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Towards a brighter future: building up Europe



In 2013 and the first part of 2014 the European Commission will put forward a set of around 50 new initiatives that are meant to reform the financial system, stimulate the economy and consequently get the EU back on the road to sustainable growth. As such the Commission intends to deal with the main hot topics of the day, being growth and jobs.

The logic behind these initiatives is for the taxpayers to get more for the same amount of money they spend. It's also intended to create a budget for integration and reduce the gaps that have emerged all across Europe. Thus, these initiatives to boost growth all across Europe cover a wide range of issues from improving transparency and consumer protection in the financial system to increasing competitiveness through the single market and

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a coordinated industrial policy. They also intend to create a more connected Europe through liberalized energy networks, encouraging investment in broadband infrastructure, and modernizing transport and logistics. As I mentioned, the energy field is being targeted as well as issues pertaining to the environment through sustainable growth policies and related initiatives that deal with the challenges of climate change. Moreover, policy makers intend to work toward the goal of making Europe safer by tackling the challenges of safeguarding external borders, terrorism and cybercrime. One of the other aims of this budgeted plan is to make sure Europe has a strong voice on the international scene. Defending Europe's interests worldwide by establishing trade agreements, improving relations with neighbouring countries and making sure the EU remains a top contributor to development aid are pivotal steps that will be taken in the coming years.

The Commission also plans to foster reliable public-private partnerships in research and invest in the R&D infrastructure. What the past few years has taught us is that we need to reduce fragmentation of research across the EU and to develop research infrastructures. The proposal to reinforce partnering in research and innovation under Horizon 2020 might just help achieve that goal. Still, these partnerships are mainly meant to leverage private investment in crucial industrial sectors. This initiative also includes Public-Public Partnerships for the joint implementation of national research programmes, which will end up supporting R&D-performing SMEs, cutting-edge metrology, and ICT-based products and services for the elderly. Another will fight against poverty-related diseases in the Sub-Saharan region. Overall, the fact that the Commission is focusing on growth, jobs and on maintaining or even elevating Europe's stature in the world means that a lot of emphasis will be put on innovation and research as a way of investing in the future.

The Commission will work closely with the European Parliament, the Council, national parliaments and other stakeholders in order to achieve their goals and make sure these proposals end in tangible results.

[The Commissions initiatives](#)

By Cosmina Marian

What shakes the skies

Interview with Prof. Sergej S. Zilitinkevich

With the help of the ERC, Professor Sergej S. Zilitinkevich of the Finnish Meteorological Institute (FMI) is hoping to revise the way physic treats turbulence in the atmosphere and ocean through the PBL-PMES project which may impact weather and climate modelling and prediction methods.

How will your research with the PBL¹ -PMES project affect existing weather and climate modelling and prediction methods?

¹The planetary boundary layer (PBL) is the strongly turbulent atmospheric layer immediately affected by dynamic, thermal and other interactions with the Earth's surface.



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Clearly, the finer is the spatial resolution in meteorological observations and in numerical solution of the equations describing atmospheric processes the higher is the expected quality of weather prediction. Until recently, the resolution in operational models was less than 10 by 10 kilometres, which made it practically impossible to resolve fine features of extreme weather events. Numerical weather prediction was able to predict only general, smoothed picture of the weather. Nowadays observational systems, supercomputers and computational technologies provide technical possibilities for very high resolution – up to one by one kilometre or even finer. However the increasing high resolution no longer gives immediate success. The point is that the spatial resolution finer than the typical height of the planetary boundary layer becomes inconsistent with current representation of physical processes, first of all turbulence, inherent in the layer. To significantly improve the existing weather and climate modelling it is necessary to advance current theory of the PBL turbulence and then, on the base of advanced physics to improve representation of PBLs in operational models. This is just what we are doing. In the practical aspect of this works we closely collaborate with weather and climate modelling groups, first of all, with colleagues at the Finnish Meteorological Institute and also with MétéoFrance and Danish Meteorological Institute.

