAS Conference 2010 – Aerospace for Europe: more than just flying**  
Conrad-Hilton Hotel, avenue Louise 71, Brussels, Belgium – [www.asd-ceas2010.eu](http://www.asd-ceas2010.eu)

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The most important multistakeholder high level roundtable congress in Brussels in December 2010.

This is the aerospace event of the year where decision maker of the most leading European industry, politics and research meet.

**ASD/CEAS Conference**  
Brussels - 1<sup>st</sup> - 2<sup>nd</sup> December 2010

The key objective of the Conference is to present and discuss the strategic issues facing European Aerospace in the light of the economic and environmental realities of the day, as well as the challenges and opportunities posed by the European political choices as the Union charts its way ahead for the next decade and beyond.

Aerospace drives innovation in science and technology, providing technology transfers and spill-over benefits to a variety of other economic sectors. Beyond its socio-economic importance, the Aerospace sector is also a powerful driver of European integration and can be considered as a vital part of the EU economy. But in the face of growing challenges stemming from climate change, much more needs to be done.

The skills and competences of its workers are a major component of EU's productivity, sustainability and innovation.

In recent years however, there has been a marked decrease in interest in scientific studies among young people, resulting in a worsening mismatch between the needs for new skilled engineers and technicians, and the number of graduates provided by the education system. Public authorities, educational establishments and industry must join forces to reverse the trend.

These are some of the main topics to be discussed at the Conference, which is an integral part of the forthcoming ASD Aero Week (Brussels, 29 November – 3 December 2010). In order to do this, the ASD/CEAS will bring together representatives of EU institutions, national governments, non-governmental agencies, industry, research institutes, financial community and the media.

More information, registration and an update on the programme will be available on our webpage ([www.asd-ceas2010.eu](http://www.asd-ceas2010.eu)). The Conference registration fee includes the attendance of the whole conference, lunch on the first day and all coffee breaks as well as the Conference Dinner.

**Brussels**  
1<sup>st</sup> - 2<sup>nd</sup> December 2010

8-9 December • **EASA** – 4<sup>th</sup> EASA Rotorcraft Symposium – Cologne, Germany – [www.easa.europa.eu](http://www.easa.europa.eu)

8-10 December • **EASA** – 5<sup>th</sup> ESA Workshop on Satellite Navigation Technologies (NAVITEC) – ESTEC – Noordwijk, NL  
[www.esa.int](http://www.esa.int)

15-16 December • **EASA** – European Commercial Aviation safety Team (ECAST)  
Plenary Meeting – Cologne, Germany – [Heidi.kammer@easa.europa.eu](mailto:Heidi.kammer@easa.europa.eu)

YEAR 2011

1-3 February • **ESA** – Cryostat Validation workshop – ESRIN, Frascati, Italy  
[www.esa.int](http://www.esa.int)

15 February • **ESA** – ISU 15<sup>th</sup> Annual International Symposium: The International Space Station: Maximizing the Return from Extended Operations – Strasbourg, France.

22 March • **ESA** – Sentinel scientific products for Land, Ocean and Cryosphere – Assessment and Consolidation Workshop – ESRIN- Frascati, Italy

28-30 March • **3AF in partnership with AIAA** – Applied Aerodynamics – Orléans, France  
[lisa.gabaldi@aaaf.asso.fr](mailto:lisa.gabaldi@aaaf.asso.fr)

30 – 31 March and 1<sup>st</sup> April • **European Commission (EC) DG Research** – Aeronautics Days 2011 ‘Innovation for Sustainable Aviation in a Global Environment’ – Political top-down messages- Technological achievements-Review process of meeting the 2020 Vision goals and the Aeronautics research Agenda - Palacio Municipal de Congresos, Madrid, Spain  
[www.aerodays2011.org](http://www.aerodays2011.org)



12 April • **ESA** – 11<sup>th</sup> Symposium on Advanced Space Technologies in Robotics and Automation (ASTRA) – ESTEC, Noordwijk, NL

13-14 April • **RAeS** – Aerospace 2011: Funding the Future – Aerospace and Aviation in the Age of Austerity London, UK – [www.aerosociety.com/conference](http://www.aerosociety.com/conference)

