National Institute for Environmental Studies, Japan

Expediting Environmental Research in Japan and Abroad, Maximizing Research and Development Results, and Helping Bridge the Gap with Society and Advance Environmental Policy

The National Institute for Environmental Studies is Japan's only research institute that undertakes a broad range of environmental research in an interdisciplinary and comprehensive manner. Since its inception in 1974, NIES has played a vital role in solving a variety of environmental problems.
April 2016 marks the beginning of our Forth Medium-and-Long-Term Plan. NIES established five problem-solving research programs for this plan's term, and will pursue them in an integrated manner that transcends individual fields. NIES has also established a Fukushima Branch, where it is running a Disaster Environment Research Program. Additionally, to produce scientific findings on environmental protection, NIES will carry out research projects that include consolidating the institute's research foundation through basic research, data acquisition and analysis, preservation and provision of environmental samples, and other efforts. Research projects including satellite observations and the Japan Environment and Children's Study Programme Office are also being conducted. We intend to move steadily forward with efforts that include the provision of environmental information, including these research results, in an easy-to-understand manner.
NIES shall continue to conduct broad-based research that covers the environmental science field in its entirety (Synthesize), promote comprehensive research that seeks to cover everything from the basics to social implementation (Integrate), further advance and enhance research networks (Network), and carry out research of a high level that contributes to broadly understanding and solving environmental problems (Evolve), thereby appropriately disseminating our store of scientific knowledge. At NIES we shall keep these four keywords (Synthesize,Integrate,Evolve,and Network = NIES strategies) in mind as we pursue environmental research, provide for the maximization of Japan's entire research and development results, endeavor to bridge the gap between the scientific community and society, and do our part for the advance of environmental policy in Japan and other countries.
NIES hopes to continue benefiting from your generous support and cooperation.

SUMI, Akimasa
President

Issue-Oriented Research Programs

1. Low-Carbon Research Program
2. Sustainable Material Cycles Research Program
3. Harmonization with Nature Research Program
4. Research Program on Health and Environmental Safety
5. Environment-Economy-Society Integration Research Program

Research Projects

1. Satellite Observation Center
2. Japan Environment and Children's Study Programme Office
3. Collaboration Office for Risk Assessment Science
4. Environmental Emergency Management Strategy Facilitation Office
5. Climate Change Strategy Collaboration Office
6. Office for Facilitating Social Dialogue and Co-production

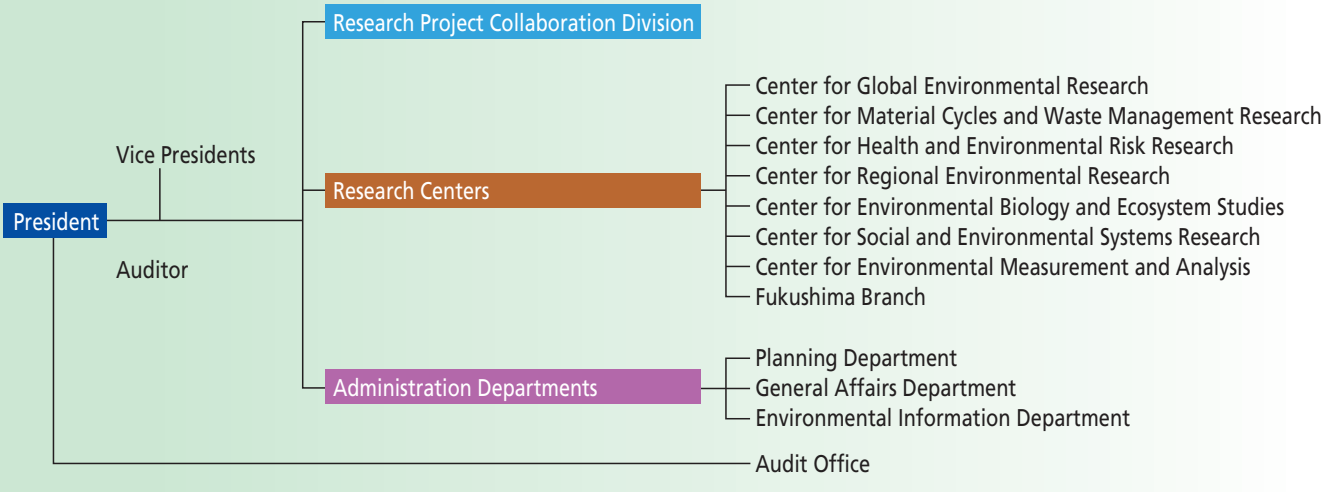
Environmental Emergency Research Programs

1. Environmental Recovery Research Program
2. Environmental Renovation Research Program
3. Environmental Emergency Management Research Program

