

有明海の海洋環境 Characteristics of the marine environment in Ariake Sea

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Ariake Sea

Width 18km

幅

Length 96km

長さ

Area 1700km²

面積

Mean depth 20m

平均水深

Max tidal range: 6m

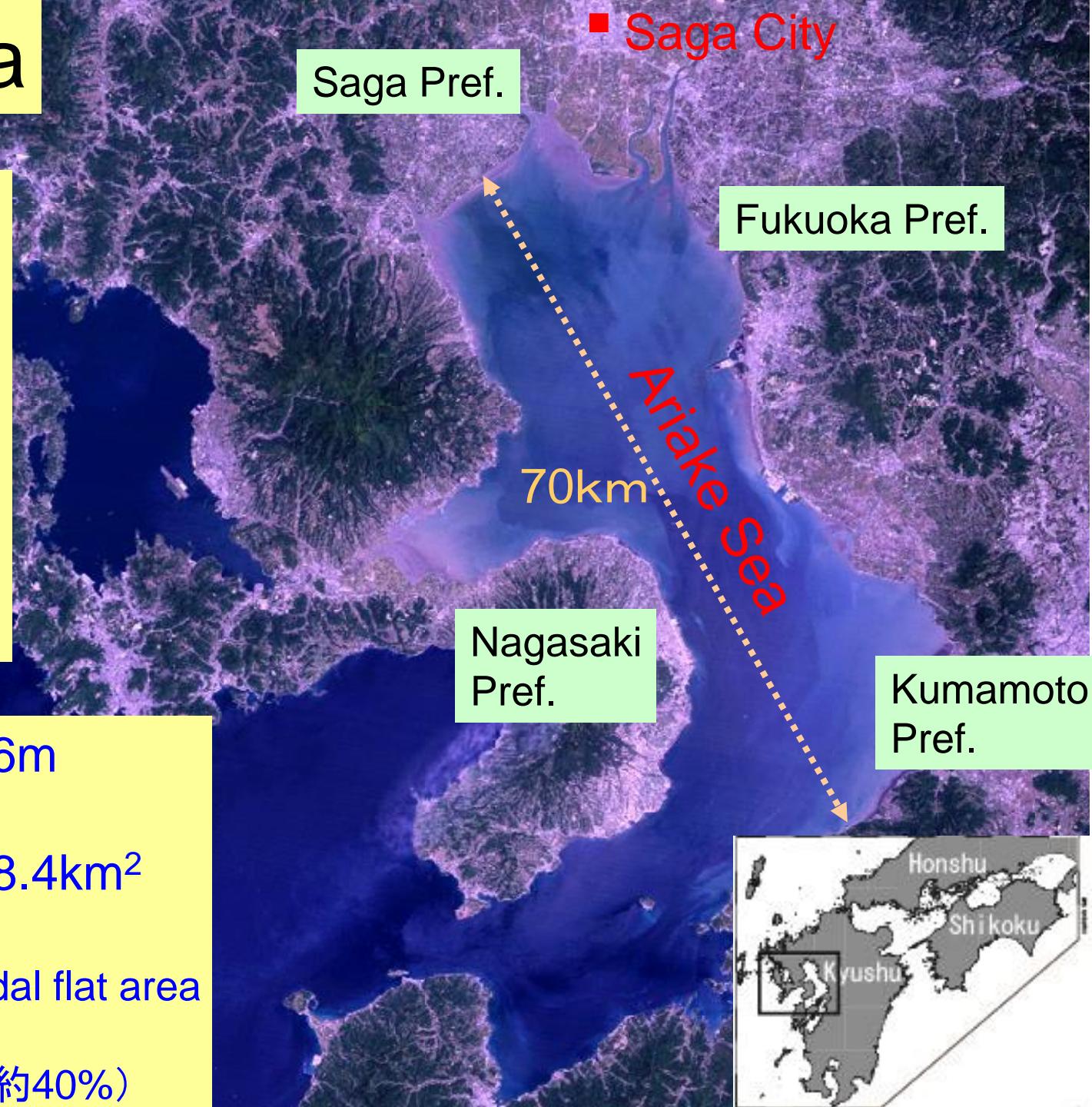
最大潮差

Tidal flat area: 188.4km²

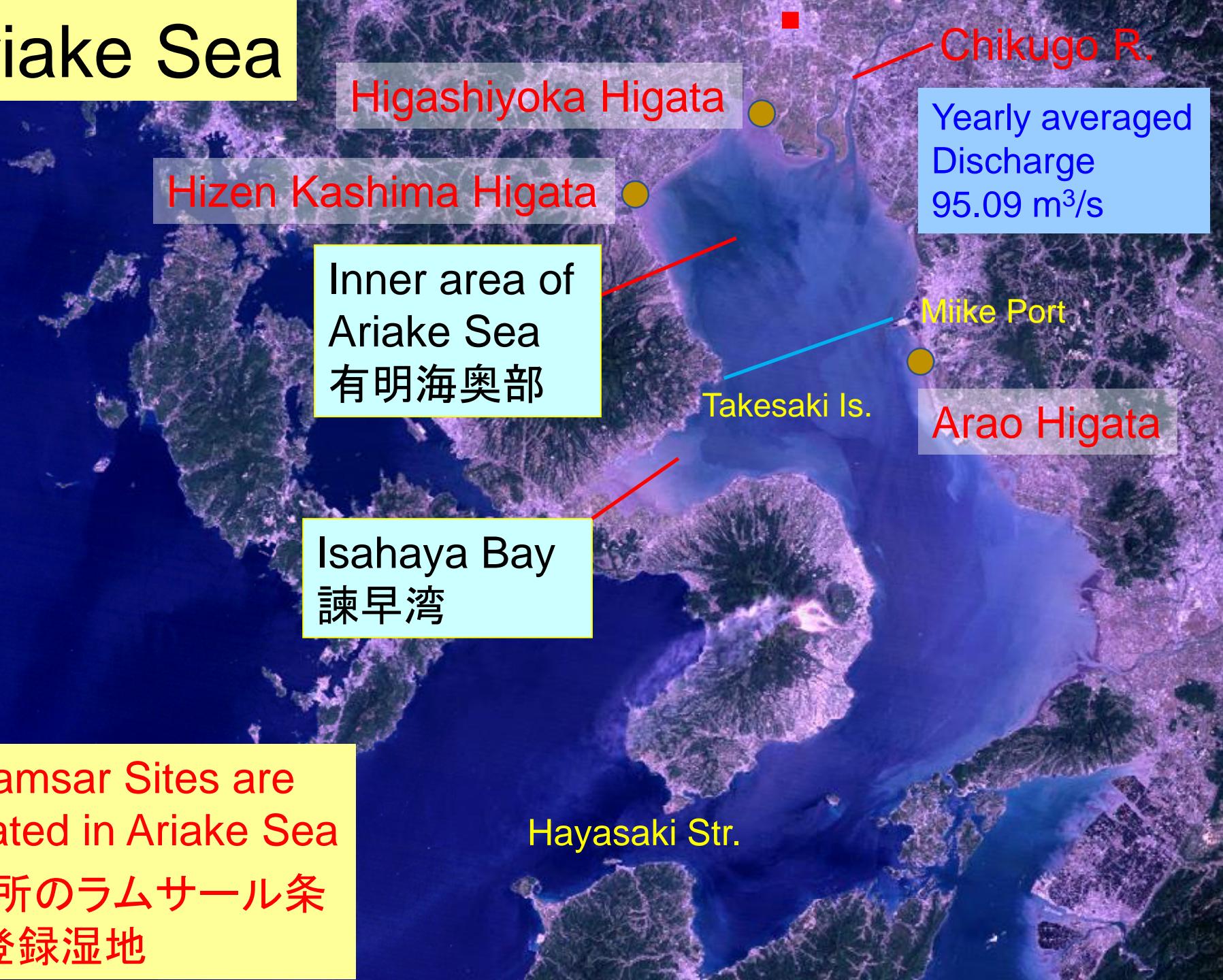
干潟面積

(ca. 40% of the all tidal flat area
in Japan)

国内の全干潟面積の約40%



Ariake Sea



Variation in coastal environment in Ariake Sea



同じ有明海の中でも様々な環境がある



Organisms are different depending on the environment

有明海奥部の泥干潟

Mudflat in the inner area



シオマネキ *Uca arcuata*

環境が違うとそこに住む生き物も違う



ヤマトオサガニ

Macrobrachium japonicus

有明海南部の砂干潟

Sandy tidal flat in the Southern area



ハクセンシオマネキ *Uca lactea*



コメツキガニ *Scopimera globosa*

Ariake Sea (有明海奥部) -especially inner area-



Extensive mud-flat
広大な泥干潟

Turbid water by
suspended clay



粘土鉱物で濁った海

23の特産種を含む独特の生きもの



Unique biota including
23 endemic species



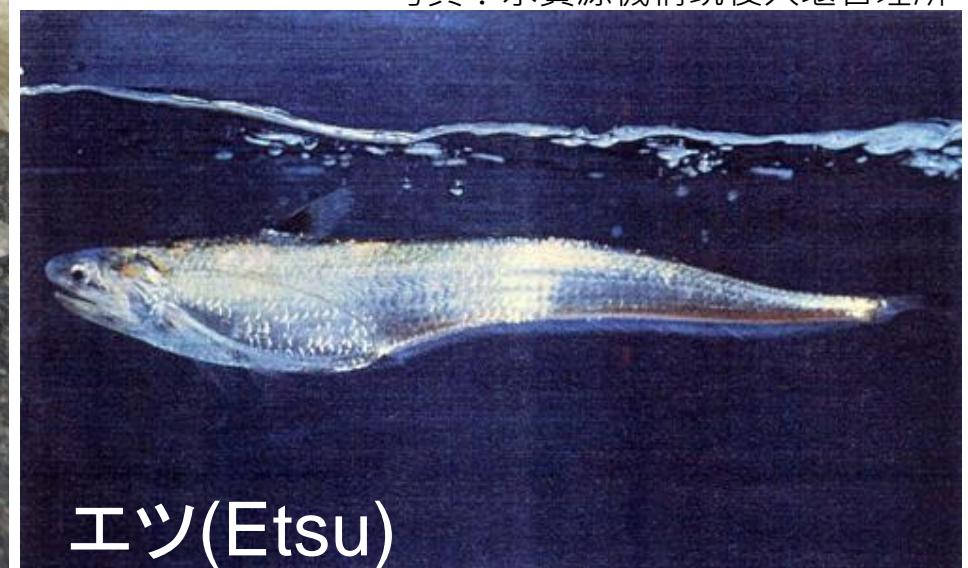
ムツゴロウ(Mutsugoro)
Mudskipper



ミドリシャミセンガイ
(Midorishamisengai) *Lingula*



ワラスボ(Warasubo)
Eel goby



エツ(Etsu)
Erenadier anchovy

写真：水資源機構筑後大堰管理所

Inner area of Ariake Sea (有明海奥部)

