



Marine Environmental Monitoring and Protection Approaches in Bohai Sea

渤海生态环境监测及环境保护措施

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1. North China Sea Branch of SOA

国家海洋局北海分局

North China Sea Branch of SOA

国家海洋局北海分局

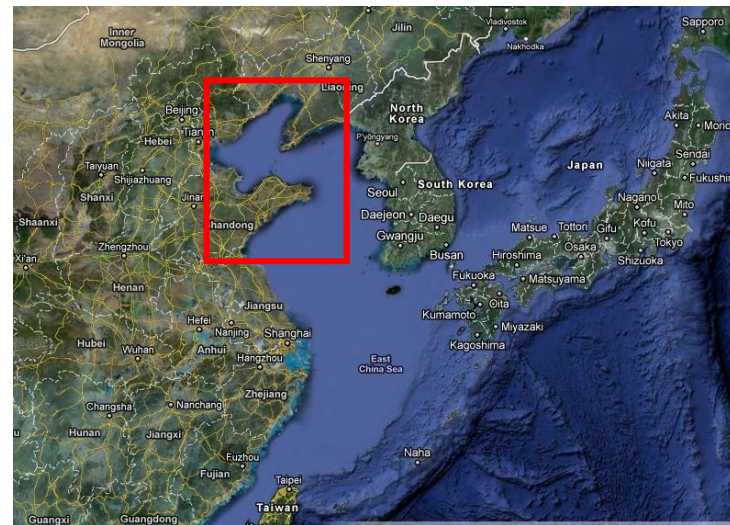
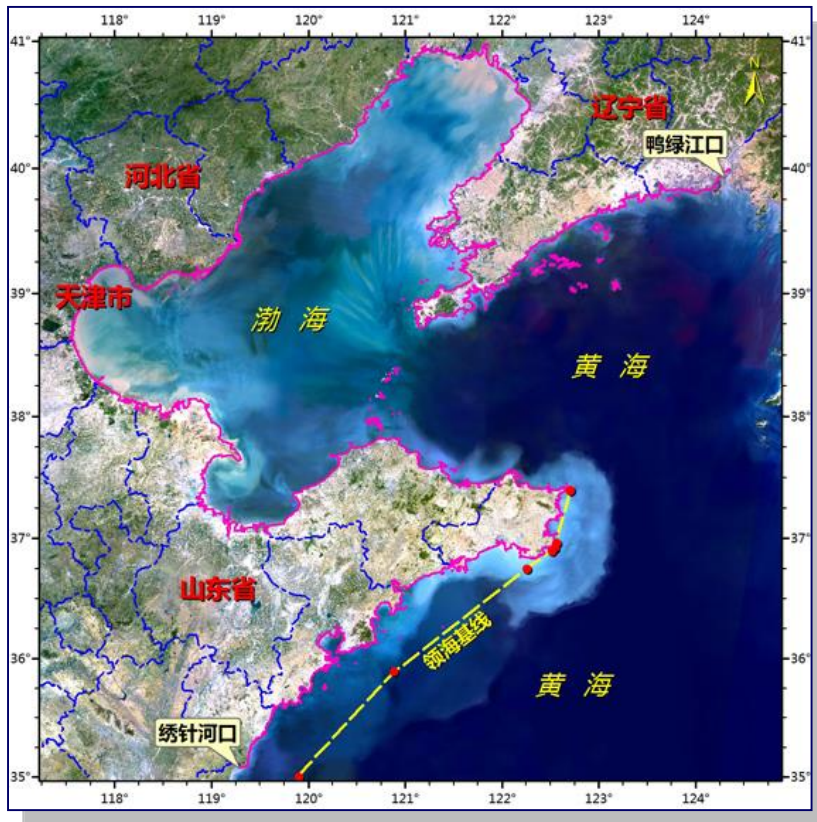


- ❖ **A Government Body**
一个政府机构
- ❖ **A Resident Agency of SOA in the North China Sea area**
国家海洋局在中国北海区的派出机构
- ❖ **Responsible for regional Marine Administrative Management**
负责区域海洋行政管理

Supervisor 监督者	The implementation of marine policies, laws, regulations, plans 海洋政策法规和计划执行
Administrator 管理者	Sea area and Islands Management Marine Environmental Protection 海域海岛和海洋环境保护
Coordinator 协调者	Affairs of cross-administrative region 协调跨行政区域海洋事务
Supporter 支撑者	Public Service, Disaster Prevention & Mitigation 公益服务，防灾减灾



About North China Sea(NCS)北海区简况



The length of coastline (approximately number)
 北海区管辖海域大陆岸线长度为 6087km, 约占全国大陆岸线的1/3

Sketch map of the North China Sea :
 Bohai Sea + North Yellow Sea(Part) to
 the north of line 35° N