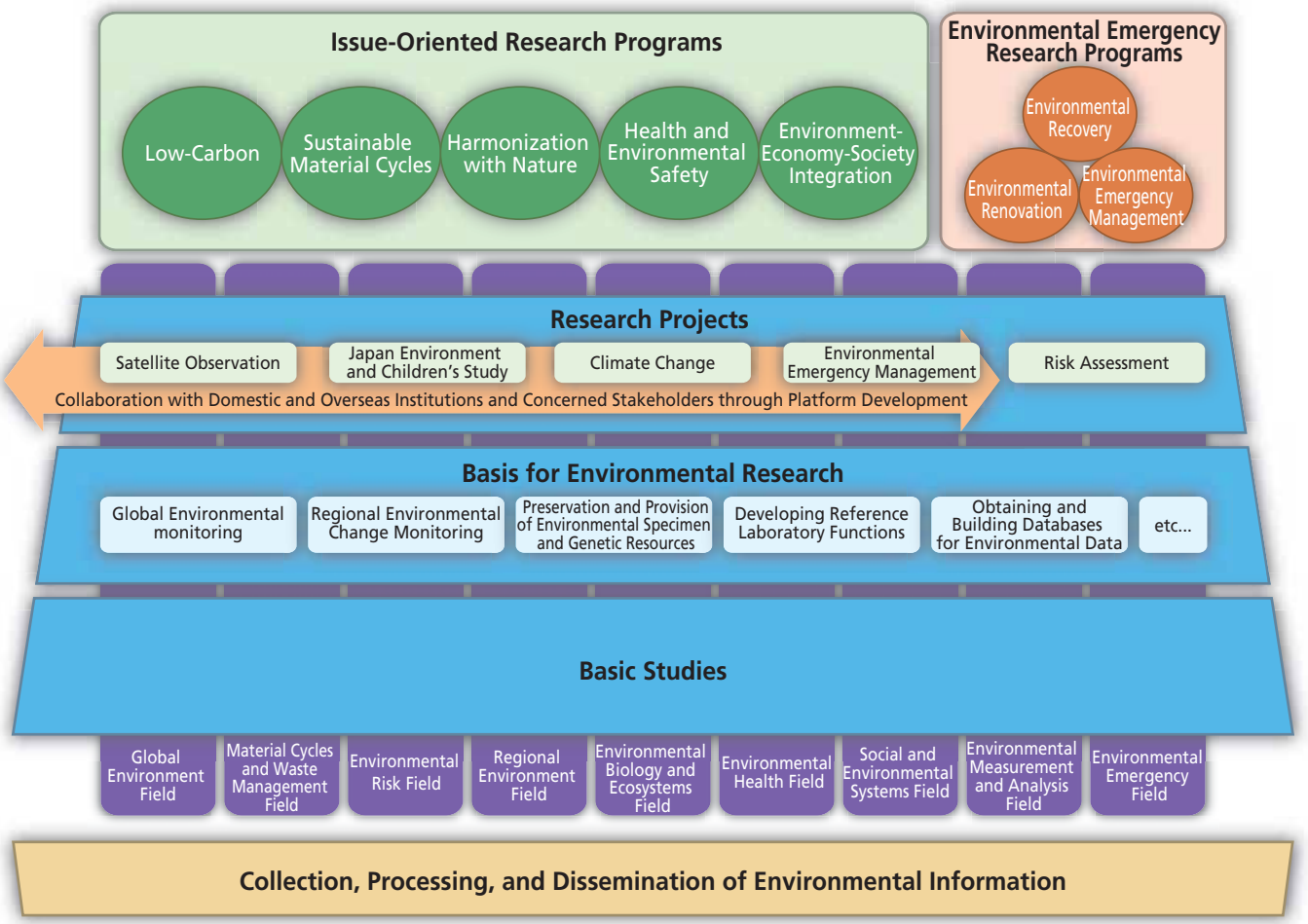
Environmental Research Fields

1. Global Environmental Field
2. Material Cycles and Waste Management Field
3. Environmental Risk Field
4. Regional Environment Field
5. Environmental Biology and Ecosystems Field
6. Environmental Health Field
7. Social and Environmental Systems Field
8. Environmental Measurement and Analysis Field
9. Environmental Emergency Field

Institutional Structure



Overview of NIES Initiatives



NIES Charter

The National Institute for Environmental Studies (NIES) strives to contribute to society through research that fosters and protects a healthy environment for present and future generations.

Proud to work at NIES and keenly aware of our individual responsibilities, we will pursue high level research based on a firm understanding of the interaction between nature, society and life on our planet.

