

Company Description

BC3 is a Research Centre on the causes and consequences of climate change. Led by one of the most recognized scientists in the Climate Change field -Prof. Maria José Sanz, we produce multidisciplinary knowledge to support decision making towards sustainable development at the international level. With a multidisciplinary team, connected to the main scientific institutions, networks and socio-economic agents, for a decade, our contribution to research of climate change and to the science-policy interface puts us in a unique position to offer knowledge, tools, new methodologies and cross-cutting proposals, that we lead towards action in a collaborative framework with stakeholders, to design and help implement policies aimed at sustainable development.

Information

 **Deadline:** 2025-05-15
 **Category:** Academia
 **Province:** Bizkaia

 **Country:** Basque Country
 **City:** Leioa

Company

BC3 Basque Centre for Climate Change



Main functions, requisites & benefits

Main functions

The Basque Centre for Climate Change (BC3) offers a full-time postdoctoral scientific-technical position to work as a Semantic and Ontology Specialist to support the research activities of Research Line (RL) 5 on Integrated Modelling of Coupled Human-Natural Systems, under the unit of excellence Maria de Maeztu's scientific plan. About the project: The project aims to develop a globally applicable, open-source semantic knowledge base for the ARIES project, building on and supporting the research activities of Research Line (RL) 5 of BC3 on Integrated Modelling of Coupled Human-Natural Systems. During the past decade, the RL has envisioned and built the ARIES (ARTificial Intelligence for Environment and Sustainability (<https://aries.integratedmodelling.org/>) platform, a technology that integrates network-available data and model components through semantics and machine reasoning. Its underlying open-source software (k.LAB, <https://docs.integratedmodelling.org/technote/>) handles the full end-to-end process of integrating data with multiple modelling paradigms. A key focus of ARIES is to integrate spatially and temporally explicit ecological and economic models to support decision-making and research aimed at sustainable development. Job description: Contribute to the ARIES platform, a semantic web infrastructure that uses AI to build computational solutions to environmental, policy and sustainability problems. This technology, based on machine reasoning, machine learning, distributed/high-performance computing and multi-disciplinary and multi-paradigm system modelling, is serving a growing number of worldwide users (from academia, governments, NGOs and industry). ARIES' current semantic resources have addressed the challenge of using ontologies capable of supporting machine reasoning to address interdisciplinary science problems, reusing existing semantic authorities whenever possible and creating novel semantic content when needed. This position will continue to grow ARIES' semantic resources to address further novel modeling challenges. As the definition of living and social systems is multi-domain, touching on the semantically diverse dimensions of vegetation, soil, biodiversity, agriculture, and the economic and social systems, the problem of characterizing ecosystems semantically is very complex and hardly suitable for a traditional, dichotomic ontology approach. The candidate will contribute to the improvement and continued development of the ARIES "worldview", a set of ontologies capturing semantics from several scientific domains and community-endorsed vocabularies. The worldview is the basis for all the ARIES functionalities and enables automated, adaptive and flexible model-building through machine reasoning. The specialist will work with a team of programmers and modelers on diverse scientific modeling and integration applications to (1) research existing authoritative semantic resources and integrate them with ARIES where possible, (2) create new semantic resources as needed, (3) co-develop tools to make semantic annotation easier and more intuitive for scientists with limited exposure to semantics, and (4) develop and build community within and beyond the ARIES team around the application of semantics to environmental modeling. Key responsibilities: Contribute to the building of robust, flexible, and interoperable semantics for socio-ecological system characterization and analysis over time. Contribute to model development and data integration within the ARIES platform, working closely with a 25+- strong team representing diverse cultural and disciplinary backgrounds. Broadly contribute to the ARIES platform, a semantic web infrastructure that uses AI to build computational solutions to