

Dialogues between scientists and stakeholders on making ocean acidification a policy focus in Japan

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Outline of OPRI-SPF

Since 2000, the Ocean Policy Research Institute has worked as a think tank which aims for a harmonious relationship between mankind and the oceans through ocean policy research, policy recommendations and publication of information.



Maritime Security

- Promoting Maritime Security Cooperation
- Maritime Security Information Report
- Collection and dissemination of information on Island Studies



Conservation of the Ocean Environment

- Marine biodiversity conservation and resource use
- Research on adaptation measures for global warming and ocean acidification



Publicizing information on the Oceans

- Publication of Ocean News Letter
- Hosting of Ocean Forum
- Publication of White Papers on the Oceans



Comprehensive Ocean Policies

- Research project on compiling and promoting comprehensive ocean policies*



Islands and their Surrounding Ocean Areas*

- Support to IO Net Implementation



Integrated Coastal Management (ICM)*

- Enforcement of model projects on Integrated Coastal Management



Ocean Education*

- Project for enhancing ocean education in the Japanese school system



Human Resource Development for Maritime Fields*

- Promotion of International Cooperation in Ocean Related Fields (WMU)



Arctic Ocean*

- Study on Effective International Cooperation to Arctic Governance

Japan's Basic Act on Ocean Policy and Scientific Knowledge

Earth Summit(1992, Rio)

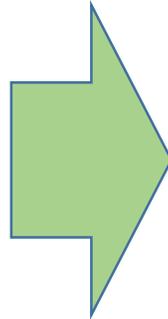


WSSD(2002, Johannesburg)



Rio+20(2012, Rio)

SDGs(2015),
UN Ocean Conference(2017)...



We contributed to the enactment of the 2007 Basic Act on Ocean Policy under the concept of sustainable use of the Ocean.

Basic Act on Ocean Policy (2007)



Basic Plan on Ocean Policy (2008)

The Plan is revised every five years, with the latest revision was in May, 2018.

Basic Act on Ocean Policy (2007)

Article 4 (Improvement of Scientific Knowledge of the Oceans)

In consideration of the fact that scientific knowledge of the oceans is indispensable for the proper development and use of the oceans and conservation of the marine environment, while many scientifically unsolved fields remain with regard to the oceans, the scientific knowledge of the oceans shall be improved.

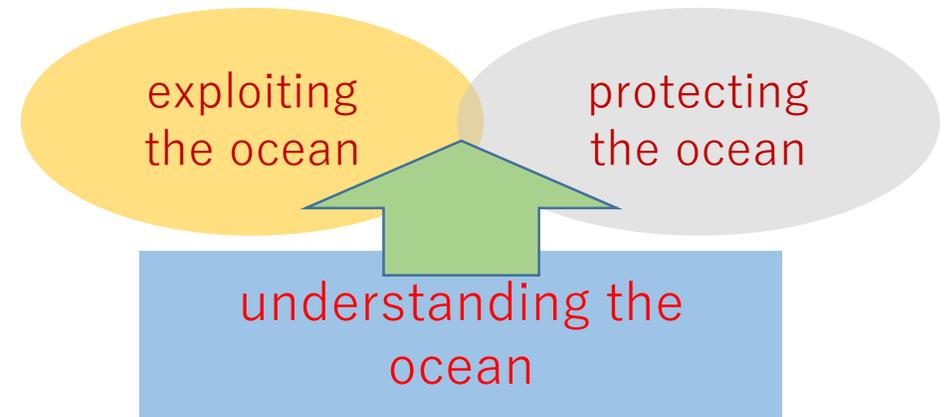
Basic Plan on Ocean Policy 2008 and Scientific Knowledge

General Remarks

(3) Goals and period of this plan

In promoting ocean policy, it is important to give due considerations to the **balance and collaboration** between the ideas of “**understanding** the sea,” “**protecting** the sea” and “**exploiting** the sea,” by deepening knowledge on the sea, reflecting the results as necessary on measures for realizing sustainable use of the sea and thereby further enhancing these measures. Based on such recognition, the Basic Act on Ocean Policy stipulates the following **six basic principles**.

- (i) Harmonization of the development and use of the sea with the preservation of the marine environment
- (ii) Securing the safety and security of the sea
- (iii) **Enhancement of scientific knowledge of the sea**
- (iv) Sound development of marine industries
- (v) Comprehensive governance of the sea
- (vi) International partnership with regard to the sea



5-year Program on Ocean Acidification(OA)

OPRI-SPF launched a 5-year program of research on ocean acidification in 2015 to observe and analyze the changing situation. Through this program, we aim to raise awareness regarding ocean risks and develop policy recommendations in order to fill the perception gaps between the increasingly serious situation and current levels of understanding.