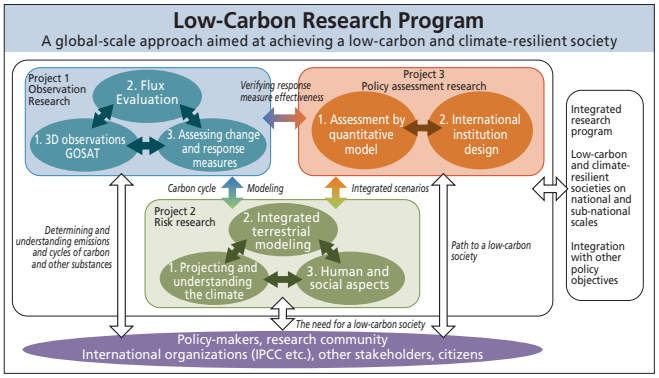
NIES Timeline

July 1971	Establishment of the Environment Agency
November 1971	Establishment of the National Institute for Environmental Studies (NIES) Founding Committee
March 1974	Establishment of NIES
April 1985	Visit of Emperor Showa to NIES
July 1990	Restructuring of NIES to include global environmental research
October 1990	Establishment of the Center for Global Environmental Research
January 2001	Environment Agency becomes Ministry of the Environment. Establishment of Waste Management Division at NIES
April 2001	Establishment of NIES as an Incorporated Administrative Agency. First five-year plan (2001-2005) commences
April 2006	Second five-year plan (2006-2010) commences
August 2010	Visit of the Japanese Emperor and Empress to NIES
April 2011	Third five-year plan (2011-2015) commences
March 2013	Amendment of the third five-year plan (2011-2015)
April 2015	National Institute for Environmental Studies relaunched as a National Research and Development Agency
April 2016	Fourth five-year plan (2016-2020) commences Fukushima Branch established

Issue-Oriented Research Programs

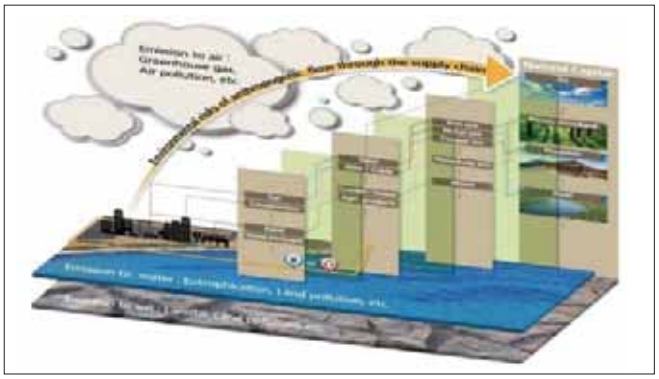
1 Low-Carbon Research Program

With the idea of building the scientific foundation that society will use to tackle the goal of keeping the global mean surface temperature increase below 2°C relative to pre-industrial levels, this program will conduct observations mainly in the Asia-Pacific region to assess the balances of the greenhouse gases that cause global warming as well as assessing impacts and control measures. To accomplish that, the program will use surface and aerial observations, and an observation satellite to be launched in 2017, to develop a highly reliable three-dimensional global-scale greenhouse gas monitoring system. Furthermore, climate change projection models, impact assessment models, and integrated socioeconomic assessment models will be combined and used to discuss the need for and feasibility of building a sustainable, low-carbon society following the path indicated by this comprehensive research program.



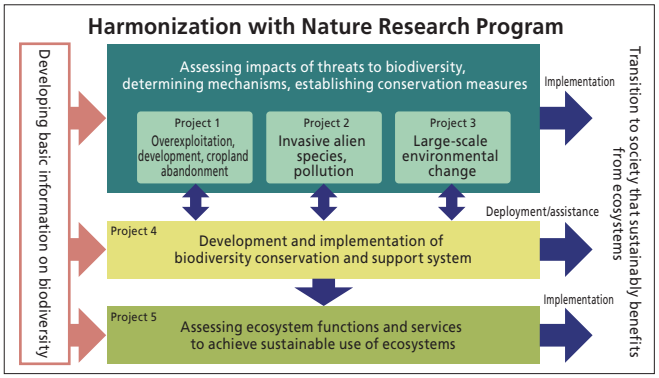
2 Sustainable Material Cycles Research Program

In preparation for realizing the future vision for an international resource use strategy, this program will elucidate supply chain structures involved in resource use and the factors that shape those supply chains. It will also assess the effects of resource conservation and environmental conservation throughout the life cycles of products and services. Measures for transitioning to sustainable material cycle based societies will be proposed. Additionally, the program will conduct development and evaluation pertaining to the advancement of sustainable, integrated waste management systems in Japan and other parts of Asia, and on the treatment, resource recovery, and other fundamental technologies needed for recycling, reuse, and reduction in harmony with the low-carbon society and other initiatives, as well as their systematic implementation in society.