Extensive mudflat

広大な干潟

Complex topography
due to tidal creeks

複雑な澪筋

Large influence of
fresh water discharge

大きな淡水影響

High turbidity, low transparency

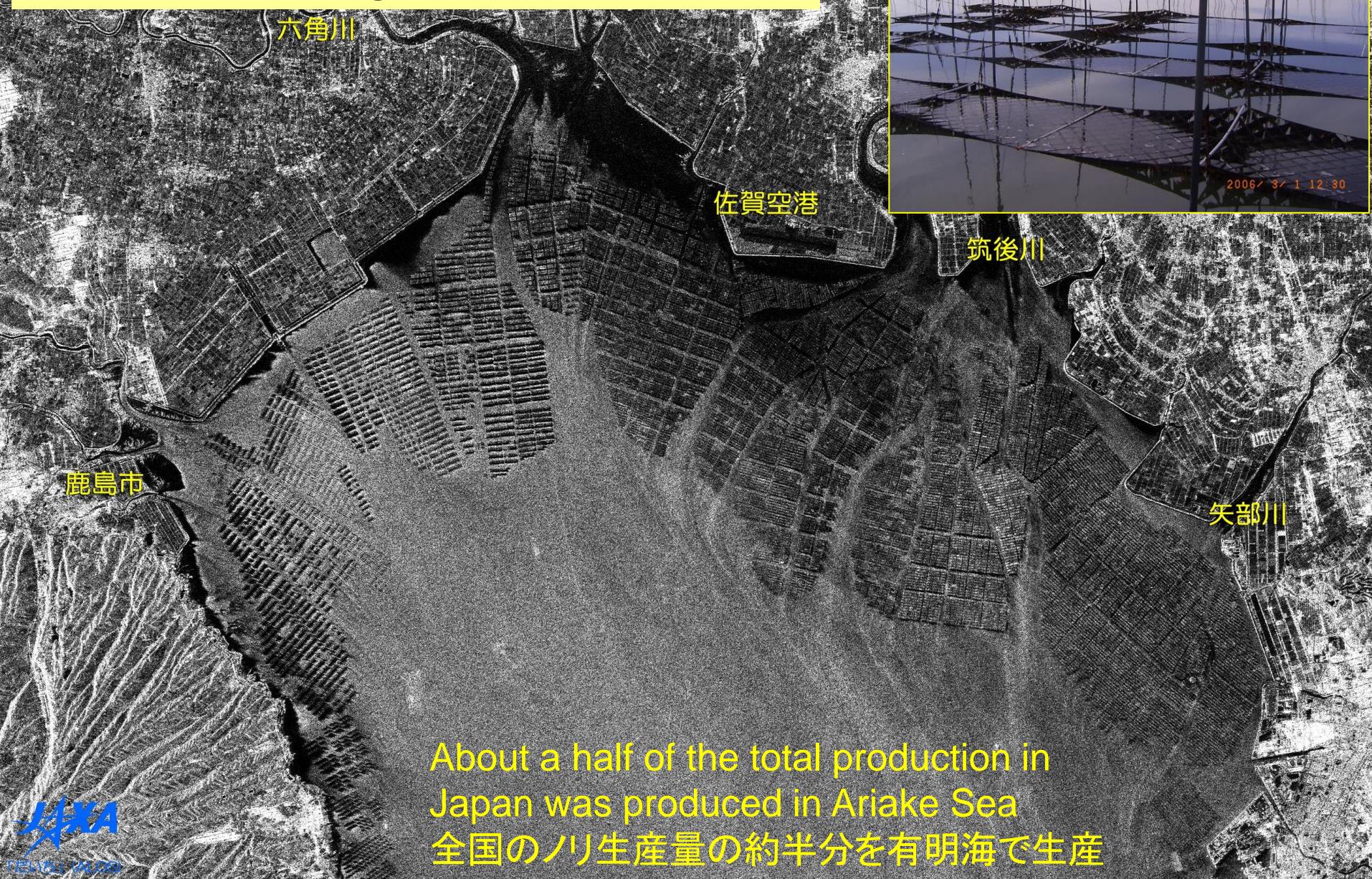
高濁度・低透明度

Habitat of the many unique species

多くの有明海特有の生物の生息地



Distribution of laver culture (Nori farming) 大規模なノリ養殖



About a half of the total production in Japan was produced in Ariake Sea
全国のノリ生産量の約半分を有明海で生産

