

唐启升 孟田湘 主编

渤海生态环境 和生物资源分布图集

ATLAS OF THE ECOLOGICAL ENVIRONMENT
AND LIVING RESOURCES
IN THE BOHAI SEA

TANG QISHENG
MENG TIANXIANG

青 岛 出 版 社
QINGDAO PRESS

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序

渔业是国民经济的重要组成部分之一。改革开放以来,我国渔业得到了迅速发展,水产品总产量已突破 1000 万吨,跃居世界第一位。搞好生物资源研究,对我国渔业的长远发展具有十分重要的意义。

目前,在近海传统渔业资源衰退的情况下,要继续发展我国海洋渔业,满足国内外市场对水产品日益增长的需求,必须充分利用我国广阔的浅海滩涂,发展水产品增、养殖业,同时管好、用好现有渔业资源,使它们逐步得到恢复并持续生产。渤海是我国重要的渔业海湾,是黄、渤海区生物资源的重要产卵场和索饵场,也是重要的增、养殖开发作业区。

为了管好、用好黄、渤海区渔业资源,充分利用渤海浅海滩涂,发展增、养殖业,“六五”、“八五”期间,国家都立项对渤海的生物资源和生态环境进行了专门调查研究。本图集就是两次渤海综合调查的技术成果之一。由于是以图集的形式反映渤海生物资源和生态环境的基本情况,所以十分便于各级渔业行政主管部门和有关单位使用,对我们今后生产过程中进行科学决策具有较高的参考价值。

谨祝本图集问世,相信它将为渤海渔业开发与生物资源持续利用做出贡献!

李友瞻

中华人民共和国农业部渔业局局长

1997 年 4 月 20 日

FOREWORD

Fishery is an important part of national economy. China fishery has obtained rapid development since the economic reform and open to the outside world. The total aquatic product has been over 10 million tons, ranking first in the world. The research of living resources is of significance to the long-term fishery development in China.

At present, under the circumstances of serious depletion of conventionally coastal fishery resources, only by fully utilizing the wide shallow sea and intertidal zone for fishery enhancement and aquaculture, and rationally exploiting and managing the standing fishery resources in order to restore the depleted stocks can China marine fishery develop for sustainable utilization, and meet the increasing need of aquatic products at home and abroad. The Bohai Sea is an important spawning and feeding ground of many living resources in the Yellow and Bohai Sea, and is also an important area for enhancement and mariculture.

China set up special surveys on living resources and ecological environment in the Bohai Sea during the sixth and eighth "Five-Year Plan" in order to rationally manage and utilize fishery resources of the Yellow and Bohai Sea, and use shallow sea and intertidal zone for enhancement and aquaculture. The atlas is one of the achievements from the two comprehensive surveys. It is more useful to various fisheries managers and relative institutions because the basic situation of living resources and environment in the Bohai Sea is represented by the atlas. It is also a good reference for scientific decision making in the future.

May the atlas be published. I believe that it will contribute to the exploitation of fishery resources and sustainable utilization of living resources in the Bohai Sea.

Zhuo Youzhan

Director of Bureau of Fisheries,
Ministry of Agriculture

April 20, 1997

前言

渤海是我国内海,平均水深 18.7 米,面积 8 万多平方公里,滩涂辽阔。有黄河、海河、辽河等诸多河流入海,又有辽东湾、渤海湾、莱州湾三大海湾,是我国黄、渤海区生物资源的主要产卵场和大宗贝类的主要分布区,也是我国对虾、贝类养殖的重要作业区。渤海海峡邻近水域又是藻类和海珍品的重要增、养殖区。

为了给生物资源开发和渔业管理提供科学依据,1991 年开始,国家科委在“八五”国家科技攻关项目“海湾渔业增养殖技术研究”(85-14-02)课题中,设立了“渤海增殖生态基础调查研究”专题(85-14-02-03)。参加该专题研究的单位有中国水产科学研究院黄海水产研究所、中国科学院海洋研究所、国家海洋局第一海洋研究所、青岛海洋大学水产学院。参加该专题的科技人员先后达 37 人。研究内容包括水文、水化学环境、初级生产力、浮游生物、渔业生物资源、种间关系等渤海生态系统主要环节的基本特征和动态变化。研究成果得到了参加验收、鉴定的领导和专家的高度评价,并作为《渤海渔业增养殖技术研究》的主要内容,先后获得农业部科技进步一等奖、国家科技进步奖和国家“八五”科技攻关成果奖,本图集就是该项研究的主要技术成果之一。为了更全面系统地认识渤海,研究渤海生态系统的动态变化,图集还收入了 1982~1983 年由中国水产科学研究院黄海水产研究所以及国家海洋局第一海洋研究所完成的“六五”国家科技攻关项目——“渤海水域渔业资源、生态环境及增殖潜力研究”的调查资料。

本图集是参与渤海综合调查的广大科技人员的劳动成果,参加图集编绘的有唐启升、孟田湘、金显仕、姜言伟、万瑞景、周诗赉、崔毅、吕瑞华、康元德、高尚武、王义忠、张铭棣、孙继闽、戴芳群等同志。

这里特别感谢农业部渔业局和国家自然科学基金委员会对本图集出版给予的大力支持,也特别感谢专题验收、鉴定组的领导和专家对本专题技术总结给予的指导和建议。

作 者

1997 年 4 月 4 日

PRE FACE

The Bohai Sea is an inner sea of China and covers an area of more than 80000 km² with a mean depth of 18.7m and with an widely intertidal zone. Major rivers, discharging directly into the Bohai Sea include Yellow River, Haihe and Liaohe. There are three bays inside the sea, namely, Liaodong, Bohai and Laizhou where are major spawning grounds for living resources in the Yellow Sea and Bohai Sea, and main distributional area of important shellfish, and are also of key areas for mariculture of shrimp and shellfish. The waters adjacent to the Bohai Strait are important enhancement and mariculture areas for seaweed and sea delicacies.