13-15 April • **CEAS** – Euro GNC 2011 – 1<sup>st</sup> Specialist Conference on Guidance, Navigation & Control – Hosted by DGLR. Venue: Technische Universität München City Campus - Munich, Germany  
[gnc@dgfr.de](mailto:gnc@dgfr.de) / +49 228 30 80 5-0 – [Florian@Holzapfel@tum.de](mailto:Florian@Holzapfel@tum.de) / +49 89 289 16081

3-6 May • **3AF** – Missile Defence – San Sebastian, Spain – [lisa.gabaldi@aaaf.asso.fr](mailto:lisa.gabaldi@aaaf.asso.fr)

5 June • **ESA** – GNC 2011 – 8<sup>th</sup> International ESA Conference on Guidance, Navigation & Control Systems – Carlsbad, Czech Republic – [www.esa.int](http://www.esa.int)

## YEAR 2011

6-8 June • **AIAA/CEAS** – Aeroacoustics Conference – Portland, Oregon (USA) – [www.aiaa.org](http://www.aiaa.org)

8 June • **ESA** – International Workshop on Planning and scheduling for Space – IW PSS 2011 – ESA/ESOC – Darmstadt, Germany

8-9 June • **RAeS** – The World Outside The Aircraft – Simulating The operational Environment – Spring Flight simulation Conference- London – [www.aerosociety.com/conference](http://www.aerosociety.com/conference)

14-16 June • **SEE/GIFAS** – European Test and Telemetric Conference (ETTC) – Toulouse, France – [communication@see.asso.fr](mailto:communication@see.asso.fr)

11 July • **ESA** – 4<sup>th</sup> International Symposium on Physical Sciences in Space – ISPS 4 Bonn Bad-Godesberg, Germany.

20-26 June • **International Air Show – PARIS LE BOURGET** – Professionals: 20-23 June

26-30 June • **3AF** – International Forum on Aeroelasticity and structural Dynamics (IFASD) – Paris. [lisa.gabaldi@aaaf.asso.fr](mailto:lisa.gabaldi@aaaf.asso.fr)

13-15 September • **Organiser NVvL - Rotorcraft Community** – 37<sup>th</sup> European Rotorcraft Forum – ERF 2011 – Vergiate/Gallarate – Ticinio Park - Italy – [hermans@nlr.nl](mailto:hermans@nlr.nl)

28-29 September • **RAeS** – An International Approach to Flight Crew Training Standards – annual RAeS International Flight Crew Training Conference – [www.aerosociety.com/conference](http://www.aerosociety.com/conference)

3-7 October • **IAC 2011** – – 62<sup>nd</sup> International Astronautical Congress – Central theme: African Astronautics – Venue: Cape Town International Convention Center (CTICC), Cape Town, South Africa.

17-21 October • **CEAS** – 3<sup>rd</sup> CEAS European Air & Space Conference – Giorgio Cini Foundation – Venice, Italy. [www.ceas2011.org](http://www.ceas2011.org)

17 November • **IAA** – Conference: Climate Change and green systems, Disaster Management & Natural hazards, Planetary& Lunar exploration, Human Spaceflight. Ronald Reagan Building and International Trade Center, Washington DC – [sgeneral@iaaweb.org](mailto:sgeneral@iaaweb.org)

## YEAR 2012

12-17 June • **ILA Berlin** – International Airshow – [www.ila-berlin.de](http://www.ila-berlin.de)

09-15 July • **International Farnborough Air Show**

23-28 September • **ICAS** – ICAS2012 Congress – Brisbane, Australia – [secr.exec@icas.org](mailto:secr.exec@icas.org)

1-5 October • **IAC** – 63<sup>rd</sup> International Astronautical Congress- IAC2012 Nostra D'oltremare Convention Center- Naples, Italy

