河口海岸学国家重点实验室

（华东师范大学）

State Key Laboratory of Estuarine and Coastal Research
(East China Normal University)

2014

年度报告

ANNUAL REPORT

河口海岸学国家重点实验室（华东师范大学）
State Key Laboratory of Estuarine and Coastal Research (East China Normal University)

2014年度报告
ANNUAL REPORT

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CAS – Chinese Academy of Sciences
CAE – Chinese Academy of Engineering
SOA – State Oceanic Administration of China
CAFS – Chinese Academy of Fishery Sciences
MLR – Ministry of Land and Resources

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实验室简介
SKLEC Introduction

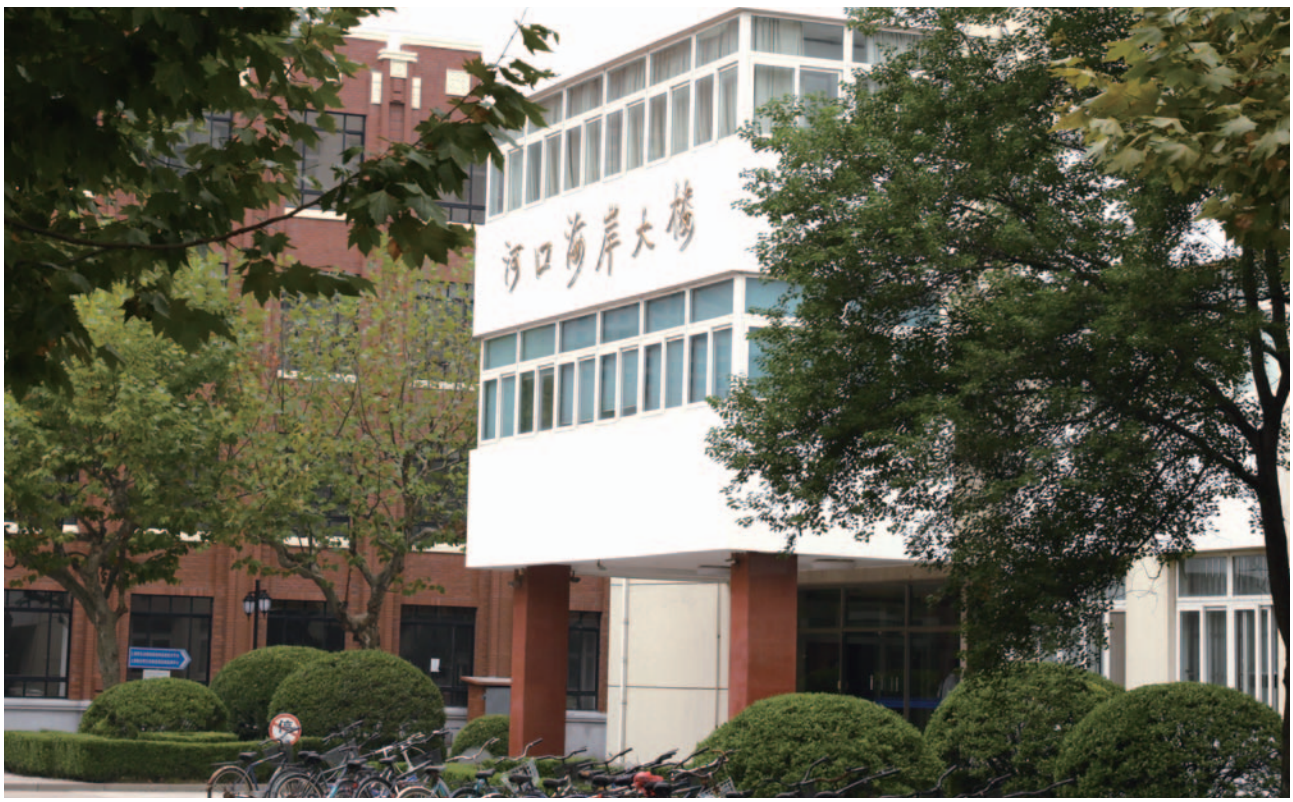
河口海岸学国家重点实验室缘自1957年由教育部批复建立的华东师范大学河口研究室，依托华东师范大学，于1989年由原国家计委批准筹建，1995年12月通过国家验收并正式向国内外开放。

经过二十多年的建设，实验室已拥有一支结构合理、多学科交叉、专业互补、老中青结合的研究队伍；配备了先进的野外勘测及室内测试与分析仪器。实验室现有固定人员63人，其中研究人员54人（教授31人，副教授11人，讲师12人；具有博士学位的52人），技术人员7人，管理人员2人。秉承“开放、流动、联合、竞争”的运行机制，实验室瞄准国际学科前沿，围绕国家重大需求，在河口海岸学科前沿领域深入进行应用基础性研究，已成为代表我国河口海岸研究水平的科研基地与高层次人才的培养基地。

The State Key Laboratory of Estuarine and Coastal Research (SKLEC) was established on the basis of estuarine and coastal research in East China Normal University (ECNU) since 1957. It was set up by the formerly State Planning Commission of China in 1989, and went into operation in December 1995. It is now co-sponsored by Ministry of Science and Technology of China (MOST) and ECNU.