Inner area of Ariake Sea

Extensive mudflat

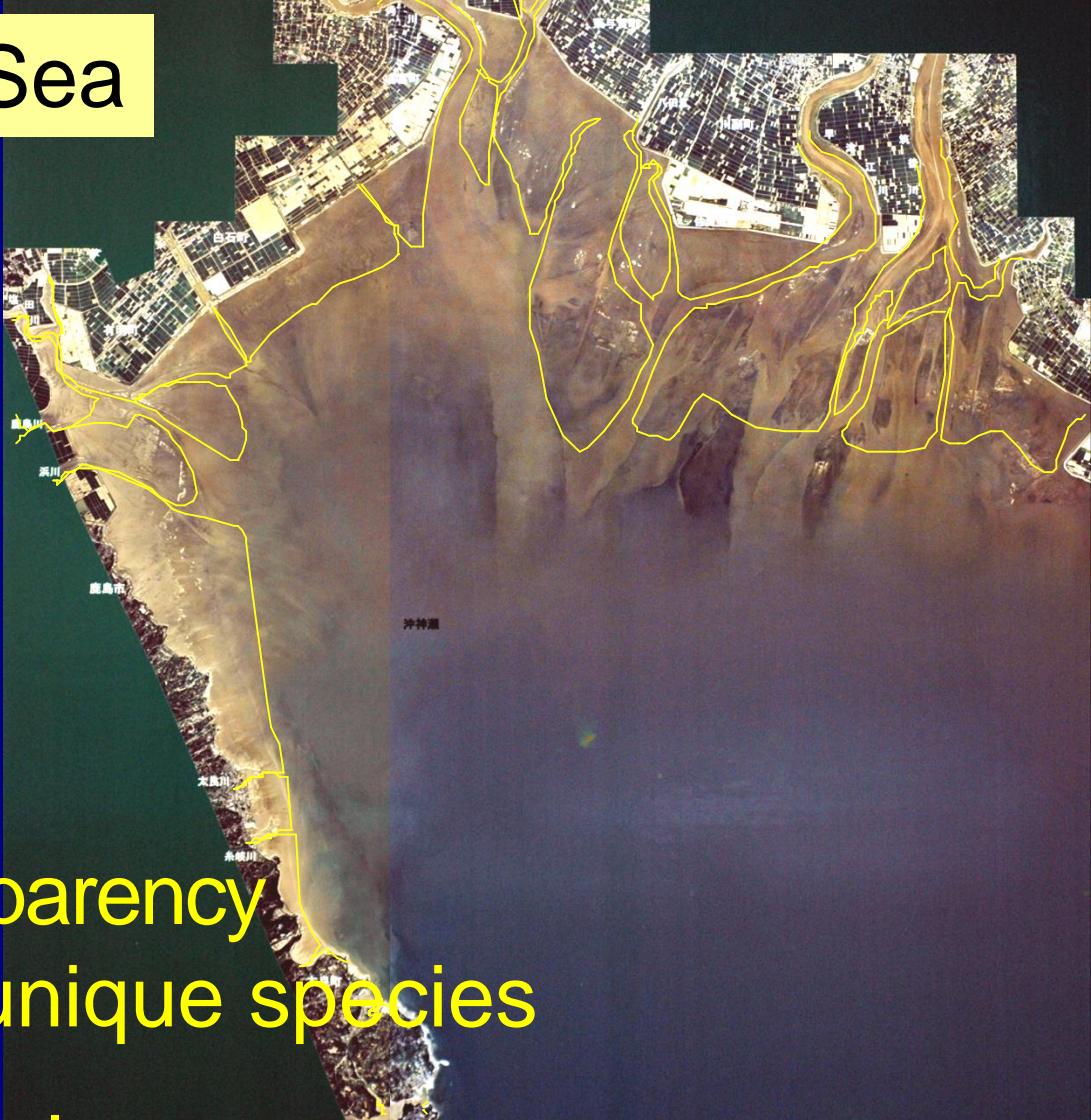
Complex topography
due to tidal creeks

Large influence of
fresh water discharge

High turbidity, low transparency
Habitat of the many unique species

Broad area of laver culture

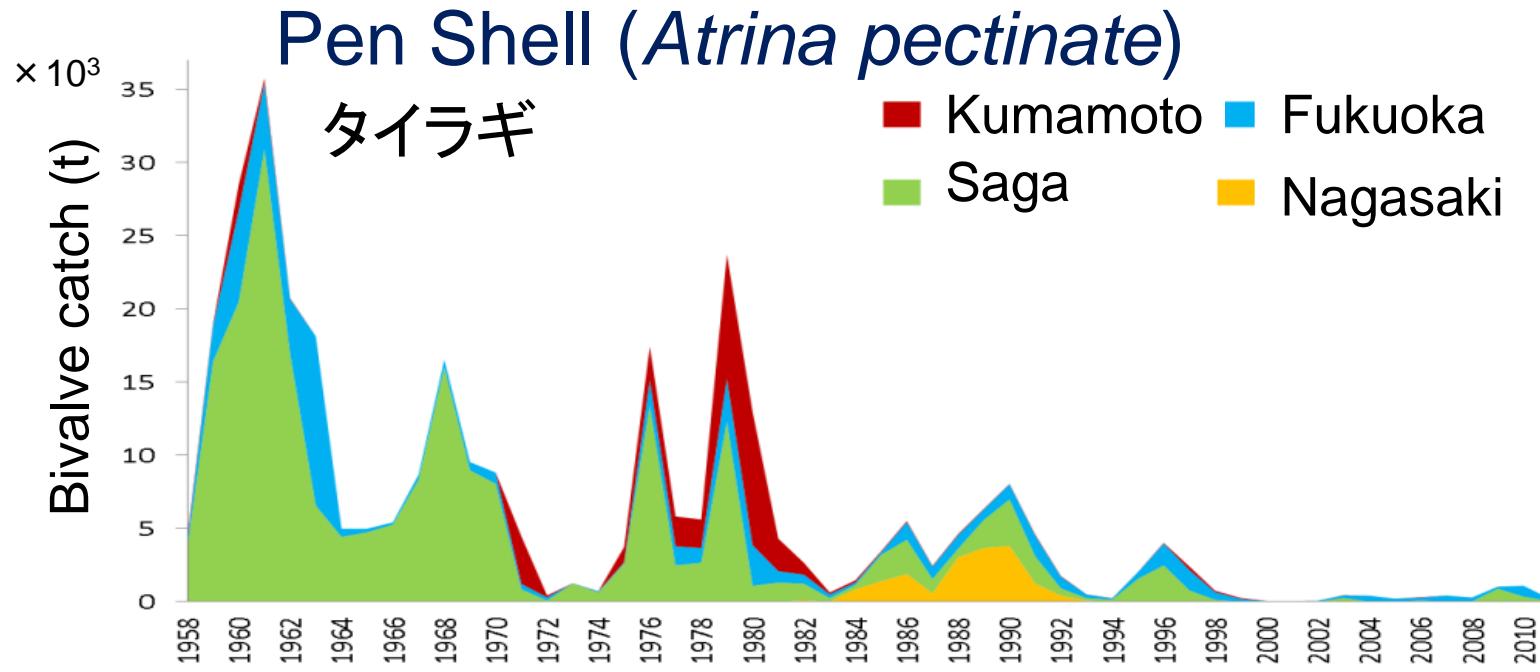
Serious environmental and Fisheries problems
現在は深刻な環境問題・漁業問題が起きている