China National Science and Technology Commission set up a sub-project "ecological basis investigation for enhancement in the Bohai Sea" (85-14-02-03) under the eighth "Five-Year Plan" project "fishery technique research for enhancement and aquaculture in bays" (85-14-02) since 1991 in order to provide scientific basis for exploitation of living resources and fishery management. The institutions attended in the sub-project include Yellow Sea Fisheries Research Institute (YSFRI), Institute of Oceanology, First Institute of Oceanography, and Ocean University of Qingdao, total 37 scientific staff have participated in the work. The research contents consist of basic characteristics and dynamics of hydrology, hydrochemistry, primary production, plankton, fishery resources, interspecies relationship. The research achievement has obtained high appraisal from leaders and experts after examination and acceptance. The sub-project as major content of "fishery technique research for enhancement and aquaculture in the Bohai Sea" was also successively awarded the Ministry of Agriculture first prize of science and technology progress, the national prize of science and technology progress, and the significant achievement prize of the national eighth "Five-Year Plan" from China National Science and Technology Commission. This atlas is one of the achievements from the sub-project, and the survey data conducted by YSFRI and First Institute of Oceanography during the period of the national sixth "Five-Year Plan" programme "research on fishery resources, ecological environment and enhancement potential of the Bohai Sea" in 1982~1983 have been also included in this atlas in order to overall and systematically understand the dynamics of Bohai Sea ecosystem.

The atlas is an achievement of collaboration from many scientific members of staff who have participated in this project. The following people attend editing and drawing: Tang Qisheng, Meng Tianxiang, Jin Xianshi, Jiang Yanwei, Wan Ruijing, Zhou Shilai, Cui Yi, Lü Ruihua, Kang Yuande, Gao Shangwu, Wang Yizhong, Zhang Mingdi, Sun Jimin, Dai Fangqun etc.

Sincere thanks are given to Bureau of Fisheries, Ministry of Agriculture, and China National Natural Science Foundation for the energetic support to the surveys and publication of the atlas, and to the leaders and experts for their advice and suggestion to the technical summary of the project.