International Conference in 2017



- Launched a 5-year program and held an International symposium

- Held an International conference and set up the “Marine Crisis Watch(MCW)” website.

- Submit policy proposals on the promotion of related policy measures and open the MCW website.

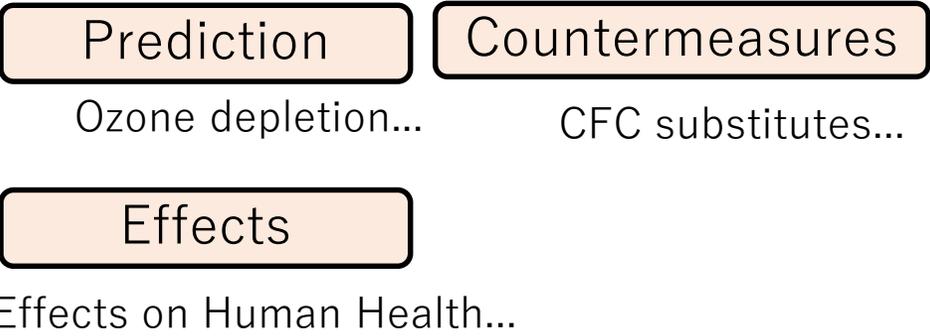
↓ Strengthening network, hosting workshops

- Will hold international symposium and submit a policy proposals on specialized countermeasures.

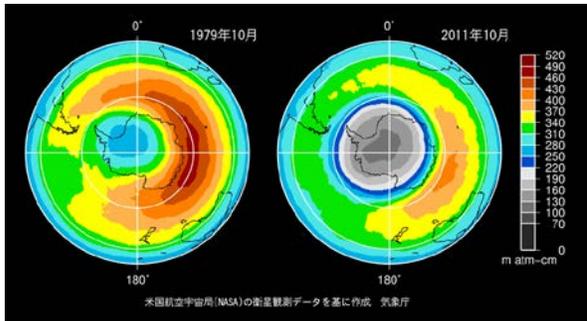
**Main scope of our study is
“Dialogues between scientists and stakeholders ”**

Comparison of the Uncertainty between CFCs and OA

CFCs A science/policy success story

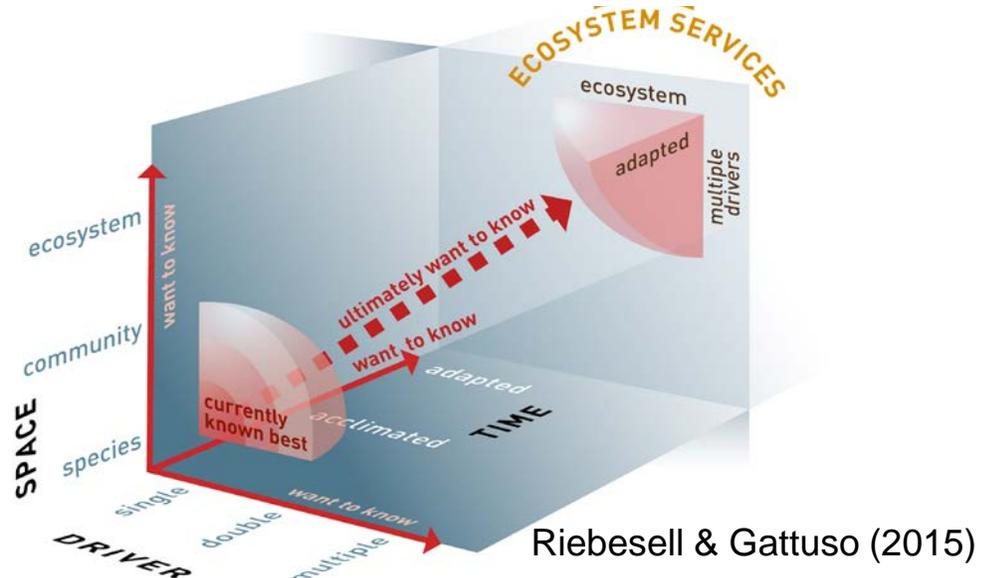
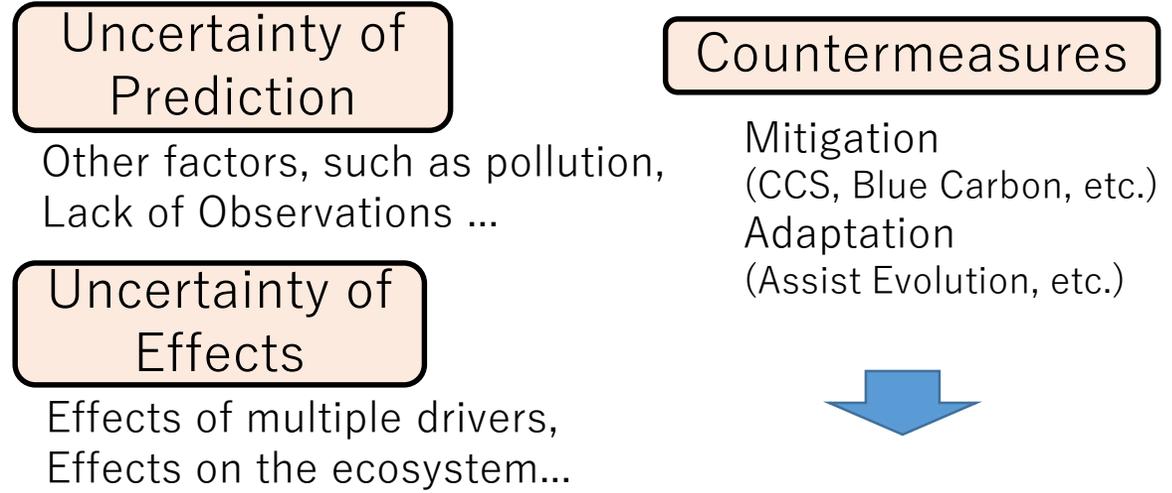


