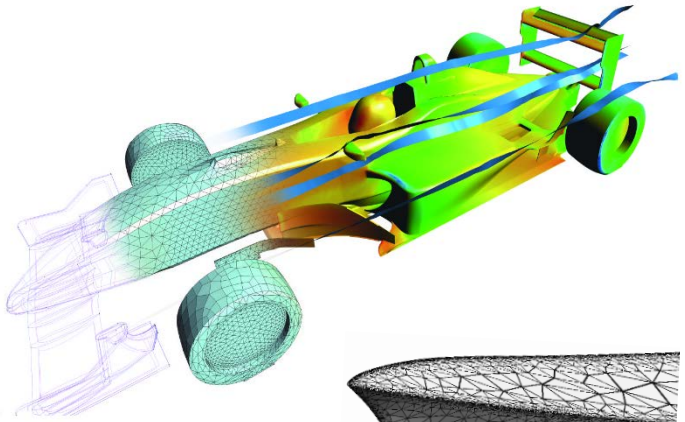
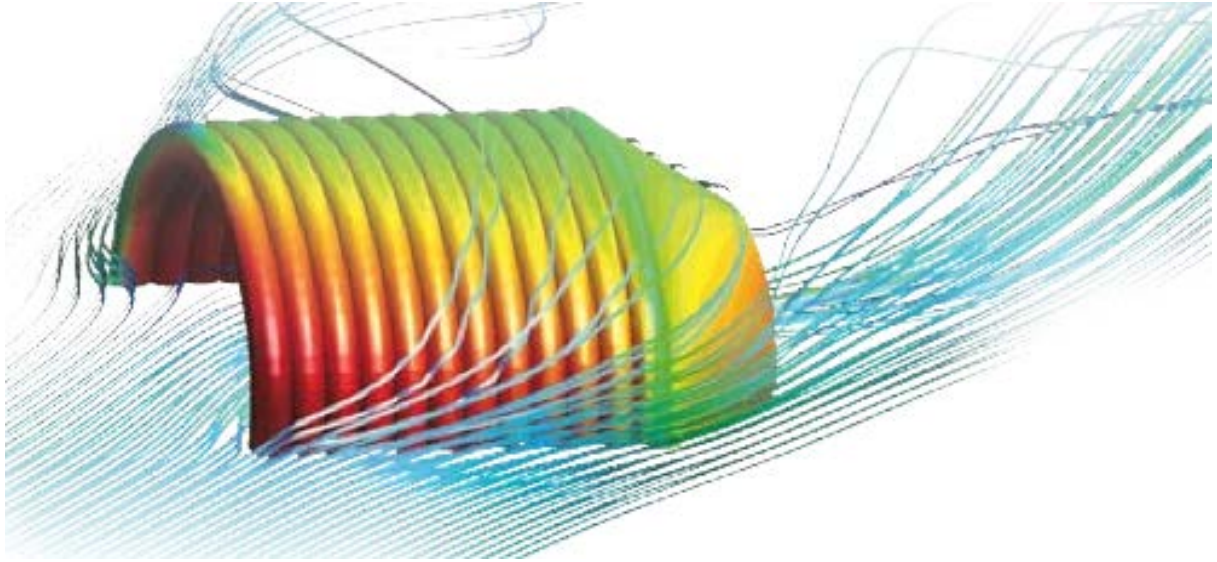
1987-2017

CIMNE

30 anys



Las Aulas CIMNE,
la UNESCO Chair of Numerical Methods in Engineering
y la Agenda 2030



Cecília Soriano

RTD Manager

1987 - 2017 CIMNE 30 anys

UNESCO
Organització de les Nacions Unides per a la Educació

UPC
Universitat Politècnica de Catalunya
BARCELONATECH
Càtedra UNESCO de Mètodes Numèrics en Enginyeria

In 1989, an agreement between UNESCO and UPC, created the first UNESCO chair in the world, the **UNESCO Chair of Numerical Methods in Engineering.**

The fundamental mission of the Chair is to **promote internationally the development, dissemination and application of numerical methods in engineering**, through education, research and technology transfer, with the aim of contributing to the solution of complex problems in lower income countries.

