RESEARCH DRIVEN EDUCATION
Based on the idea of research-driven education, the Center promotes not only discipline-specific but also interdisciplinary education for students and doctoral candidates. The CEN’s School of Integrated Climate System Sciences (SICSS) is a pioneer in providing students truly interdisciplinary education.

NATIONAL AND INTERNATIONAL SERVICES
The Control Station German Research Vessels and the Integrated Climate Data Center support research at the Center, but also providing their services at a national and international level.

COMMUNICATION
Topics like energy transition, ecosystem management or adaptation to climate change are pressing societal questions. CEN creates a panel communicating research findings, it educates, interlinks and inspires.

CEN OFFICE
Administration, research coordination, support and promotion of young researchers, gender equality and outreach are present in the CEN office, supporting research by offering professional research management.

INFRASTRUCTURE
CEN and its partner institutions utilize facilities and resources, i.e. IT services, as well as model development and visualization, a variety of measuring systems, a library and a workshop.

INTEGRATIVE APPROACH
Thinking outside the box to arrive at new insights — this is one of the guiding principles of the Center for Earth System Research and Sustainability (CEN). Since autumn 2011 CEN has pooled Universität Hamburg’s research expertise in climate, environment and earth system sciences.

Oceanographers, meteorologists, geophysicists, marine biologists, geologists, soil scientists, geographers, biogeochemists, economists and social scientists from Universität Hamburg work together on questions of paramount importance. The work of CEN is also often a part of national and international cluster projects.

CENTRAL RESEARCH CENTER
The CEN is a central research center at Universität Hamburg and part of the local network KlimaCampus Hamburg. CEN promotes the development and implementation of research projects and supports its members in the acquisition of external funding.

Currently CEN is also coordinating the application for funding of climate research in Hamburg in the course of the federal and state excellence strategy.

NETWORKING
Within Universität Hamburg CEN is closely connected and benefits from a longstanding partnership with research institutions outside of the university, fostering strong collaboration at both, national and international levels.
EARTH SYSTEM DYNAMICS

- Causes and impacts of climate changes in the Earth system
  Aided by computational models, observations and data analyses, CEN teams monitor the variability of and changes in land, vegetation, ocean and atmosphere, waste-, energy and carbon cycles.

- Energy flux as a communicator of Earth system changes
  Flows in atmosphere and ocean convey energy and momentum, water vapor as well as dissolved gases and carbon. Quite commonly very small-scale phenomena can shape the dynamics of global processes.

- Impacts of sea level changes on coastal regions
  This is one of the crucial problems caused by climate change with far-reaching consequences for the safety of the population. A number of interconnected factors – global, regional and local developments are quite different.

- Element cycling at boundary layers of the Earth System
  Biologically relevant elements like carbon, oxygen, nitrogen, phosphorus and silicon are in constant circulation. Shaping global biological productivity, these elements also interact with our climate.

EMERGING ISSUES

- Soil in environmental and climate system
- Food transitions
- Climate and geo risks

SUSTAINABLE STRATEGIES AND SOCIAL DYNAMICS

- Marine ecosystem services and their management
  To ensure sustainable development, economics and environmental protection, the exploitation and use of natural resources must be reconciled. This calls for new systems for evaluating ecosystem services.

- Urban areas in global change
  More and more people now live in cities – by 2030, the global average will likely reach 60 percent. In this context global climate change interacts with housing, urban green areas, traffic and air pollution.

- Energy landscapes
  Climate change has produced a growing demand for renewable solutions and accordingly the need for suitable areas of land and ocean. Cultivating food crops and plants for biofuels, wind turbines, solar and biogas plants – it all takes room.

- Climate change and society
  The social discourse on the right policy grows. Which strategies have been successful – in which countries or sectors? How can we initiate the protagonists to take action? Failing this, how can society cope with the consequences?

COORDINATION OF MAJOR PROJECTS

The member institutes of CEN regularly contribute to large-scale national and international programs; for many of these, CEN serves as a coordinating authority:
https://www.cen.uni-hamburg.de/en/research/coordinating-projects.html