April 4, 1997

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1982~1983 年

渤海生态环境和生物资源调查

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- 渤海幼鱼生物量密度分布

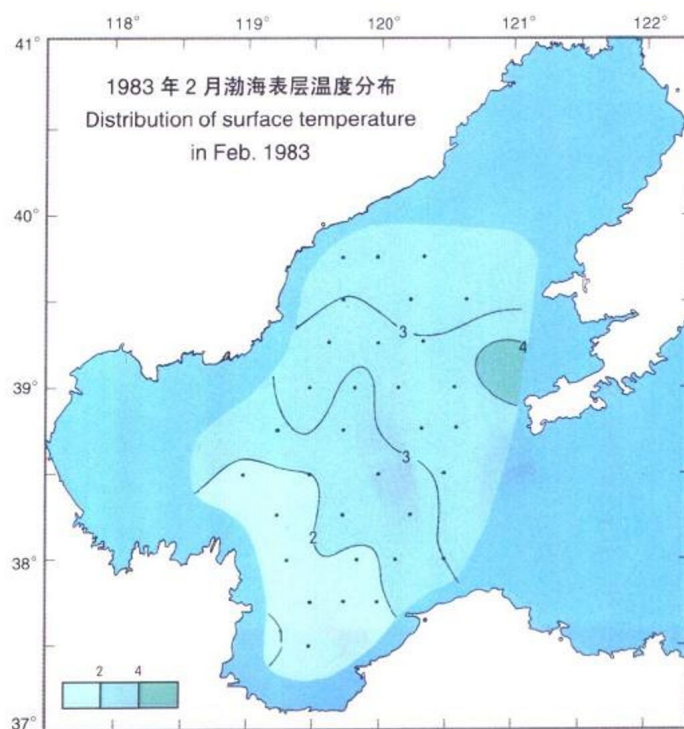
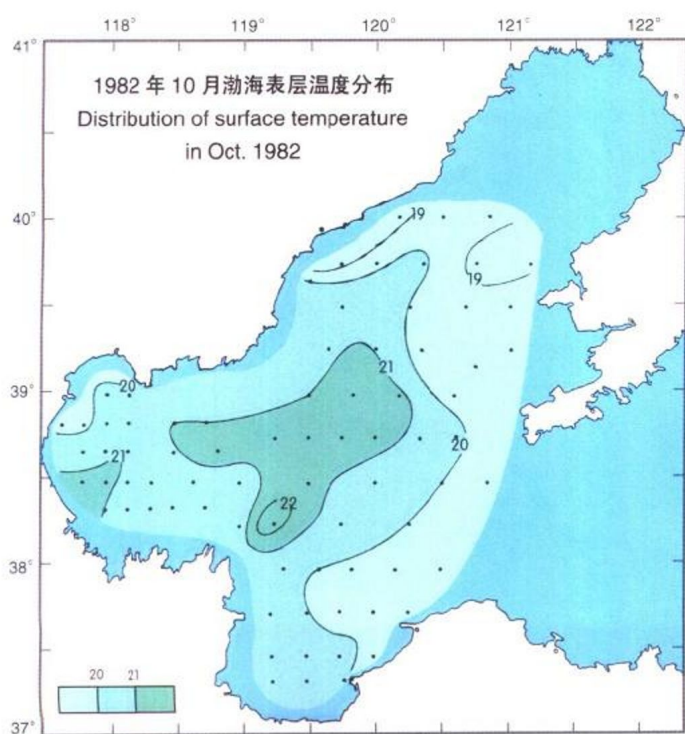
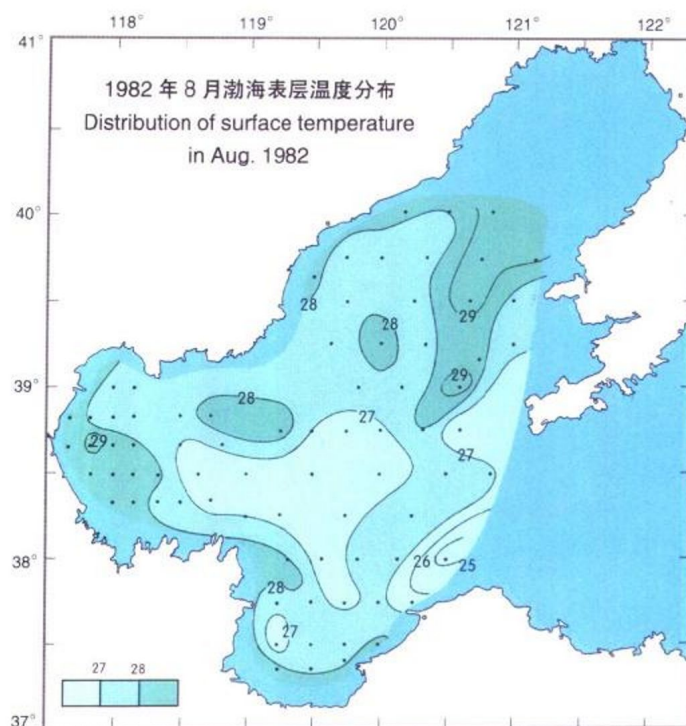
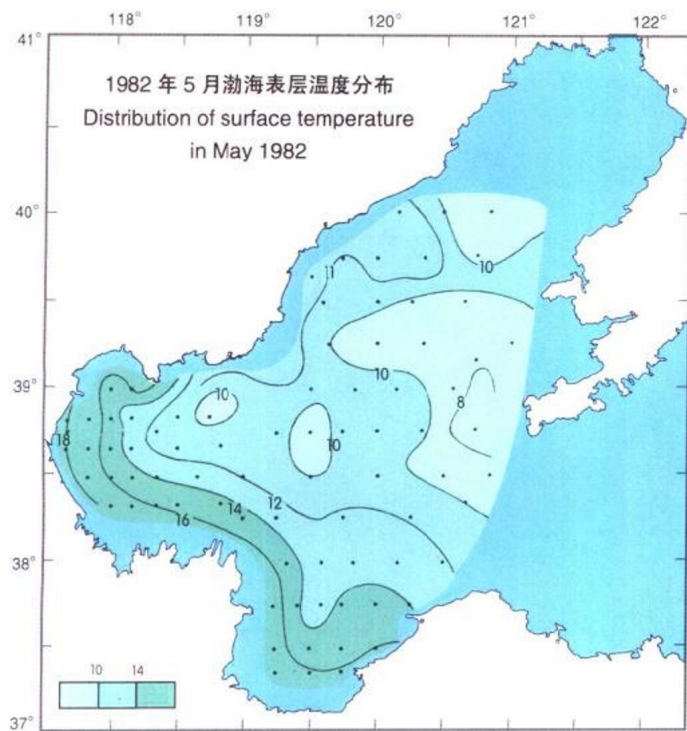
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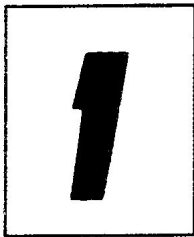
渤海海洋物理化学环境要素分布

Distribution of abiotic environmental factors

§ 1.1 渤海水温分布图 (Temperature)