1987 - 2017 CIMNE 30 anys

UNESCO — Organització de les Nacions Unides per a la Educació

UPC — Universitat Politècnica de Catalunya BARCELONATECH

Càtedra UNESCO de Mètodes Numèrics en Enginyeria

An important UNESCO Chair's activity over the years has been the creation of a series of **"Aulas CIMNE"** (CIMNE Classrooms), physical spaces of collaboration with other research groups in universities and research centers located mainly in Latin America and Europe. All nodes in the network connected to each other are using, transforming and broadcasting knowledge generated in CIMNE over the last thirty years.

Red Aulas CIMNE

United Nations
Educational, Scientific and
Cultural Organization

The background

In September 2015, the United Nations adopted a resolution setting an agenda for sustainable development “for people, planet and prosperity”: **the 2030 Agenda for Sustainable Development.**

2030 AGENDA

FOR SUSTAINABLE DEVELOPMENT

Adopted by the UN at its September 25-27, 2015 meeting in New York

Following the success of the *Millennium Development Goals* ,
the 2030 Agenda sets **17 Sustainable Development Goals (SDGs) and 169 targets.**

1987-2017 CIMNE 30 anys

SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

The 2030 Agenda offers immense opportunities to **reconnect science to society** and to build a new basis for research and development as a key precondition for both science and society to flourish.

As the only UN agency with science in its mandate, **UNESCO is at the heart of this initiative**

In this context, **the 172 UNESCO Chairs and UNITWIN Networks that are specialized in science have an important role to play, as bridge builders between the scientific community, decision makers and society.**

IMPLICATION OF THE UNESCO CHAIRS IN THE IMPLEMENTATION OF THE AGENDA 2030

1987 - 2017 CIMNE 30 anys

Organització de les Nacions Unides per a la Educació

Universitat Politècnica de Catalunya BARCELONATECH

Càtedra UNESCO de Mètodes Numèrics en Enginyeria

This conference brought the **network of Chairs** together for the first time, to contribute to the reflection on sustainable development.

During this conference, the Chairs built synergies and pool resources for the implementation of the **2030 Agenda and its Sustainable Development Goals.**

1987 - 2017
CIMNE
30 anys

Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura

uni Twin

UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Cátedra UNESCO de Métodos Numéricos en Ingeniería

CIMNE

UNESCO Chair in Numerical Methods in Engineering

Spain - Barcelona

Universitat Politècnica de Catalunya BarcelonaTECH

The UPC UNESCO Chair in Numerical Method created in 1989 was the first UNESCO Chair created in the world. CIMNE (Centro Internacional de Métodos Numéricos en Ingeniería) hosts the Chair.

Dr. Jacques Periaux (Chairholder)
Prof. Eugenio Oñate (Chair Director)
Ms. Francisca Garcia-Sicilia (Coordinator)

Dr. Cecilia Soriano (Chair Research Member participating in the conference)

Graduated with a BsC in Physics at the Universitat de Barcelona (UB), PhD degree in Physics (Universitat Politècnica de Catalunya).
Research interests: Environmental Engineering, Meteorology and Air Pollution Modeling and Atmospheric Remote Sensing with Lidar. Staff Scientist at CIMNE since 2012, with responsibilities in the UPC UNESCO Chair in the areas of Research Management, Competitive Fundraising & Scientific Project Management.

http://www.cimne.com/unesco

SUSTAINABLE DEVELOPMENT GOALS

GENERATING KNOWLEDGE AND SOLUTIONS THROUGH NUMERICAL METHODS AND COMPUTATIONAL TECHNIQUES

3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
11 SUSTAINABLE CITIES AND COMMUNITIES
13 CLIMATE ACTION

SIMULATION TOOLS TO ADDRESS SUSTAINABLE DEVELOPMENT CHALLENGES: EMPOWERING EXPERTISE TO INCREASE COMPETITIVENESS AT THE LOCAL LEVEL.

