

**COUNTRY: KOREA**

**Source of Information:**

Prof. Im Sang Oh, May 2004

**National Representative/Contact:**

Prof. Im Sang Oh  
School of Earth and Environmental Science  
Seoul National University  
Gwanak-gu, Seoul 151-742, Korea

ois@storm.snu.ac.kr  
Tel: +82 2 880 6752  
Fax: +82 2 876 3147

**Chief Scientist (Research Project II, III & IV):**

Prof. Suam Kim  
Department of Marine Biology  
Pukyong National University  
Nam-gu, Busan 608-737, Korea

suamkim@pknu.ac.kr  
Tel: +82 51 620 6268

**Chief Scientists (Research Project V):**

Drs. Cheol-Ho Kim (KORDI) and Suam Kim (PKNU)  
Korea Ocean Research & Development Institute  
Ansan P.O. Box 29, Seoul 425-600, Korea

chkim@kordi.re.kr  
Tel: +82 31 400 6128  
Fax: +82 31 408 5829

**Chief Scientists (Research Project VI):**

Drs. Hee-Dong Jeong (NFRDI) and Chang-Ik Zhang (PKNU)  
National Fisheries Research & Development Institute  
Gijang-gun, Busan 619-902, Korea

hdjeong@nfrdi.re.kr  
Tel: +82 51 720 2210  
Fax: +82 51 720 2225

**Participating Institutions:**

Korea Ocean Research & Development Institute (KORDI), Ansan  
National Fisheries Research & Development Institute (NFRDI), Busan  
Pukyong National University (PKNU), Busan  
Seoul National University, Seoul

---

**Research Project I: A study on the climate regime shift and fisheries resources in Korean waters**

**Chief Scientist (Research Project I):**

Prof. Chang-Ik Zhang  
Department of Marine Production and Management  
Pukyong National University  
Nam-gu, Busan 608-737, Korea

cizhang@pknu.ac.kr  
Tel: +82 51 620 6124

**Project Description:**

The major objects are to:

- examine the effects of the variations of marine ecosystem caused by climate change on fisheries resources in Korean waters.
- suggest the research direction for identifying variations in fisheries resources.

**System type studied:**

Korean waters

**Methodology used:**

Retrospective analysis with currently existing data sets from fisheries, oceanography, meteorology, and others

**Participating Institutions:**

Pukyong National University

Korea Ocean Research and Development Institute  
Meteorological Research Institute (MRI)

**Number of scientists and fte: 3**

**Duration:** Two years (1997-1999)

**Budget:** US\$ 40,000/yr

**Funding Agency:**

Korea Science & Engineering Foundation, Korea

---

**Research Project II: Relationship and dynamics between climate change and fishery resources in the East Sea of Korea**

**Chief Scientist (Research Project II, III & IV):**

Prof. Suam Kim  
Department of Marine Biology  
Pukyong National University  
Nam-gu, Busan 608-737, Korea

suamkim@pknu.ac.kr  
Tel: +82 51 620 6268

**Project Description:**

The major objectives are to:

- conduct retrospective analysis on climate, oceanographic, biological, and fisheries data sets in the East Sea.
- provide the basis for "Science and Implementation Plan" of Korea GLOBEC.

The major purposes and findings are to:

- describe variations in time-series production of fisheries resources.
- conduct researches on the shifts of habitat distribution of major pelagic species by climate changes, and structure of the East Sea ecosystem.
- figure out the relationship between fishery products and environmental effect.
- develop the basis for an ecosystem-based fisheries resource management procedure.

**System Types Studied:**

East Sea

**Target Organisms:**

Yield and distribution of macro-algae, plankton, and fish resources

**Physical Processes Examined:**

Seawater temperature (surface, 50m and 200m), precipitation, wind, PDO

**Participating Institutions:**

Pukyong National University

**Number of Scientists:** 19

**Duration:** 2 years (2001 – 2003)

**Budget:** US\$ 50,000/ yr

**Funding Agency:**

Ministry of Maritime Affairs and Fisheries, Korea

---

### **Research Project III: Climate effects on marine ecosystem and fisheries resources**

**Chief Scientist (Research Project II, III & IV):**

Prof. Suam Kim

suamkim@pknu.ac.kr

Department of Marine Biology

Tel: +82 51 620 6268

Pukyong National University

Nam-gu, Busan 608-737, Korea

**Project Description:**

The purposes of this project are to:

- find an abnormal phenomenon due to climate change.
- describe variations in time-series production of fisheries resources.
- identify the organisms' response to the temperature increase.
- understand cause-effect relationship between environmental changes and responses of cold water fish species (walleye pollock, chum salmon, and macro-algae).