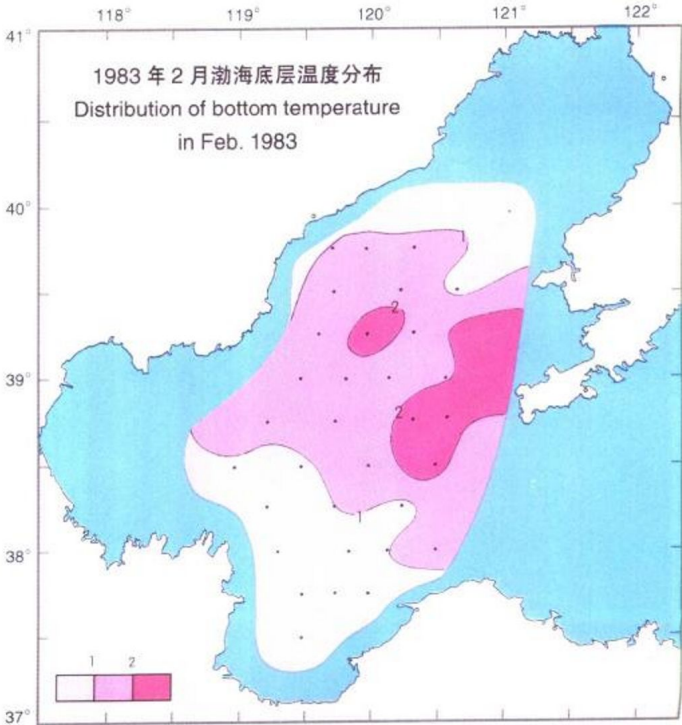
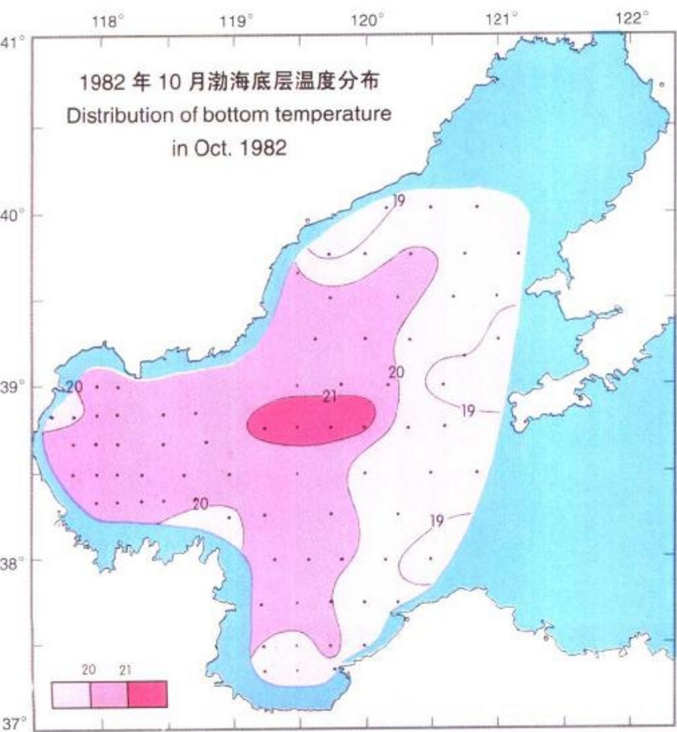
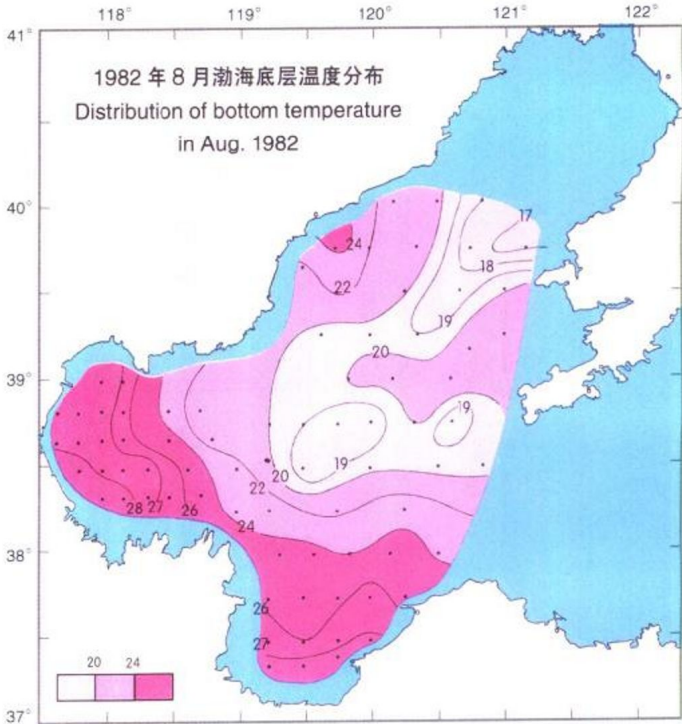
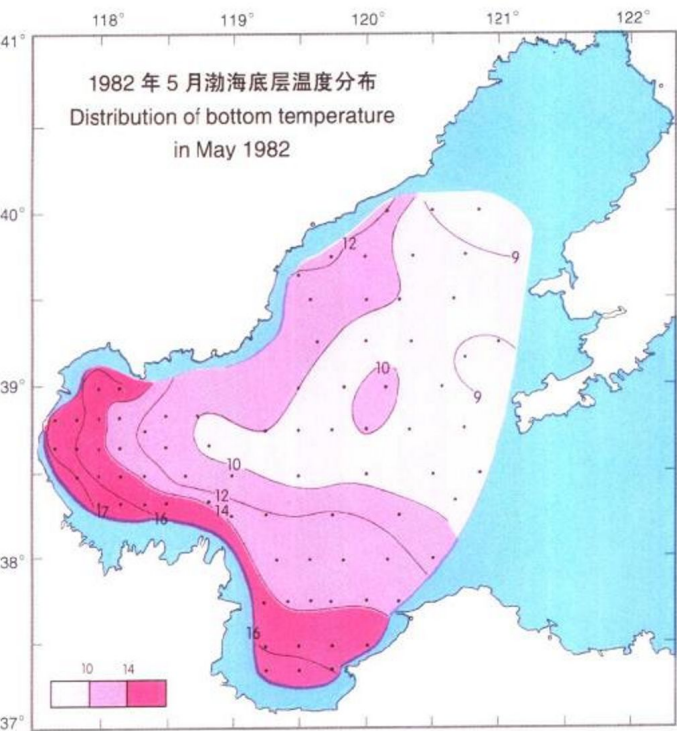
(°C)