Since 1989, the laboratory has formed a number of multidisciplinary research teams, equipped with advanced instruments both for fieldwork and laboratory analysis. There are 63 fulltime faculties and staff members in the laboratory, which include 54 research faculties (31 professors, 11 associate professors, and 12 lecturers, among them 52 with Ph.D. degree), 7 technicians and 2 administrative staff.

SKLEC carries out a large amount of theoretical and applied research projects to serve the demands of national development, social sustainability, and frontline science. Guided by the philosophy of “Openness, Exchange, Cooperation and Competition”, it has become a high level research and training base for estuarine and coastal studies in China.



概述
Summary

实验室围绕河口演变规律与河口沉积动力学、海岸动力地貌与动力沉积过程、河口海岸生态与环境三个研究方向，承担了973项目、科技部全球变化研究重大专项、科技部基础专项和国家自然科学基金重点项目等课题170多项，开展了河口海岸地区的物理过程、化学过程、生物过程和地质过程综合研究，揭示全球气候变化与人类活动对河口海岸区域的影响。在三峡工程对长江入海泥沙通量的定量评估、河口湿地生物-物理相互作用机制、河口动力地貌模拟、河口近岸氮循环关键过程及微生物作用机理研究、海岸及近海光学遥感应用基础研究、河口新型有机物高效采样和分析方法建立、气候变化对河口湿地生态系统影响评估等方面，取得了显著进步，发表学术论文160多篇，其中SCI论文95篇，包括Earth Science Reviews、Environmental Science and Technology、Journal of Geophysical Research、Scientific Reports等一区、二区论文27篇；出版图集1册、编著书籍1册、出版科普读物1本，1项研究成果获得上海市自然科学一等奖。

SKLEC is dedicated to the research on 1) Estuarine evolution and sedimentation dynamics, 2) Coastal morphodynamics and sedimentary process, and 3) Ecology and environment in costal and estuarine areas. It emphasizes integrated study of physical, geochemical, biological and geological processes in estuarine and coastal regions, and its response to global climate change and human activities. More than 170 projects were ongoing, including National Basic Research Programme of China (973), Ministry of Science and Technology (MOST) Global Change Study Programme, and Key Project of National Natural Science Foundation of China (NSFC). Research progresses include, but not limited to, quantitative assessment of the influence of the Three Gorges Dam on fluvial sediment load of the Yangtze River, bio-physical interaction in coastal wetlands, morphodynamic analysis of estuarine evolution, key process in nitrogen cycle and its microbiological influence, coast and ocean optics and remote sensing applications, passive sampling technology for emergent organic pollutants in estuarine waters and its analytical methods, and assessment of the impact of climate change on coastal wetland ecosystem. More than 160 peer-reviewed papers were published, among which 95 were published in international journals, including top jourals like Earth-Science Reviews, Environmental Science and Technology, Journal of Geophysical Research. Three books were edited or authored by SKLEC faculties. SKLEC won the first class prize of the Natural Science Award from Shanghai Municipality for its outstanding performance in research.

实验室主、承办了第二届国际河口海岸学论坛、第240期东方科技论坛“河口近海环境中新型污染物研究”学术研讨会、中国海洋湖沼学会“全球变化下的海洋与湖沼生态安全”学术交流会“河口海岸环境演变与安全”专题、中坦流域与海岸学术研讨会等重要的国内外学术会议。

A number of international/national academic meetings were hosted by SKLEC, including the 2nd Intrnational Estuarine and Coastal Symposium, the 240th Eastern Science and Technology Forum “Workshop on emerging Pollutants in Estuarine and Coastal Environments”, Sino-Tanzania Workshop on Coastal and Catchment Research, and Session “Environmental Evolution and Safety of Estuary and Coast” of The Marine and Lake Ecological Safety under Global Change Conference organized by the Chinese Society for Oceanology and Limnology.

在研究生教育上，实验室聘请国际知名教授开设了全英文授课的“高级河口海岸研究”(AECS)课程。首次试行申请考核入学的方式招收博士研究生。1篇博士学位论文入选2013年上海市研究生优秀成果。

SKLEC provides the course Advanced Estuarine and Coastal Research (AECS), which was lectured in English by well known international scholars. SKLEC introduces a new Ph.D. student admission scheme, in which overall performance of a Ph.D. student applicant is the key factor to be considered for admission rather than high scores from paper examination. One Ph.D. dissertation was awarded the Outstanding Dissertation of Shanghai Graduate Students.

