9th WORLD OCEAN FORUM
October 20 – 22, 2015, Busan, Republic of Korea

IMPACTS OF GLOBALIZATION ON CONTEMPORARY USE AND MANAGEMENT OF THE MARINE RESOURCES

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Globalization and its drivers

1. ECONOMIC FACTORS

* **Modernization:** transfer of technology and know-how, lower transaction costs because of improved communications, transportation and increased competition,

* **Reduced subsidization** of economic activities: fuel, construction, exports incentives, taxation,

* **Elimination or reduction of inefficiencies:** lower cost of labor and higher productivity in resource extraction, processing, transportation, marketing

2. INTERNATIONAL TRADE

* Growth of export-oriented sectors (aquaculture, off-shore oil and gas, marine tourism, ports - land processing infrastructures),

* Market expansion and commercialization from subsistence to profit and export-oriented activities,

* Growing market for environmental goods (fish, timber, minerals, marine tourism services)

OCEANS AND INTEGRATION OF THE GLOBAL ECONOMY

- Currently in the ocean there are approx. 50,000 ships operating in the sea trade and other ocean activities
- The sea trade covers approx. 80% of the international trade
- Oceans and sea never were and are most dangerous regions of the economic activity .
- Even today, in contrast to the land areas and the air, marine space is only partially monitored

3. Population growth

During first 25 years of the 21st Century, the population of the North Pacific will grow by over 400 million. China, the US and Mexico are the most important contributors to this growth.

This puts pressure on:

- Off-shore fossil and renewable energy sources,
- Coastal zone (growing demand for land for housing and infrastructure),
- Living resources for food and fodder for
- aquaculture needs,
- Demand for fresh water

SUPPORTING CASE : Busan port-urban center, South Korea

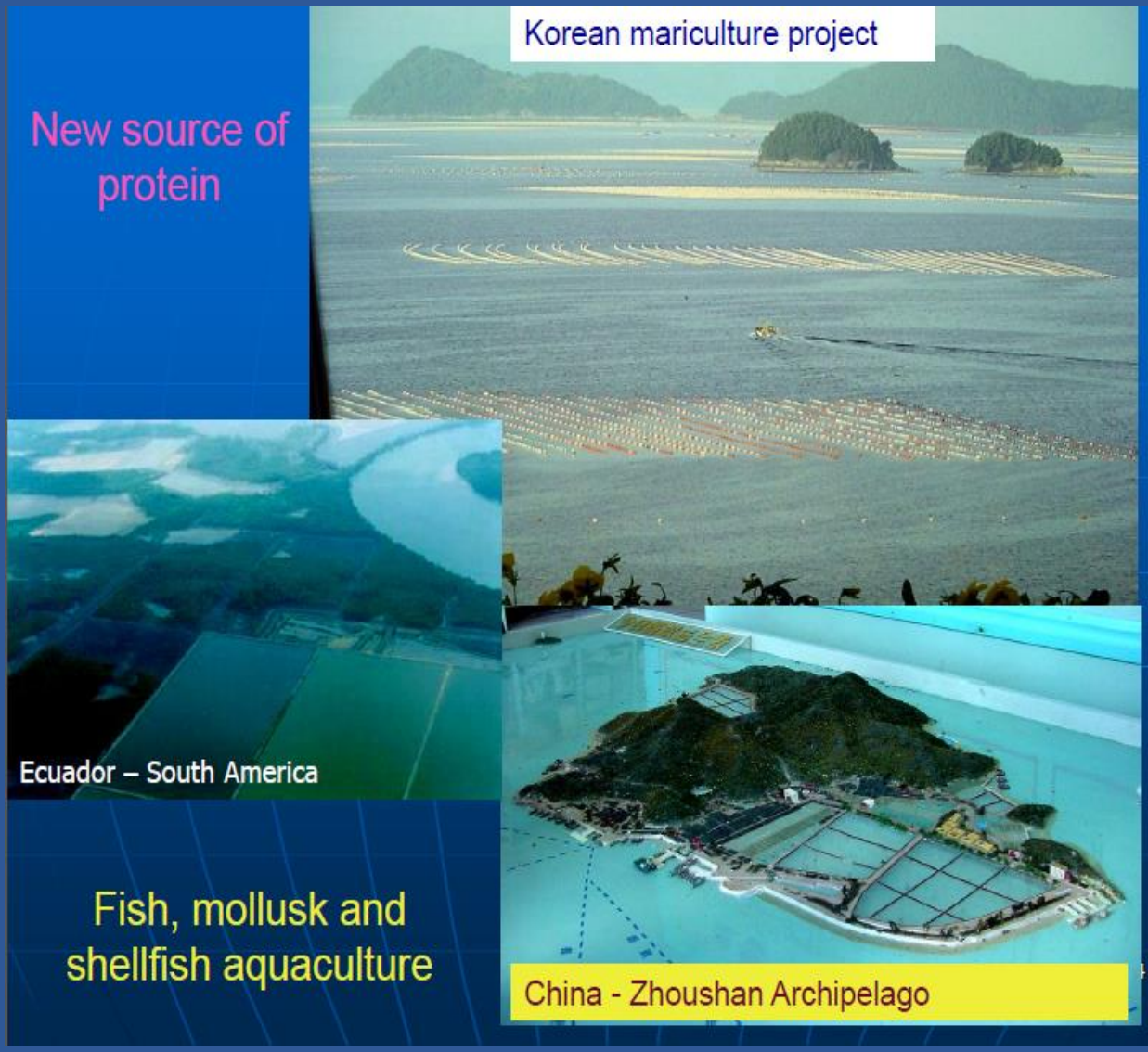
Coastal urbanization

Over 40% of all towns with population over 500,000 inhabitants are localized in the coastal areas .

Increasing consumption and demand of marine and aquatic resources

There is a growing interest to develop further coastal mariculture and aquaculture.

Expansion of fish farming puts new demands on shrinking water, grain reserves and marine fish that are needed to produce feed for the aquaculture.



However, most economic and population trends are unsustainable because of:

- Resource overexploitation,
- scarcity of coastal areas for urban and industrial development,
- shrinking fresh water reserves and land available for farming of aquatic species.

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DEALING WITH OTHER IMPACTS OF GLOBALIZATION:

Two conceptual approaches:

a) Natural cycles

b) Human (anthropological) impacts on the oceans

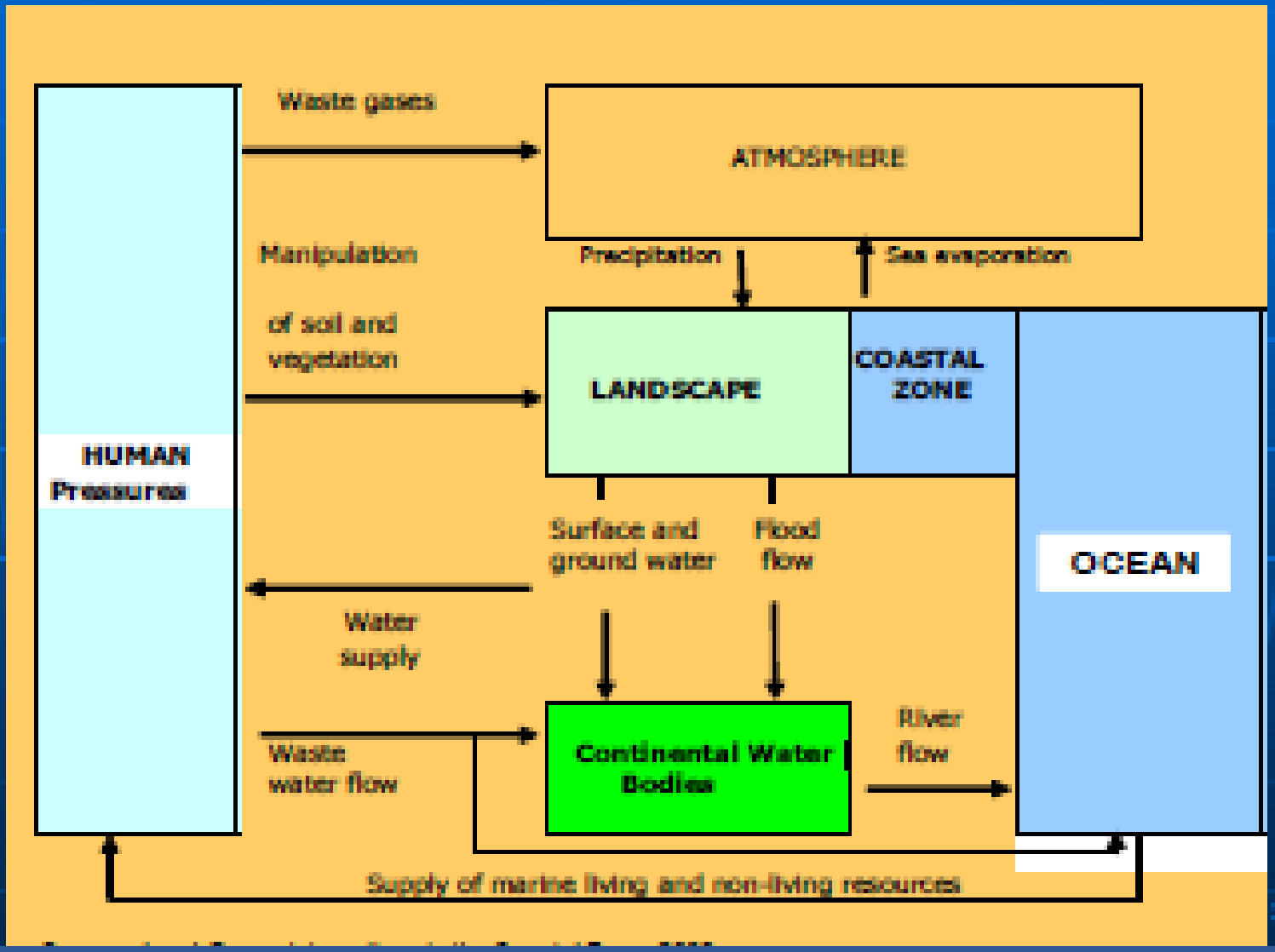
NATURAL CYCLES: HOW MARINE/COASTAL ECOSYSTEM WORKS? THE CASE OF NORTHEAST PACIFIC

Human (anthropological) impacts on the oceans

Taking integrative approach and understanding the ways in which humans interact with:

- **atmosphere,**
- **land,**
- **terrestrial ecosystems,**
- **water systems**
  and
- **marine ecosystems**

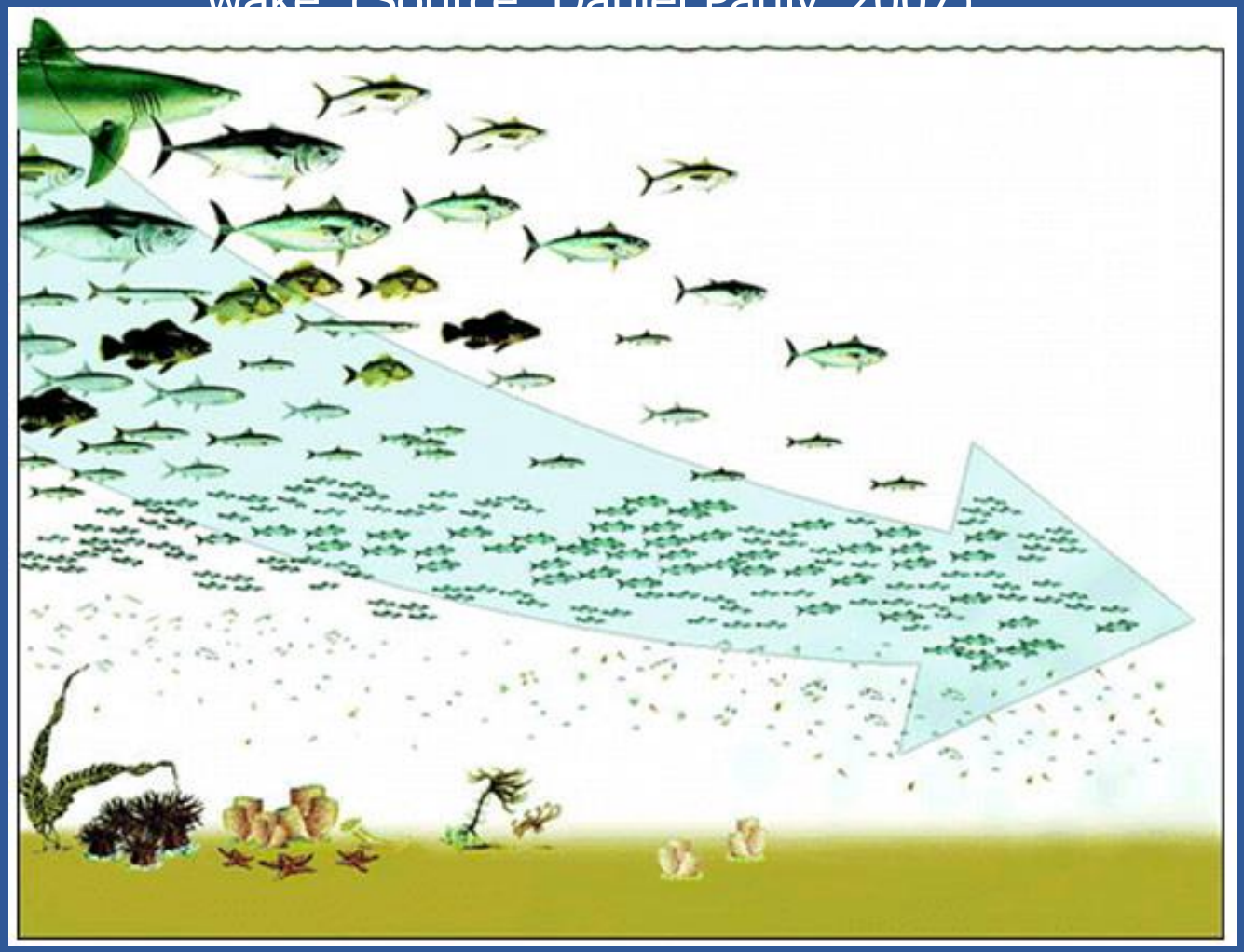
Land – ocean interactions and water cycle model



SUMMARY OF TRENDS IN THE OCEAN USES

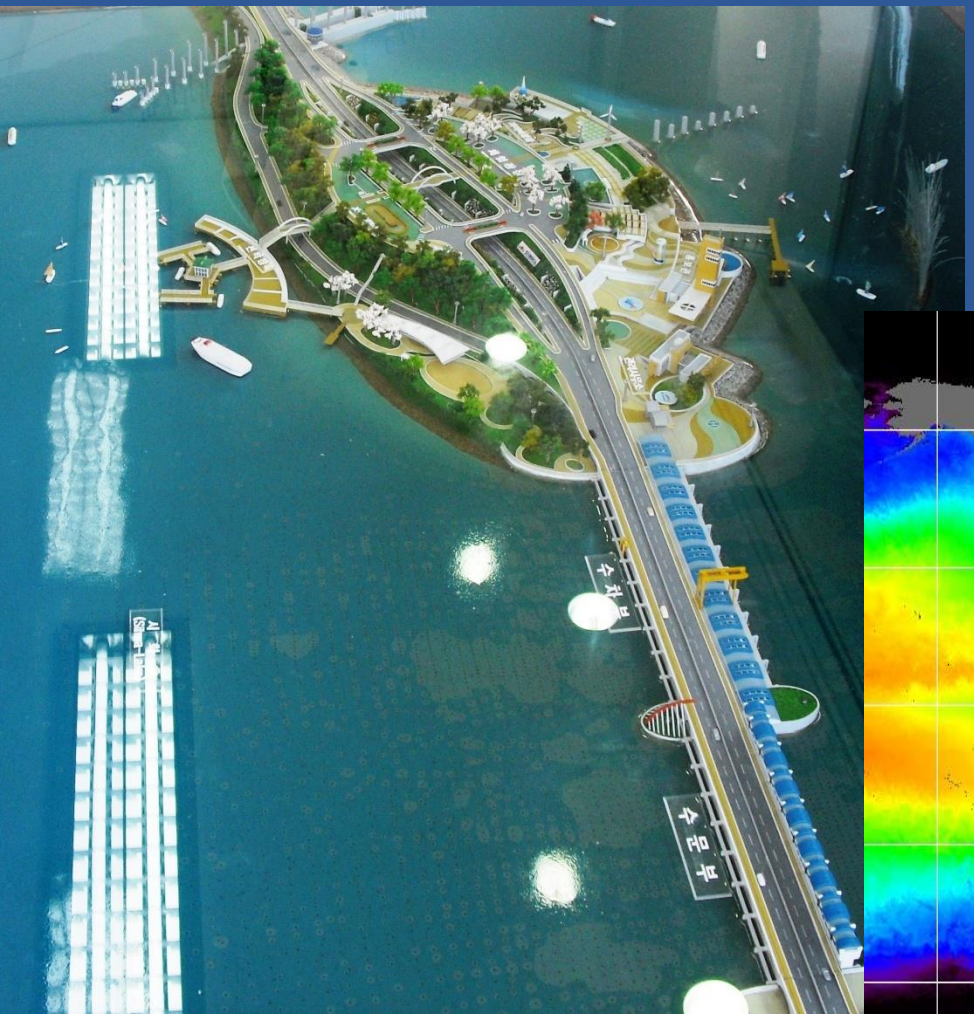
- 1. Shrinking availability of the ocean living resources and
- expansion of aquaculture and mariculture,
- 2. Foreign investment and increased controls of the
- developing country fishery industry and resources,
- 3. Transfer in focus on the energy sources from the
- land to the continental shelves,
- 4. Rapid development of the ocean science and new
- discoveries of the sea bottom resources,
- 5. Ocean piracy, drug trafficking and other illegal
- activities including migrations and IUU fishing.