HOW THE CHAIR IS ACTING ON THE SDGS

Often at the heart of the engineering and science deficit in low-income countries we find outdated methodologies and isolated researchers. It is crucial to provide the necessary skills to a sufficient number of highly trained engineers to advance and locally apply technology. Computer analysis and simulation are key tools for technical, social and economic development, enabling faster research, fewer errors and less expensive cycles of testing compared to physical methods.

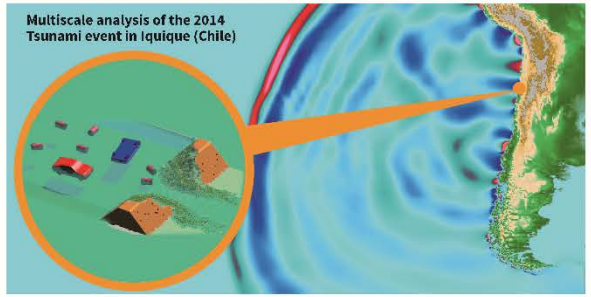
The Chair is involved in advanced research and training in computer modeling and simulation. Computational Modeling is a transversal technology, critical for research in almost every scientific discipline. The Chair is involved in several training programs on Numerical Methods at the Graduate, MSc and PhD levels. The Chair coordinates a network of 30 Aulas CIMNE (Joint Labs) of experts in numerical methods in Latin American Universities. Its major activities and projects focus on the development of numerical methods and computational techniques for advancing knowledge and technology in engineering and applied sciences.

Regarding the SDGS, main efforts are dedicated to improving knowledge through our training programs and by developing state-of-the-art computational tools to help decision-making, minimize risks and improve the ecosystem and the population's health and quality of life.

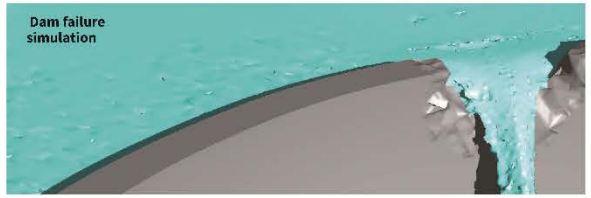
FUTURE ACTIONS

The UNESCO Chair and Aulas CIMNE will continue their active involvement in research and training in the following fields:

- Training on Numerical Methods (as a transversal tool).
- Natural disaster prevention and mitigation: earthquakes, floods, tsunamis, etc.
- Water management: draught, water supply, aquatic environment protection.
- Bioengineering: personalized diagnosis and treatment though simulation and Big Data.
- Optimization in Manufacturing Processes for more efficient industries.

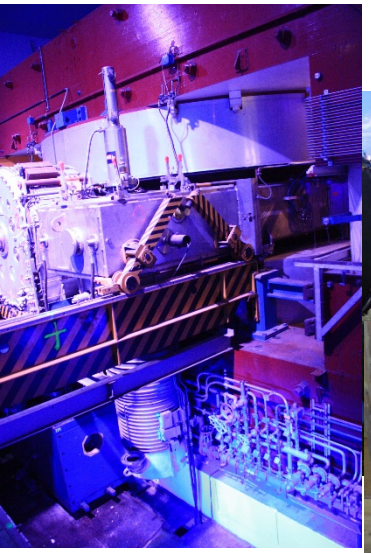


Multiscale analysis of the 2014 Tsunami event in Iquique (Chile)



Dam failure simulation

http://en.unesco.org/sc-chairs-conference/programme



1987 - 2017 CIMNE 30 anys

United Nations Educational, Scientific and Cultural Organization

The Geneva Milestone: a path to policy action towards the 2030 Agenda through science

UNESCO's vast network of Chairs and Networks in the Natural Sciences concluded their first meeting with the **adoption of the Geneva Milestone, a blueprint to strengthen UNESCO Chairs' contribution to transformative change towards the implementation of the 2030 Agenda** for sustainable development through cooperation.

http://unesdoc.unesco.org/images/0025/002565/256554E.pdf

THE GENEVA MILESTONE

The UNITWIN/UNESCO Chairs Programme is celebrating its 25th anniversary in 2017. Today, there are more than 700 UNESCO Chairs and UNITWIN Networks around the world, and more than 170 of these specialise in the fields covered by the Natural Sciences Sector of UNESCO. They provide a unique scientific expertise in the United Nations context and significant global, regional and local impacts, in a wide array of relevant fields. The UNESCO Chairs and UNITWIN Networks in Natural Sciences have an important role to play in the shared efforts to link science, policy and society through adopting open science practices to implement the 2030 Agenda for Sustainable Development and other United Nations development agendas.