Major environmental and fisheries problems in Ariake Sea (有明海の主な環境問題)

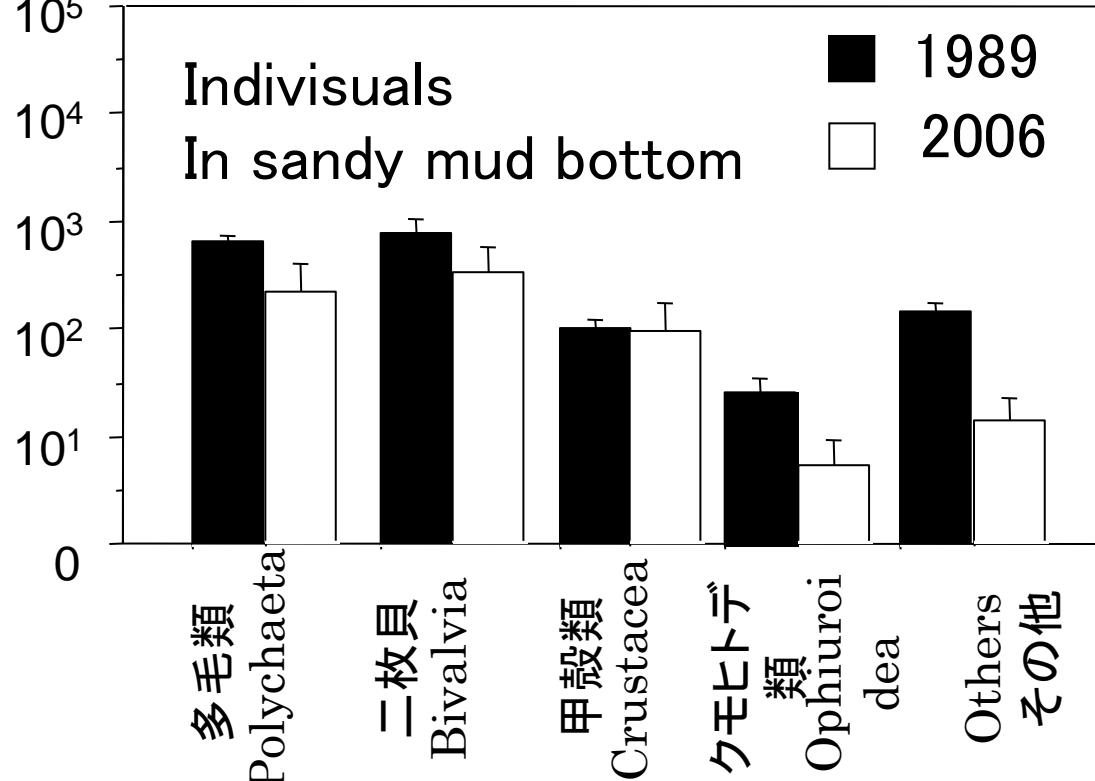
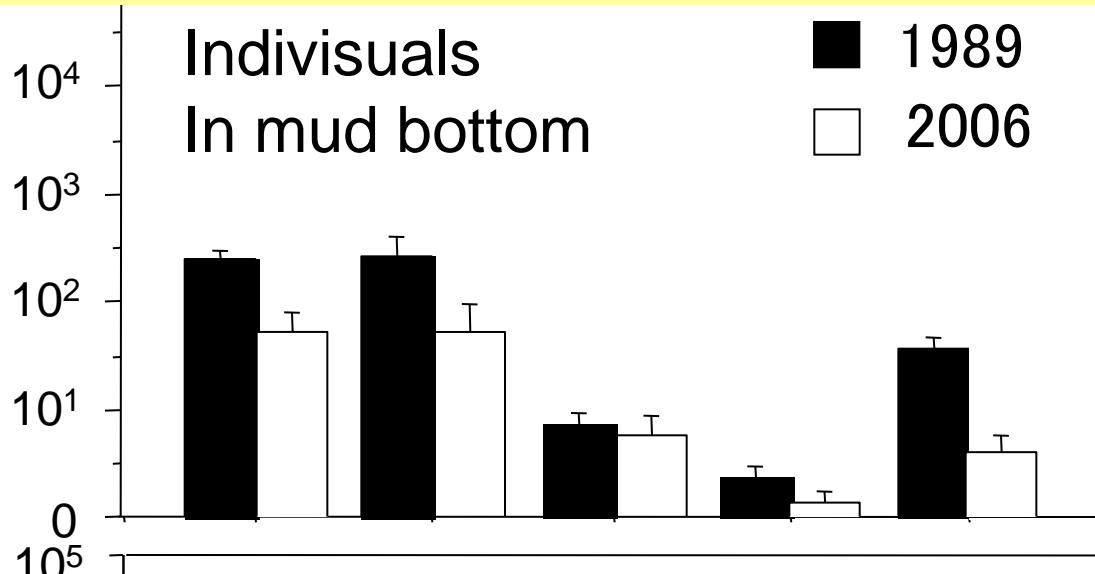
- 1) Increase of red tide 赤潮の増加
 - 2) Occurrence of hypoxia 貧酸素水塊の発生
 - 3) Decrease of shellfish catch 二枚貝の漁獲減少
(pen shell タイラギ, ark shell サルボウ etc.)
 - 4) Decrease in other macro-benthos
他の底生動物(ベントス)の減少
 - 5) Decrease in fish catch especially demersal fish
魚類、特に底魚類の漁獲減少
- etc