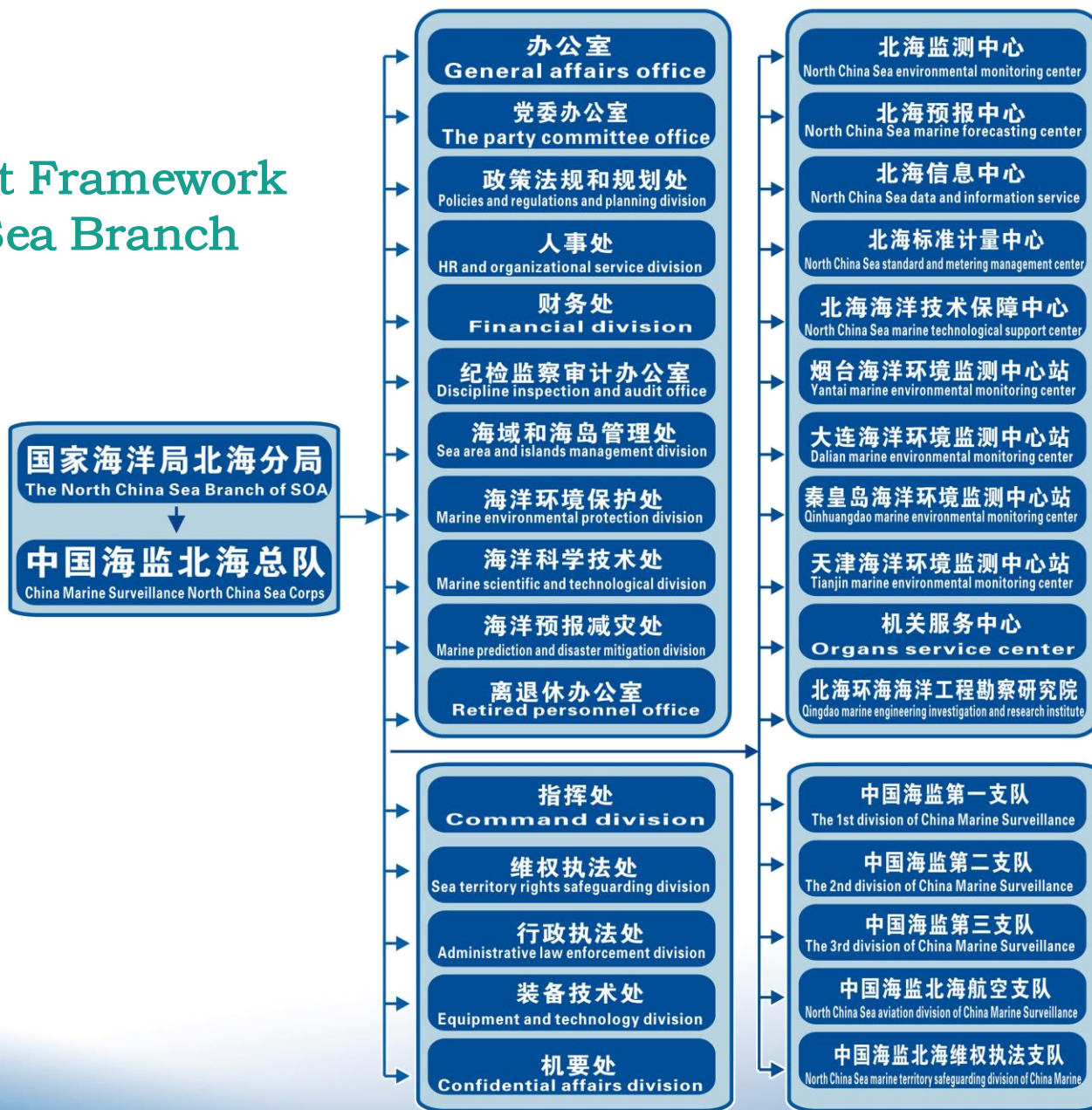
North China Sea: 6,087km (Mainland)
 Total China: 18,000km (Mainland)