Montreal Protocol on Substances that Deplete the Ozone Layer (1987)



Distribution of ozone in southern hemisphere (Japan Meteorological Agency)

OA Reduction of uncertainties is necessary to be a science/policy success story



Riebesell & Gattuso (2015)

- 1) Measures under the precautionary approach.
- 2) Expansion of scientific knowledge is indispensable.

We emphasized these two countermeasures, because clear effects on OA is not seen around Japan.

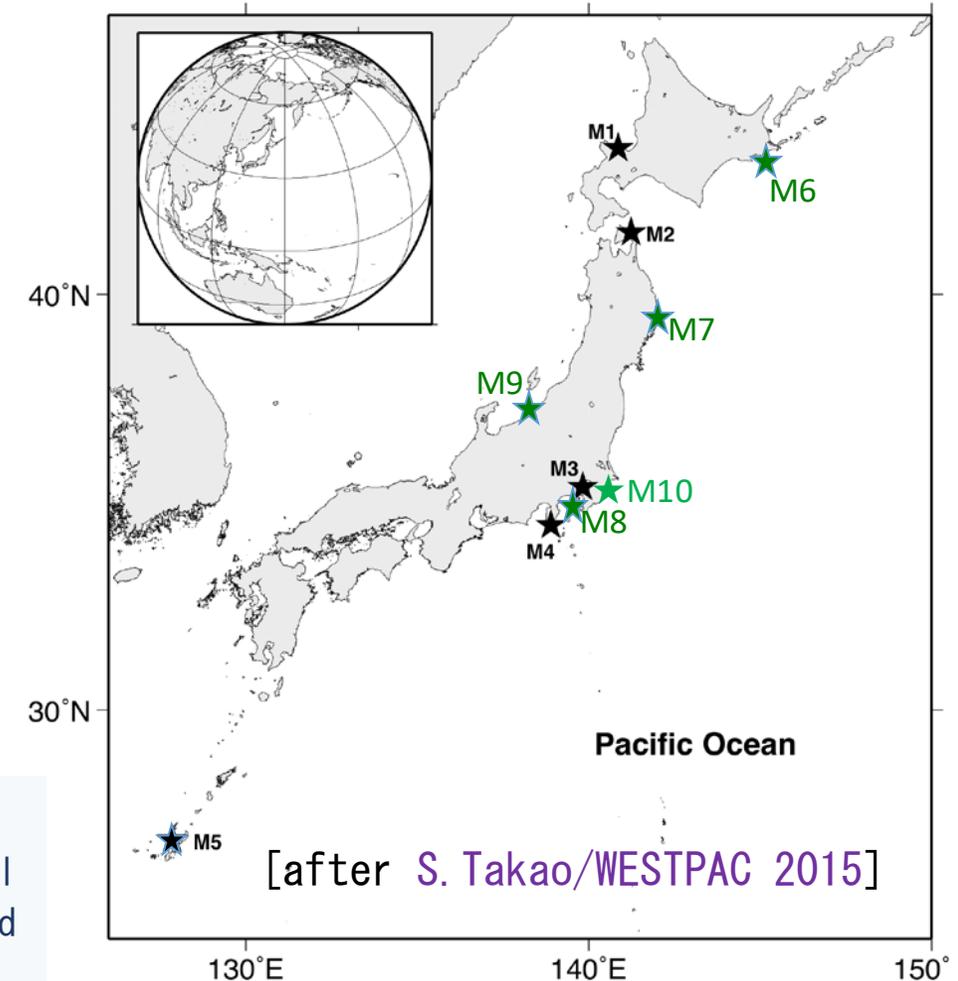
Proposals toward Japan's Basic Plan on Ocean Policy

1: Promotion of understanding based on scientific knowledge and consideration of countermeasures

- **Scientific research** on ocean acidification's impacts on marine creatures and marine ecosystems should be promoted.
- In order to monitor the progress of ocean acidification, hydro-chemical **time-series observations** should be continued.
- Efforts should be made on related **technical development** and international standardization.
- Studies should be **promoted on adaptation measures**.