GLOBAL EVOLUTION OF FISHERIES – after depleting (blue arrow) the more vulnerable large fish at the top of various food chains, people end up targeting very small fish and invertebrates. The bottom invertebrates at the lower left part of the graph disappear because of trawling, which leaves large mudbeds in its wake. (Source: Daniel Pauly, 2007)

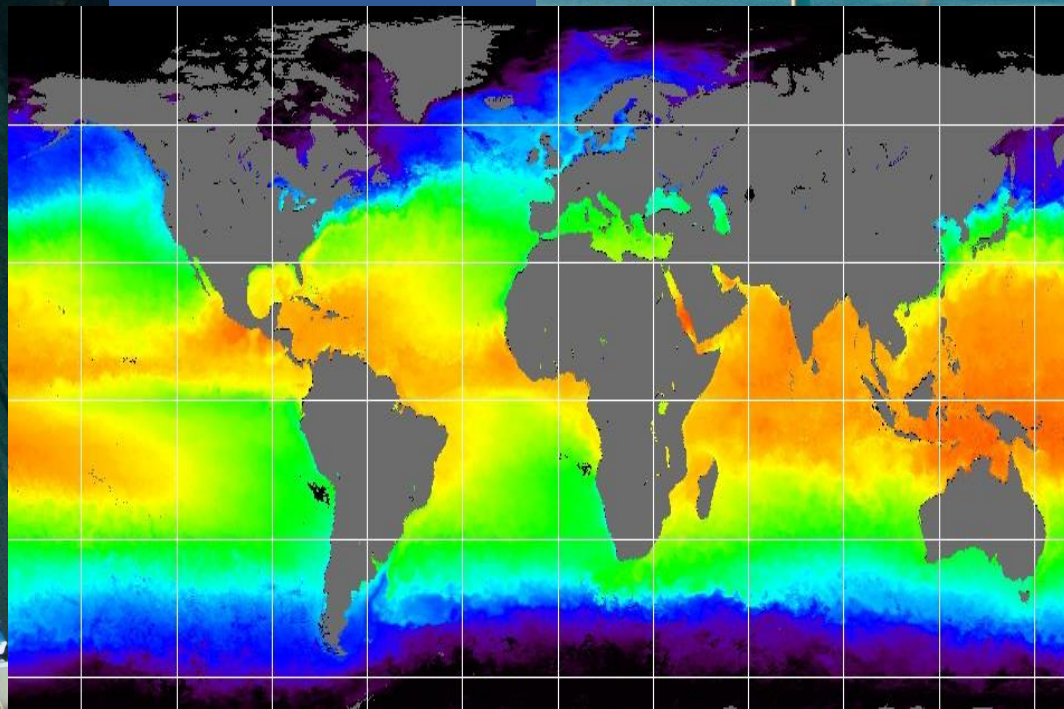