北海区示意图: 渤海+黄海北部一部分
 35° N以北的中国海域



The Management Framework of North China Sea Branch

北海分局机构图

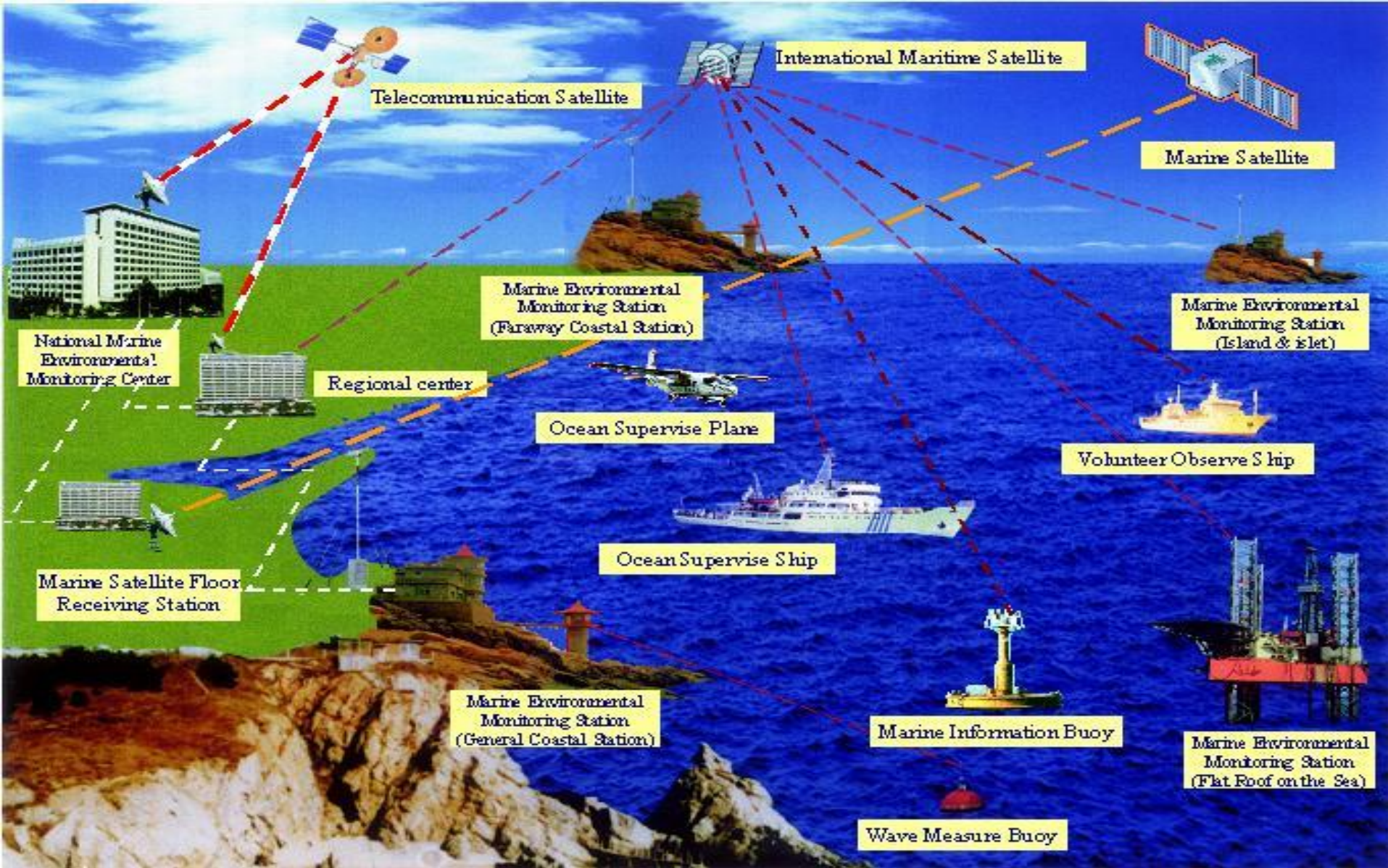


Operation departments, basing facilities and equipment 北海分局业务单位和设施装备



- ❖ 5 Regional marine operational centers 5个海区业务中心
- ❖ 5 Marine environmental monitoring central stations
5个海洋环境监测中心站
- ❖ 38 Marine environmental monitoring stations
38个海洋环境监测站
- ❖ 30 Law enforcement vessels 30艘中国海监船
- ❖ 6 Research vessels 6艘海洋科学调查船
- ❖ 6 Aircrafts 6架飞机
- ❖ 4 Wharfs 4个码头
- ❖ 90+ Laboratories 90多个实验室
- ❖ 25 Emergency Monitoring Vehicles 25辆应急监测车





Three-dimensional marine environmental monitoring system
北海区立体海洋环境监测网络



2. Main Environmental Monitoring Plan

渤海环境监测计划

Maine environmental monitoring plan

渤海环境监测计划



渤海生态环境监测计划 Marine environmental and ecological monitoring Plan

海洋环境质量监测
Marine environmental quality monitoring

海水、沉积物、二氧化碳、海洋大气
Seawater, sediment, CO2, atmosphere

海洋生态状况监测
Marine ecological monitoring

海洋生物多样性、典型海洋生态系统、海洋自然/特别保护区、
Marine biodiversity, typical marine ecosystem, marine protected areas

海洋环境监管监测
Marine environmental supervision

陆源污染物排海、海洋倾倒地、海洋石油勘探开发区、海洋工程
建设项目
Land-based pollutants, marine dumping area, marine petroleum exploration area, marine engineering construction project

公益服务监测
Public service

海水浴场、滨海旅游度假区、海水增养殖区
Bathing Beaches, tourism resorts, Mariculture areas

海洋生态环境风险监测
Marine environmental risk monitoring

海洋溢油、危险化学品污染、海洋放射性监测预警、赤潮（绿潮）、水母灾害、海水入侵和土壤盐渍化、重点岸段海岸侵蚀
Marine oil spill, hazard chemical pollution, marine radioactivity monitoring, HAB (Green Tide), jellyfish bloom, saline intrusion, oil salinization, and coastal erosion

Maine environmental monitoring plan

渤海环境监测计划



❖ 根据不同需求选取不同监测频率和监测内容

- 海洋环境质量监测，掌握海洋环境的现状及变化趋势
Marine environmental Quality Monitoring
- 海洋生态状况监测，掌握渤海典型生态系统的健康状况
Marine ecological monitoring to understand the marine ecosystem status
- 海洋环境监管监测，掌握开发活动的影响，为监管提供技术支撑
Marine environmental supervision
- 公益服务监测，服务海上生产活动及公众生活娱乐
Public service
- 海洋生态环境风险监测，为防灾减灾提供技术支撑
Marine environmental risk monitoring