Decrease in bivalve catch 二枚貝の漁獲減少



1952 1958 2009 2010

Decrease in macro-benthos ベントスの減少



Total macro-benthos biomass
全マクロベントス生物量

mud bottom(泥底域)

1989 101.1 gww/m²

2006 54.1 gww/m²

Decreased by 50%

sandy mud bottom
(砂泥底域)

1989 119.2 gww/m²

2006 96.8 gww/m²

Decreased by 20%

Occurrence of hypoxia

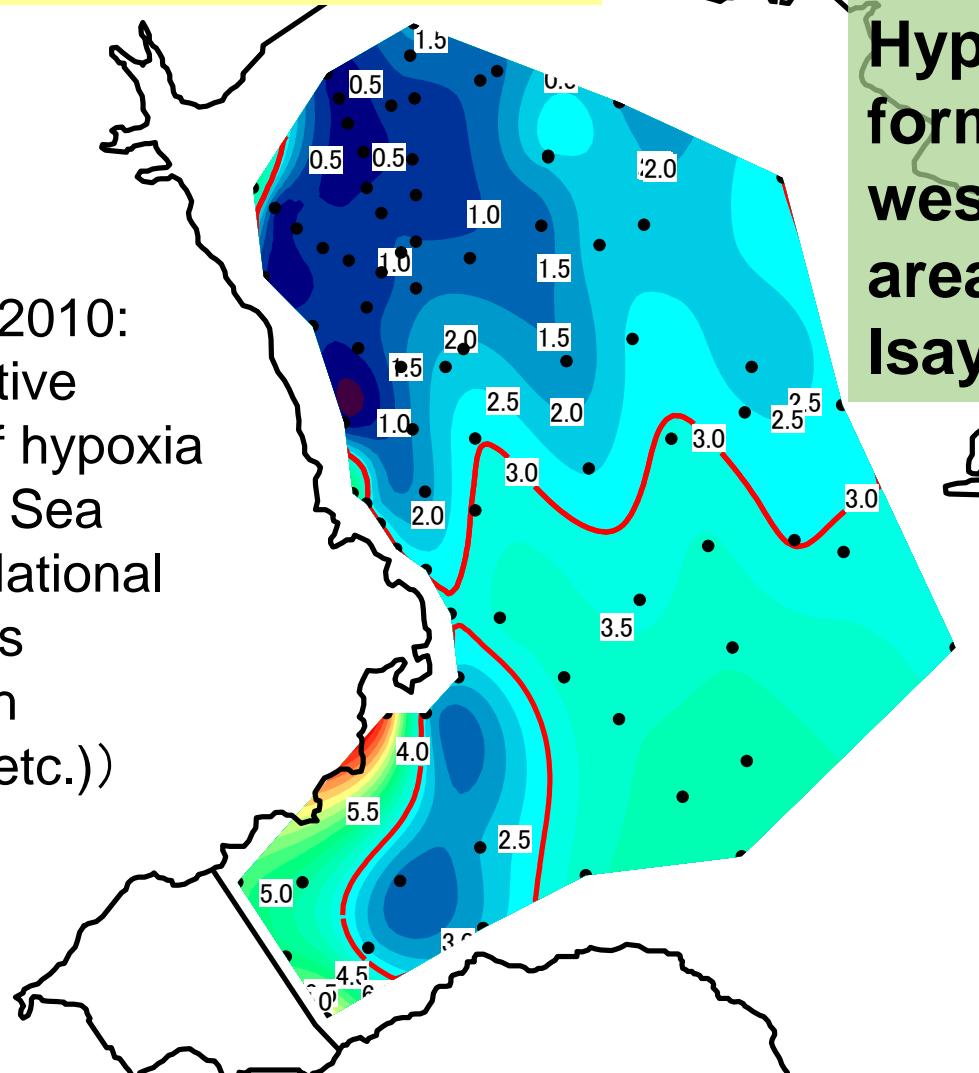
貧酸素水塊の発生

Bottom layer DO (mg/L)

海底直上の溶存酸素濃度

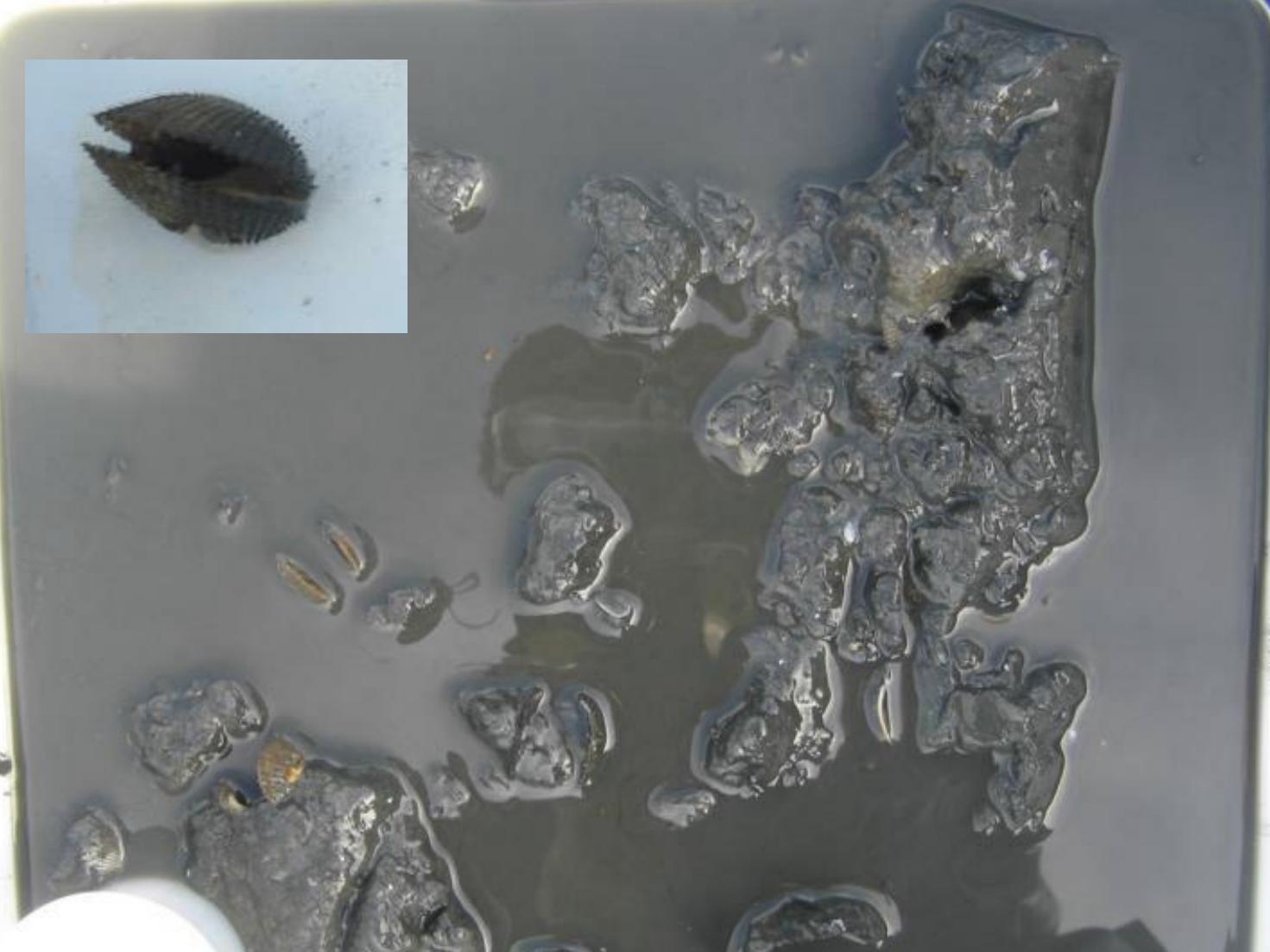
Hypoxic water mass was formed in the north-western part of the inner area of Ariake Sea and Isayaha Bay, respectively