The 2030 Agenda, adopted in 2015 by the United Nations, represents a significant step forward in terms of recognising science, technology and innovation (STI) as a driving force for sustainable development in its three pillars, environmental, social and economic. As the only UN agency that includes science in its mandate, UNESCO finds itself at the heart of this initiative. It implements its activities through its global network of field offices, international scientific programmes, centres, institutes, and the UNESCO Chairs and UNITWIN Networks.

Within this context, the UNESCO Chairs and UNITWIN Networks linked to the Natural Sciences Sector gathered for the first time in Geneva from 5 to 7 July 2017 for the Conference *"Mobilizing UNESCO Chairs in Natural Sciences for Policy Action Towards the 2030 Agenda"*. The results of the deliberations and reflections about how UNESCO Chairs can contribute to the achievement of the 2030 Agenda are expressed in form of the **Geneva Milestone**.

The **Geneva Milestone** contributes to guiding the future endeavours of the UNESCO Chairs in Natural Sciences in close cooperation with the UNESCO family and the UNESCO National Commissions, as a blueprint for potential activities and cooperation avenues, throughout the following concrete areas:

Values:

- Uphold the values of UNESCO, and incorporate those of the 2030 Agenda for Sustainable Development, into the operations of UNESCO Chairs, at organisational level and in their research, teaching and outreach.

Focus on the 2030 Agenda:

- Increase and enhance the focus of UNESCO Chairs and UNITWIN Networks activities on the 2030 Agenda.
- Identify main SDGs for each Chair where they can make the most substantial contributions, and indicate specific fields of action where they could provide advice to stakeholders and policy-makers.
- Develop programmes aimed at generating new knowledge, as well as innovative tools for Member States to face the challenges raised by the SDGs.

Interdisciplinarity and transdisciplinarity:

- Foster interdisciplinarity and transdisciplinarity throughout UNESCO Chairs and UNITWIN Networks, crucial for the successful implementation of the SDGs.
- Encourage interactions between Chairs from different but relevant disciplines, particularly to implement joint pilot projects towards achieving the SDGs.
- Adopt Open Science practices to promote collaboration and knowledge co-production

United Nations Educational, Scientific and Cultural Organization
Natural Sciences Sector
University Twinning and Networking Programme
Sustainable Development Goals

Science-policy-society:

- UNESCO Chairs will endeavour to influence the host academic institutions towards putting societal interests and the 2030 Agenda at the core of their mission.
- UNESCO and UNESCO Chairs, with the support of UNESCO National Commissions, will work together to increase collaboration with policymakers and other stakeholders, including civil society, local communities, mass-media and private sector, and establish multi-stakeholder strategic partnerships, to allow for focusing research and training towards SDGs.
- Further develop and promote the full potential of the capacities and role of the UNESCO Chairs as think tanks for advancing towards SDGs through Science, Technology and Innovation.

Fostering collaboration:

- Engage in concrete impact-driven actions to strengthen Chairs and Networks exchanges, particularly through regional, inter-regional, South-South, and South-South-North cooperation, in order to enhance their capabilities and improve their leading role within their fields.
- Foster collaboration in the development and implementation of programmes, and in capacity building and standards development, between UNESCO Chairs and Networks, and UNESCO Natural Science Programmes at headquarters, regional offices and other field offices, UNESCO sites, National Committees of International Science Programmes, UNESCO Centres, and other UNESCO Sectors, with special focus on UNESCO global priorities, i.e. Gender and Africa.
- Engage with governments at local, regional and national levels, as well as regional bodies, in cooperation with UNESCO field offices, to promote actions of UNESCO and the Chairs.
- Encourage UNESCO National Commissions to strengthen advocacy for Chairs towards stakeholders, such as governments, civil society, funding institutions, private sector, and international organizations.
- Encourage UNESCO and UNESCO Chairs to incorporate the 2030 Agenda in the content of their meetings, conferences and forums, and actively involve relevant UNESCO Chairs in these, in order to increase collaboration.