Richard Bellerby教授入选国家千人计划；王小华、杨昭庆教授入选上海市千人计划；Baskaran Mark教授入选2014年度“高端外国专家项目”。

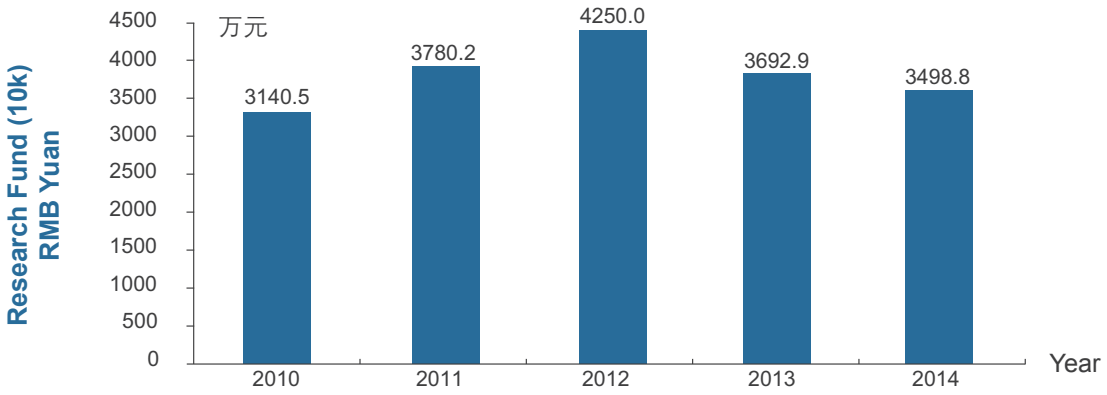
Prof. Richard Bellerby was selected into the Recruitment Program of Global Experts (also named Thousand Talents Program) of China. Prof. Wang Xiaohua and Zhaoqing Yang were selected into the Shanghai Reruitment Program of Global Experts (also named Thousand Talents Program of Shanghai). Prof. Baskaran Mark was selected into the Recruitment Program of High-end Foreign Experts sponsored by the State Administration of Foreign Experts Affairs.

科研课题与进展
Research Programs and Highlights

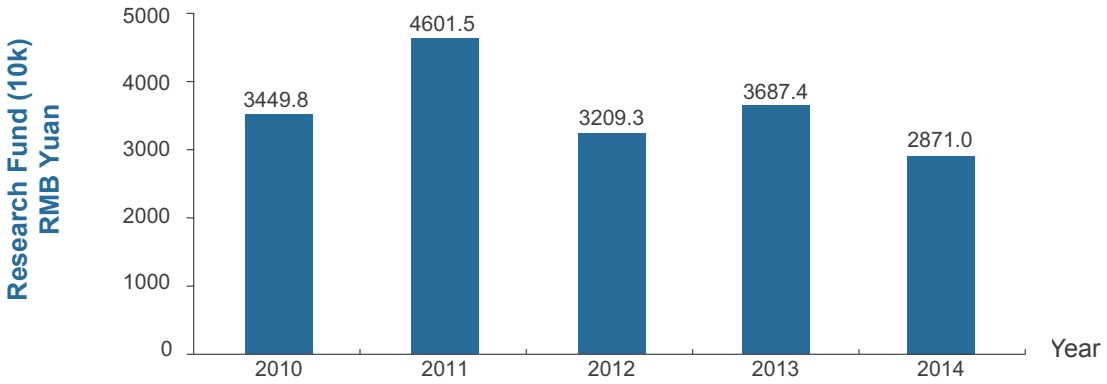
科研课题
Research Programs

2014年度，实验室新增项目50余项，新增合同经费2471万元。其中，国家、省部级项目新增近30余项，合同经费1923万元。2014年度，实验室合计承担课题170余项，实到经费3099万元，其中国家和省部级课题102项，实到经费2427万元。此外，实验室还获得科技部国家重点实验室专项经费900万元，其中400万元用于自主研究课题的部署，500万元用于实验室管理运行和开放课题；获得教育部和国家外专局“111计划”资助“河口海岸水安全创新引智基地”180万元。

More than 50 new projects were granted in 2014, with a total fund of 24.71 million RMB. Among them, nearly 30 projects were awarded from national or provincial funding agencies, which total 19.23 million RMB. More than 170 research projects were carried out in 2014, with a total fund of 30.99 million RMB. Among them, 102 projects were funded by national, provincial and ministerial agencies with a total of 24.27 million RMB. In addition, SKLEC received special funding from the Ministry of Science and Technology (MOST) of China, among which 4 million RMB was targeted at scientific research, 5 million RMB for administration and operation of SKLEC. The “111 Project” “Sustainability of Water Resources in Estuarine and Coastal Environment” received 1.8 million RMB from the Ministry of Education (MOE) and the State Administration of Foreign Experts Affairs (SAFEA) of China.



2010-2014年实到科研经费
Competitive Research Fund Received in 2010-2014



2010-2014年新增合同经费
Contracted Competitive Research Funding in 2010-2014

新增重要项目简介
Brief Introduction of Selected New Projects

国家自然科学基金重大国际(地区)合作与交流项目：高浊度河口航道回淤及滩槽系统响应研究(5132010500)
NSFC Major International Cooperation Project: Navigation to a resilient estuary - morphological interactions between navigation channel and estuary (2014.01-2018.12)

该项目由华东师范大学和代尔夫特理工大学共同承担。项目主要研究内容包括：辨析高浊度河口水沙运动的复杂过程，揭示航道泥沙回淤机制，探究深水航道回淤泥沙来源，量化河口滩槽系统发育的工程响应模式，预测河口滩槽系统的中长期冲淤演变趋势。
This project was carried out jointly by East China Normal University and Delft University of Technology. The main contents of the project include: analyzing the complex process of water and sediment transport in high turbidity estuaries, exploring the sediment source of siltation in deepwater channel and its mechanism, quantifying engineering response to the linked shoals and channels system, forecasting medium- and long-term evolution of estuarine geomorphology.