Maine environmental monitoring plan

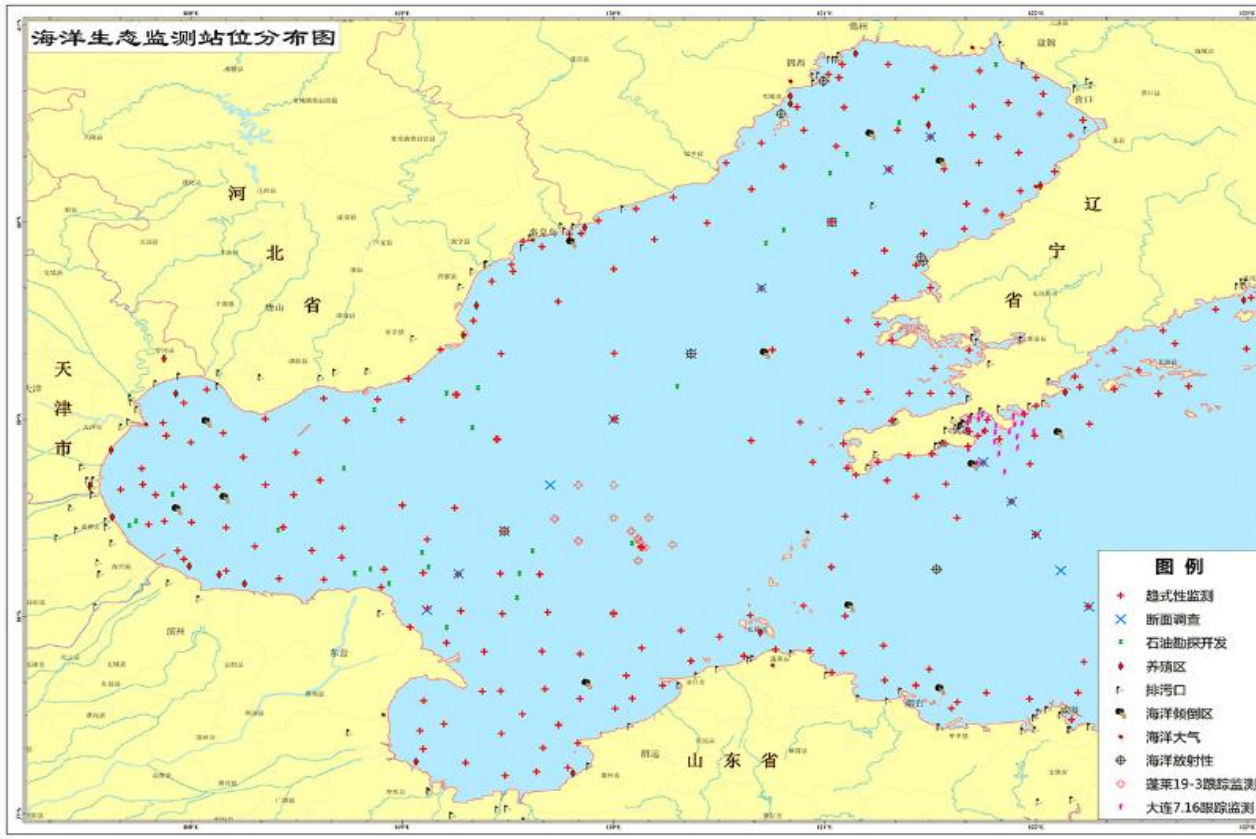
渤海环境监测计划



❖ 5 types of monitoring tasks with 2082 stations

5大类监测任务，共布设2082个站位

- E.g.: Sea water monitoring
以海水监测为例：
- frequency: 4 times/year: Feb. May, August and October
监测频率: 4次/年, 分别在2月、5月、8月和10月开展。



Maine environmental monitoring plan 渤海环境监测计划

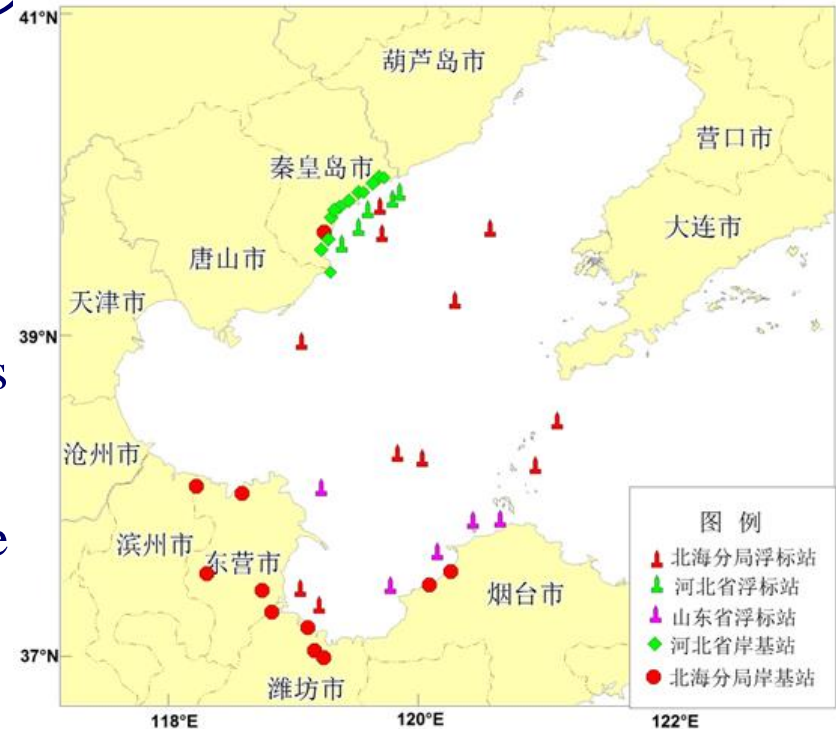


海洋环境在线监测

Marine environmental online monitoring

海洋环境监测手段由定点定时监测逐步向定点连续监测发展，目前在渤海近岸海域、海湾、重要河口、主要入海江河、重点排污口布设在线监测系统39套。

Marine environment monitoring method is developed from timing monitoring to continuous monitoring. Now, 39 sets of online monitoring instruments were set up in major coastal area, bays, river mouths, outlets and etc.





3. Red-line Policy in Bohai Sea

渤海海洋生态红线

Basic thoughts 基本思路



生态红线是国家生态文明建设的重要制度，是渤海环境保护的重要措施，通过划定生态红线对渤海开发活动实施最严格的管控，切实保护生态环境。

Ecological Red-line policy, an important policy for the construction of ecological civilization, is the most stringent measure to control the development activities and implement the environmental protection of Bohai Sea.



海洋生态红线 Marine Ecological Red-Line

- 是维护海洋生态健康和生态安全而划定的海洋生态红线区的**边界线及其管理指标控制线**，保证对重要海域实施分类指导、分区管理、分级保护。
- refers to the delimitation of the boundary line of the marine ecological red line and its management and control line for the maintenance of marine ecological health and ecological safety, to implement the categorizing guidance, partitioned management and classified protection of the sea areas with important protection and ecological values.