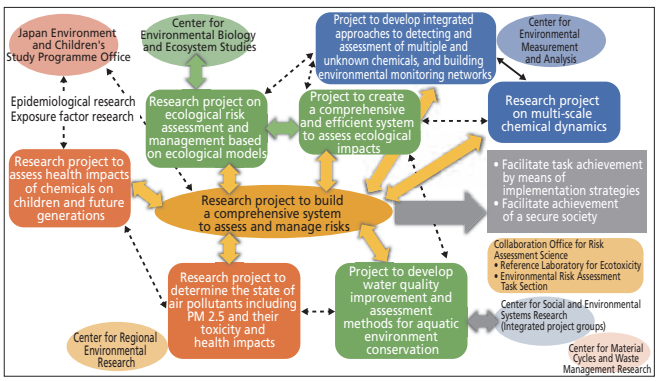
3 Harmonization with Nature Research Program

This program will shed light on the mechanisms by which the four major factors behind the biodiversity crisis (overexploitation/development, cropland abandonment, invasive alien species/pollution, and climate change) affect biodiversity. It will also assess and project their impacts as well as develop biodiversity conservation measures and adaptation strategies. Additionally, the program will assess the ecosystem functions and services generated by biodiversity, and propose strategies, such as watershed management in harmony with nature, for sustainably benefiting from ecosystems.



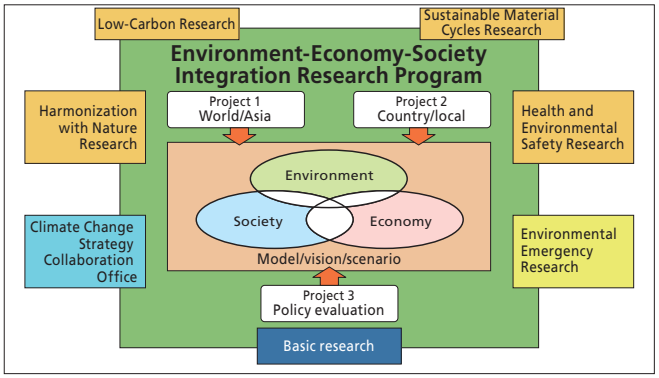
4 Research Program on Health and Environmental Safety

This program will conduct systematic research on methods of assessing and managing health- and environment-related risks such as transgenerational effects and risks to higher-order biological functions, new systems for assessing ecological impacts, chemical analyses and understanding of dynamics that are higher throughput and more comprehensive, research on PM 2.5 and other air pollutants, and on regional water environment conservation. This research will be accomplished by means of eight research projects (PJ): Health impacts of chemicals on children and future generations, comprehensive analyses of multiple and unknown chemicals, ecological risk assessment based on ecological models, comprehensive assessment of ecological impacts, multi-scale chemical dynamics, the state and impacts of PM 2.5 and other air pollutants, development of methods for improvement and assessment of regional water quality, and building a comprehensive system to assess and manage risks. By these means the program will establish systems to assess health and environmental risks, for which there is currently no established approach, as well as monitoring and prediction systems and management technologies that are comprehensive and rapid.



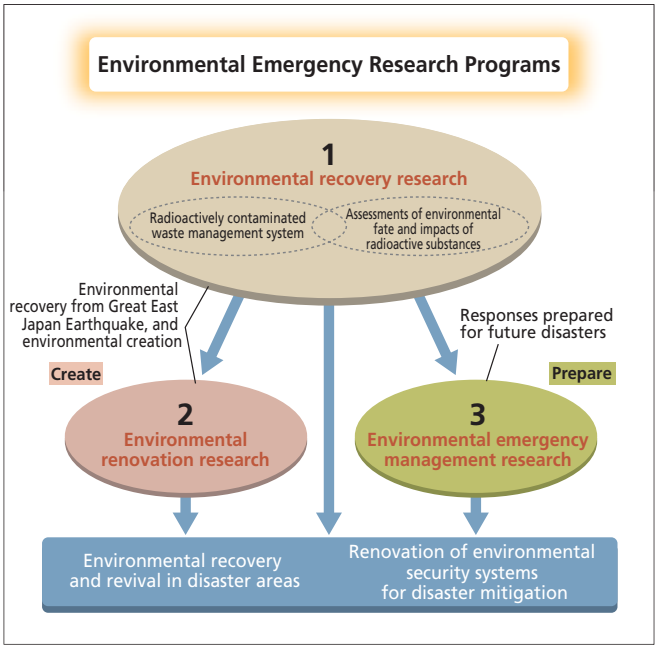
5 Environment-Economy-Society Integration Research Program

With its point of departure being the mitigation of and adaptation to climate change, this program develops multilayer models that quantitatively analyze the solutions to environmental problems including those of socioeconomic activities, sustainable material cycles, harmonization with nature, and health and environmental safety, on a variety of scales including global, Asia, Japan, municipality/local, and livelihood. From the perspectives of environmental, economic, and societal sustainability, the program conducts quantitative and qualitative analyses pertaining to the future vision for each scale, and also designs and evaluates international and local/urban policies needed to realize the intended future vision. Additionally, the program will build systems to assist the implementation and realization of proposed policies, response measures, and technologies.



