21st century COE Program Kanazawa University, Long- and Short- Term Dynamics of Pan-Japan Sea Area : Environmental Monitoring and Prediction

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21st century COE Program Kanazawa University

Long- and Short-Term Dynamics of Pan-Japan Sea Area: Environmental Monitoring and Prediction

Outline of the Program

This project carries out the research and education on the development of highly sensitive environmental monitoring methods for the Sea of Japan area, construction of data networks, prediction of environmental variations based on the monitoring, the maintenance and effective use of resources, and the prevention of accidents that could damage the environment.

Needs and Objectives for the Program

The Sea of Japan is a zone of frequent earthquake and volcanic activity and is very sensitive to artificial pollution because both ends are narrow channels. On the other hand, the industries and economies of China, Korea and Russia are rapidly developing, and large amounts of pollutants are emitted with the consumption of fossil fuel. These pollutants are though to be the main factors that induce the borderless environmental problems. Therefore, prediction of long- and short-term environmental fluctuations in this area, development of preservation programs and countermeasures to prevent environmental accidents based on these predictions are very important.

Plan for Formation of Research Center

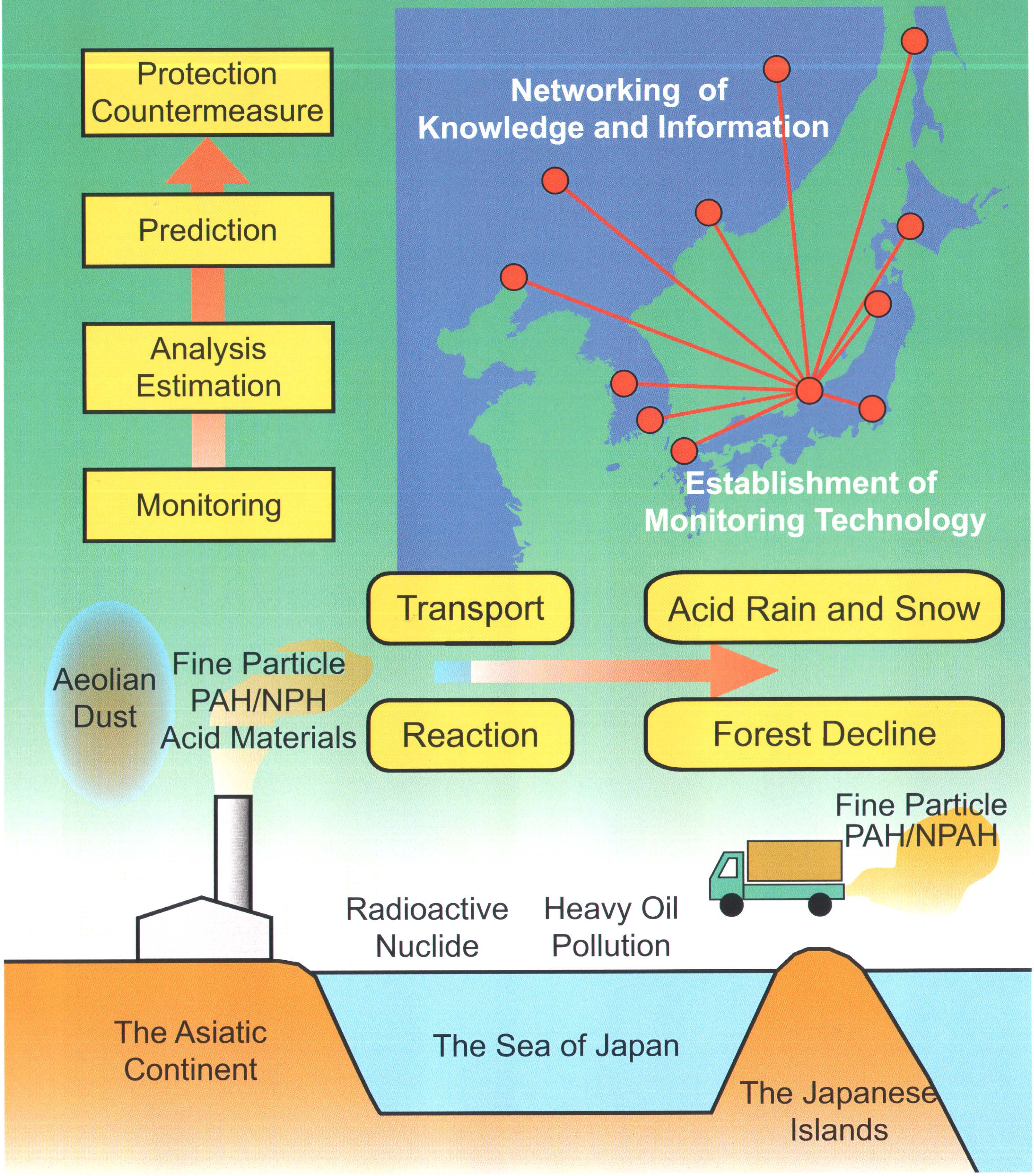
In order to form a research center of top-level in the world, the research activities are carried out with four major activities: 1) development of measuring /monitoring methods (low level radioactivity, PAH), 2) construction of a Pan-Japan Sea environmental monitoring network, 3) analyses of short term (up to 10^2 years) and long term (up to 10^6 years) changes of the Pan-Japan Sea area environment, and 4) development of environmental preservation and anti-disaster techniques. It is necessary to have tactics as follows: 1) enhancing collaborations with scientific instructions in Pan-Japan Sea area, 2) publishing data collected by the monitoring network on the web, 3) holding international symposiums and seminars every year, and 4) launching an international scientific journal, publishing newsletters, 5) publishing textbooks on Pan-Japan Sea area environmental science, 6) subjecting collaborations with industry and local governments, and 7) promoting collaborations with industry and local governments.