Renewable source of energy

Kinetic, termal energy, bio-fuels from the sea

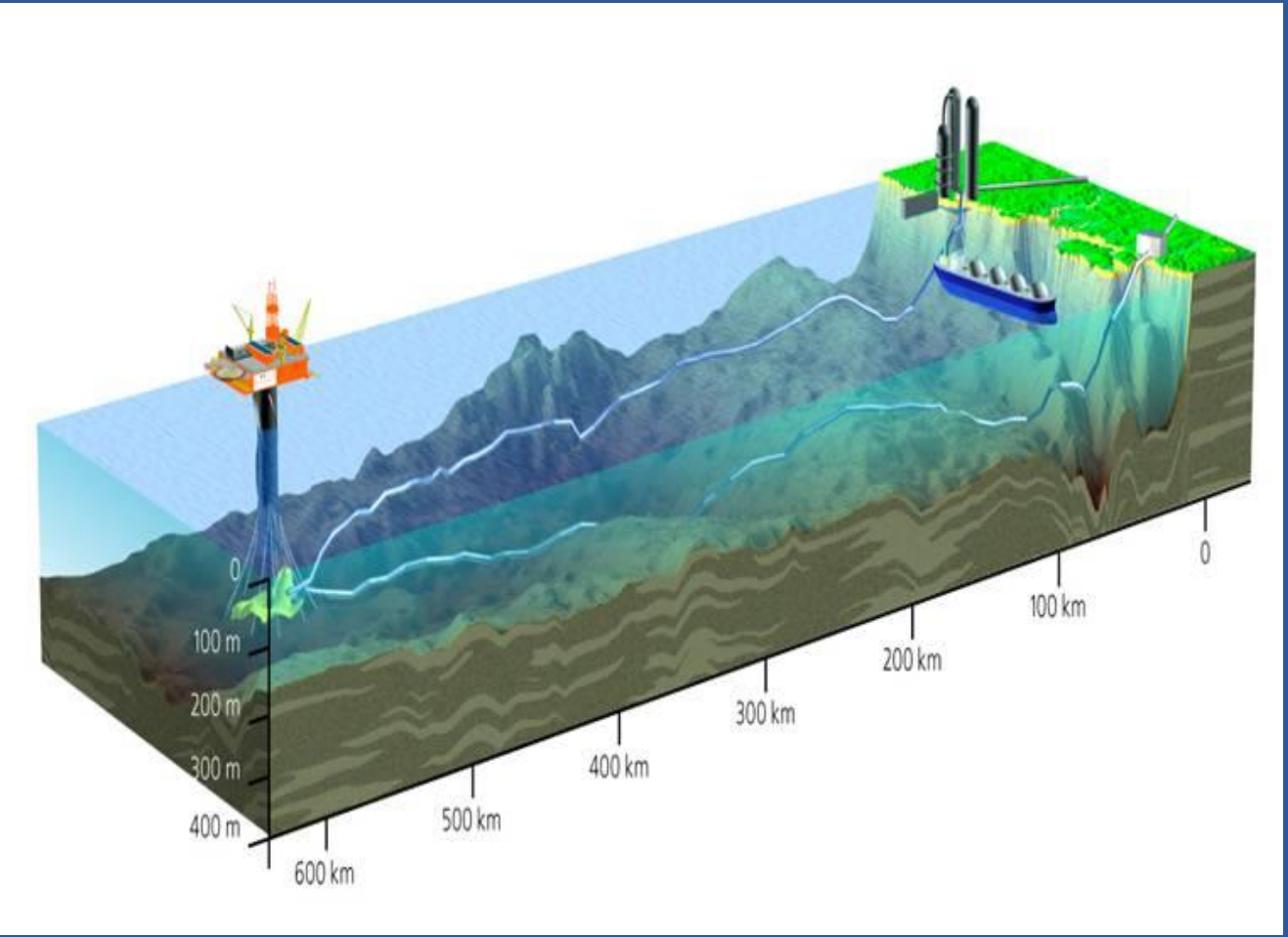


Bio-fuels from marine algae

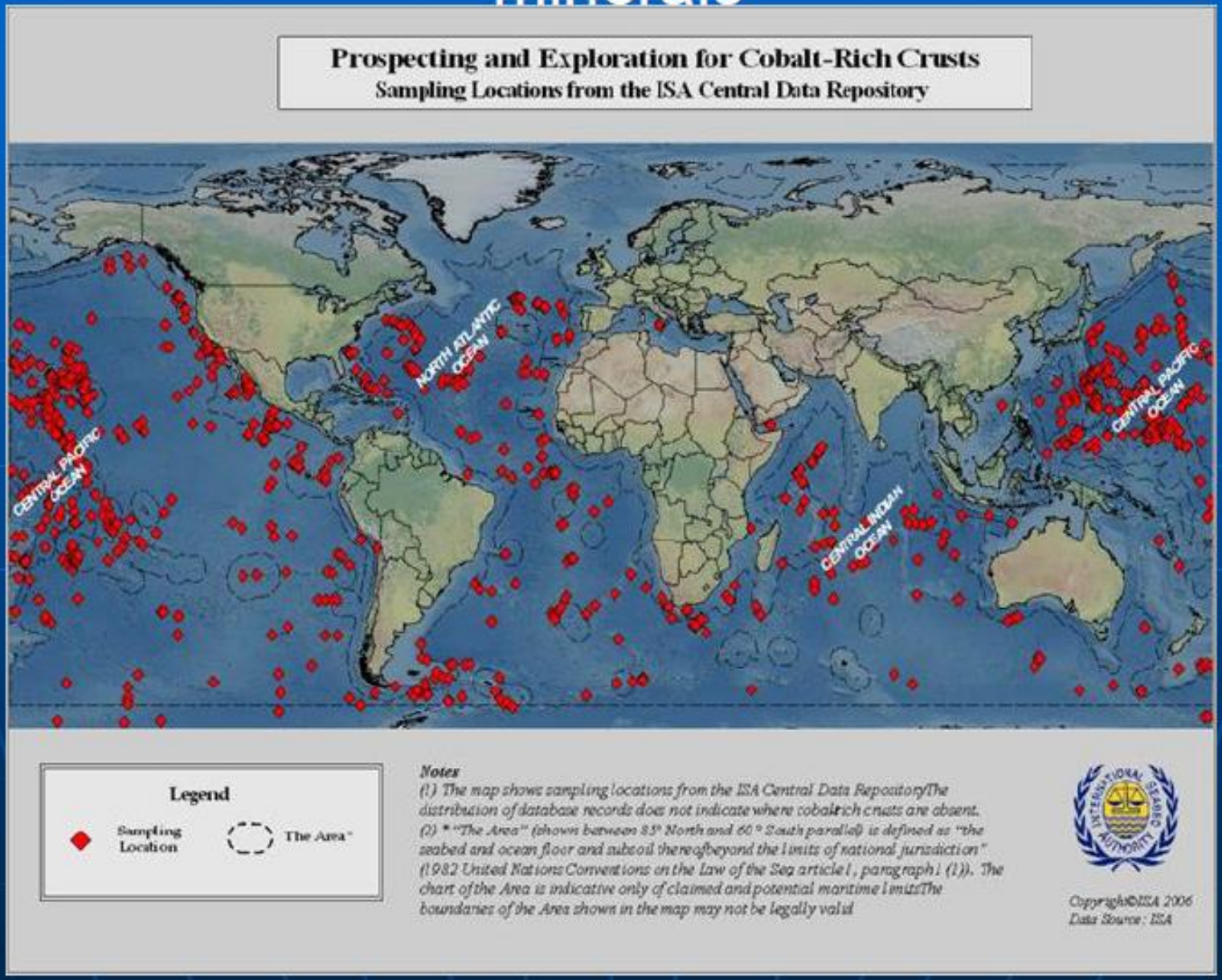


Transfer of companies from lands to the sea

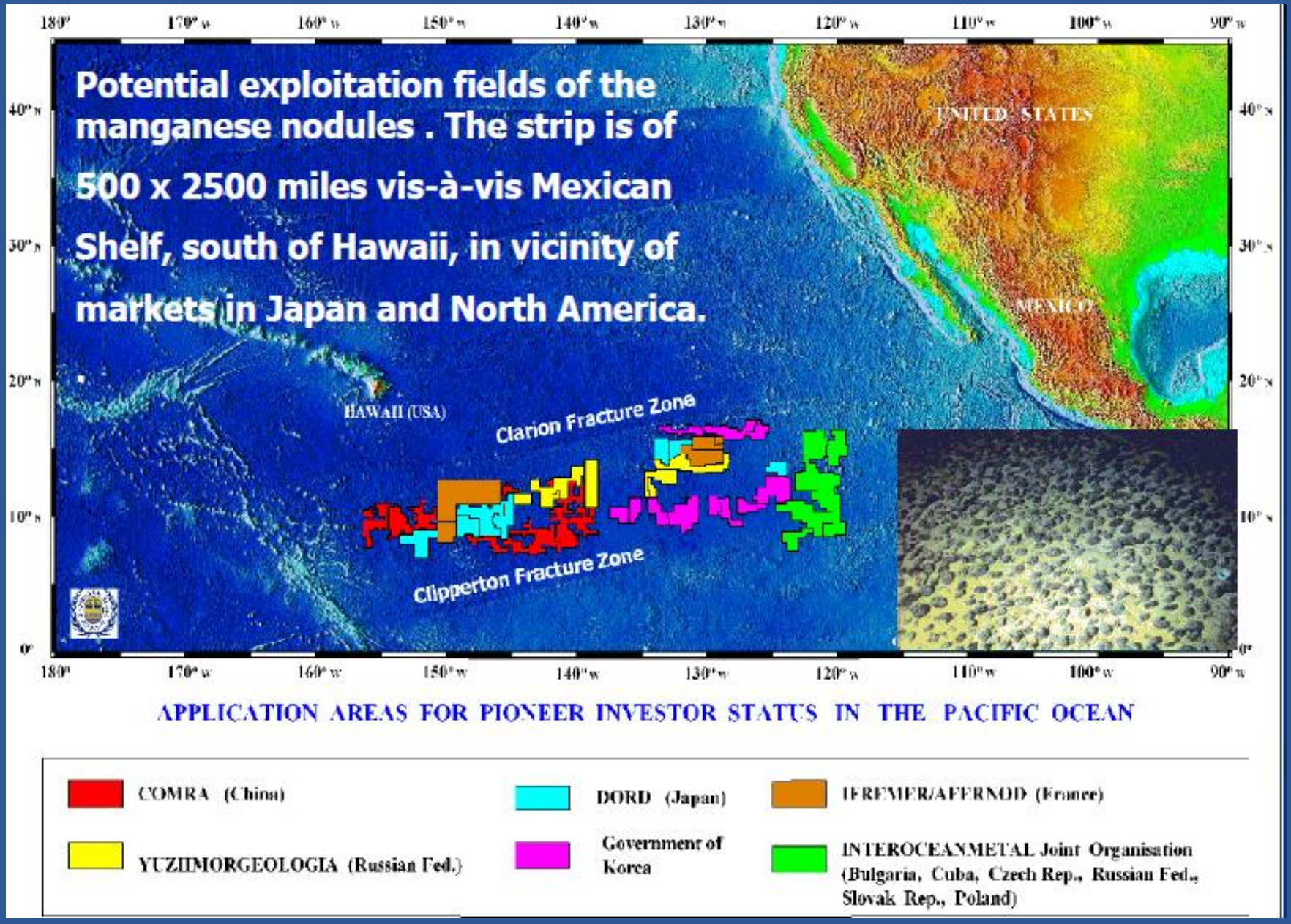
Example: investment plans to exctract gas from the Shtockman Field (Russia) by French and TOTAL and Norwegian Stat-Oil.