Environmental Emergency Research Programs

Immediately after the Great East Japan Earthquake and Fukushima nuclear disaster, the National Institute for Environmental Studies (NIES) undertook disaster-related environmental research, and has thereby contributed to recover and create the environment of the devastated areas. Based on this accumulated research outcome, and using as a research hub the NIES Fukushima Branch, which was established in the Fukushima Prefectural Centre for Environmental Creation, this program conducts "environmental recovery research," "environmental renovation research," and " environmental emergency management research" in collaboration with Fukushima Prefecture, the Japan Atomic Energy Agency, other related institutions in Japan and abroad, stakeholders, and other entities. In addition to contributing to environmental recovery in the devastated areas, the program indicates paths leading to restoration and environmental creation, and contributes to create a disaster-resilient society based on the lessons of the Great East Japan Earthquake and other major disasters.



1 Environmental Recovery Research Program

This program is conducting research and development for volume reduction and other technologies for the purpose of intermediate storage and permanent disposal of radioactively contaminated waste, which is an urgent task of the highest priority for the nation. It will also carry out research and development for technological solutions to problems related to the processing and disposal of designated wastes and other wastes. Additionally, the program will conduct studies and research from a long-term perspective on the environmental fate of radioactive substances remaining in forests, bodies of water, and other environments. Further, it will perform long-term environmental impact assessments in places where residents have returned, develop living environment risk-management methods to secure a livelihood platform where people can live safely and free of concern, and implement ecosystem assessments that include ecosystem services.

2 Environmental Renovation Research Program

This program will carry out research to support community reconstruction and development mainly in Fukushima Prefecture and its municipalities, primarily in the prefecture's Hamadori region. For this purpose, the program will build an integrated social monitoring system that quantifies the effectiveness of reconstruction in terms of livelihoods and the environment, and it will propose systematic measures aimed at achieving sustainable communities. Through means including support for the design of locally-optimized distributed energy systems in central districts, the program will carry out research that supports community development and matches it well with the overall regional reconstruction plan. The program will also develop an integrated assessment model for developing future visions and investigating policy measures for municipalities, and build future scenarios in which industrial development, community development, environmental conservation, and other efforts are harmonized with one another. Further, the program will develop methods for communication among stakeholders for restored communities, which incorporate diverse local needs including livelihoods and a sound environment.

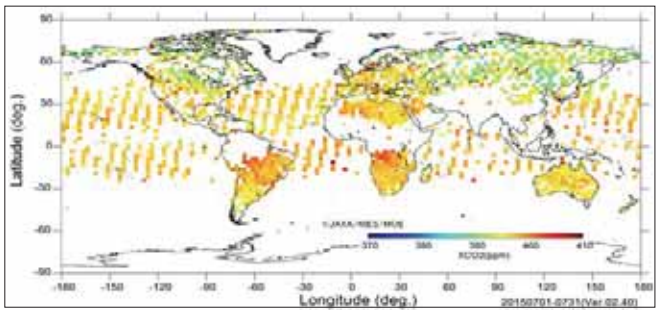
3 Environmental Emergency Management Research Program

To contribute to the development of a strategy to improve disaster resilience of material cycle and waste management system, this program will devise integrated technologies and systems for disaster waste management aimed at achieving smooth and appropriate management of disaster wastes. Additionally, with the aim of creating a strategy to manage the environmental and health risks associated with disasters, the program will investigate approaches for setting risk management targets when disasters strike and the methods and organizational arrangements for emergency environmental surveys. Further, for the purpose of building a research core for the environmental emergency research network, the program will design and develop an information platform pertaining to the environmental emergency research field and a capacity development system for the environmental emergency.

Research Projects

1 Satellite Observation Center

The center contributes to the improved scientific understanding of the carbon cycle, more accurate prediction of the climate in the future, and the Ministry of the Environment's global warming-related measures through activities using the Greenhouse Gases Observing Satellite (Ibuki/GOSAT, launched in 2009) and the satellite that will succeed it (GOSAT-2, to be launched in 2017). Activities include developing and operating a data-processing system that determines concentrations and other information about substances including atmospheric CO_2, methane, CO, and fine particulate matter by verifying, storing, and providing the data obtained, and using the data in communication activities. The center will also conduct the scientific review of Earth observation satellites to come after GOSAT-2.