What approach did you adopt when studying turbulence and the effects it might have on weather prediction schemes?

Until recently the role of the PBL in weather and climate models basically reduced to exchange of energy, matter and momentum between the atmosphere and the underlying land or water surface (left sketch in the figure below). To better predict local weather events and local features of climate one should take into account much more complicated mechanisms involving interactions between the free atmosphere, the atmospheric PBL,



the underlying oceanic PBL (or the air flow within the vegetation or urban canopy) and the deeper layer of the ocean (or the soil), wherein the PBLs play the role of buffers.

What makes the PBL-PMES project innovative and what practical results can we expect in the future as a result of your research?

In this project we focus, in particular, on the problems of PBL turbulence and PBL height in extreme conditions. In very stable stratification, when the Earth's surface is much colder than the air, the PBLs are very shallow – sometimes only a few dozen metres deep, which strongly increases the danger of air pollution. In unstable stratification, when the surface is much warmer than the air, PBLs are strongly mixed, and convective motions cause development of cumulus clouds and thunder storms thus affecting weather and climate at larger scales. As for innovative results, we have developed theoretical models of new PBL types: “conventionally neutral” and “long-lived stable”; and then disclosed that the first type is typical over the ocean and the second, over continents in winter at high latitudes, and both play important roles in climate and weather physics. These results are now universally recognised and wordings “conventionally neutral” and “long-lived stable” has already entered the terminology.

News in research



Energy: More energy for EU researcher in photovoltaics

European research in renewable energy has received a boost with the debut of the KESTCELLS research project. The overall aim of the project is to develop a network for the interdisciplinary training of researchers in advanced thin films photovoltaic (PV) technologies. To be more specific, the project aims to develop new technologies, which will rise to the occasion of becoming future alternatives to conventional non-renewable energy sources.

[Details](#)

Reduce energy consumption by 30% through ICT

According to the ENERSIP project, cities may be able to reduce their energy consumption by 30% by leveraging information and communication technologies. The findings of the project show how to optimise the use of residential consumption and generation infrastructures.

[Details](#)



Medicine: Teenage girls dance their way to better mental health

A recent study entitled 'Influencing self-rated health among adolescent girls with dance intervention' has shown that depression, stress, fatigue and even headaches suffered by young girls can be alleviated

through regular dance. The findings also show high adherence and a positive experience, which suggests that an intervention with dance can be suitable for adolescent girls internalising problems.

[Details](#)

Hope for effective new malaria treatment

Scientists are on the path of developing a promising new treatment for malaria. Despite the fact that treatments for malaria are available, the Plasmodium parasite is rapidly becoming resistant to most of the drugs and thus new means of fighting the disease are needed..

[Details](#)

Innovative medical textiles eliminates bacteria



The SONO project was aiming to improve antimicrobial properties of medical textiles through the use of a state-of-the-art technique. They have succeeded in achieving

their aim by using an enzymatic pre-treatment combined with simultaneous deposition of nanoparticles and biopolymers under ultrasonic irradiation.

[Details](#)

Education: Study investigates how lifelong learning is essential to continued employability

An EU study has just been launched in order to research the importance of lifelong learning and how it impacts the workplace. Lifelong learning is not just seen as an essential part of an individual's development, but it's also pivotal for the economy. The study looks into the



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investments that would be necessary over the years in order to assure that the goal of lifelong learning is reached for most Europeans.

Details

Agricultural biotechnology: European scientists contribute to greater understanding of the pig genome

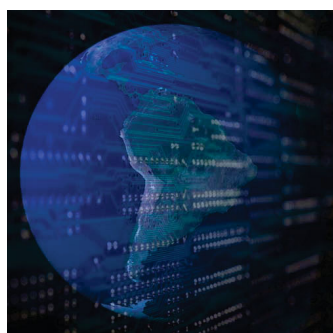


A group of scientists from all over the world have come together to research the pig genome, research that might have various

applications. Their findings helped identify genes that are useful in pork production and increase our knowledge of the health, science and history of the pig. The research can also have some positive implications on the study of human diseases.