渤海海洋物理化学环境要素分布
Distribution of abiotic environmental factors

§ 1.1 渤海水温分布图 (Temperature) (°C)

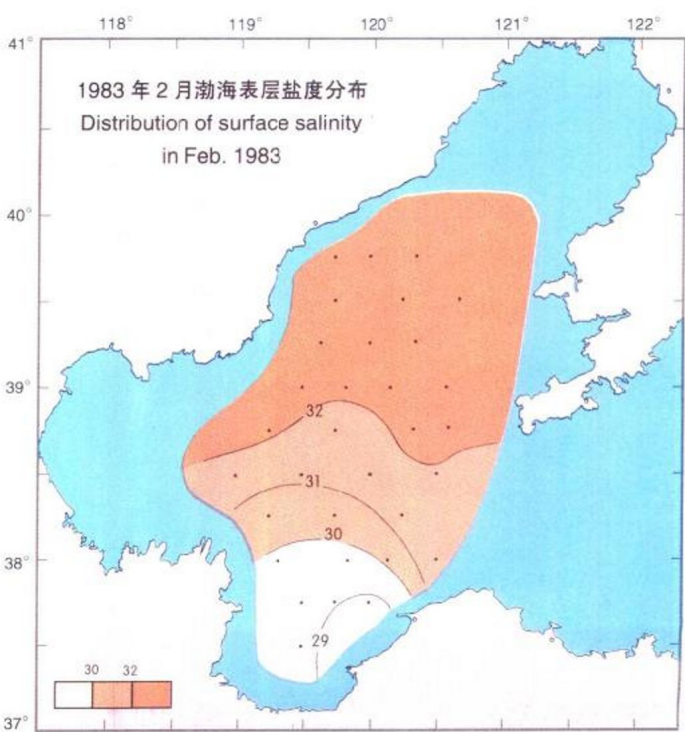
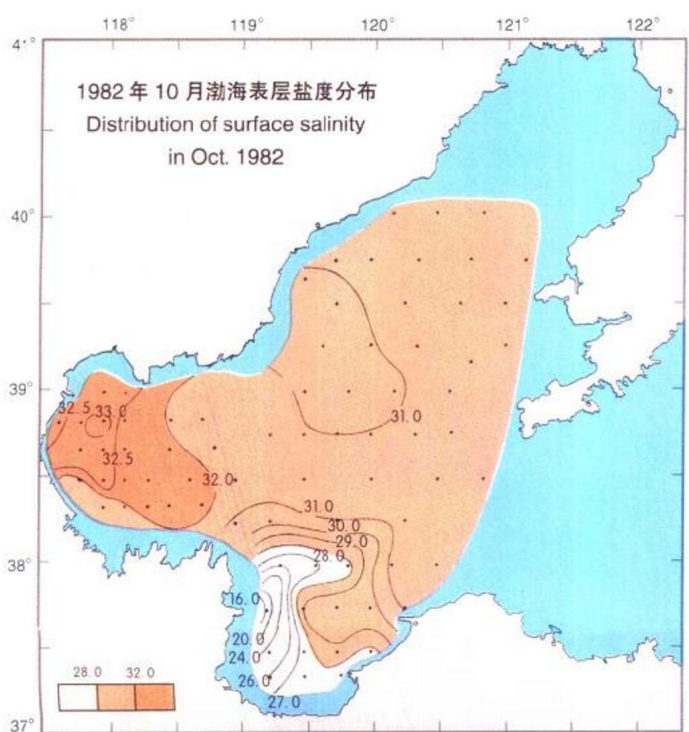
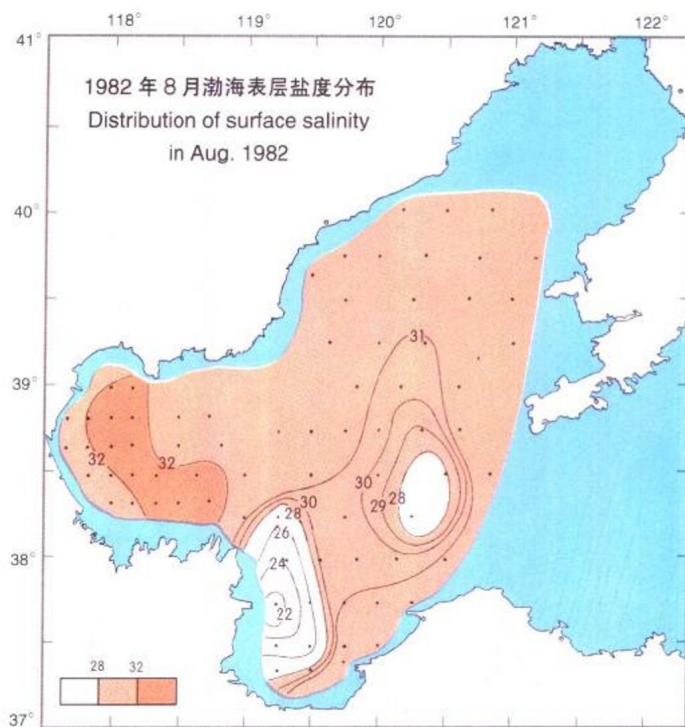
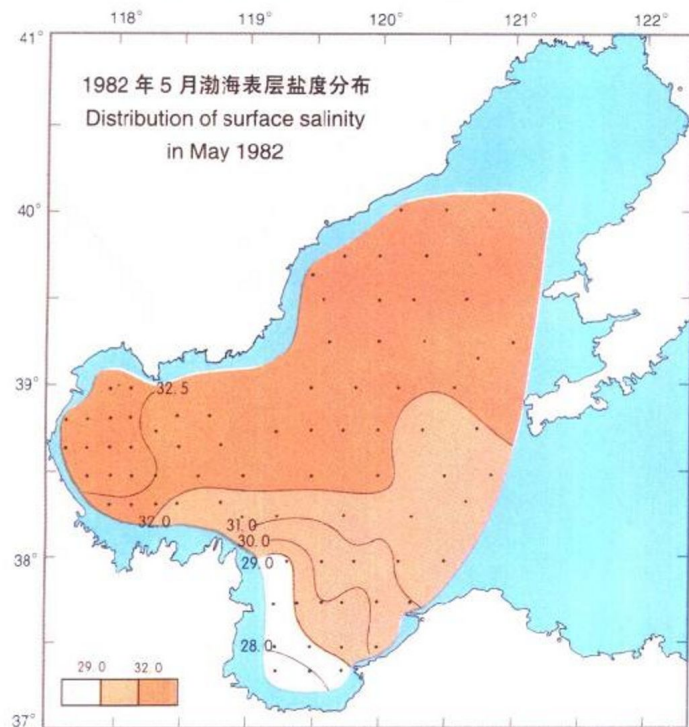