国家自然科学基金优秀青年科学基金项目：河口环境过程与生态效应(41322002)
NSFC Project for Excellent Young Scientists: Estuarine environmental processes and ecological effects (2014.01-2016.12)

项目以长江口作为典型研究区，运用稳定同位素示踪和现代分子生物学技术，系统研究河口近岸环境系统内厌氧氨氧化过程(ANAMMOX)的时空变异，分析ANAMMOX菌在河口近岸环境系统内的种群结构、丰度、多样性及其分布特征，定量剖析ANAMMOX菌的种群动态变化与ANAMMOX反应速率之间的耦合关系，揭示控制河口近岸环境系统内ANAMMOX过程的关键环境因子及其影响机制，并探讨ANAMMOX过程在河口近岸氮素生物地球化学循环中的重要性，以期为长江口和我国其它河口近岸生态环境的保护与管理、流域氮污染控制提供重要的理论支撑。
Taking the Yangtze Estuary as a typical study area, this project aims to (1) study the spatial and temporal distributions of ANAMMOX in the estuarine and coastal environments using a stable isotope and molecular biological techniques; (2) analyze the compositions, diversities, and abundances of ANAMMOX bacterias ; (3) quantify the relationship between the reaction rates of ANAMMOX and the community dynamics of ANAMMOX bacteria; (4) explore the key environmental facotrs and mechanism controlling ANAMMOX, and (5) discuss the contribution of ANAMMOX to nitrogen cycling in estuarine and coastal environments. The results may provide scientific support for the protection and management of estuarine and coastal environment as well as nitrogen pollution control at the catchment scale.

上海市科委重大项目：潮间带海三棱藨草种群重建和复壮技术研究与示范（14DZ1206004）
Major Project sponsored by Science & Technology Committee of Shanghai Municipal Government: Reconstruction and rejuvenation of *Scirpus mariqueter* population on the intertidal zone: technology and demonstration (2014.10-2016.09)

海三棱藨草在长江口湿地生态系统中具有无可替代的作用。本项目将确定恢复海三棱藨草种群的适宜生境，建立海三棱藨草种群重建和复壮关键技术体系，优化多途径互花米草物理/化学方法清除与防治技术。
Scirpus mariqueter provides the most valuable ecological services in the Yangtze Estuary. The objectives of the project are (1) to determine the suitable habitat for restoration of *Scirpus mariqueter* population; (2) to establish the technical system of *Scirpus mariqueter* population revegetation; (3) to optimize the methodology on exotic plant control based on physical/chemical approaches.

部分新增项目
Selected New Projects

国家自然科学基金重大国际合作项目 NSFC Major International Cooperation Project	
高浊度河口航道回淤及滩槽系统响应研究 (5132010500) Navigation to a resilient estuary - morphological interactions between navigation channel and estuary (2014.01-2018.12)	何青 He Qing
国家自然科学基金优秀青年科学基金项目 NSFC Project for Excellent Young Scientists	
河口环境过程与生态效应 (41322002) Estuarine Environmental Processes and Ecological Effects (2014.01-2016.12)	侯立军 Hou Lijun
国家自然科学基金面上项目 NSFC General Project	
海平面上升对长江河口湿地演替与分布影响研究 (41371112) The study on impact and response to sea level rise on Yangtze estuarine wetlands (2014.01-2017.12)	田波 Tian Bo
基于辐射传输和颗粒光学的近似方法遥感估算沿海浑浊水体光学和生物地球化学参数 (41371346) Radiative transfer and particulate optics approximations for assessment of optical and biogeochemical variables in turbid coastal waters (2014.01-2017.12)	Leonid Sokoletsky
湖泊水华过程中溶解有机物结构组成的时空变化及其环境指示意义 (41373119) Seasonal and spatial variations on dissolved organic matter composition in eutrophic lakes and its environmental implication (2014.01-2017.12)	张芬芬 Zhang Fenfen
我国黄海海底地下水排泄及营养盐入海通量的研究 (41376089) The investigation of submarine groundwater discharge and nutrient input into Yellow Sea (2014.01-2017.12)	杜金洲 Du Jinzhou
北部湾北部强潮海滩动力地貌过程 (41376097) Morphodynamic processes of macro-tidal beach along the northern Beibu Gulf (2014.01-2017.12)	戴志军 Dai Zhijun
长江口细颗粒泥沙絮凝对表层水体光谱反射率的影响 (41376098) Flocculation of fine grain suspended sediment and its impact on spectral reflectance out of estuarine water surface in the Changjiang Estuary (2014.01-2017.12)	蒋雪中 Jiang Xuezhong
国家自然科学基金项目-主任基金 NSFC Director Special Fund	
长江口科学考察实验研究 (41349903) Scientific investigation of the Yangtze Estuary (2014.01-2014.12)	张卫国 Zhang Weiguo
长江河口河槽演变过程对大型工程的响应 (41340044) Response of estuarine channel morphological process to the large engineering projects within the watershed and estuary of Yangtze River (2014.01-2014.12)	程和琴 Cheng Heqin
长江口外低氧区近千年来的沉积地球化学过程演变及其生态环境效应 Evolution of the sedimentary geochemical processes in the Changjiang Estuary hypoxia during the last thousand years and its ecological environmental effects (2014.01-2014.12)	孟翊 Meng Yi