(4, Aug 2010:
Cooperative
survey of hypoxia
in Ariake Sea
(Seikai National
Fesheries
Research
Institute etc.))



有明海湾奥西部と諫早湾の2カ所に貧酸素水塊形成

有明海一斉観測の結果より
(西海区水産研究所提供)



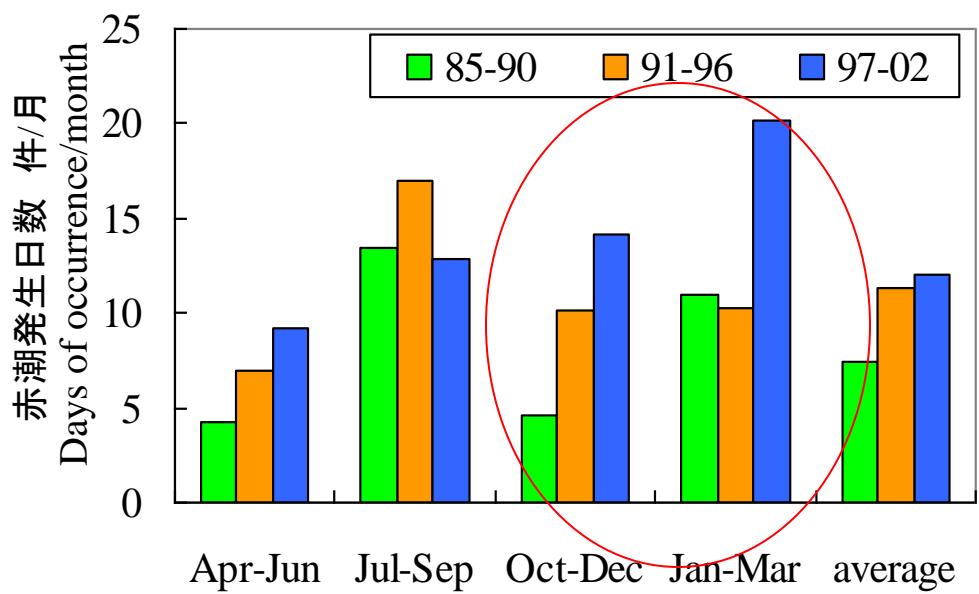
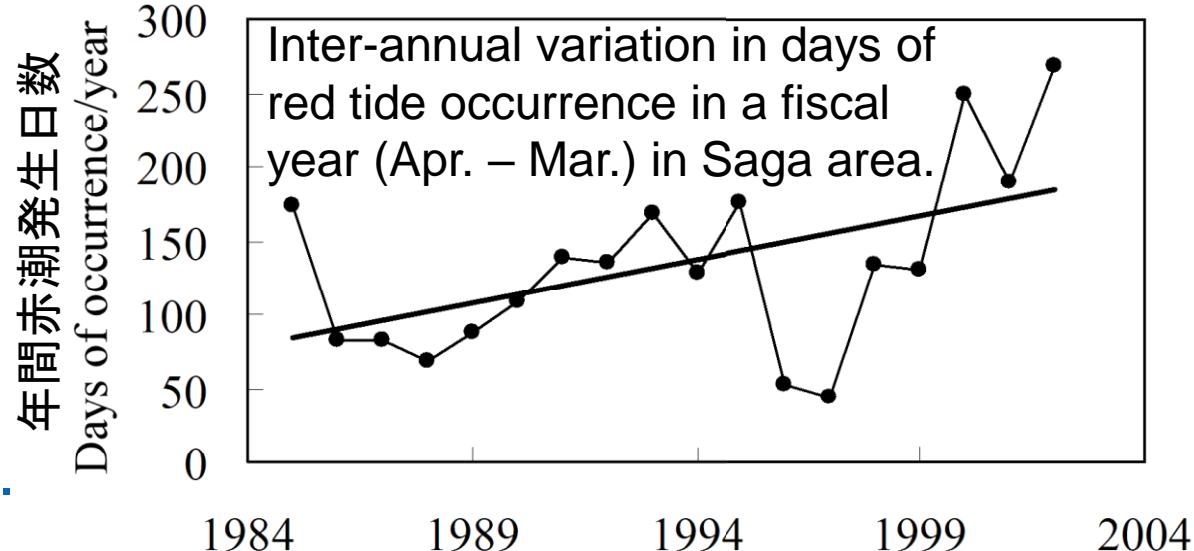
Kill of arc shell in 8 Aug. 2006 when serious hypoxia (anoxia) occurred

Red tide (赤潮)