Figure 3. Ongoing Japan-coast pH monitoring sites

Source: T.Ono, International conference "Impacts of Global Warming and Ocean Acidification on Marine Ecosystems and Necessary Policy Measures" in Tokyo on 19–20 January 2017



Proposals toward Japan's Basic Plan on Ocean Policy

2: Increase international contributions

- Participate in and contribute to the international framework of data sharing.
- Support to developing countries in the Asia Pacific region.

→Take initiatives to broaden “Rule of Law” and “Policies based on Scientific Knowledge” as universal principles in the field of ocean policy for the world

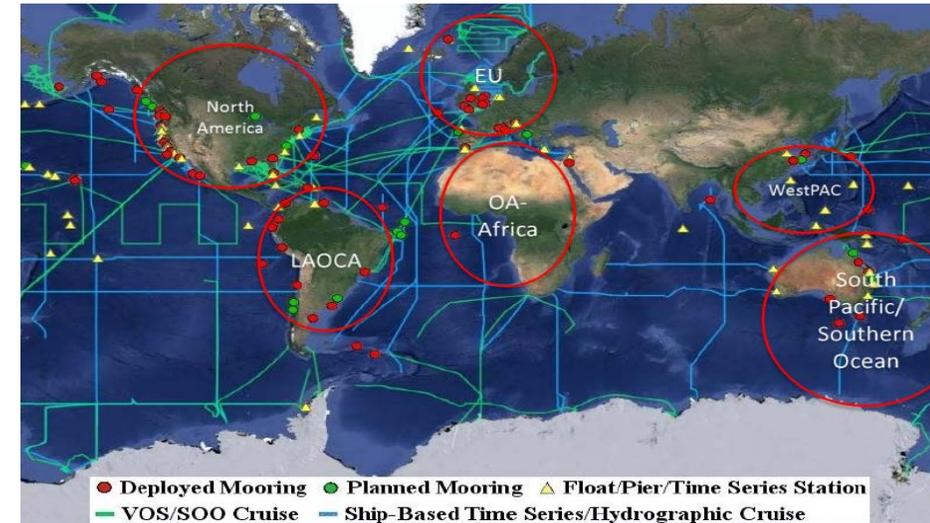
(Third Basic Plan on Ocean Policy, Chap.5 “International collaboration and cooperation”)

3: Promote Mitigation Measures

-If emission reduction measures of carbon dioxide aren't sufficient, the ocean environment will be affected seriously through global warming and ocean acidification.

→Work on reduction measures towards achievement of the Paris agreement.

(Third Basic Plan on Ocean Policy, Chap.5 “International collaboration and cooperation”)



Libby Jewett/ICP2018, 2018.5

Proposals toward Japan's next Basic Plan on Ocean Policy

4: Promotion of Public Awareness Activities



Lectures
(Oct. 2016)

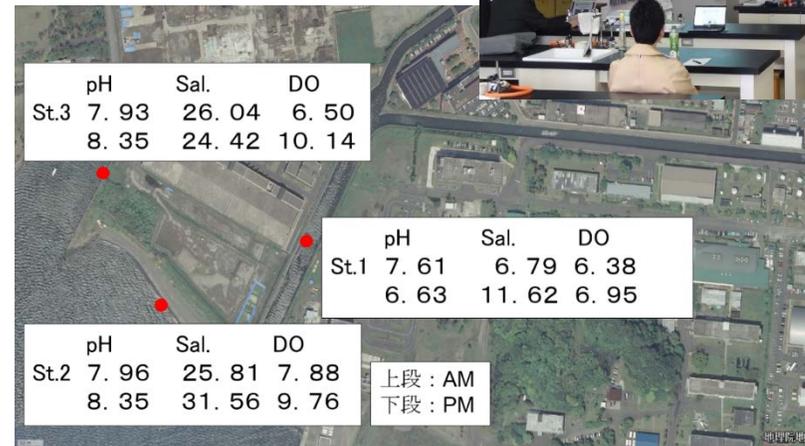


Planning
(Mar. 2017)

As part of the efforts to raise public awareness on OA in Japan, OPRI-SPF has been coordinating guest lectures on the issue at Kanagawa Prefectural Marine Science High School since 2016. In August 2017, they started pH monitoring activities in areas near the school.