海洋生态红线区 Marine ecological red-line areas

- 海洋生态红线区包括重要河口、重要滨海湿地、红树林、珊瑚礁、海草床、特殊保护海岛、海洋保护区、自然景观与历史文化遗迹、砂质岸线和砂源保护海域、重要渔业海域和重要滨海旅游区。
- covers exploitation-prohibited zone and restricted development zone, including important estuary, coastal wetland, mangrove, coral reef, sea grass, special island, marine protected area, natural landscape, historical cultural relics and remains, sandy coastline, sand source protection areas, major fishing area and recreational area.

Marine ecological red-line areas

海洋生态红线区



Red line areas consist of Exploitation-prohibited Zone and Restricted Development Zones 红线区分为禁止开发区和限制开发区

Exploitation-prohibited Zone

禁止开发区

including (1)the core area and buffer zone of natural MPAs, (2) the key protected areas and reserved areas of the special marine protected areas.

包括海洋自然保护区的**核心区和缓冲区**、海洋特别保护区的**重点保护区和预留区**。

Restricted Development Zones

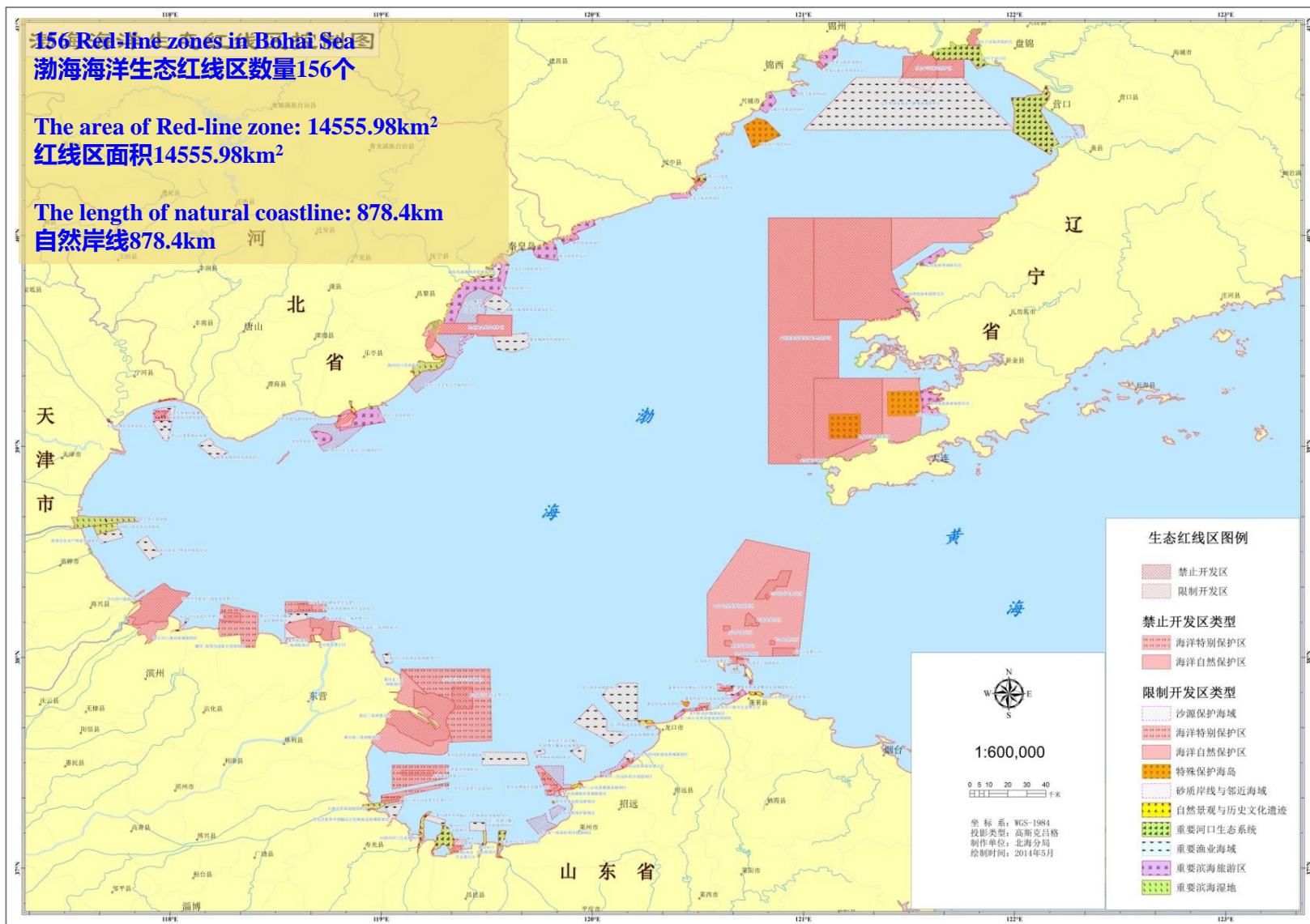
限制开发区

Including (1)the experimental area of natural MPAs, (2)the moderate use area and the ecological and resource recovery area of special MPAs, (3)other important marine ecological function areas, ecological sensitive areas and ecologically fragile areas.

包括海洋自然保护区的**实验区**，海洋特别保护区的**适度利用区和生态与资源恢复区**及除上述之外的重要海洋生态功能区、生态敏感区和生态脆弱区。

Delimitation of Red-line zone in Bohai Sea

生态红线区划定





Control Indices 控制指标

生态红线区面积控制指标

Area of ecological Red-line area in Bohai Sea

——渤海海洋生态红线区面积占渤海近岸海域
面积37.53%

The area of ecological Red-line area in Bohai Sea
accounts for 37.53% of the offshore area of

海域	面积比例
辽宁省 Liaoning Province	45.20%
河北省 Hebei Province	26.02%
天津市 City of Tianjin	10.24%
山东省 Shandong Province	40.05%
合计 Total	37.53%



Control Indices 控制指标

自然岸线保有率控制指标

Retention rate of natural coastline

- ❖ 根据目前渤海自然岸线的分布情况，确定渤海自然岸线保有率占渤海总岸线的30.97%，维持现有砂质岸线长度。
- ❖ According to the current distribution of natural coastline in Bohai sea, the retention ratio of natural coastline of the Bohai sea is 30.97 % of the Bohai total coastline, and the length of the existing sandy coastline has to be maintained.