Education Implementation Plan

Philosophy and goal in education implementation plan are 1) development of research quality and skills by interesting a great amount of expertise on the environmental sciences, 2) improvement of skills for planning, problem-solving, implementation of research plans, communication in English and improvement of performance in interdisciplinary research plans. Following educational programs will be to arrive at the goal: 1) compile of educational programs especially pertaining to environmental issues in Pan-Japan Sea Area (2) start-up of cross-fertilization program for students and young scientists (3) organizing an international school and publishing text books for environmental science in Pan-Japan Sea Area (4) start-up of English training course for PhD students (5) establish competitions for research proposal and funding for excellent (6) increasing the number of TA, TR and post-doctoral positions (7) establishment exploratory and external evaluation committees, and a plan-do-see system.

Program Leader: Kazuichi Hayakawa

Long- and Short- Term Dynamics of Pan-Japan Sea Area : Environmental Monitoring and Prediction



金沢大学21 世紀 COE プログラム

環日本海域の環境計測と長期・短期変動予測

プログラムの概要

本事業は、日本海域を対象とする高感度環境計測法の開発とそのデータネットワークの構築、それに基づく環境変動の予測、有用資源の保全と有効活用、災害防止に関する研究教育を行う。

研究拠点形成の目的と必要性

日本海は、地震や火山活動の盛んな地帯であるとともに、その両端は狭い海峡で、人為的汚染にはきわめて弱い。一方、中国、北朝鮮、韓国、ロシア諸国は、産業や経済が急速に発展しつつあり、化石燃料の消費に伴って大量の有害物質を排出している。これらは、近年の国境なき環境問題を引き起こす大きな要因となっている。従って、環日本海域環境の長期的、短期的変動の予測とそれに基づく保全・災害防止対策の構築はきわめて重要である。

研究の柱として以下の4項目を掲げる。（1）世界最高レベルの計測技術開発（極低レベル放射線測定、PHA, 等)、（2）環日本海域をカバーする環境モニタリングネットワークの構築、（3）短期（～10^2 年、人為的要因含む)、長期（～10^6 年）の環境変動解析、（4）集塵、ナラ枯防止技術、地盤・岩盤破壊予測システム等の環境保全・防災技術の開発。

研究拠点実施計画

世界トップレベルの研究拠点形成のため、次の7つのプランを実行する。（1）海外の共同研究実施機関、協定校との協力体制の強化。（2）収集データのインターネット上での公開（3）国際シンポジウ、セミナーの開催　（毎年開催し、トップレベル研究者を招聘）（4）国際英文 Journal, Newsletter 等英文刊行物を発行（5）環日本海環境に関するテキストブックの刊行（6）世界トップレベルの研究者による外部評価の実施（7）産官学連携の促進による知の供与、ベンチャー育成。

