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# **Strategic and Scientific Programme for BSC's Earth Sciences Department**

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# Aim of this presentation

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- Formulate a strategic plan in weather and climate modelling research that favour the **consolidation, leadership and expansion** of the Department
  - Solve the challenges of the increase in size of the Department **ensuring its sustainability**
  - Discuss solutions for its **consolidation and efficient management**
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# Strategic plan

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- A detailed strategic plan, including the potential sources of funding, will be prepared early on **to ensure a logical development instead of an organic one**; it should be revised at least every two years
  - The plan should help identifying all the **emerging initiatives** in weather and chemistry forecasting, and climate modelling and services research
  - The plan will be prepared by a task force involving **all group leaders** and in consultation **with an external advisory panel**
  - The plan will **identify the strengths and vulnerabilities** of the current structure, define the overall objectives of the Department, and **inspire its members**
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# Strategic plan

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## Scientific and technical aspects of the strategic plan:

- Gaps of Earth system modelling for weather and chemistry forecasting and climate research, including initialisation and use of observations
  - Gaps of the interface between Earth system modelling science and computing (role of ENES roadmap and ETP4HPC strategy)
  - Gaps of the interface between Earth system modelling science and industry and society
  - Opportunities for co-development between weather and chemistry forecasting and climate research, including operational implementation
  - Opportunities for HPC and storage resource sharing: establish a common layer of technical services shared and maintained by all the groups of the Department
  - Raise new resources in competitive calls (both funding and computing time)
  - Lead and contribute to international community standards (formats, codes, dissemination) that favour the integration of the Department's objectives and activities in the wider international context
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# Strategic plan

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## Non-exhaustive list of [research topics](#):

- Active research topics at the Department
  - Active research topics at IC3's Climate Forecasting Unit
  - Regional modelling of weather and climate, not just as downscaling tool for climate adaptation, but to deal with questions like dynamical versus thermo-dynamical role in regional-scale climate change
  - Analysis of predictability at local versus regional scale for high-resolution modelling of weather and climate variability (grey zone)
  - Paleo-climate modelling, poor in the Spanish research community
  - Optimisation of Earth system models for the new generation of super-computers (new programming paradigms, profiling of codes and use of new hardware)
  - Global bio-geochemistry modelling, source of some of the most important uncertainties in Earth system modelling
  - Modelling for coastal oceanography at different time scales
  - Climate services, including ethics and credibility
  - Data storage and dissemination (data reduction, documentation, curation, and efficient data analysis of distributed datasets)
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# Implementation

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List of **tasks for the implementation** of the strategic plan:

- Ensure that the existing research lines **continue** their **activity** and fulfil their objectives, **identifying all possible improvements**
  - **Integration of the CFU** with minimum disruption of the current activity of the Department
  - Ensure the groups maintain their thematic and programmatic independence, but **fostering transparency and sharing** of the common objectives, tools and resources (both human and technical)
  - **Promote interaction strategies** (regular internal scientific and technical talks, Department meetings with at least a semiannual frequency, internal wiki for documentation and informal exchange, etc) and, without prejudice of the monitoring strategies currently used at the BSC, **annual appraisals** of all members
  - Enhance **cooperation with other BSC departments**
  - Explore research topics of interest, whose selection will depend on the capacity to **identify competitive PIs** at the international level to lead them, ensuring sustainable contractual figures
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# Resources

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**Sustainability is a priority.** A large range of sources will be considered for funding human capital and to obtain computing time, assuming that they will be scarce:

- Core funding
  - Public
    - Horizon2020 collaborative projects, ERC instruments, LIFE+ demonstration projects, Marie Curie grants
    - Procurements from the different services of the Copernicus programme
    - Enhanced participation in the different KICs
    - ESA and Eumetsat calls
    - National (MINECO, CDTI, RyC) and regional (AGAUR, ICREA) calls
    - Procurements from development banks (e.g. Asian and African Development Banks) and environmental funds (e.g. Green Fund)
    - Computing and storage: PRACE, ECMWF Special Project programme, US Department of Energy's INCITE programme, EUDAT
  - Private
    - Research calls from well-known companies (AXA, MAPFRE, Iberdrola)
    - Partnerships and contracts with consultancy companies
    - Private-sector procurements
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# Collaborations and visibility

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Strategic **collaborations** are fundamental to play a significant role in both the national and international arena; **leadership** will be accompanied by increased visibility

- International

- EC-Earth consortium
- GMES and Copernicus
- PRACE/EUDAT
- Future Earth: fastest growing initiative on environmental sustainability
- WMO's WCRP/WWRP
- EC's JRC
- WMO's GFCS and CBS
- Climate Services Partnership (CSP)

- National

- AEMET
  - Instituto Español de Oceanografía, Puertos del Estado
  - Different CSIC institutes (e.g. Instituto de Ciencias del Mar)
  - Environmental departments of the autonomous governments
  - CLIVAR Spain
  - Meteocat
  - Universities
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# What next

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- The preparation of the strategic plan should start asap
  - We need a first draft (four pages maximum) for mid November with this information for the next five years:
    - Objectives (a global one, 3-4 more specific ones)
    - Groups
    - Tasks
    - Commitments made
    - Resources (both human and technical) required
    - Current and potential sources of funding
  - Involve **everyone** in the Department, people responsible of each group to lead
  - The same presentation and requests to be sent to the CFU
  - Joint meetings BSC/CFU to be organised in November
  - Contact me any time [francisco.doblas-reyes@ic3.cat](mailto:francisco.doblas-reyes@ic3.cat)
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