海 域 Sea area	自然岸线保有率 Retention rate of natural coastline
辽宁省 Liaoning Province	31.5%
河北省 Hebei Province	20.05%
天津市 City of Tianjin	12.12%
山东省 Shandong Province	40.14%



Control Indices 控制指标

水质控制指标 Water Quality

- ❖ 渤海海洋生态红线区域内实行严格的水质控制指标，至2020年总体水质达标率不低于80%。
- ❖ In the Red-line zone of Bohai, strict water quality control indicators shall be applied, and the overall water quality compliance rate should be no less than 80 % by 2020.

陆源江河入海污染物减排指标

Pollutant emission reduction index of pollutants from land-based river discharging into Bohai Sea

- ❖ 2020年，渤海海洋生态红线区实现陆源入海直排口污染物排放达标率100%。
- ❖ By 2020, the outlets discharging straightly into Bohai Sea must be 100% standardized discharged.

Management and control measures

管控措施



海洋生态红线区类型	一般管控要求	开发行为管控措施要求
海洋自然保护区 Natural marine protected area	执行《中华人民共和国自然保护区条例》。	禁止在自然保护区内进行砍伐、放牧、狩猎、捕捞、采药、开垦、烧荒、开矿、采石、挖沙等活动；禁止任何人进入自然保护区的核心区。因科学研究的需要，必须进入核心区从事科学研究观测、调查活动的，应按照国家《条例》规定的管理机构批准；禁止在自然保护区的缓冲区开展旅游和生产经营活动。因教学科研的目的，需要进入自然保护区的缓冲区从事非破坏性的科学研究、教学实习和标本采集活动的，应当由《条例》规定的管理机构批准。
海洋特别保护区 Special marine protected area	执行《海洋特别保护区管理办法》。	海洋特别保护区生态保护、恢复及资源利用活动应当符合其功能区管理要求。重点保护区内实行严格的保护制度，禁止实施各种与保护无关的工程建设活动；适度利用区内，在确保海洋生态系统安全的前提下，允许适度利用海洋资源，鼓励实施与保护区保护目标相一致的生态型资源利用活动，发展生态旅游、生态养殖等海洋生态产业；生态与资源恢复区内，可以采取适当的人工生态整治与修复措施，恢复海洋生态、资源与关键生境；预留区内严格控制人为干扰，禁止实施改变区内自然生态条件的生产活动和任何形式的工程建设活动。
重要河口生态系统 Major estuary	1、禁止围填海、禁止采挖海砂。	禁止围填海、采挖海砂、设置直排排污口及其他可能对河口生态功能造成危害或不良影响的开发活动，并加强对重要河口生态系统的整治与生态修复。
重要滨海湿地 Major wetland	2、不得新设陆源排污口。	禁止围填海、矿产资源开发及其他可能改变海域自然属性、对湿地生态功能造成危害或不良影响的开发活动，并加强对受损滨海湿地的整治与生态修复。
重要渔业海域 Fishing area	3、严格控制河流入海污染物排放。	禁止围填海、截断洄游通道、水下爆破施工及其他可能对渔业资源育幼、索饵、产卵造成危害或不良影响的开发活动。
特殊保护海岛 Protected island	4、控制养殖规模，鼓励生态化养殖。	禁止围填海、炸岩炸礁、填海连岛、实体坝连岛、沙滩建造永久建筑物、采挖海砂及其他可能对海岛生态系统及其自然地形、地貌造成危害或不良影响的行
	5、对已遭受破坏的海洋生态红线区，实施可行的整治修复措施，恢复原有生态功能。	为，并加强对受损海岛生态系统的整治与修复。
	6、实行海洋垃圾巡查清理制度，有效清理海洋垃圾。	

类型	一般管控要求	开发行为管控措施要求
自然景观与历史文化遗产 Natural landscape and historical resorts	1、禁止围填海、禁止采挖海砂。 2、不得新设陆源排污口。 3、严格控制河流入海污染物排放。 4、控制养殖规模，鼓励生态化养殖。 5、对已遭受破坏的海洋生态红线区，实施可行的整治修复措施，恢复原有生态功能。 6、实行海洋垃圾巡查清理制度，有效清理海洋垃圾	禁止设置直排排污口、爆破作业等危及文化遗产安全的，有损海洋自然景观的开发活动，保护历史文化遗产、独特地质地貌景观及其他特殊原始自然景观完整性。
砂质岸线及邻近海域 Sandy coastline and the adjacent area.		禁止实施对沙滩自然属性造成危害或不良影响的开发建设活动。设立砂质海岸退缩线，禁止在高潮线向陆一侧500米或第一个永久性构筑物或防护林以内构建永久性建筑和围填海活动。在砂质海岸向海一侧3.5海里内禁止采挖海砂、围填海、倾废等可能诱发沙滩蚀退的开发活动。加强对受损砂质岸线的修复。
沙源保护海域 Protection of sand source		禁止实施对沙源保护海域造成危害或不良影响的开发建设活动。
重要海湾 Major bay		禁止围填海、工业排污及城市建设开发工程等对海湾生态系统健康造成危害或不良影响的开发活动，其他资源开发建设活动不应超出海湾资源环境承载能力，并加强对受损海湾的整治修复。
重要滨海旅游区 Major tourism areas		禁止实施对滨海旅游造成危害或不良影响的开发建设活动。
珍稀濒危物种集中分布区 Concentration distribution of rare and endangered species		禁止实施对珍稀濒危物种造成危害或不良影响的开发建设活动。
红树林 Mangrove		禁止围填海、毁林挖塘、矿产资源开发及其他对红树林造成危害或不良影响的各类开发活动，保护现有的红树林资源及其生态系统，并加强对受损红树林生态系统的修复。
珊瑚礁 Coral reef		禁止围填海、毁林挖塘、矿产资源开发、设置直排排污口及其他对珊瑚礁造成危害或不良影响的各类开发活动；保护现有珊瑚礁资源及其生态系统，并加强对受损珊瑚礁生态系统的修复。
海草床 Sea grass		禁止围填海、毁林挖塘、矿产资源开发、设置直排排污口及其他对海草床造成危害或不良影响的各类开发活动；限制贝类采挖活动，保护现有海草资源及其生态系统，并加强对受损海草床生态系统的修复。