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渤海海洋物理化学环境要素分布

Distribution of abiotic environmental factors

§ 1.2 渤海盐度分布图 (Salinity)

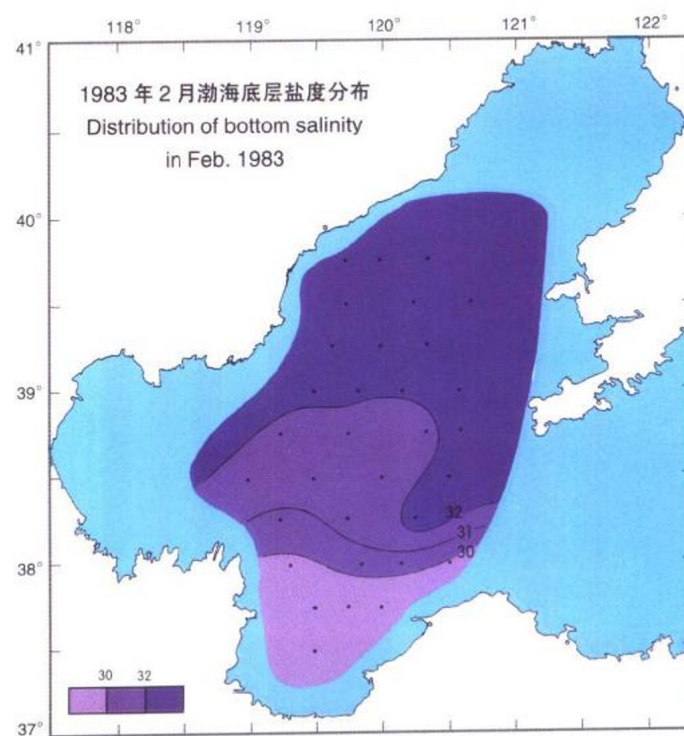
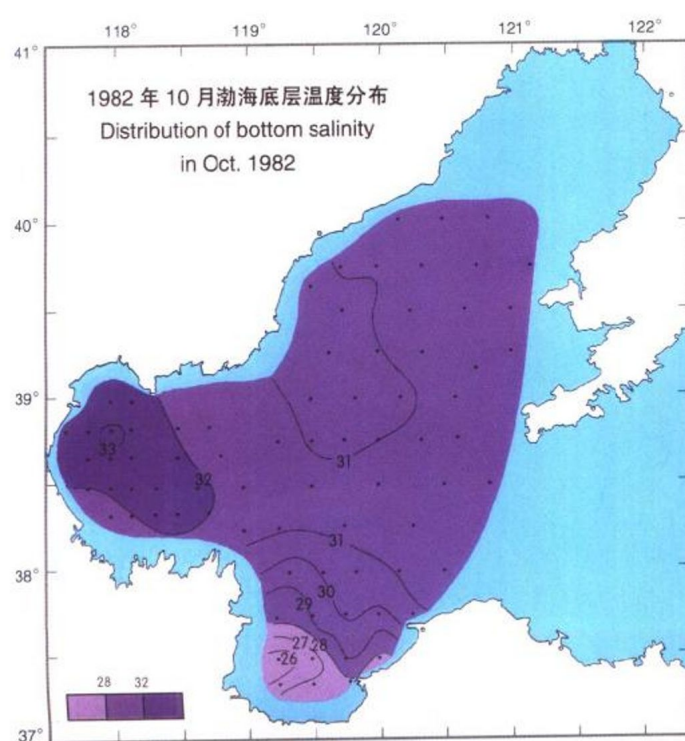
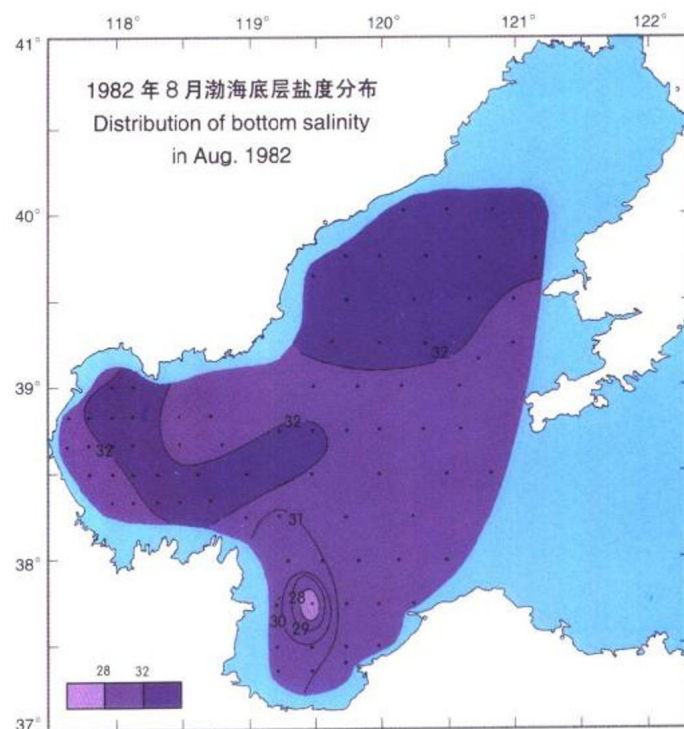
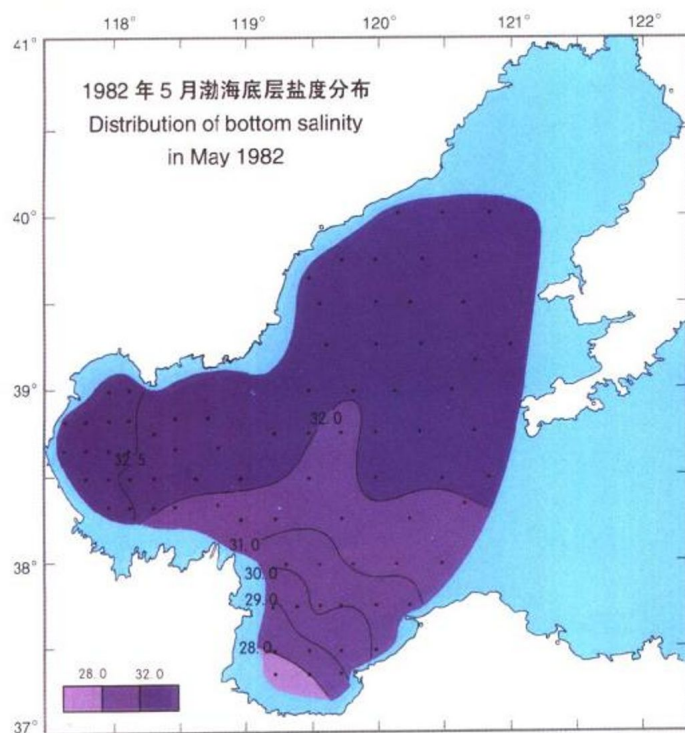