## THE CEAS MEMBER SOCIETIES

**Association Aéronautique et Astronautique de France (3AF)**

6, rue Galilée – F-75016 Paris

Tel.: + 33(0) 1 56 64 12 30

3af@aaaf.asso.fr – www.aaaf.asso.fr

**President:** Michel Scheller**General Delegate:** Jacques Sauvaget

jacques.sauvaget@aaaf.asso.fr

**Secretary General:** Gilles Marcoin**CEAS Trustees:** Pierre Bescond

pierre.bescond@laposte.net

and François Gayet

francois.gayet@asd-europe.org

**Executive Secretary :** Anne Venables

secrexec@aaaf.asso.fr

**Event Coordinator:** Lisa Gabaldi

lisa.gabaldi@aaaf.asso.fr

**Asociación de Ingenieros Aeronáuticos de España (AIAE)**

Francisco Silvela 71, Entreplanta

ES-28028 Madrid

Tel.: + 34 91 745 30 30

CEAS@coiae.com - www.coiae.com

**President:** Mr Felipe Navio Berzosa

fnavio@coiae.es

**CEAS Trustees:**

Mr José Luis de Luna Lázaro

jldlunal@fcc.es

Dr Leandro B. Fernández Sáinz

l.fernandezs@recol.es

**Secretary:** info@coiae.com**Associazione Italiana di Aeronautica e Astronautica (AIDAA)**

Casella Postale 227 – I-00187 Roma V.R.

Tel / Fax : + 39 06 883 46 460

info@aidaa.it – www.aidaa.it

**President:** Prof. Franco Persiani

franco.persiani@unibo.it

**Secretary General:** Prof. Antonio

Castellani

a.castellani@aidaa.it

**CEAS Trustees:**

Prof. Franco Persiani - Università de

Bologna – Via Fontanelle 40

I - 47100 Forlì

Prof. Amalia Ercoli Finzi

Politecnico di Milano – Via La Masa 34

I - 20156 Milano

amalia.finzi@polimi.it

**Secretary:** Daniela Vinazza

daniela@aidaa.it

**Deutsche Gesellschaft für Luft-und Raumfahrt Lilienthal-Oberth e.V. (DGLR)**

Haus der Luft und Raumfahrt

Godesberger Allee 70 – D- 53175 Bonn

Tel.: + 49 228 30 80 50

geschaeftsstelle@dglr.de – www.dglr.de

**President:** Dr-Ing. Detlef Müller-Wiesner

detlef.mueller-wiesner@eads.net

**CEAS Trustees:** Prof. Dr-Ing. Joachim

Szodruich and Peter Brandt

**Secretary General:** Peter Brandt

peter.brandt@dglr.de

**Secretary:** Petra Drews

petra.drews@dglr.de

**Finnish Society of Aeronautical Engineers (FSAE)**

c/o Airline Management Technologies

Leinikkitie 20 B – FI-01 350 Vantaa

**President and CEAS Trustee:**

Markku Roschier- markku.roschier@almt.fi

enna.peltoniemi@vtt.fi

Tel.: +358(0)40 7029 375

**Flygtekniska Föreningen (FTF) – Swedish Society for Aeronautics and Astronautics**

Anna Rathsman – c/o Rymdbolaget

Box 4207 – SE-171 04 Solna

Tel: +46-8-627 62 62

anna.rathsman@ssc.se

**President:** Captain Roland Karlsson

Drottninggatan 18, SE – 602 24

Norrköping, Tel.: + 46(0)11 345 25 16

Mob.: + 46 (0)705 38 58 06

rkrolandk@gmail.com

**CEAS Trustees:** – Kaj Lundahl

Wiboms väg 9 • SE - 171 60 Solna

klundahl@bredband.net

+46 8 270 264 – +46 703 154 969 (mob)

– Prof. Petter Krus : Linköping University

SE - 58183 Linköping – petter.krus@liu.se

+46 13 282 792 – +46 708 282 792 (mob)