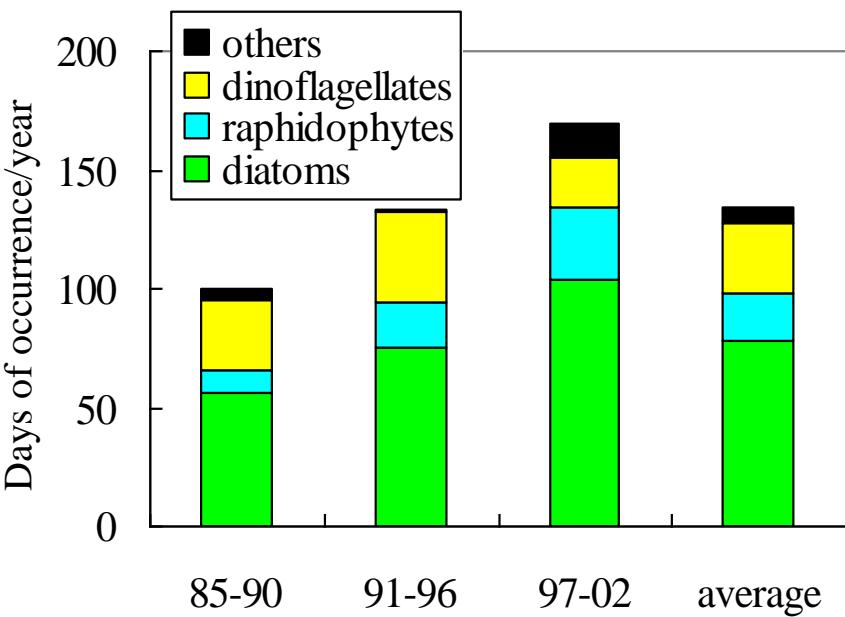
Increase in red tide

Red tide occurrence is monitored by visual survey with boat by the fisheries experiment stations of 4 prefectures.



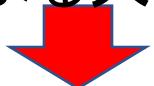
Comparison between seasons of the change in days of red tide occurrence.

Change in days of red tide occurrence per year with their composition of dominant species.



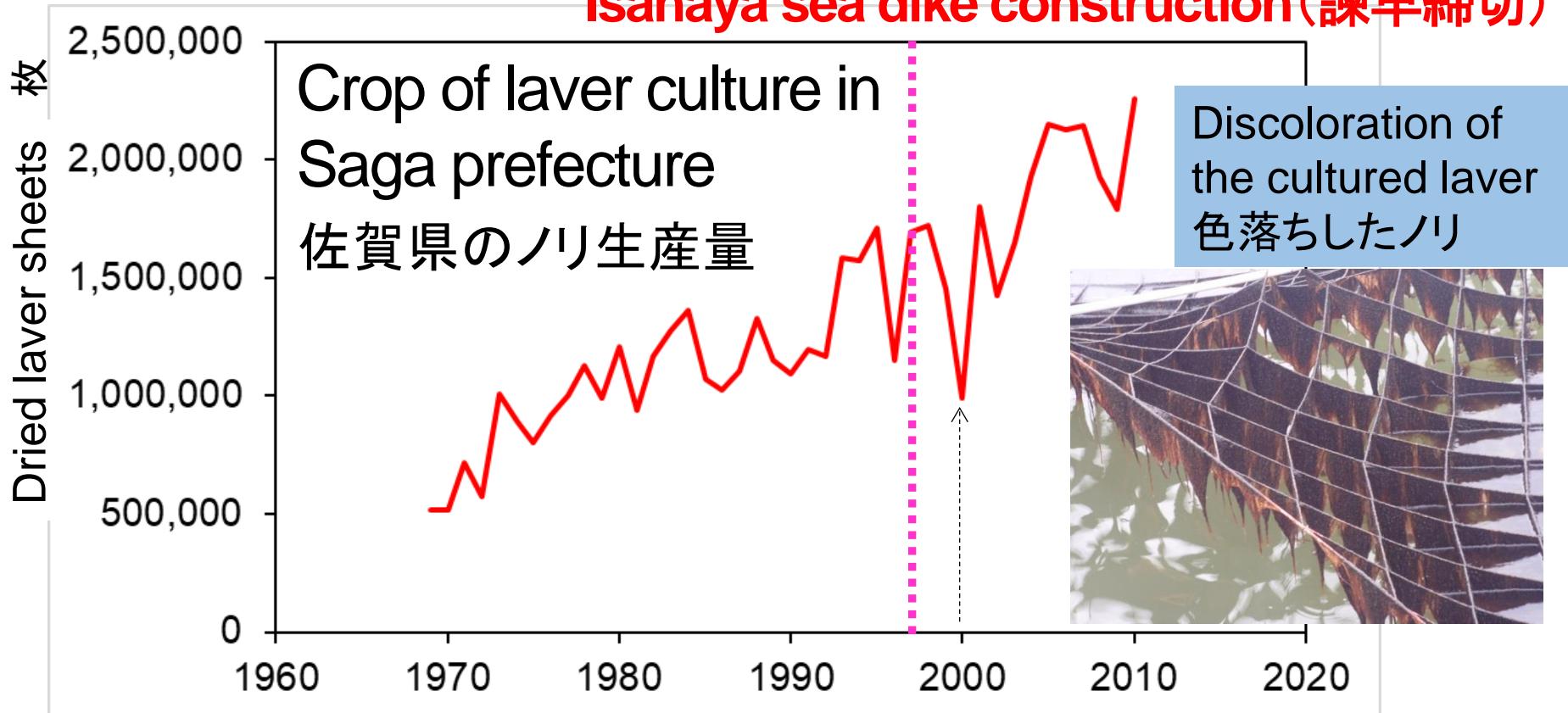
Serious low crop of laver culture in 2000

2000年漁期:色落ちによる大不作



Reason for that the environmental and fisheries problems in Ariake Sea became a big social problem that had attracted attention from all over Japan (有明海の環境・漁業問題が社会問題化し、全国的に注目されるきっかけとなった)

Isahaya sea dike construction (諫早締切)

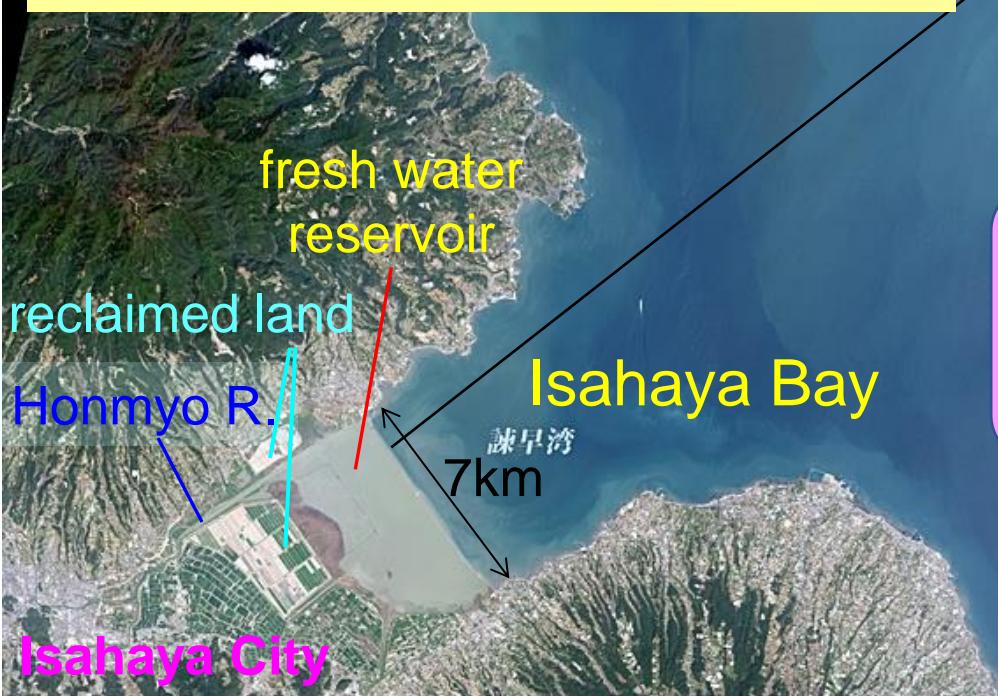


The Isahaya Bay reclamation 謳早干拓事業

Shut off by construction of
the sea dike in 1997

Completed in 2008

1997年締切、2008年完工



Sea dike and gates
潮受堤と排水門

Reclamation with
double dike system
複式干拓

Reason for the environmental
and fisheries problems?
環境問題・漁業問題の原因？

Opinions are divided
意見は分かれている

However, Ariake Sea is not a dead zone It keeps a lot of biological production.