Details

Technology: EU study tackles vision-mapping language



Scientists are currently working on developing techniques to understand vision-language mapping across the lifespan in typically and atypically developing populations. The LANPERCEPT project

is testing instruments and training software that will benefit the elderly who are diagnosed with dementia and individuals with disabilities or disorders like deafness and autism. The software will act as a bridge between vision and language.

Details

Environment: BONUS research opportunities in the Baltic

A boost in funds has been made possible through the BONUS programme, which will support research projects targeting the protection of the Baltic Sea. Two main areas are covered: research supporting the management of a viable Baltic Sea Ecosystem and research targeting innovative technological solutions.

Details

Greenlandic rocks shift geological historical perspectives

The discovery made by a French-Danish team of researchers in Greenland's south-west Isua mountain area could turn out to hold important information regarding the structure of Earth during its earliest stages of development. The rocks that the team found date from 3.4 billion years ago and lack a chemical element which is essential for the study of the Earth's formation.

Details

Policy: Europe and Africa agree joint research funding



Renewable Energies



European and African countries have agreed on a new collaborative funding scheme for research projects in different sectors such as: agriculture, health, climate change and energy. The objective of ERAFRICA is to promote the networking of European and African funders of research and innovation, as well as to develop joint project calls. This latest initiative came after the recent launch of a new bilateral EU-South Africa science cooperation project, ESASTAP Plus, which seeks to advance European and South African science and technological cooperation.

Details



Events and Workshops

Destination Europe, 6-7 December 2012, San Francisco, California

'Destination Europe' events showcase the vibrant and exciting research and innovation culture in Europe and the opportunities available to researchers, from anywhere in the world, interested in working in Europe.

Details

'Towards a sustainable bio-based society: aligning scientific, cultural and societal agendas for bio-innovation society', 6-7 December, Amsterdam, The Netherlands

The conference will bring together experts from academia, industry and politics with an interest in life sciences, social sciences and humanities. Together they will deliberate a common agenda for research, a debate which will serve as a kick-off for the ESF Conference Series devoted to this topic.

Details

Quietenng the Environment for a Sustainable Surface Transport, 10 December 2012, Brussels, Belgium

The QUIESST Final event is organised for stakeholders from all over Europe in order to inform them about the QUIESST project's final results and to share ideas on optimisation and sustainable solutions for noise abatement through the use of Noise Reducing Devices (NRDs).

Details

'Sentiment elicitation from natural text for information retrieval and extraction', 10 December, Brussels, Belgium

The event will be a forum for researchers in the field of opinion mining and sentiment analysis to share information on their latest investigations in social information retrieval and their applications both in academic research areas and industrial sectors.

Details

Third International Workshop on Knowledge Discovery Using Cloud and Distributed Computing Platforms, 10 December, Brussels, Belgium

The workshop will bring together researchers, developers, and practitioners from academia, government, and industry to discuss new and emerging trends in cloud computing technologies, programming models and software services.

Details

'Workshop on generating linguistic descriptions of data', 10-13 December, Brussels, Belgium

The objective of this workshop will be to provide a forum for discussions of recent developments in linguistic description of data.

Details

'EUJO-LIMMs Information Day', 12 December, Lausanne, Switzerland

The information day conference will be an opportunity to present the results of the project that aimed to reinforce research collaboration between Europe and Japan in the field of micro and nanotechnologies.

Details

InfoDay on FP7 Environment Research in the specific field of water innovation demonstration projects, 15 January 2013, Brussels, Belgium

The event will focus on the Call FP7-ENV-2013-WATER-INNO-DEMO of the 2013 Work Programme. It aims to provide guidance on the preparation of proposals, to update proposers on recent progress by the European Innovation Partnership (EIP) on Water and to allow for brokerage amongst the participants.

Details