4. Marine ecological environment protection measures in Bohai

渤海环境保护措施

Marine ecological environment protection measures in Bohai

渤海环境保护措施



2017年5月18日，渤海开始实施最严格环境保护措施

From May 18th, 2017, the strictest environmental protection measures were implemented in Bohai Sea

□ **加快编制和修订海洋空间规划**

Speed up the preparation and revision of marine space planning

□ **用规划优化调整海洋产业布局，统筹安排海洋空间利用活动**

Optimize the layout of marine industry by planning and optimizing the layout of marine industry and make overall arrangements of the activities of ocean space utilization

□ **加强入海污染物联防联控**

Strengthen joint defense and control of land-based pollutants

□ **加强海陆联动，开展渤海入海排污口排查及清理整顿，加快实施重点海域排污总量控制，强化与“河长制”的衔接联动**

Strengthen the linkage of land and the sea, carrying out the investigation and cleaning of discharge outlets into the sea in the Bohai sea, speeding up the implementation of the total discharge control of the key sea areas, strengthening the connection with the " river system"

Marine ecological environment protection measures in Bohai

渤海环境保护措施



□ 加强海洋空间资源利用管控

Strengthen the control of marine space resources utilization

- 推动海域资源利用方式向绿色化、生态化转变，暂停选划临时性海洋倾倒区，暂停围填海项目审批

Promote the green and ecological transformation of marine resource utilization, suspend the selection of temporary marine dumping areas and suspend the approval of reclamation projects

□ 加强海洋生态保护与环境治理修复

Strengthen marine ecological protection and environmental restoration

- 强化湿地保护、自然岸线保护，重点做好三湾两口环境治理和生态修复

Enhance protection of wet-land and nature shoreline. Focus on the environmental management and ecological restoration of “3 bays and 2 estuaries”

□ 加强海洋生态环境监测评价

Strengthen monitoring and evaluation of marine ecosystem and environment of Bohai Sea

- 逐步建成渤海生态环境实时在线监测网，并开展渤海生态本底调查和第三次环境污染基线调查

Establish environment real - time online monitoring network, and carry out the Bohai ecological background survey and the third environmental pollution baseline survey

Marine ecological environment protection measures in Bohai

渤海环境保护措施



□ 加强海洋生态环境风险防控

Strengthen the prevention and control of marine ecological and environmental risks

- 全面排查环境风险隐患，完善分类分级的应急监测和处置预案，提高海洋环境和生态灾害的监测预警水平

Carry out the overall investigation on environmental risks, improve the emergency monitoring and disposal plan of classification, and improve the monitoring and early warning of marine environment and ecological disaster

□ 加强海洋督察执法与责任考核

Strengthen maritime supervision and responsibility assessment

- 实施国家海洋督查制度，建立分级考核目标体系与机制

Implement the national marine supervision system, establish the graded assessment target system and mechanism

□ 加强渤海生态环境保护关键问题研究和技术攻关

Strengthen the researches on key techniques and problems on the protection of marine ecosystem and environment in Bohai