2 Japan Environment and Children's Study Programme Office

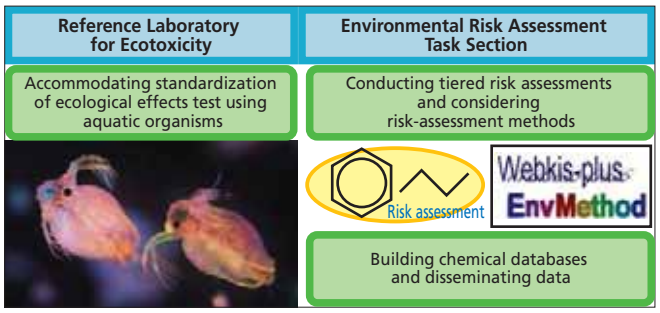
The Japan Environment and Children's Study is a large-scale birth cohort study conducted by the Ministry of the Environment. The National Institute for Environmental Studies (NIES) serves as the Programme Office. The study, conducted in 15 regions throughout Japan, aims to investigate environmental influences during pregnancy and childhood on children's health and development. The Programme Office takes a leading role for the JECS, including accumulating data collected by Regional Centres; maintaining the database, or data management system (DMS); maintaining the repository of biological and environmental specimens; and performing exposure measurements including chemical analyses on the specimen. The Programme Office prepares standard operating procedures (SOPs); carries out administrative tasks; provides administrative and technical support for Regional Centres and is responsible for risk management and public communication.

Above: Procedures that minimize children's fear, pain and burdens

Right: A part of blood samples provided by participants are stored in liquid nitrogen tanks

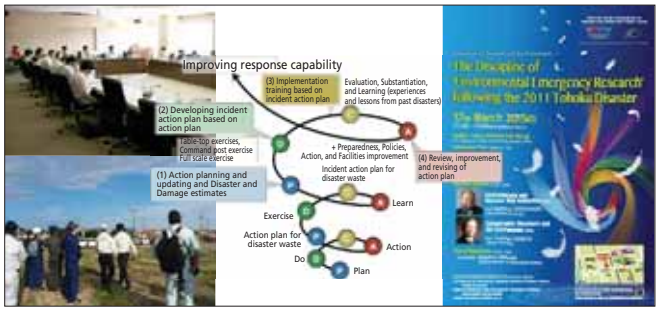
3 Collaboration Office for Risk Assessment Science

Seeking to provide domestic leadership for promoting regulatory science with the aim of achieving a safe and worry-free society, the office carries out ecological toxicity research, international collaboration for development of testing methods, support for and standardization of test implementation, infrastructural improvements, and other efforts to support regulatory policies and measures. The office also collaborates with relevant organizations in activities such as conducting scientific risk analyses, building databases, and providing knowledge and methods. The office implements research projects so that the latest research and development results are used as the basis for shaping new regulatory policy measures.



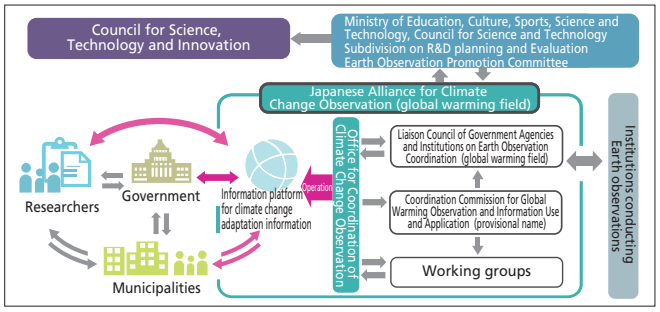
4 Environmental Emergency Management Strategy Facilitation Office

Through research collaboration with organizations in Japan and other countries, this office implements projects such as developing disaster environment management strategies and collecting information upon which to base development, building and operating network systems; training personnel with practical expertise; providing on-site support for disaster responses; setting up international research hubs; and training researchers. By means of these initiatives, the office takes on the role and function of headquarters for implementing disaster environment management strategies of Japan.



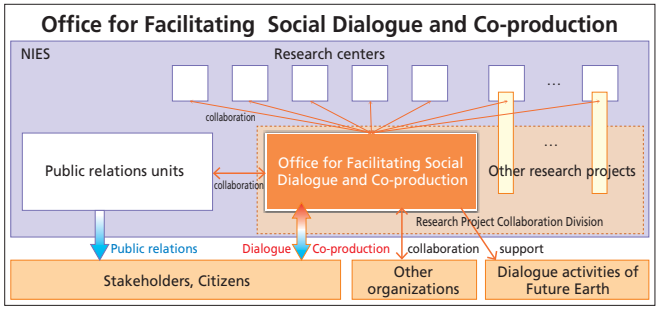
5 Climate Change Strategy Collaboration Office

To understand climate change and its impacts, this office in particular considers measures that include compiling observation needs for the global warming field, developing implementation plans, managing and reporting on the state of implementation, and facilitating data distribution, as well as promoting the dissemination of results and public awareness. Municipalities , businesses, citizens, and other actors need climate change information to undertake measures to cope with climate change; to that end, the office shall, having first prepared a comprehensive information platform, continue to gather information and disseminate it widely in an easy-to-use form.



6 Office for Facilitating Social Dialogue and Co-production

To encourage dialogue between society and NIES about awareness of environmental problems and the current state of environmental research, this office will compile and analyze our experience to date, develop new communications content to provide information to the public using social media and other means. Further, the office will plan and hold events such as stakeholder meetings on NIES activities, and provide feedback from society to research activities. By means of these efforts the office will endeavor to build a relationship of mutual trust between society and environmental researchers.