国家自然科学基金青年科学基金项目 NSFC Young Scientist Fund	
东海内陆架泥质区末端中晚全新世物源及其对洋流的指示 (41301214) Sediment provenance of the southernmost region of inner shelf mud wedge in the East China Sea: implication for Holocene coastal currents (2014.01-2016.12)	陈静 Chen Jing
高含沙河口导堤丁坝算法的建立以及在长江口北槽的初步应用 (41306080) Development of dike-groyne algorithm for high-turbidity estuary and its priliminary application on the North Passage of the Changjiang Estuary (2014.01-2016.12)	葛建忠 Ge Jianzhong
省部级项目 Project Funded by Provincial and Ministerial Commission	
潮间带海三棱藨草种群重建和复壮技术研究与示范(上海市科委重大项目课题) (14DZ1206004) Reconstruction and rejuvenation of *Scirpus mariqueter* population on the intertidal zone: technology and demonstration (Major Project sponsored by Science & Technology Committee of Shanghai Municipal Government)(2014.10-2016.09)	张利权 Zhang Liquan
长江口咸潮入侵格局变化和成因及预警预报提升(上海市科委科技项目)(14231200402) Pattern change and its causes, warning and forecasting improvement of saltwater intrusion in the Changjiang Estuary(Science & Technology Commission of Shanghai Municipal Government Project) (2014.04-2016.16)	朱建荣 Zhu Jianrong
维甲酸X受体抑制剂（UVI3003）毒性分子标志物的筛选与验证 (教育部留学回国人员启动基金) (第47批) Toxicity biomarker discovery of a representative retinoid X receptor antagonist UVI3003 (Scientific Research Foundation for Returned Scholars, Ministry of Education of China) (2014.01-2015.12)	郑亮 Zheng Liang
河口盐沼湿地大型底栖动物食性功能群的时空变异型 (教育部留学回国人员启动基金)(第47批) Spatial and temporal variations of the benthic macroinvertebrate feeding habit functional groups in the estuarine salt marshes (Scientific Research Foundation for Returned Scholars, Ministry of Education of China) (2014.01-2015.12)	童春富 Tong Chunfu
长江口水/盐条件对滨海湿地初级生产力格局的调控机理与空间建模(教育部留学回国人员启动基金) (第47批) Regulatory mechanism of water and salinity conditions on spatial pattern of primary productivity of coastal wetlands in the Yangtze River mouth: a model approach (Scientific Research Foundation for Returned Scholars, Ministry of Education of China) (2014.01-2015.12)	葛振鸣 Ge Zhenming

科技部实验室专项基金
MOST Special Fund

2014年，科技部实验室专项共资助研究团队自主课题7项，人才队伍课题3项，人才培养项目1项。
Laboratory special fund, supported by the Ministry of Science and Technology (MOST) of China, granted seven research cluster projects, four projects for faculties.

各团队自主课题经费额度为150万元，分3年执行(2012年-2014年)。2014年，各团队研究的主要内容为：长江三角洲全新世地层结构与地貌发育、海表风矢量对悬浮泥沙扩散机制作用的研究、长江口滨海湿地碳源/汇时空格局对气候变化的响应、近岸河口新型有机污染物的环境行为及复合污染效应、南海北部带鱼和微生物对海洋环境变化响应、中长时间尺度的三角洲地貌演变、长江河口径流及冲淡水扩展的动力学控制机制研究。
Each research cluster was granted a three-year (2012-2014) project with a total of 1.5 million RMB. In 2014, the research contents carried out by the research clusters include: 1) Holocene stratigraphy of the Yangtze River delta and geomorphological evolution; 2) Suspended sediment transport due to sea surface wind; 3) Spatial-temporal

variation of carbon source/sink pattern in the Yangtze Estuary wetlands and its response to climate change; 4) environmental behavior of emerging organic pollutants in coastal and estuarine waters and combined pollution effects; 5) Response of *Trichiurus spp.* and microorganisms to marine environmental change in the northern South China Sea; 6) Meso- to long-term morphological evolution of large deltas; 7) River and tidal forcing on Changjiang plume and estuarine morphodynamics.