5. Future cooperation

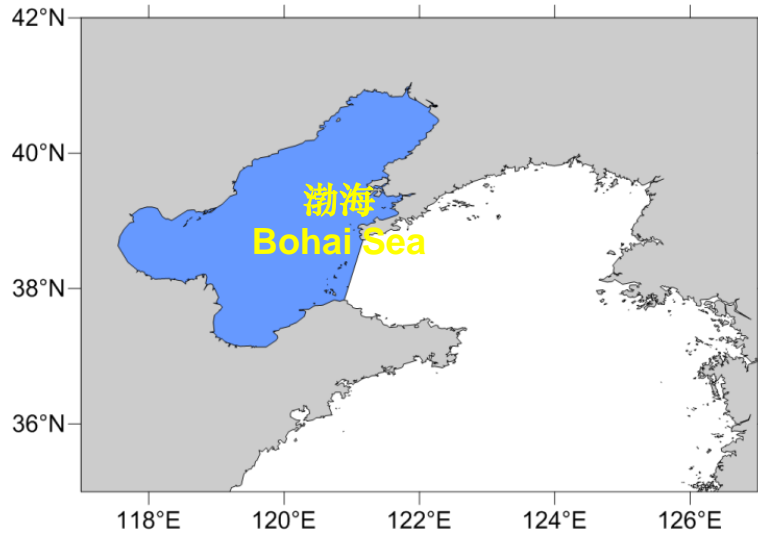
未来合作计划

Common Features of the Bohai Sea and the Blatic Sea

渤海与波罗的海共同点

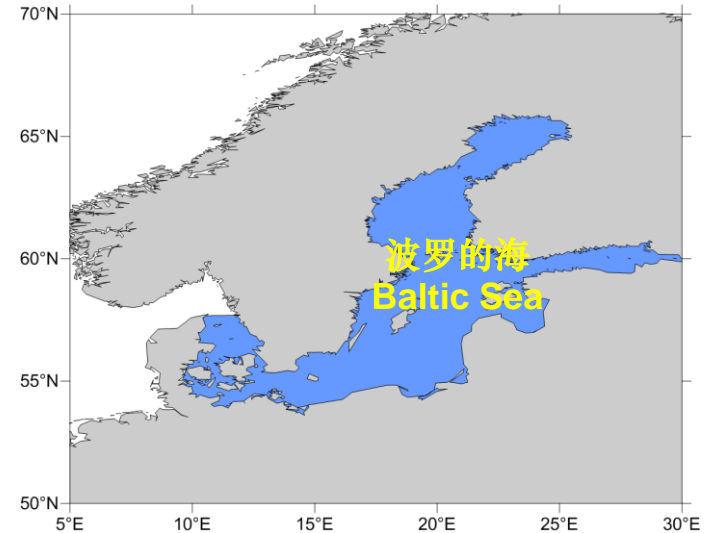


- **Enclosed seas** 都属于半封闭内海，被海峡与外海隔开
- **Shallow seas, mean water level less than 60 m** 都属于浅海，平均水深不超过60米
- **Weak water exchange with outer sea** 水交换能力差
- **Sea ice in winter** 冬季生成海冰



渤海Bohai Sea

- **平均水深Average depth: 18 m**
- **面积Surface area: 77,284 km²**
- **水体总量Water volume: 1,730 km³**
- **海岸线长度Shore length: 2,668 km**



波罗的海Baltic Sea

- **平均水深Average depth : 55 m**
- **面积Surface area : 377,000 km²**
- **水体总量Water volume : 21,700 km³**
- **海岸线长度Shore length : 8,000 km**

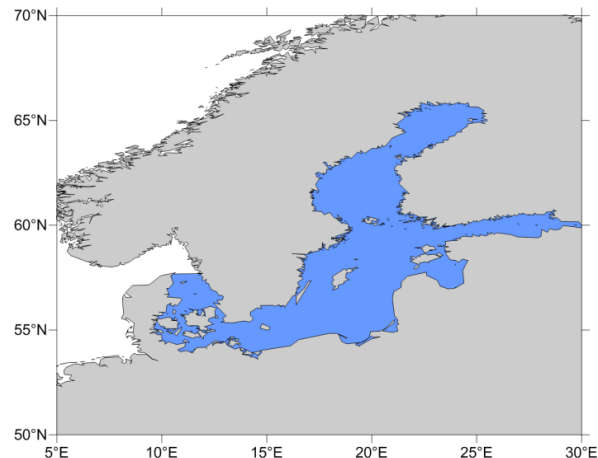
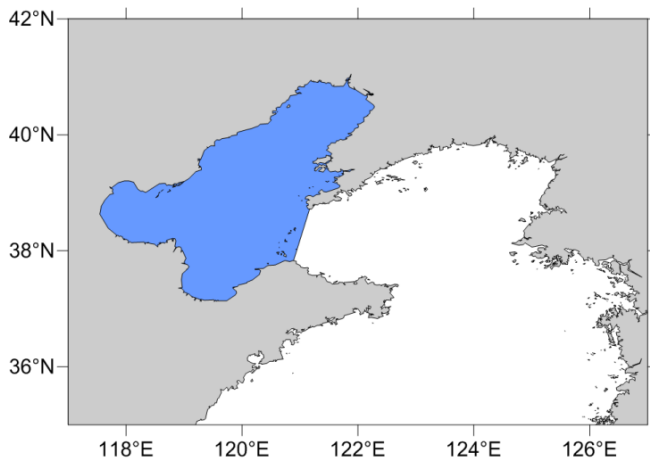
Future cooperation 未来合作计划



Considering the similarities of the Baltic sea and the Bohai Sea, future cooperation could be conducted:

波罗的海与渤海的自然属性具有相似性，可在海洋监测、观测、数值预报模式、生态学研究方面开展交流合作，提高业务化工作水平

- Monitoring 海洋监测
- Observation 海洋观测
- Numerical Forecast Model 海洋预报模式
- Ecological Research 生态学研究





Thank you for your listening!
谢谢!

Marine Environmental Monitoring and Protection Approaches in Bohai Sea

渤海生态环境监测及环境保护措施



❖ North China Sea Branch of SOA 国家海洋局北海分局

- Administration range: Bohai and North Yellow Sea
管辖范围：渤海和北黄海
- Supervisor, administrator, coordinator and supporter
监督者、管理者、协调者、支撑者

❖ Main environmental monitoring plan 渤海生态环境监测计划

- Environment equality and ecological monitoring, environment supervision, public service and ecological environment risk monitoring
环境质量、生态状况、环境监管、公共服务、生态环境风险

❖ Red-line Policy in Bohai Sea 渤海生态红线制度

- the delimitation of the boundary line of the marine ecological red line and its management and control line for the maintenance of marine ecological health and ecological safety
维护海洋生态健康和生态安全而划定的海洋生态红线区的边界线及其管理指标控制线，对重要海域实施分类指导、分区管理、分级保护。

❖ Marine ecological environment protection measures in Bohai 渤海环境保护措施

- From May 18th, 2017, the strictest environmental protection measures were implemented in Bohai Sea
2017年5月18日，渤海开始实施最严格环境保护措施

❖ Future cooperation 未来合作

- Similarities of Bohai Sea and Baltic Sea
渤海与波罗的海具有相似性
- Marine monitoring
海洋监测
Marine observation
海洋观测
Marine forecast
海洋预报