Please see outside of the breakwater.
You would be amazed at the richness
of the organisms.

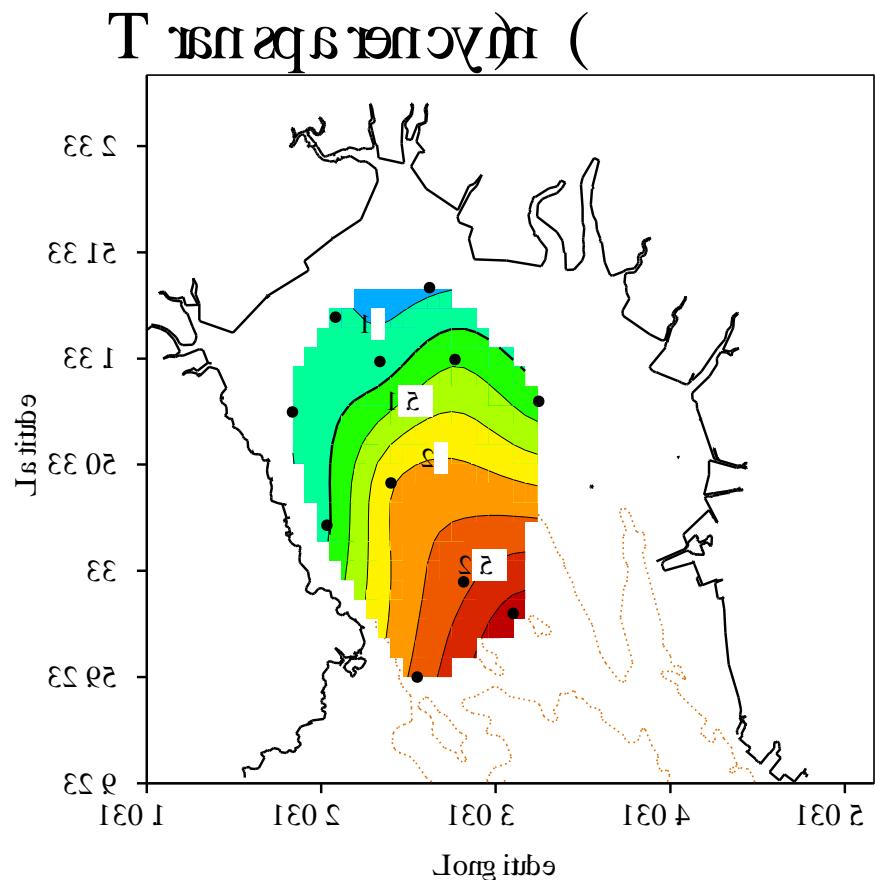
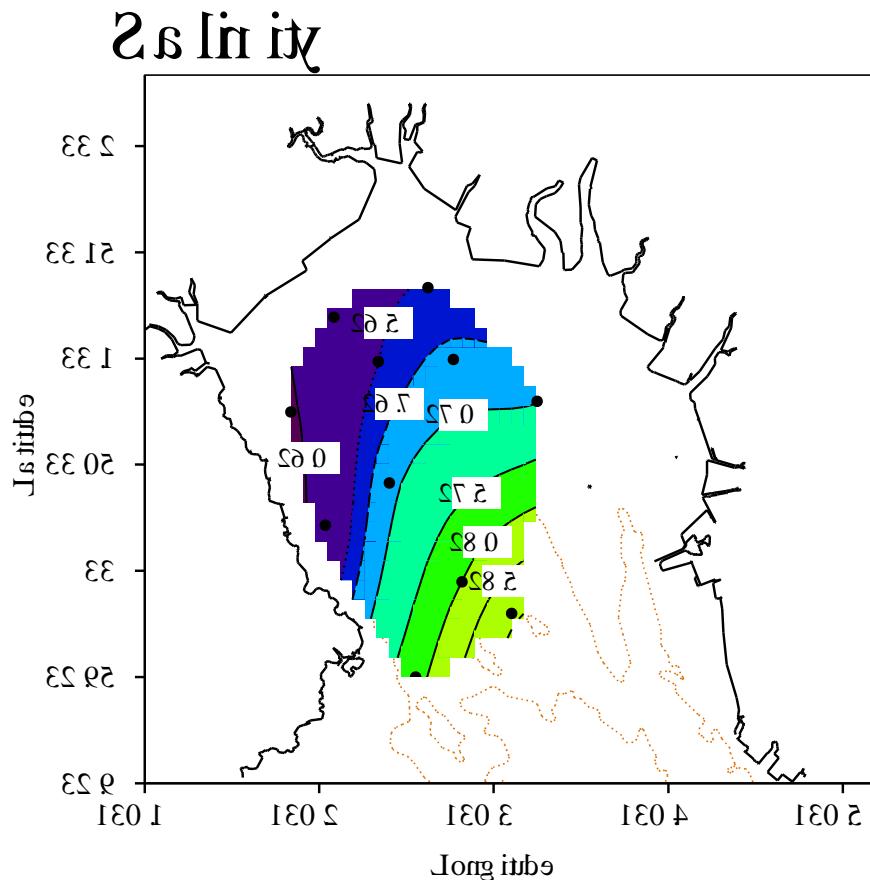
ちょっと堤防の向こうを見てみよう。そこにいる生
き物たちの豊富さ！ これは誇るべきものである。

You can easily find finless porpoises
from boat in autumn. It is rarely to find
them in Seto Inland Sea or Tokyo Bay.
秋に舟で海に出れば、毎度のようにスナメリに
出合うことができる。（瀬戸内海や東京湾では、もう
滅多に見られない。）

Don't focusing on the environmental
degradation only. It is important to
recognize and preserve the richness
of this sea。「環境悪化」だけを見るのではなく、
この海の豊かさ認識し、守る努力を！

Distribution of surface salinity and transparency in the inner area of Ariake Sea

Average in spring and summer (May-Sep.) from 1972 to 2010



Salinity in open ocean: 34-34.5