专项基金自主课题资助一览表
List of Projects Granted to Research Clusters (2012-2014)

项目名称 Project	研究团队 Research Cluster
长江流域 - 三角洲全新世环境演化：人与自然互动 Holocene Evolution of the Yangtze River Basin-Delta: Interaction of Human and Environment	沉积环境演变研究中心 Center for Paleoenvironmental Changes
河口海岸水域光学 / 微波特性研究 - 以悬浮泥沙及水下地形遥感应用为例 Optical and Microwave Characteristics of Estuarine and Coastal Waters: Remote Sensing Applications on Suspended Sediment and Underwater Topography as Examples	遥感与地理信息研究中心 Center for Remote Sensing and Geoinformatics
长江口湿地碳源 / 汇稳定性对气候变化的响应及适应性调控策略研究 Response of carbon source/sink stability of the Yangtze Estuary wetland to climate change and its adaptive adjusting strategies	湿地生态研究中心 Center for Coastal Wetland Ecosystems
近岸河口新型有机污染物的环境行为及复合污染效应 Emerging Organic Pollutants in the Yangtze River Estuary and Coastal Region: Environmental Behavior and Combined Pollution	水环境研究中心 Center for Aqua Environment
海南东部潟湖物质通量特征及其对毗邻生态环境的影响 Material Flux Characteristics of Lagoon in the Eastern Part of Hainan Province and Its Effect on Adjacent Environment	化学海洋学与生物地球化学研究中心 Center for Chemical Oceanography andBiogeochemistry
大河三角洲沉积动力与地貌动力耦合理论及应用研究 Coupling Theory of Sediment Dynamics and Morphodynamics of Large River Delta and Its Application	动力地貌与沉积研究中心 Center for Morphodynamics and Sedimentation
河口海岸水沙运动对自然和人类驱动的响应机制 Estuarine and Coastal Hydrodynamics and Sediment Dynamics in Response to Natural Processes and Human Activities	水沙动力学及工程应用研究中心 Center for Hydro-Sediment Dynamicsand Coastal Engineering

专项基金人才队伍、人才培养课题资助一览表
List of Recipients of Special Fund for Research Faculties

项目名称 Project	负责人 Investigator
利用原生动物对长江口环境污染的监测与评价 Use of Protist Cummunity Patterns to Monitor Water Quality in Yangtze Estuary, China	许媛 Xu Yuan
基于光释光技术的上海地区贝壳沙堤的年代学研究 Chronology of Cheniers in the Shanghai Area, Based on Optical Dating	年小美 Nian Xiaomei
稳定化 NZVI体系对含氯新型污染物的吸附、还原脱机理研究 Study on the Adsorption, Reduction, and Desorption of Emerging Chlorinated Contaminant by Stabilized NZVI	徐江 Xu Jiang
河口海岸环境观测技术研究 Study of Observation Technology in Estuary and Coast Environment	张文祥 Zhang Wenxiang

研究进展
Research Highlights

2014年，实验室在河口研究方面，围绕定量评估气候变化和人类活动对入海水沙通量影响的定量评估、盐水入侵数值预报技术、泥沙物源、悬沙的垂向分布、河口河槽沉积物侧向捕集机制、分汊河口的地貌演化格局、河口动力地貌模拟、河口及近海悬浮颗粒稳定碳氮同位素时空分布机制、流域土地利用对河口有机物分布影响等主题开展了深入研究；在海岸研究方面，围绕淤泥质潮滩沉积动力学、冲淡水沿苏北海域扩展的动力机制、埋藏盐沼的矿物学表征、海岸生态系统脆弱性评估、盐沼植被结构变化对生态系统功能的影响、湿地碳源-汇格局的生态过程、水下三角洲的污染沉积记录、海岸光学遥感基础、海岸悬沙遥感解译等方面开展了深入研究；在生态环境方面，围绕湿地生物-物理相互作用、溶解态氮同位素分析新技术、新型有机污染物（抗生素）的被动采样技术、河口有机质行为、新型有机污染物对河口近岸氮素反硝化过程的影响、海底地下水排放及营养盐输运、海洋微塑料污染、有机锡致畸机制等开展了深入研究。

In 2014, in the field of estuarine study, the following topics are focused on: quantitative ascription on the influence of climate change and human activities on fluvial water and sediment discharge,numerical forecasting technique for salinity water intrusion, sediment source, vertical distribution of suspended sediment, lateral entrapment of sediment in estuarine channels, geomorphological evolution of bifurcated estuary, morphodynamic analysis of estuarine evolution, distribution of stable isotope of carbon and nitrogen in suspended matter in estuary and adjacing seas and its controlling factors, impact of land use on organic matter distribution in estuary. In the field of coastal study, the topics are: sedimentary processes on muddy tidal flat, hydrodynamic mechanism of diluted freshwater dispersion along the northern Jiangsu coast, mineraological characterization of buried saltmarsh facies, vulnerability assessment of coastal ecosystem, impact of saltmarsh vegetation structures on ecological function, ecological process linked to carbon source/sink pattern in costal wetland, pollution record in subaqueceous delta, fundamental study of coastal remote sensing, monitoring of suspended sediment concentration using remote sensing images. In the field of ecological and environmental study, the following areas are focused on: bio-physical interaction in coastal wetlands, new method for analysis of isotope of dissolved nitrogen, passive sampling technique of ermegent organic pollutants (EOP), organic matter behaviors in esturine environments, the impact of EOPs on denitrification process, submarine groundwater discharge and its deliervery of nutrients, marine microplastic pollution,imposex induction by organic tin pollution.