Mar. 2018



Reporting

Monitoring (Aug. 2017-)

Proposals toward Japan's next Basic Plan on Ocean Policy

4: Promotion of Public Awareness Activities

We are also developing a website called “Marine Crisis Watch”, with the help of JAMSTEC.

Top page (Only Japanese)

The screenshot shows the homepage of the Marine Crisis Watch website. The header includes the logo and the title "海洋危機ウォッチ プロトタイプ版" (Marine Crisis Watch Prototype Edition) by OPRI-SPF. The main navigation menu includes Home, 海の温暖化・海洋酸性化 (Ocean Warming/Acidification), 海の予測情報 (Ocean Forecast Information), 観測の情報 (Observation Information), ニュース (News), 学習コーナー (Learning Corner), and サイトポリシー (Site Policy). The "最新のニュース" (Latest News) section lists several articles from 2017 and 2018. The main content area is titled "海洋危機ウォッチとは" (What is Marine Crisis Watch) and explains the website's purpose in monitoring ocean warming and acidification. At the bottom, there are two maps showing "今日の予測水温" (Today's predicted sea surface temperature) and "今日の予測pH" (Today's predicted pH) for the North Pacific region.

Near real time forecast date

This screenshot shows the "海の予測情報" (Ocean Forecast Information) page. The left sidebar contains controls for data type (水温 (°C), 塩分(psu), pH), cross-section direction (水平断面, 鉛直断面), data range (日平均, 月平均), display date (2015/07/06), animation (海の变化を動画でみられます), and data source (JCOPE2). The main area features a map of the North Pacific Ocean with a color-coded temperature forecast. A color scale at the bottom ranges from 16°C (blue) to 32°C (red). The map shows a clear temperature gradient across the region.



In order to address the issues of ocean warming and acidification, OPRI-SPF is developing the website “Marine Crisis Watch”.
<https://www.marinecrisiswatch.jp>

Proposals toward Japan's next Basic Plan on Ocean Policy

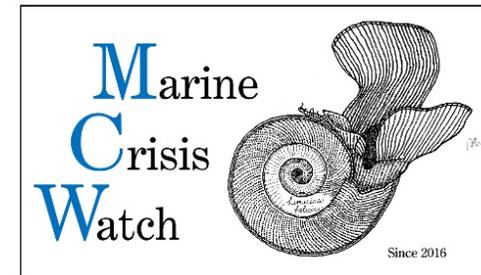
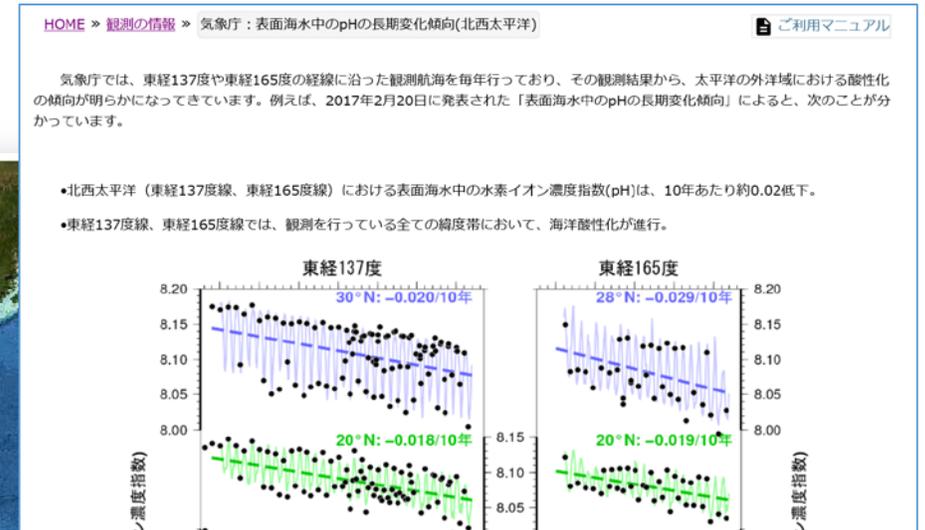
4: Promotion of Public Awareness Activities

Sharing the information on Monitoring activities for general public

The screenshot shows a website navigation menu with '観測の情報' (Monitoring Information) highlighted in a red box. Below the menu, there are three main sections:

- 気象庁：表面海水中のpHの長期変化傾向(北西太平洋)**
気象庁では、東経137度や東経165度の経線に沿った観測航海を毎年行っており、その観測結果から、太平洋の外洋域における酸性化の傾向が明らかになってきています。
[続きを読む](#)
- JAMSTEC：西部北太平洋亜寒帯域におけるpHの定点観測**
国立研究開発法人海洋研究開発機構では、西部北太平洋亜寒帯域の観測地点St. ための時系列定点観測が実施されています。
[続きを読む](#)

A satellite map of the North Pacific Ocean is shown, with a red dot indicating a monitoring location in the western North Pacific. A speech bubble over the map says '気象庁：定期海洋観測 観測記事'.