Environmental Research Fields

1 Global Environmental Field http://www.cger.nies.go.jp/

Contributing to the Solution of Climate Change and Other Global Environmental Problems

In this field our researchers are determining the current state of the global environment and the physical, scientific, and biological processes of long-term change. Based on those findings they predict global environmental changes and assess the impact risks associated with those changes, and also conduct studies and research on measures to protect the global environment. Especially in relation to climate change, they assess the long-term changes in atmospheric composition, gauge climate change risks and adaptation measures, and work on problems such as depletion of the stratospheric ozone layer.

2 Material Cycles and Waste Management Field http://www-cycle.nies.go.jp/

Contributing to the Cyclical and Efficient Use of Resources, and to Decreasing the Environmental Burden of Wastes

On scales from local to international, researchers in this field determine the state and elucidate the mechanisms of resource use and the attendant environmental burdens arising from socioeconomic activities. They conduct research on assessment methods and proposals for transition strategies for sustainable material cycle-based societies. Researchers also develop and evaluate technologies for the appropriate treatment, disposal, and recycling of wastes and recyclable resources as well as the fundamental technologies needed for resource recycling and material management.

3 Environmental Risk Field http://www.nies.go.jp/risk_health/

Establish Sciences to Support the Prevention of Environmental Risks and Contribute to the Achievement of a Safe Society

The research in this field includes enhancing ecological toxicity testing, developing a new ecological risk assessment system for chemicals, developing methods to determine environmental exposure and impact of chemicals, ascertaining exposure and impacts in the ecosystem through field work and laboratory experiments and developing control measures, systematization of risk management for chemicals and other substances, and environmental fate of those substances and exposure assessment, collaboratively with the Environmental Health Field on research related to human health. Their findings are being applied as risk assessment science.

4 Regional Environment Field http://www.nies.go.jp/chiiki/en/index_en.html

Contributing to Solutions for Regional Environmental Problems Focusing on Japan and Developing Countries in Asia

This field concerns itself with a variety of spatial scales from transboundary to individual city. Researchers are investigating environmental problems including the environmental burdens caused by human activities and the impacts on humans and ecosystems via the atmosphere, water, soil, and other environmental media and are seeking solutions to reduce these problems. By integrating their work, researchers conduct studies and research for finding, applying, and implementing comprehensive and effective solutions for regional environmental problems.

5 Environmental Biology and Ecosystems Field http://www.nies.go.jp/biology/eng/

Helping Establishment of a Society in Harmony with Nature that Conserves Biodiversity and Ecosystems, and Enables Future Generations to Benefit from Ecosystems

Researchers carry out studies and research at various temporal and spatial scales to determine the structures and functions of the ecosystems comprised by the diverse organisms on the Earth, the relationships between those structures and functions, the benefits that humans receive from ecosystems, and the impacts of human activities on biodiversity and ecosystems.

6 Environmental Health Field http://www.nies.go.jp/ risk_health/

Contributing to Preventing Harmful Effects Caused by the Environment and Promoting Safe and Healthy Environment

Researchers are conducting animal studies, epidemiological research and exposure analyses to evaluate the effects of various environmental factors including chemicals substances on human health, especially that of future generations, and elucidate the mechanisms of these effects. The results of these research will be used to perform health risk-assessment research jointly with the Environmental Risk Field.

7 Social and Environmental Systems Field http://www.nies.go.jp/social/

Assisting the Transition to a Society and Economy in Harmony with the Environment at Scales Including the Global Environment, Nations, Regions, and Cities

This field presents a future vision for a sound society and economy that benefits from the environment's bounty. To plan the scenario and roadmap needed to make this a reality, researchers are developing the foundational theories and methods for the transition of social systems from the environment's standpoint. This includes development of policies and plans, evaluations of direct and indirect impacts from a broad perspective, public policy support, and participatory processes.