Distribution of discovered bottom sea minerals



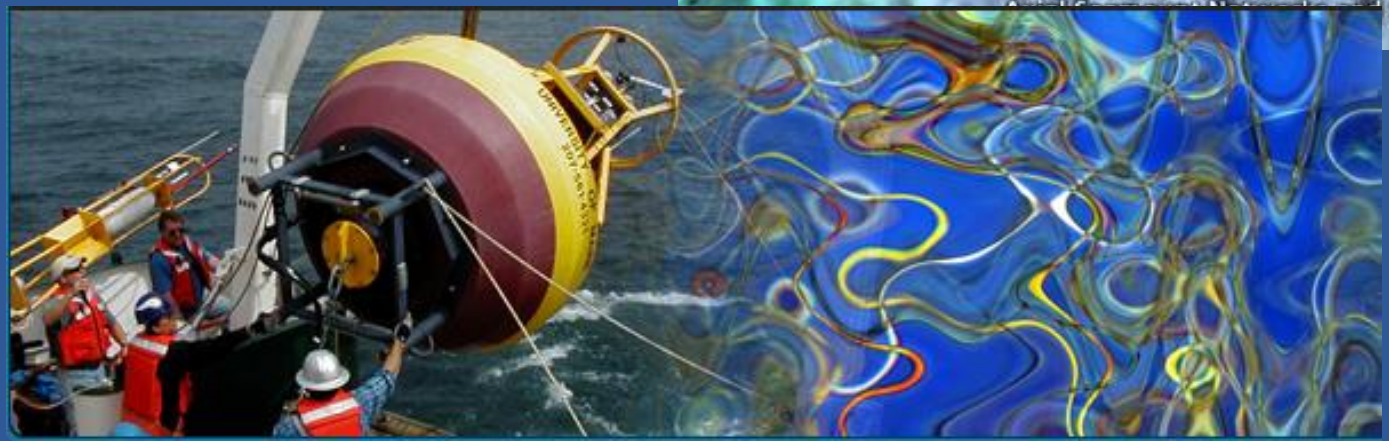
Mining ship of De Beers specializing in diamond extraction from the Namibia shelf


Potential exploitation fields of the manganese nodules . The strip is of 500 x 2500 miles vis-à-vis Mexican Shelf, south of Hawaii, in vicinity of markets in Japan and North America.
UNITED STATES
MEXICO
HAWAII (USA)
Clarion Fracture Zone
Clipperton Fracture Zone
180°
170° w
160° w
150° w
140° w
130° w
120° w
110° w
100° w
90° w
40° n
30° n
20° n
10° n
0°
APPLICATION AREAS FOR PIONEER INVESTOR STATUS IN THE PACIFIC OCEAN
COMRA (China)
DORD (Japan)
IFREMER/AFERNOD (France)
YUZHMORGEOLOGIA (Russian Fed.)
Government of Korea
INTEROCEANMETAL Joint Organisation (Bulgaria, Cuba, Czech Rep., Russian Fed., Slovak Rep., Poland)

Newest tendencies in the oceanographic research

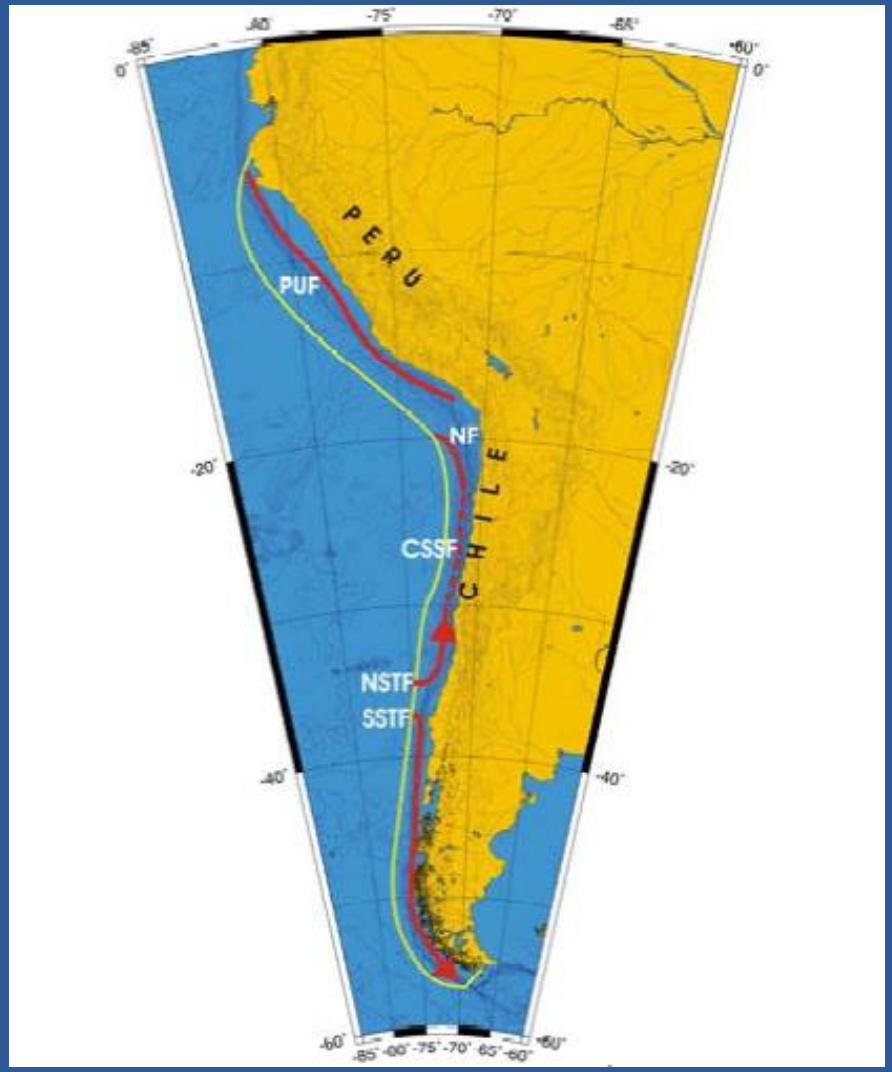
Understanding of interrelationships between geological specifics of the sea bottom, climatic, biological, chemical, physical and hydrometeorological changes in the oceans.

Also increasing role of the satellite observations .