**Secretary:** Bengt Moberg

Norrbackagatan 22,2tr

SE-113 41 Stockholm

Tel.: +46 709 97 90 60 –

bengt.moberg@sas.se

**Hellenic Aeronautical Engineers Society (HAES)**

3, Karitsi Str. 10561 – GR-10561 Athens

Phone.&amp; Fax (HAES): +30-210-3239158

Working hours Phone:+30 22620-52334

Mob.:+30 697 997 7209

E-mail (HAES): admin@haes.gr

**President and CEAS Trustee:**

Dott.Triantafyllou Tsitinidis

E-mail (pers.): ttsitinidis@haicorp.com

**Nederlandse Vereniging voor Luchtvaarttechniek (NVvL)**

c/o National Aerospace Laboratory

Anthony Fokkerweg 2

NL- 1059 CM Amsterdam

Tel.: +31 20 511 3298 (secretariat)

nvvl@nlr.nl – www. nvvl.org

**President and CEAS Trustee:**

Fred Abbink – f.j.abbink@planet.nl

**Secretary General and CEAS Trustee:**

Christophe Hermans

Tel.:+31 20 511 3298 – hermans@nlr.nl

**Royal Aeronautical Society(RAeS)**

No.4 Hamilton Place – London

W1 J 7 BQ – United Kingdom

Tel.:+ 44(0)20 76 70 4300

raes@aerosociety.com

www.aerosociety.com

**President:** AVM David Couzens**CEAS Trustee:** David Marshall

marshall.daa@wanadoo.fr

**President-Elect for 2010-2011:**

Graham Roe

**Chief Executive:** Simon Luxmoore

Tel.:+44(0)20 7670 4302

simon.luxmoore@aerosociety.com

**PA to the Chief Executive:**

Anne Tompkins

anne.tompkins@aerosociety.com

**CEAS Trustee:** Paul Bailey

paul.bailey@aerosociety.com

**Conf.&Events Manager:** Lorraine Reese

lorraine.reese@aerosociety.com

**Schweizerische Vereinigung für Flugwissenschaften/Swiss Association of Aeronautical Sciences (SVFW)**

RUAG/Aviation – Seetalstrasse 175

PO Box 301 – CH-6032 Emmen

Tel.:+41 41 268 4049

www.svfw.ch

**President:** Dr Jürg Wildi

Vice-President, Innovation &amp; Technology

juerg.wildi@ruag.com

**CEAS Trustee:** Dr Georges Bridel

a/o ALR – Gotthardstr. 52

CH-8002 Zurich

Tel.: + 41 79 405 7645

georgesbridel@aol.com

**Central Aerohydrodynamic Institute Russian Aerospace Society (TsAGI)**

1, Zhukovsky St. – Zhukovsky, Moscow

region, 140 180, Russian Federation

Tel.: +7(495) 556 - 41- 01

**Chief Executive:**

Sergey L. Chernyshev, D.Sc.

ved@tsagi.ru – www.tsagi.com

**Associate Member: Polish Society of Aerospace Sciences**

Prof. Zdobyslaw Goraj

goraj@meil.pw.edu.pl

Prof. Jacek Rokicki

jack@meil.pw.edu.pl

Nowowiejska 24 – 00665 Warsaw – Poland

**Societies which have signed a Memorandum of Understanding with the CEAS:****American Institute of Aeronautics and Astronautics (AIAA)**

1801 Alexander Bell Drive, Reston, VA 20191

megans@aiaa.org

carols@aiaa.org

www.aiaa.org

**Chinese Society of Astronautics (CSA)**

PO Box 838 – 10830 Beijing, China (PRC)

Pr Wang Jia

csa\_space@yahoo.com.cn

www.csaspace.org.cn/

**International Council of the Aeronautical Sciences (ICAS)****President:** Ian Poll, UK**Executive Secretary:** Anders Gustavsson,

Sweden

c/o FOI

SE-16490 Stockholm

www.icas.org

**Korean Society for Aeronautical and Space Sciences (KSAS)****Prof. Seung Jo Kim****Prof. In-Seuck Jeung**

enjis@snu.ac.kr

sjkim@snu.ac.kr



Sixth European Aeronautics Days

# Aerodays 2011

*Innovation for a Sustainable Aviation  
in a Global Environment*

Palacio Municipal de Congresos  
Madrid / Spain

30<sup>th</sup> March - 1<sup>st</sup> April 2011

[www.aerodays2011.org](http://www.aerodays2011.org)



Centro para el Desarrollo  
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