8 Environmental Measurement and Analysis Field http://www.nies.go.jp/

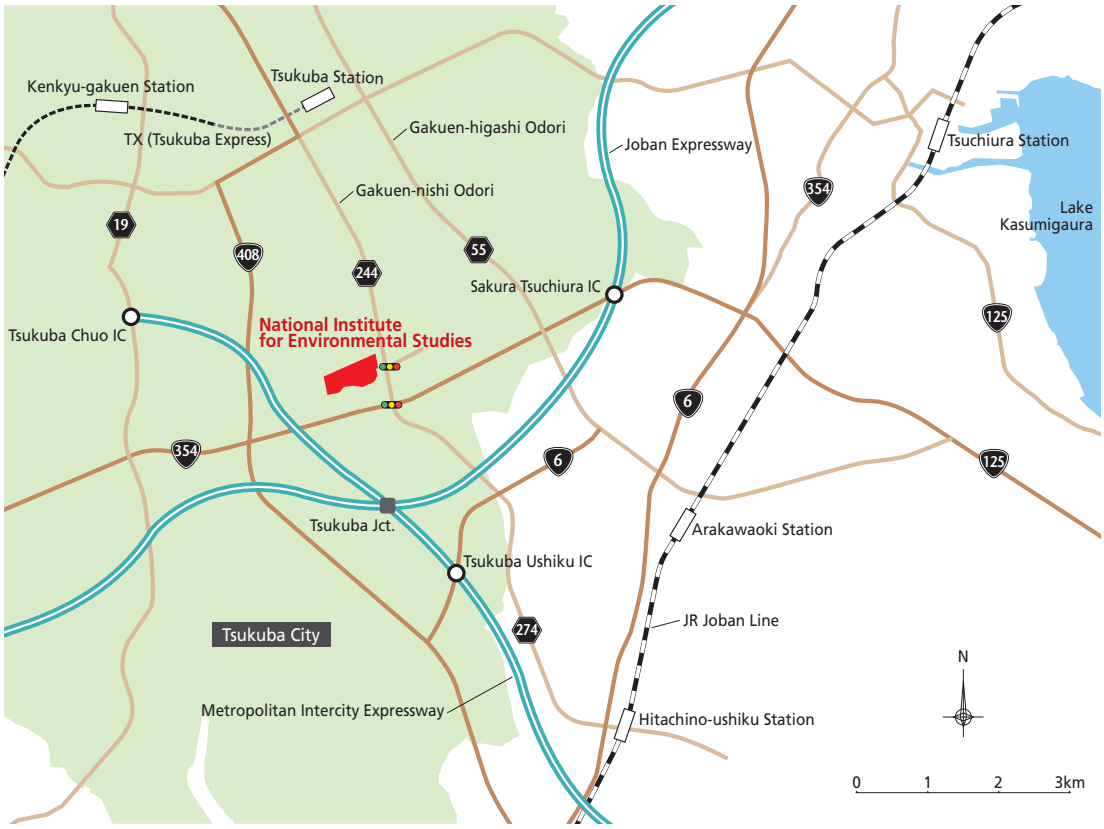
Continuing Assessment of Current and Future Environmental Concerns through Exploratory Science, Continuous Development and Deployment of Scientific Methodologies and Strict Management of Measurement Data Quality

Tackling environmental concerns requires early detection of environmental issues and changes. By exacting measurements and careful monitoring, we provide invaluable scientific input for the implementation of domestic and international policy. We further assess the effectiveness of these technological and political measures in mitigating environmental risk. We achieve this through the continuous development of measurement methods, deploying these in the natural environment and extracting information from the measurement data whilst striving to ensure the highest standards of data quality.

9 Environmental Emergency Field http://www.nies.go.jp/

Contributing to the Environmental Recovery and Reconstruction of the Disaster-Stricken Region from the Great East Japan Earthquake and to Building a Sustainable Society Resistant to Future Disasters

Based on the experiences of the Great East Japan Earthquake and other disasters, researchers in this field conduct research and develop environmental technologies that will contribute to the environmental recovery and revival of disaster areas, creation of sustainable regional environments, and the renovation of environmental security systems for disaster mitigation.



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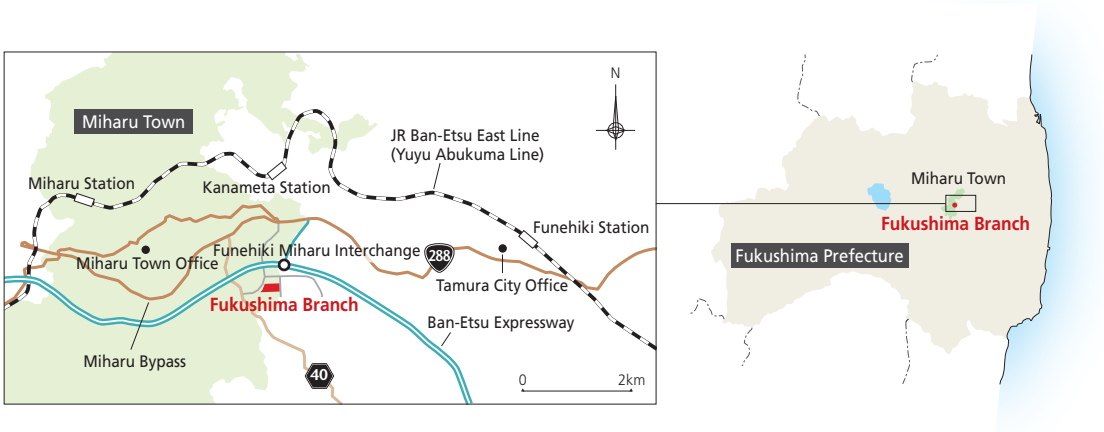

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