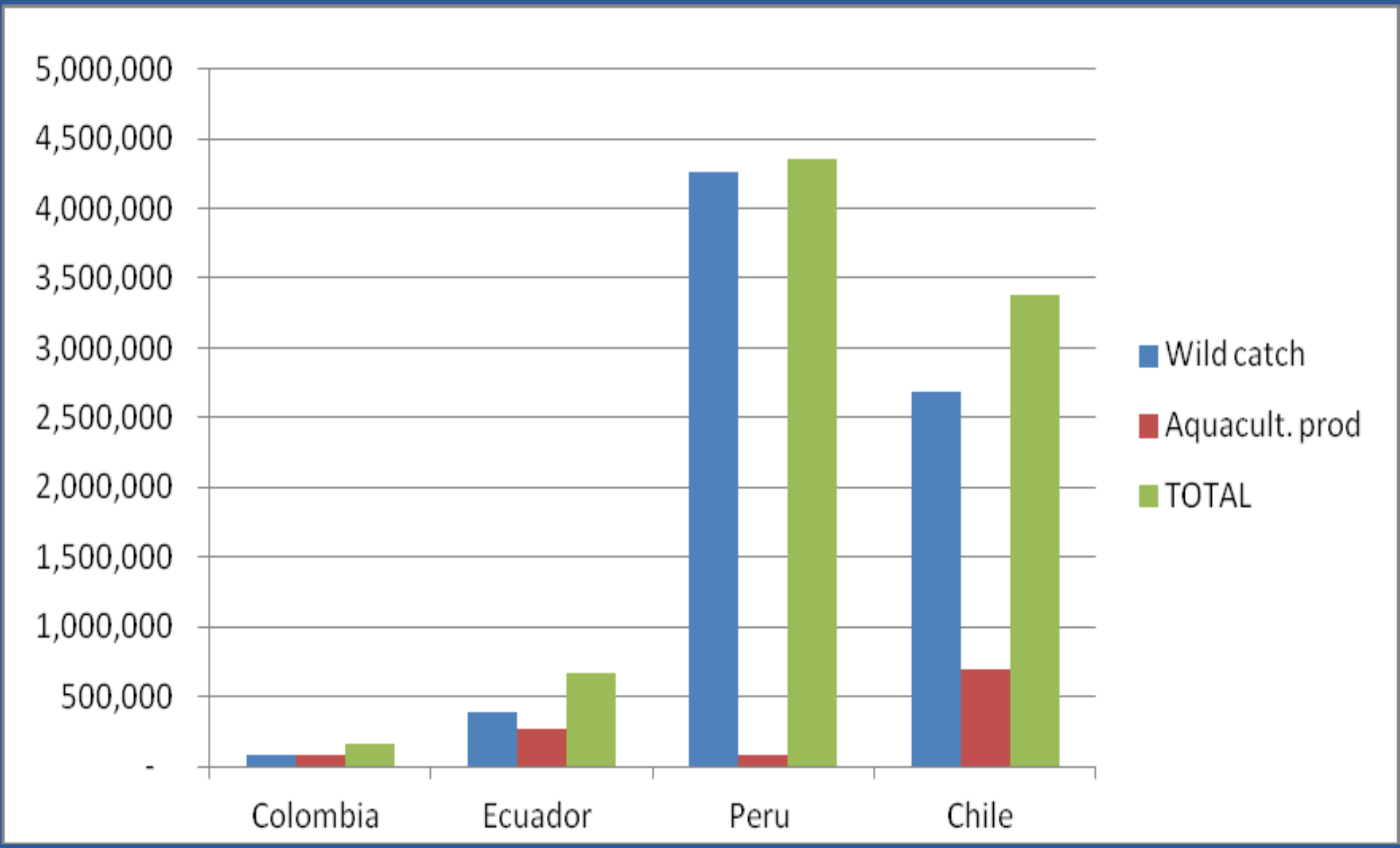


REGIONAL FISHERIES PROBLEMS: THE CASE OF HUMBOLDT CURRENT LARGE MARINE ECOSYSTEM

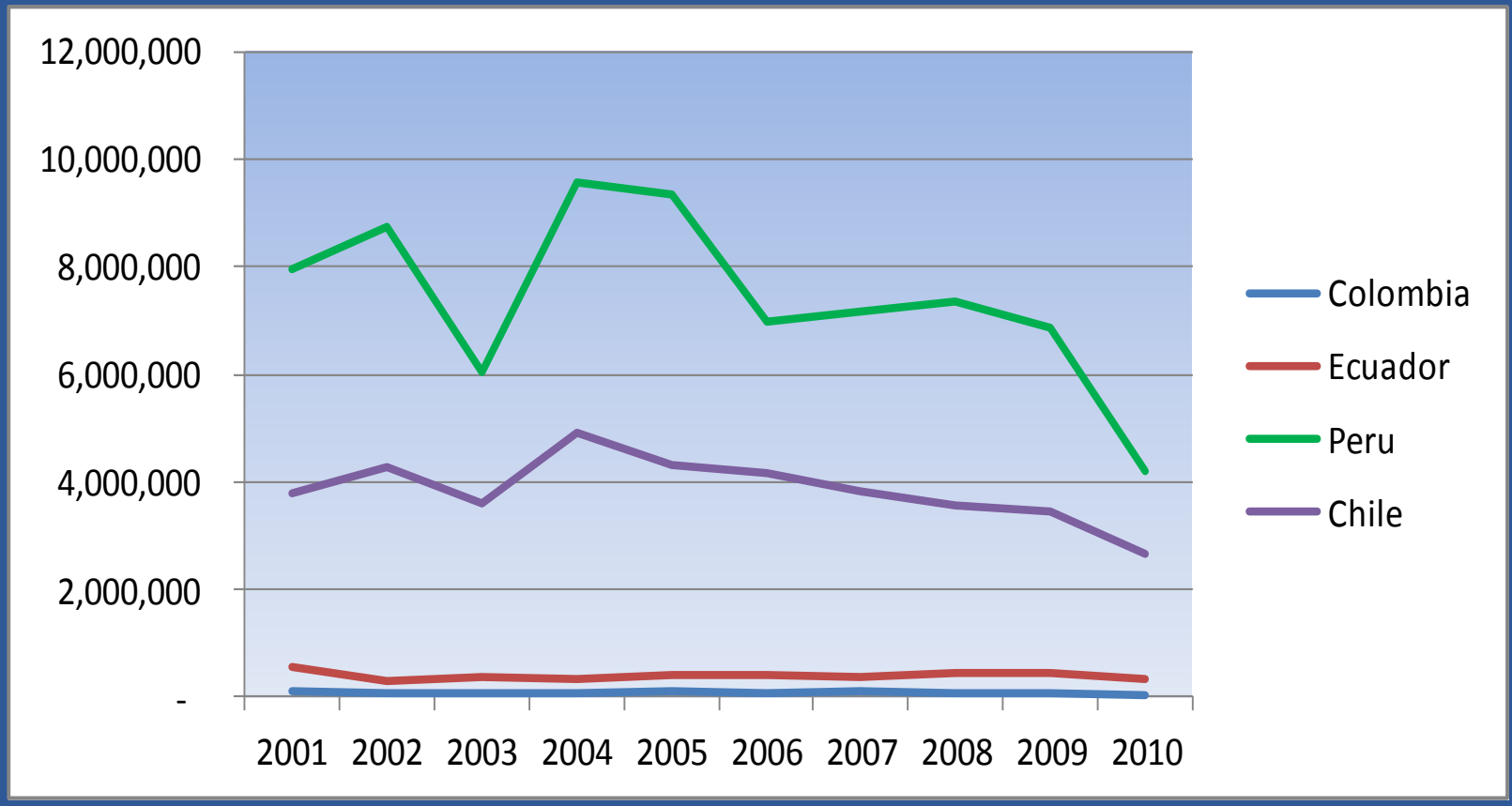
- Transboundary resources,
- Overfishing,
- The need for an ecosystem-based resource management,
- Sea border issues,
- Open ocean fishery resource management problems,
- Grievances of coastal ethnic populations,
- Impacts of aquaculture,
- Marine and fresh water pollution.