In order to address the issues of ocean warming and acidification, OPRI-SPF is developing the website "Marine Crisis Watch".
<https://www.marinecrisiswatch.jp>

Proposals toward Japan's next Basic Plan on Ocean Policy

4: Promotion of Public Awareness Activities

News Article

Home 海の温暖化・海洋酸性化 海の予測情報 観測の情報 **ニュース** 学習コーナー サイトポリシー

HOME > ニュース

- [2018年2月 8日] 【事業紹介】 IPCC評価報告書と海洋酸性化
- [2018年1月16日] 【研究紹介】 神奈川県立海洋科学高校におけるpH測定について
- [2018年1月 6日] 【研究紹介】 海洋酸性化と人工的の海洋アルカリ化
- [2017年12月22日] 【イベント紹介】 海洋酸性化の観測モニタリング・トレーニングワークショップ
- [2017年12月 1日] 【研究紹介】 海生生物への海洋酸性化の影響
- [2017年10月20日] 【ニュース】 日本海洋学会 2017年度秋季大会開催
- [2017年10月 6日] 【イベント紹介】 PICES-2017 Annual Meeting 開催
- [2017年9月 8日] 【イベント紹介】 蘭越町貝の館 特別企画展示『もし海がなかったら』および 特別講演会『海の温暖化と酸性化』

【事業紹介】 IPCC評価報告書と海洋酸性化
2018年2月 8日

IPCC (気候変動に関する政府間パネル) は、気候変動に関する科学を評価するための国際組織で、1988年に世界気象機関 (WMO) と国連環境計画 (UNEP) のもとに設立され、195か国・地域が参加しています。気候変動に関する最新の科学的知見や文献についてとりまとめた報告書を作成し、各国政府の気候変動に関する政策に科学的な基礎を与えることを目的としています。代表的な報告書である評価報告書 (Assessment Report, AR) は、1990年の第1次以降2~6年おきに発表され、最新の第5次は2013-2014年に発表されています。

[続きを読む](#)

【研究紹介】 神奈川県立海洋科学高校におけるpH測定について
2018年1月16日

1. 背景
笹川平和財団海洋政策研究所では、日本各地の小学校、中学校及び高等学校を対象とした「海洋教育バイオアススクールプログラム」を日本財団、東京大学海洋アライアンス海洋教育促進研究センターと共同で実施しています。
「海洋教育バイオアススクールプログラム」の取組の一環として、海洋の温暖化や酸性化の課題に取り組み神奈川県立海洋科学高校において、2017年8月に高校生によるpH調査の支援を行いましたので、その様子を紹介いたします。

Sharing videos on education content

Home 海の温暖化・海洋酸性化 海の予測情報 観測の情報 ニュース **学習コーナー** サイトポリシー

HOME > 学習コーナー

映像紹介

映像を紹介します。

[続きを読む](#)

用語解説

用語を解説します。

[続きを読む](#)

Youtube動画

YouTube動画リンク
[もうひとつのCO2問題](#)

この海洋酸性化の課題に関するアニメーションは、EPOCA (海洋酸性化 欧州プロジェクト) のもと、英国セントマーク&セントジョン大学と英国国立海洋水族館の後援で、リッジウェイ校 (プリマス・アカデミー) の生徒/サンドッグ・メディア/キャロル・ターラー博士、ヘレン・フィンリー博士 (プリマス海洋研究所) により企画・制作されました。日本語字幕は公益財団笹川平和財団海洋政策研究所が作成しました。

クリエイティブアニメーション「もうひとつのCO2問...」

みんなでもないしわる魚たちに食べられてしまったんです...

3:11 / 8:02 YouTube

Proposals toward Japan's Basic Plan on Ocean Policy

Cabinet decision adopting the latest Basic Plan on Ocean Policy was made on 15th May. It includes most items which we proposed.