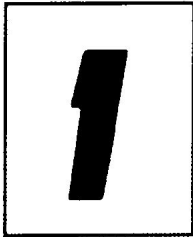
1

渤海海洋物理化学环境要素分布

Distribution of abiotic environmental factors

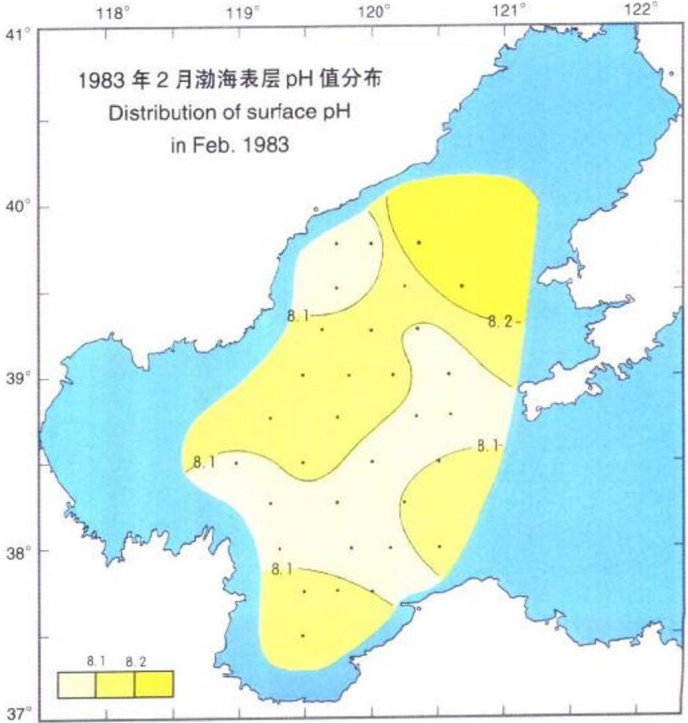
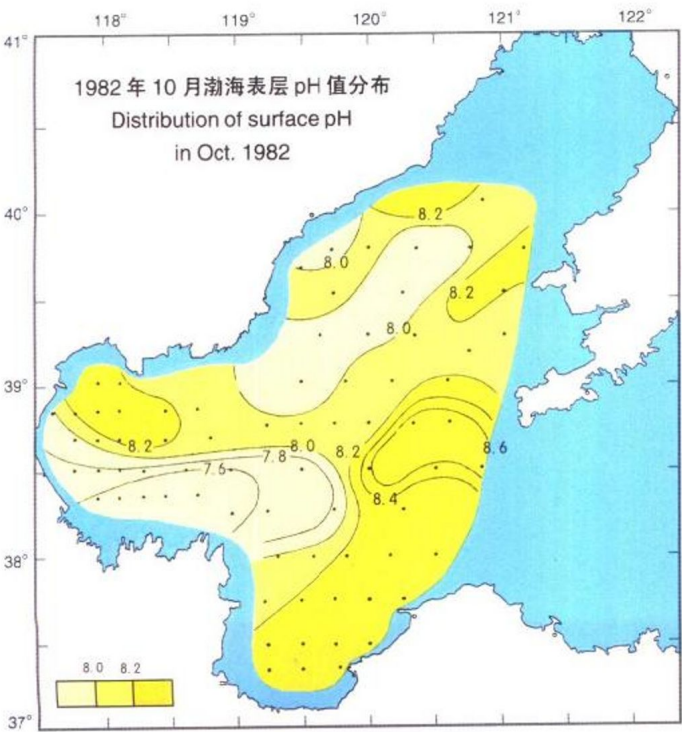
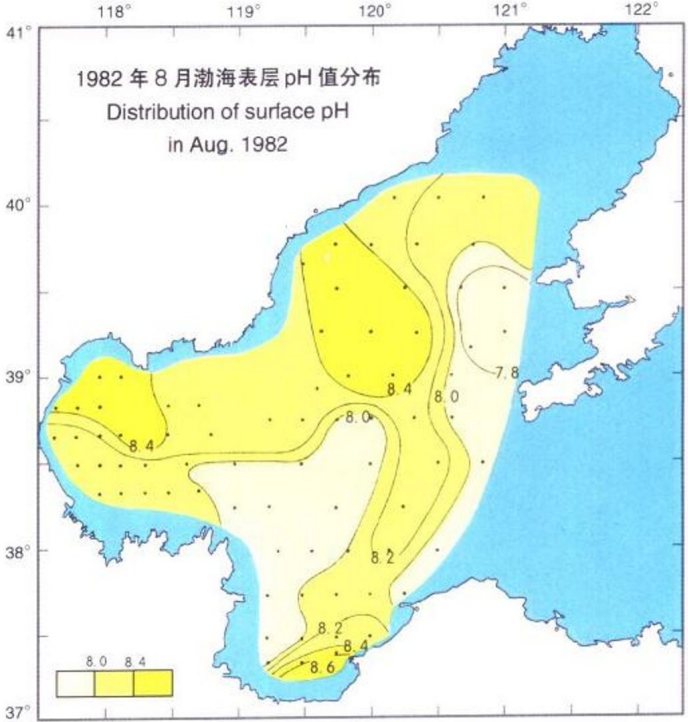
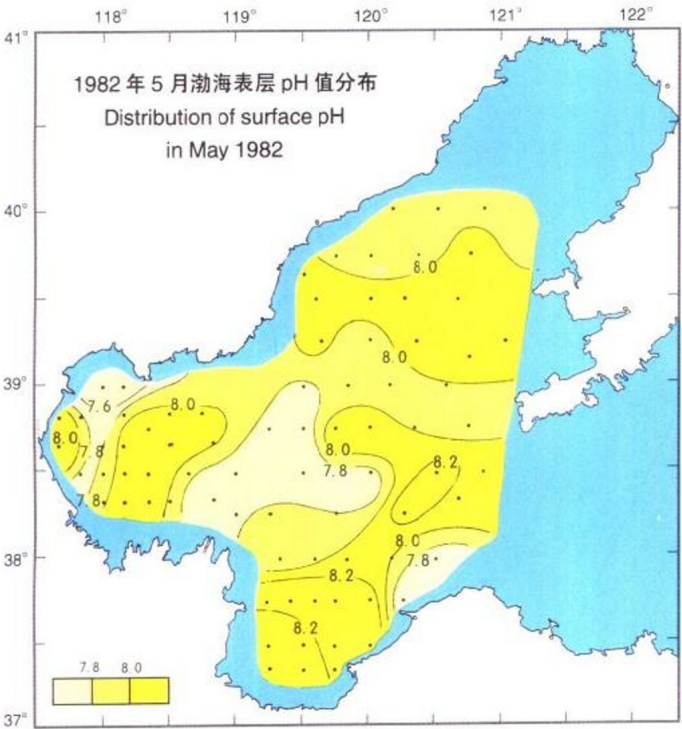
§ 1.2 渤海盐度分布图 (Salinity)

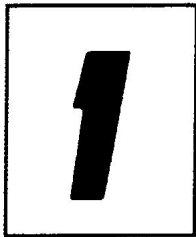




渤海海洋物理化学环境要素分布
Distribution of abiotic environmental factors

§ 1.3 渤海 pH 值分布图 (pH)





渤海海洋物理化学环境要素分布
Distribution of abiotic environmental factors

§ 1.3 渤海 pH 值分布图 (pH)