Increasing visibility and knowledge sharing:

- Promote the establishment of networks and working groups of Chairs, at national, regional or thematic levels, to enhance communication, create linkages and support programme development.
- Establish a knowledge-sharing platform linked to the SDGs, to facilitate information exchange and contacts among UNESCO Chairs and UNITWIN Networks in Natural Sciences, and with partners.
- Enhance communication and outreach activities, to highlight the achievements and activities of UNESCO Chairs towards SDGs, including dedicated websites, and to share scientific results in an open access environment.
- Share success stories about Chairs that have effectively collaborated towards the 2030 Agenda, in partnership with governments, private companies, international organizations, NGOs, donors and other non-academic entities.

A working group with the participation of representatives of Chairs and the UNESCO Secretariat will prepare, by the end of 2017, an Action Plan for follow-up of the Geneva Milestone, to be submitted to consultation with the UNESCO Chairs and Networks in Natural Sciences.

The follow-up

Through their programmes, the Chairs will generate new knowledge and develop innovative tools to help Member States address the challenges raised by the Sustainable Development Goals. **The Milestone emphasises the need for interdisciplinarity and transdisciplinarity, the importance of connecting science, society and policy through close collaboration and to share knowledge widely.**

A working group with the participation of representatives of Chairs and the **UNESCO Secretariat will prepare, by the end of 2017, an Action Plan for follow-up of the Geneva Milestone**, to be submitted to consultation with the UNESCO Chairs and Networks in Natural Sciences.

Uphold the values of UNESCO, and incorporate those of the 2030 Agenda for Sustainable Development, into the operations of UNESCO Chairs, at organisational level and in their research, teaching and outreach

Identify main SDGs for each Chair where they can make the most substantial contributions, and indicate specific fields of action where they could provide advice to stakeholders and policy-makers

Enhance communication and outreach activities, to highlight the achievements and activities of UNESCO Chairs towards SDGs

Adopt Open Science practices to promote collaboration and knowledge co-production

Develop programmes aimed at generating new knowledge, as well as innovative tools for Member States to face the challenges raised by the SDGs.

Establish a knowledge-sharing platform linked to the SDGs, to facilitate information exchange and contacts among UNESCO Chairs and UNITWIN Networks in Natural Sciences, and with partners.

Engage in concrete impact-driven actions to strengthen Chairs and Networks exchanges, particularly through regional, inter-regional, South-South, and South-South-North cooperation, in order to enhance their capabilities and improve their leading role within their fields.

2018 International Tech4Dev Conference

UNESCO Chair in Technologies for Development: Voices of the Global South
27-29 June 2018 | SwissTech Convention Centre | EPFL, Lausanne, Switzerland

2018 UNESCO Chair Conference on Technologies for Development:

Voices of the Global South

27-29 June 2018 | EPFL, Lausanne, Switzerland

Find out what it's all about!

WE ARE PLEASED TO INFORM YOU THAT WE HAVE OFFICIALLY LAUNCHED #TECH4DEV 2018 CALL FOR SESSIONS, EVENTS AND PAPERS! WE ARE LOOKING FORWARD TO RECEIVING YOUR PROPOSALS!

DOWNLOAD CALL DOCUMENT HERE!!!!

http://cooperation.epfl.ch/page-147249.html

http://cooperation.epfl.ch/files/content/sites/cooperation/files/Tech4Dev2018/Call_Tech4Dev2018.pdf

Core Thematic Areas

1. Technologies for **Humanitarian Action**
2. **Medical Technologies**
3. Science and Technology for **Disaster Risk Reduction**
4. Technologies for **Sustainable Access to Energy**
5. **ICT for Development**
6. Technologies for **Sustainable Habitat and Cities**