**System Types Studied:**

East Sea and Kuroshio system

**Key Questions, Hypotheses and Issues:**

Spatial, temporal, and vertical seawater temperatures

Stable isotopes in pollock otolith, trace elements in salmon otolith

Algal production and disease in relation to climate change

**Participating Institutions:**

Pukyong National University

East Sea Fisheries Research Institute, NFRDI

**Number of Scientists:** 19

**Duration:** 1 yr (2002 – 2003)

**Budget:** US\$ 70,000/yr

**Funding Agency:**

Ministry of Maritime Affairs & Fisheries, Korea

### **Research Project IV: Study on fluctuation and prediction of fisheries resources**

**Chief Scientist (Research Project II, III & IV):**

Prof. Suam Kim

suamkim@pknu.ac.kr

Department of Marine Biology

Tel: +82 51 620 6268

Pukyong National University

Nam-gu, Busan 608-737, Korea

**Project Description:**

The purposes of this project are to:

- describe variations in time-series production of chub mackerel resources.
- provide basic information concerning distribution, migration, and abundance of Pacific saury in relation to climate/ocean change.
- forecast chub mackerel catch with response to the changes in climate/marine environments.
- examine fluctuation tendency for recruitment and biomass of chub mackerel.

**System Types Studied:**

Northwestern Pacific from Taiwan to the East Sea

**Physical Processes Examined:**

SST, location of polar front

**Target Organisms:**

Catch, distribution, recruitment, biomass of fish species

**Participating Institutions:**

Pukyong National University

**Number of Scientists:** 10

**Duration:** 1 yr (2002 – 2003)

**Budget:** US\$ 30,000/yr

**Funding Agency:**

National Fisheries Research & Development Institute  
Ministry of Maritime Affairs & Fisheries, Korea

---

**Research Project V: Long term change of the biogeochemical cycling and biological processes in the East China Sea: Observation and Prediction**

**Project Description:**

The final purposes are to:

- detect changes both in the oceanic environment and lower-level ecosystem due to long-term climate change in the East China Sea(ECS), and to clarify their changing mechanisms.
- enhance the understanding capability for the physical and biogeochemical processes in the ECS.
- develop the prediction model for ecosystem change.
- predict the impact of future climate change on the physical and chemical environment and ecosystem in the ECS.

**System Types Studied:**

East China Sea and Yellow Sea: shelf area

**Physical Process Examined:**

Mixing of the Chinese Coastal Water and the Kuroshio

**Key Questions, Hypotheses and Issues:**

- Mixing process of the Chinese Coastal Water (CCW) and the Kuroshio in the ECS continental shelf area
- Dynamical influence of monsoonal wind on the distribution of the fresh CCW
- Influence of ocean environmental change on the ocean carbon cycle and bio-geochemical cycling of organic/non-organic nutrients, and understanding its controlling mechanisms in the ECS
- Understanding of lower-level ecosystem structure and its interaction with ocean environmental changes
- Primary production and energy transfer process through lower-level food-web in the study area
- Questions on the process how the long-term ocean environmental change influences on the fluctuation of squid resources and its distribution
- Recruitment processes of common squid in Korean waters

**Participating Institutions:**

Korea Ocean Research and Development Institute  
Pukyong National University

**Number of Scientists:** 18

**Duration:** 2003 - 2006 (first stage of the project)

**Budget:** US\$ 345,000; first year (Aug. 2003 – May 2004)

**Funding Agency:**

Ministry of Science and Technology, Korea

---

**Research Project VI: Impact of climate changes on oceanographic conditions and fisheries resource**

**Project Description:**

The purposes are to:

- monitor the long-term variability in oceanographic conditions and its impact on marine ecosystem.
- find out the relationship between fisheries resources distribution and oceanographic conditions.
- analyze marine ecosystem in the Korean waters and predict the migration and distribution of fisheries resources.
- suggest the oceanographic implications for strategic fisheries planning.

**System Types Studied:**

Korean waters

**Physical Processes Examined:**

CTD cast, dissolved oxygen, nutrients, suspended solids, chlorophyll-*a*, optic properties, zooplankton biomass, pCO<sub>2</sub>, fisheries assessment in target area, common squid distribution

**Participating Institutions:**

National Fisheries Research and Development Institute  
Pukyong National University

**Number of Scientists:** 40

**Duration:** 15 yrs (2003 – 2017)

**Budget:** US\$ 160,000/yr

**Funding Agency:**

National Fisheries Research and Development Institute, Korea