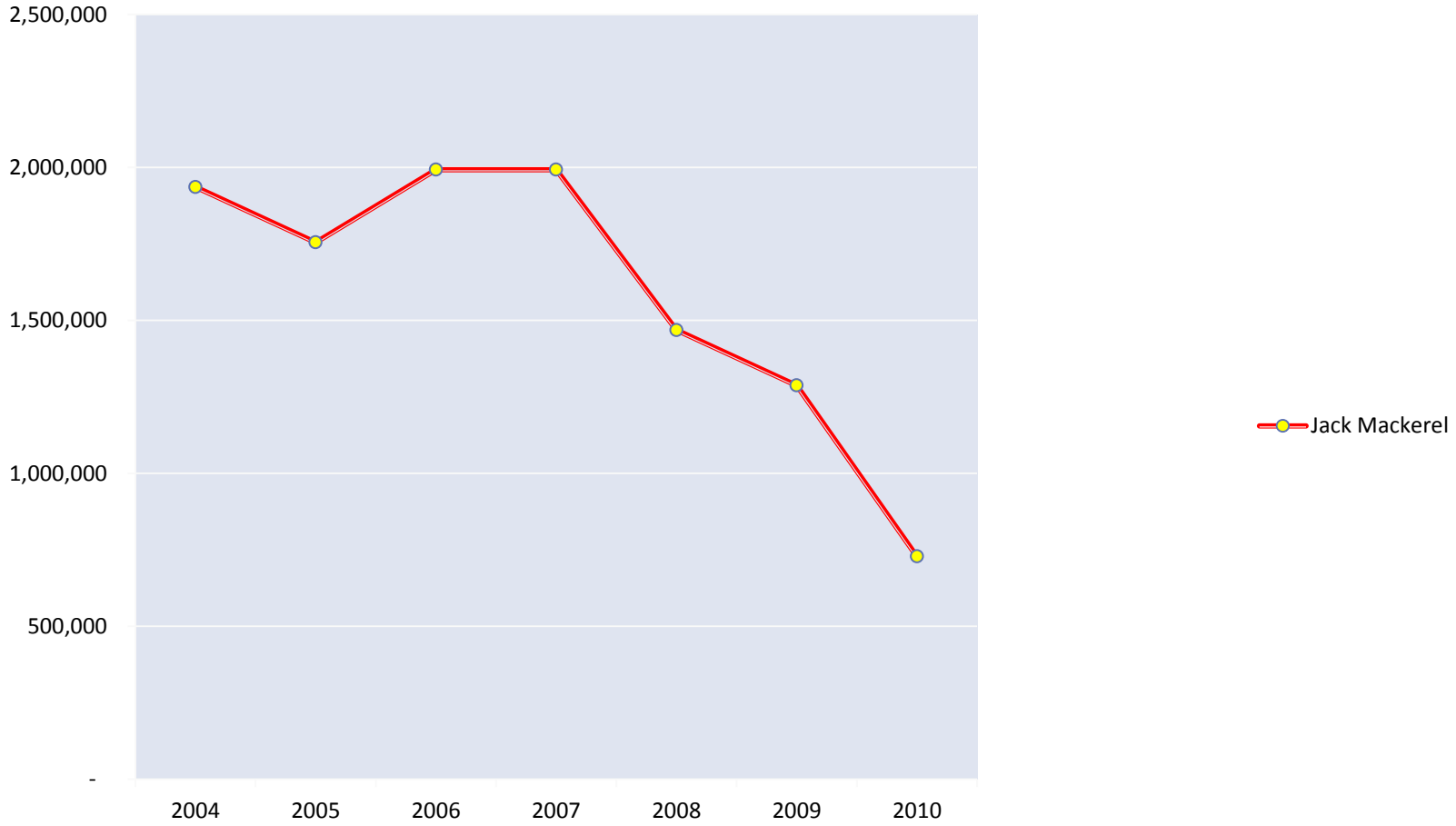
Marine catch and aquaculture production in Colombia, Ecuador, Peru and Chile, in 2010 (in m. tons)

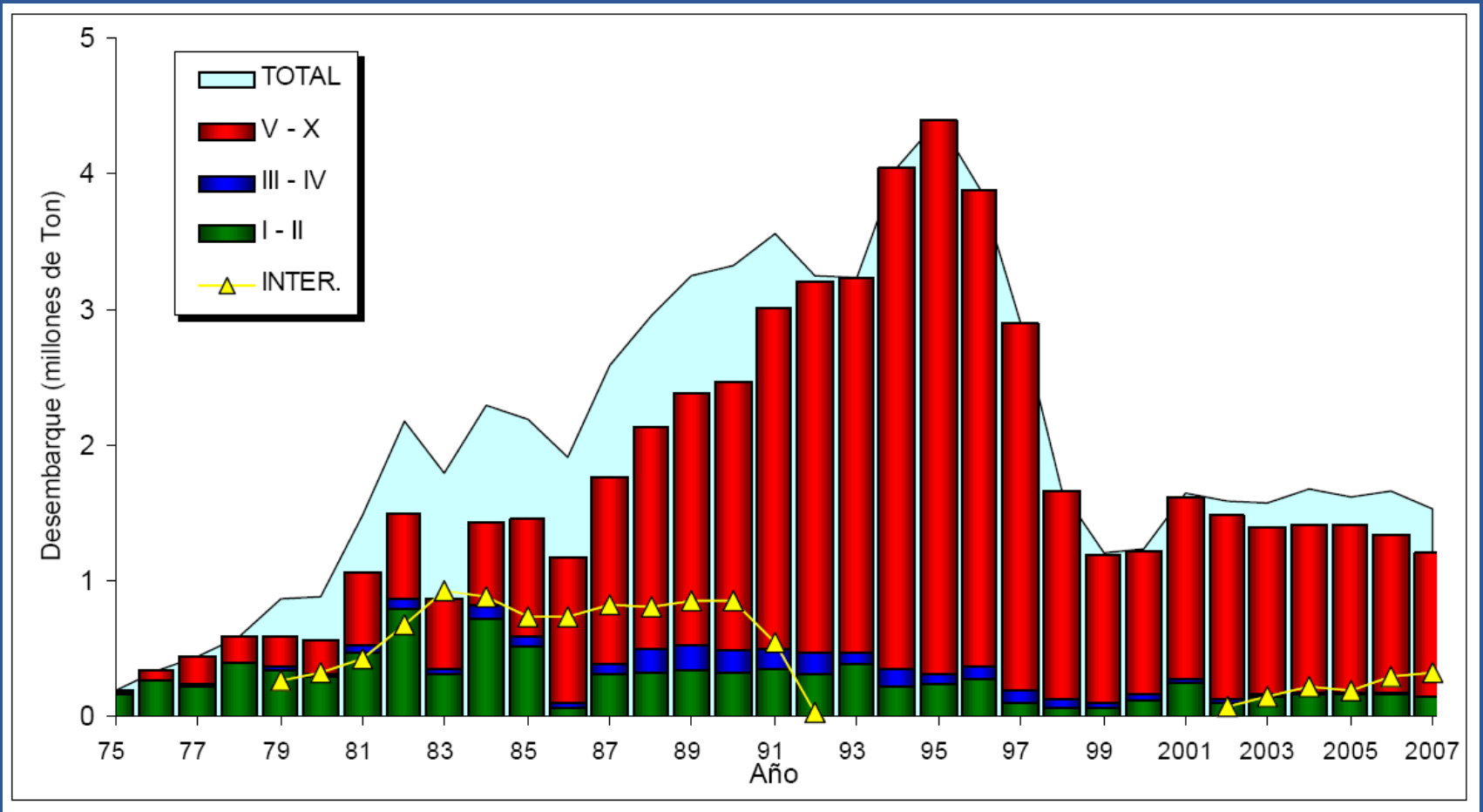


Catch trends in four South American Pacific coastal states, 2001-2010 (FAO 2011)



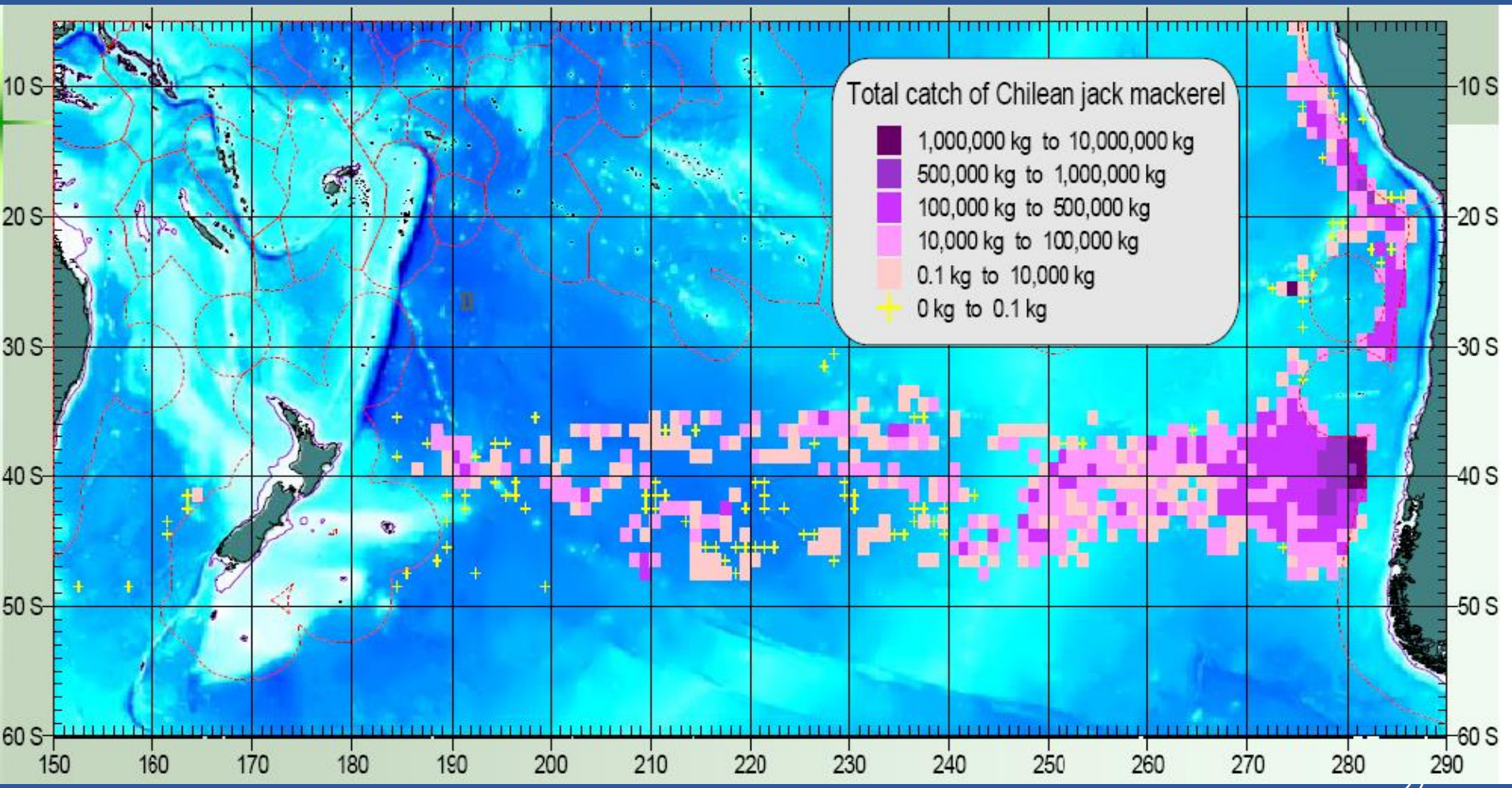
Catches of Jack Mackerel (Jurel) in the South Pacific (m. tons) - FAO 2011