Photo; Meeting before a cabinet decision (Cabinet Office of Japan)

The Third Basic Plan on Ocean Policy (Provisional Translation)

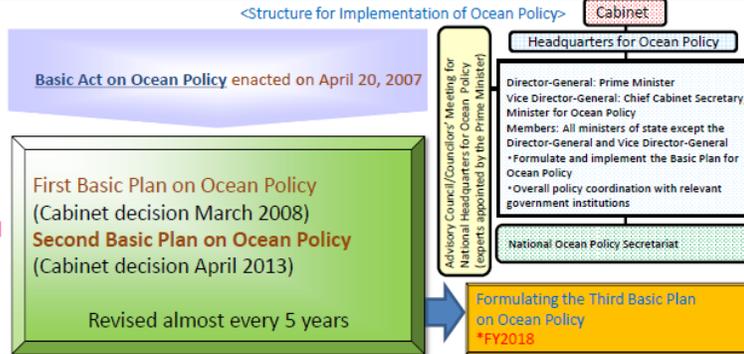
The measures on the ocean around Japan are promoted in a comprehensive and prudent manner based on the Basic Act on Ocean Policy and the Basic Plan on Ocean Policy.

The Second Basic Plan on Ocean Policy was formulated in April 2013 and covered five years to April 2018.

* The Basic Act on Ocean Policy states, "the Government shall review the Basic Plan on Ocean Policy almost every five years, and shall make necessary changes."

In May 15, 2018, the Third Basic Plan on Ocean Policy was approved by the Meeting of the Headquarters for Ocean Policy, followed by Cabinet decision.

The main points of the Third Basic Plan are outlined below.



Third Basic Plan: Points

(1) Introduction: Evaluation and Current Situation Awareness

Recap of progress from the enactment of the Basic Act on Ocean Policy until today and current situation

(2) Chapter 1

General Remarks (philosophy for ocean policy, policy direction, basic policy for measures)

"The challenge toward a new oceanic state" is positioned as the policy direction for the Basic Plan on Ocean Policy to aim for the goal of the Basic Act on Ocean Policy, which is to realize a new oceanic state.

The following is a concise summary of the policy direction in point (1) above

- (a) Toward open and stable seas. Protect the nation and its citizens.
 - (b) Use seas to make the nation prosper. Pass on abundant sea to posterity.
 - (c) Challenge unknown seas. Improve technology and enhance awareness of sea.
 - (d) Take the lead to realize peace. Create world standards for seas.
 - (e) Familiarize people with seas. Develop human resources with knowledge of ocean
- (3) Based on a broad understanding of ocean policy from the perspective of maritime security, the plan clearly states that the whole government shall come together to promote Comprehensive Maritime Security, which cover not only the core maritime security measures, but also the ocean measures that could contribute to maritime security.

(4) Main measures other than "Comprehensive Maritime Security," based on the change of the situation in ocean:

- (a) Use ocean more for the purpose of industries
- (b) Maintain and protect the maritime environment
- (c) Improve scientific knowledge
- (d) Promote Arctic policy
- (e) International collaboration and cooperation
- (f) Develop human resources with knowledge of ocean and to advance citizens' understanding

This is the first time for the plan to state the policy for the Arctic as one of the main measures.

(3) Chapter 2: Detailed Exposition (Specific Measures)

- (1) List for measures approx. 370 items
- (2) To secure the effective implementation of the ocean measures, the plan clearly states the name of the implementing ministry or agency for each measure.
- (3) Strengthening the capacity of Maritime Domain Awareness (MDA) is treated as an independent item in this Chapter.

(4) Chapter 3: Required Matters for Implementation

- (1) The Headquarters for Ocean Policy will promote ocean policies by carrying out a control tower function for the government, together with the National Ocean Policy Secretariat.
- (2) Describes the PDCA cycle and process management using indicators to gain a panoramic and quantitative understanding for the purpose of better understanding and evaluating the progress of each measure as well as securing the systematic and comprehensive implementation.

How to mainstream OA issues?

-Ocean Acidification which is referenced in **SDGs** is an important issue to tackle with.

- **Paris Agreement**

Points of the Third Basic Plan

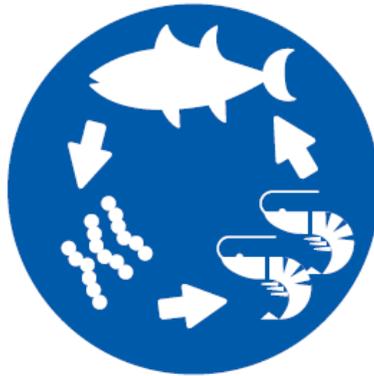
http://www8.cao.go.jp/ocean/english/plan/pdf/plan03_gaiyou_e.pdf

Mainstreaming OA issues

SDG14 : Conserve and sustainably use the oceans, seas and marine resources for sustainable development



14.1 Prevent and significantly reduce marine pollution



14.2 Sustainably manage and protect marine and coastal ecosystems



14.3 Minimize and address impacts of ocean acidification



14.4 End overfishing, IUU fishing, and destructive fishing practices



14.5 Conserve coastal and marine areas



14.6 End subsidies contributing to overcapacity, overfishing and IUU fishing



14.7 Increase economic benefits to SIDS and LDCs

14.a Increase scientific knowledge, develop research capacities and transfer marine technology