此外，实验室紧密结合国民经济和社会发展需求，努力解决沿海地区有关重大工程中的关键科学技术问题，为沿海地区国民经济建设和公众教育服务。实验室正确分析了2014年2月长江河口极端盐水入侵事件，为上海淡水资源保障做出了贡献；改进了东中国海－长江口多尺度、多过程模型系统（ECS-YE-COAWST）,尤其是中天气模型的改进，使得台风路径的模拟更加准确；系统开展了上海市滨海湿地植物调查，并对近10年上海地区滨海湿地植物种类及分布变化进行了分析，为上海市滨海湿地资源保护和管理提供了决策支持。受交通部长江口航道管理局委托，开展长江口深水航道回淤研究；受上海市地质调查研究院委托，开展人类活动影响下长江口海岸带地质环境演化模式研究；受广西海洋局委托，开展北部湾广西海域海岛可持续发展定量评估方法研究；受上海城投原水有限公司委托，开展陈行水库污染状况分析；受中国气象局上海台风研究所委托，开展中国海风暴潮数值模式试报研究等。

In addition, SKLEC was actively involved in the studies aiming at providing support for government decision making, solving key scientific and technological issues related to local and national economic and social sustainable development. We sucessfully forecast the extreme salinity water intrusion event in Feburary 2014, which guarantee freshwater supply for Shanghai. We refined the multi-scale numerical forecasting system ECS-YE-COAWST for the East China Sea and the Yangtze Estuary. Funded by Shanghai Wild Animal and Plant Protection Station, we carried out survey of coastal wetland resources in Shanghai and analysed the changes over the last 10 years, which provided decision support for coastal wetland management in Shanghai. Commissioned by Yangtze Estuary Waterway Administration Bureau, deep-water navigation channel siltation was studied. Commissioned by Shanghai Institute of Geological Survey, geological evolution of the Yangtze Estuary due to human activities were studied. Supported by Guangxi Oceanographic Bureau, assessment method of sustaibable development of islands in Guangxi area was studied. Commissioned by Shanghai Chengtou Raw Water Co., Ltd., pollution status and vegetation coverage of Qingcaosha Reservoir was investigated. Funded by Shanghai Typhoon Institute of China Meterological Administration, numerical forecasting of storm surge in coastal sea of China was carried out.

河口演变规律与河口沉积动力学
Estuarine Evolution and Sedimentation Dynamics

Downstream sedimentary and geomorphic impacts of the Three Gorges Dam on the Yangtze River.
Yang, S.L., Milliman, J.D., Xu, K.H., Deng, B., Zhang, X.Y., Luo, X.X., ***Earth-Science Reviews,*** 2014, 138: 469-486.

Although large dams have been constructed and continue to be constructed on many rivers, the lack of long-term gauging data often makes it difficult to document either reservoir sedimentation or the dams' downstream impacts. More than 50 years of water and sediment data from 20 gauging stations within the Yangtze River's basin provide us a unique opportunity to delineate the impacts from the Three Gorges Dam (TGD), the world's largest dam. During the first decade after TGD completion in 2003, 1.8 Gt of sediments were trapped in the Three Gorges Reservoir (TGR). The TGR's sediment retention rate increased from ~65% during the first three years of operation to ~85% by 2008–2012, when the TGD was in normal operation; in the low-discharge drought years of 2006 and 2011, reservoir retention exceeded 90%. Sedimentation in the TGR has been discontinuous, the most prominent depocenters being at the broad section near the up-river entrance to the reservoir and just up-stream of the dam, where sediment thickness locally exceeds 60 m. Median size of the sediments trapped in the TGR is 11 μm, whereas sediments discharged from the TGR are finer than 5 μm. As a result of sediment retention in the TGR, the river downstream has been eroded at a rate of 65 Mt/yr. Riverbed sediments have coarsened considerably in the first several hundred kilometers downstream of TGD. Sediment discharge into the Yangtze estuary, as measured at the Datong downstream gauging station, decreased by 130 Mt/yr relative to the normal water years of 2001–2002, nearly 90% of which can be attributed to the TGD. With planned construction of large upstream Cascade Reservoirs, the amount of sediment entering the TGR will decline dramatically, thus reducing sedimentation in the TGR and thereby extending its lifespan; by the end of the 21st century, the TGR should have retained more than 80% of its original storage capacity. Sediment outflow from the TGR will likely be less than 15 Mt/yr, compared to 50 Mt/yr at present. Even with downstream channel erosion, the long-term average sed-iment discharge into the Yangtze estuary in future decades most likely will decrease to ca. 110 Mt/yr, only 20% of its level in the 1960s, and further delta erosion is expected.