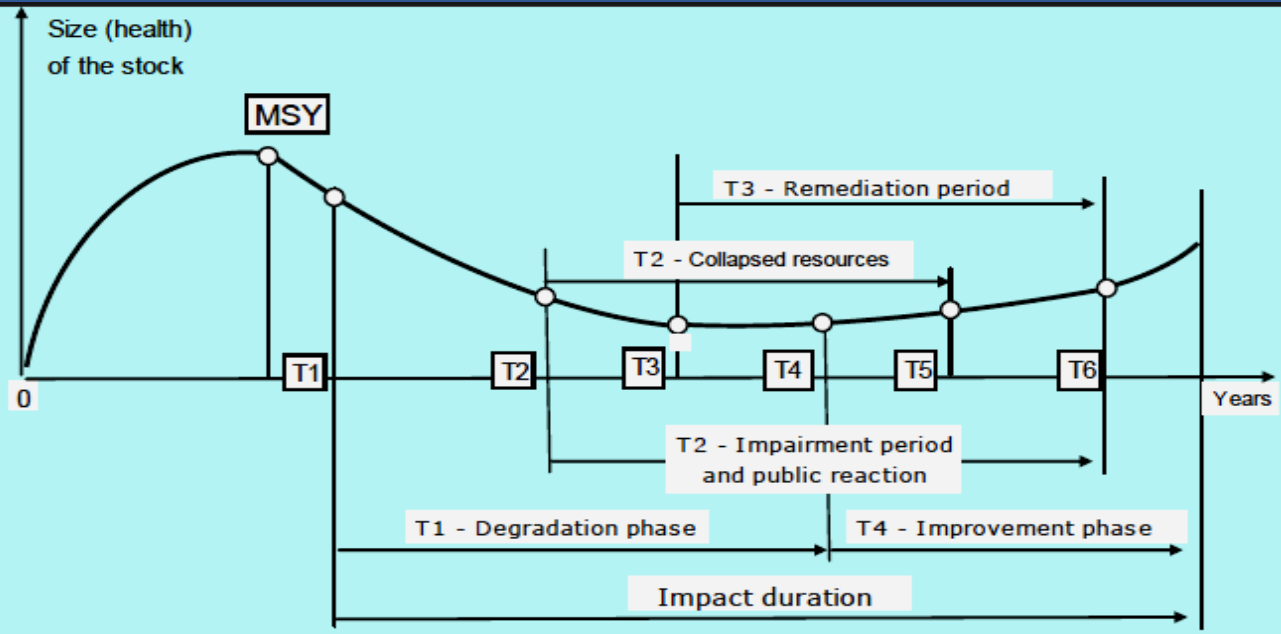


Landings of Jack mackerel in millions of tons, from 1975 to 2007 (through September), geographic area within the EEZ of Chile (I-II Regions), (III-IV Regions), (V-X Regions), and showing the total landings and catches of the international fleet outside the EEZ

Concentrations of the Jack Mackerel resources in the South Pacific and inefficiency of the Regional Fishery Management Organization (Source: Kaczynski, 2012)



Degradation of marine living resources, public awareness and policy/ecosystem inertia



MSY	Maximum sustainable yield of the wild living resources
T1	Detection of resource depletion, "alarm bell ringers", specialized institutions
T2	Development of public awareness until depletion is brought to political agenda
T3	Policy lag - debates until remdiation is determined and implemented (several years)
T4	Ecosystem reaction to policy and management/conservation measures (inertia)
T5	Technical-financial lag needed to implement decisions
T6	Duration of remediation measures

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Figure 3. Degradation of marine living resources, public awarenss and policy/ecosystem inertia

Natural and Policy Inertia in Conservation Measures

* When fish stocks are depleted and whole ecosystem is collapsed people are extracting smaller and smaller animals from predatory to prey species (tuna – anchovies, whales – krill).

* Improved fishing techniques mask declining yields of traditionally exploited resources

* Reactions to the declining status of resources are usually late and it takes usually 5 or more years before conservation measures are applied.

Where foreign pollution-intensive industries go?

- The balance of global production in pollution-intensive industries is shifting to the developing countries because of their reluctance to implement, monitor, and enforce strict environmental controls.

- Capital and technology is moving where environmental regulations are not stringent and costs of production are low.
- Social and environmental costs are not considered.

International policy responses: The concept of "Blue Economy"

Sustainable use of marine resources

Impacts of resource exploitation must be seen in the context of the whole marine ecosystem

The cost of marine environmental degradation is included in the price of the final products sold in the market ,

Quality of marine environment should be left in a better status than it was found at the beginning of human intervention in the ecosystem

ARE IMPORTING MARKETS RESPONSIBLE FOR DEGRADATION OF COASTAL ENVIRONMENTS AND DECLINE OF THE NATURAL RESOURCES IN DEVELOPING COASTAL STATES?

- **YES** - Because consumption (imports) of environmental goods (fish, timber, minerals) and services (marine/coastal tourism) are associated with unconcern by individuals, private companies and institutions about the environment and sustainability of natural resources.

- **NO** - As management of natural environments and use of their resources are a sovereign responsibility of the exporting countries.

LESSONS FROM INTERNATIONAL EXPERIENCE: CHALLENGES AND OPPORTUNITIES FOR KOREA

1. The need to expand marine education in the country,
2. Promoting social awareness on importance of country's marine economy,
3. Conservation of the coastal zone resources,
4. Better use and protection of the ocean resources,
5. Progress and expansion of marine science and technology development,
6. Promoting investment in maritime economy by the private sector and expansion of maritime infrastructures,
7. Participation in shaping international regional and global marine policy.

CONCLUSIONS

1. Globalization played important role in the world marine economic development,

2. Growth of population, technology and increasing demand for sea protein as well as ocean energy are leading to increasing pressures on and decimation of the ocean resources,

3. Consumption markets, uncontrolled fishing and investment of foreign capital accelerated overfishing of marine living resources and degradation of the marine environment especially in developing countries,

4. Urgent conservation measures and ocean activity controls must be implemented on the national, international and global levels,

5. Aquaculture and mariculture are important suppliers of the marine living resources lost in the wild by overexploitation and degraded aquatic environment. These, however, bring new environmental problems and generate tensions between industry and local coastal communities.