14.b Improve access of small-scale artisanal fishers to marine resources and markets

14.c Enhance conservation and sustainable use of oceans and their resources by implementing international law

Mainstreaming OA issues

100% of water

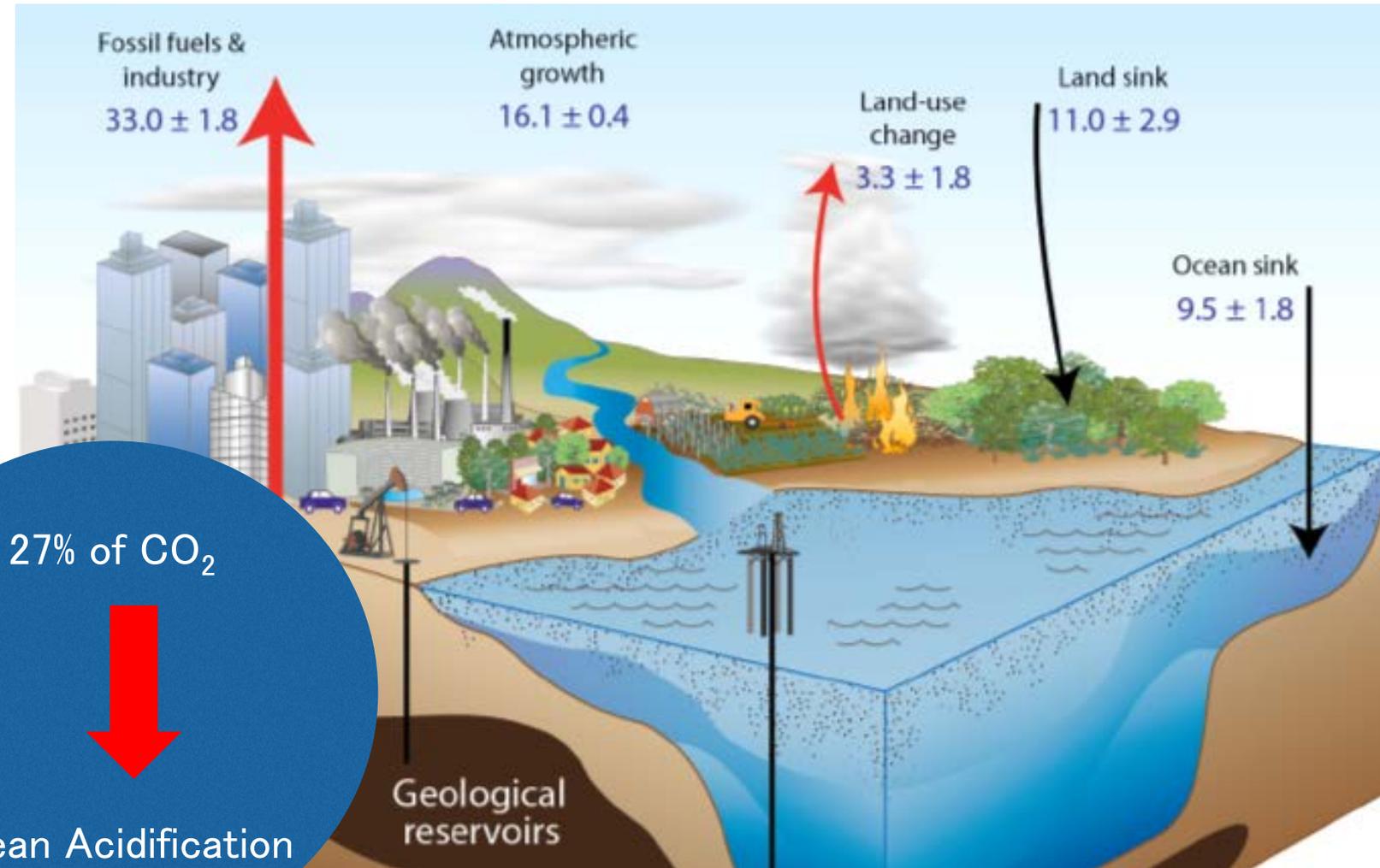


Sea level rise

93% of heat



Ocean warming



27% of CO₂



Ocean Acidification

Mainstreaming OA issues

IPCC special report on the impacts of global warming of 1.5 ° C
(IPCC 1.5°C特別報告書)

B4. Limiting global warming to 1.5° C compared to 2°C is projected to reduce increases in ocean temperature as well as associated increases in ocean acidity and decreases in ocean oxygen levels (high confidence).

Indicative linkages between mitigation options and sustainable development using SDGs (The linkages do not show costs and benefits)
(Summary for Policymakers)