教育実施計画

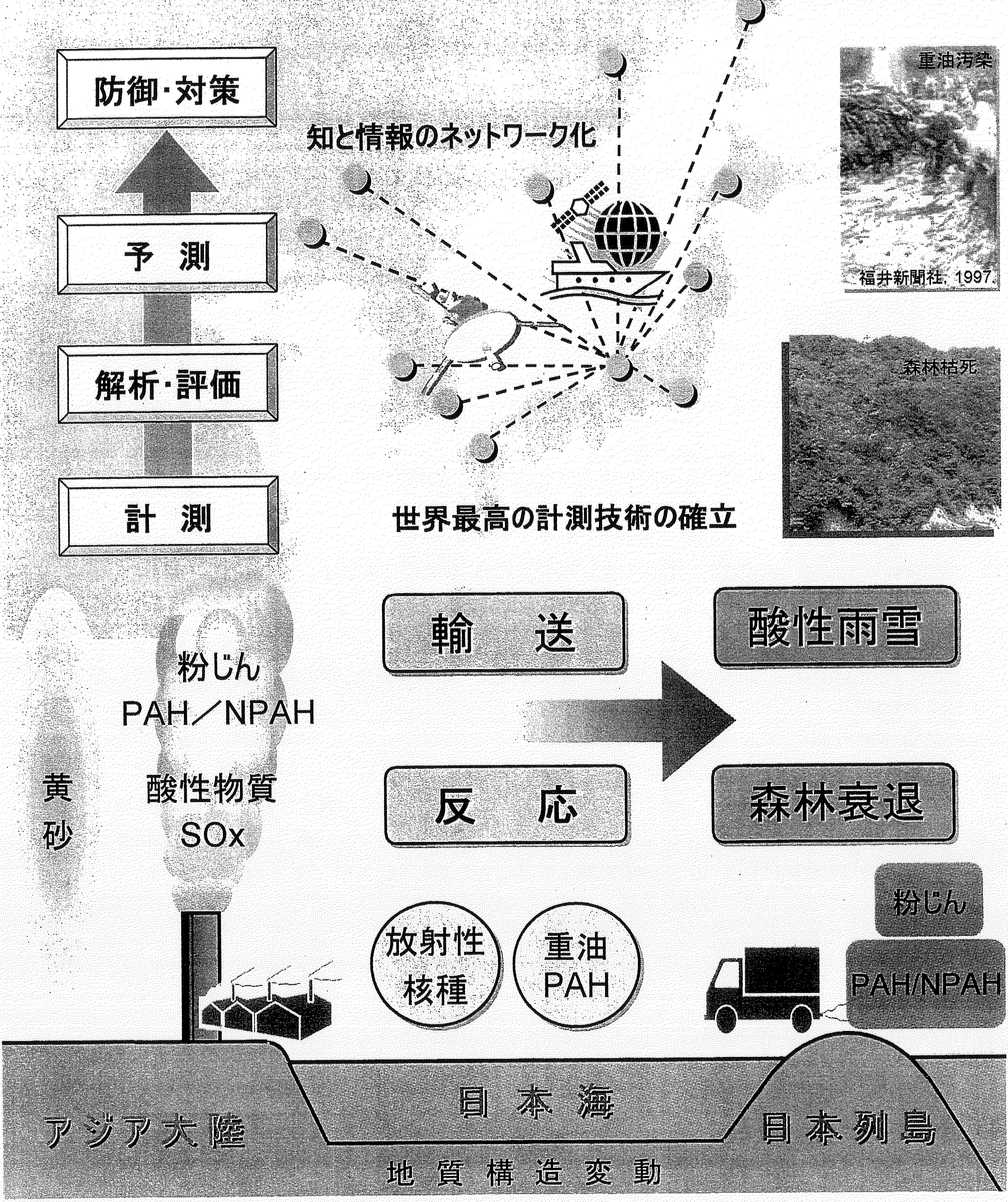
本事業における教育活動の理念・目標は、（1）世界的な英知・技術の集積による世界トップレベルの環境科学者、技術者の育成を目指し、（2）学生が、環境分野の深い専門知識のほか、課題発見・研究立案・研究遂行能力、国際コミュニケーション能力、学際分野で仕事ができる能力を身に付けることを達成目標とすることである。

これらの教育目標を実現するために以下の教育プログラムをおこなう。（1）環日本海環境域で特に問題となっている環境科学分野に特化したカリキュラム編成、（2）学生・若手研究者相互交流プログラムの立ち上げ、（3）地球環境科学スクール開催とテキストの出版、（4）英語トレーニングコースの立ち上げ、（5）研究プロポーザルのコンペと研究費の補助、（6）TA, RA, ポスドク制度の充実、（7）教育プログラム検討委員会と、外部評価委員会の創設と plan-do see システムの確立。

拠点リーダー：早川和一

環日本海域の環境計測と長期・短期変動予測

Long- and Short-Term Dynamics of Pan-Japan Sea Area : Environmental Monitoring and Prediction



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21st century COE Program

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