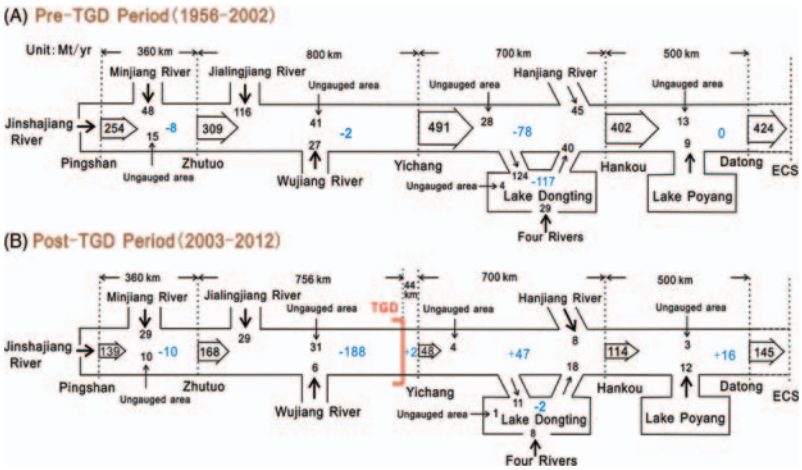


Fig. 9. Flowcharts of annual sediment budget along the Yangtze River (Pingshan to Datong), pre-TGD (A) and post-TGD (B). The numbers in the open arrows represent the amount of sediment transported along the main river; numbers beside solid arrows represent the amount of sediment supply from tributaries or ungauged areas or to and from Dongting or Poyang lakes. Numbers with a "+" or "–" represent the amount of erosion or deposition, respectively, along the Yangtze channel and in Lake Dongting. Datong lies 600km upstream from the East China Sea (ECS).

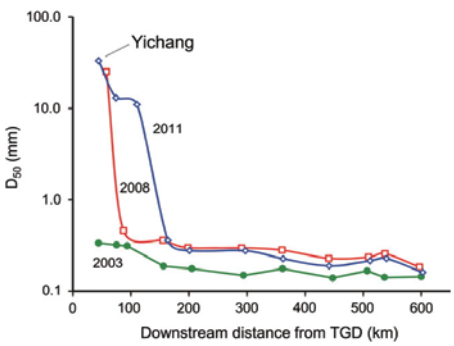


Fig. 10. Median size (D_{50}) of surficial sediments along the first 600 km downstream of TGD. All values represent a cross-channel sectional average of (typically) three samples. 2003: May in 2003 (prior to TGD closure) (original data from Wang, 2006); 2008: January in 2008 (4.5 years after TGD closure); 2011: January in 2011 (7.5 years after TGD closure). Original data from Luo et al. (2012).

Stable isotope ratios of carbon and nitrogen in suspended organic matter: Seasonal and spatial dynamics along the Changjiang (Yangtze River) transport pathway.

Gao, L., Li, D.J., Ishizaka, J., ***Journal of Geophysical Research: Biogeosciences,*** 2014, 119(8): 1717-1737.

Seven cruises were conducted in the Changjiang (Yangtze River) Estuary and the adjacent western East China Sea (ECS) from 2010 to 2012 to study the seasonal variations of δ^{13}Cand δ^{15}N in suspended organic matter. In addition, two cruises in the northeastern ECS in July 2011 and in Tsushima Strait in July 2012 were conducted to evaluate the distribution patterns of these isotopes over the entire Changjiang transport pathway. In summer, the surface δ^{13}C was lowest in the Changjiang Channel, increasing from land to sea, reaching highest values in the central ECS, and then decreasing and remaining relatively constant. In winter, the surface δ13C in the western ECS showed lower values with less variation in general. At most stations, δ^{13}Cincreased from the sea surface to the seabed, reflecting the degradation of sinking organic matter; however, these trends could be changed in the summer by surface phytoplankton accumulation. Combining data from all the Changjiang Estuary and western ECS cruises revealed that when the suspended particulate matter (SPM) was > 135 mg/L, the δ^{13}C values were fairly constant (-24.5‰ to -20.5‰); when the SPM was < 135 mg/L, the δ^{13}C values showed much greater variability (-28.4‰ to -16.6‰). The surface δ^{15}N also showed generally higher values in the central ECS in summer and lower values in winter. The seasonal variations of δ^{13}C and δ^{15}N were largely attributed to the SPM composition change, i.e., more phytoplankton cells in the summer whereas more resuspended sediment particles were present in winter.

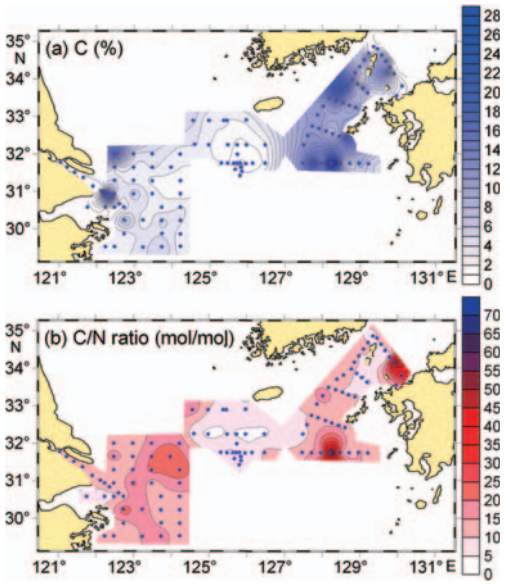


Fig. 10. Distribution of SPM C (%) (a) and C/N molecular ratio (b) at the surface along the Changjiang transport pathway in summer. The data are from the Changjiang Estuary and western ECS cruise in July 2012, from the northeastern ECS cruise in July 2011, and from the Tsushima Strait cruise in July 2012.

The role of river flow and tidal asymmetry on 1-D estuarine morphodynamics.

Guo, L.C., van der Wegen, M., Roelvink, J.A., He, Q., ***Journal of Geophysical Research: Earth Surface,*** 2014, 119: 2315-2334.

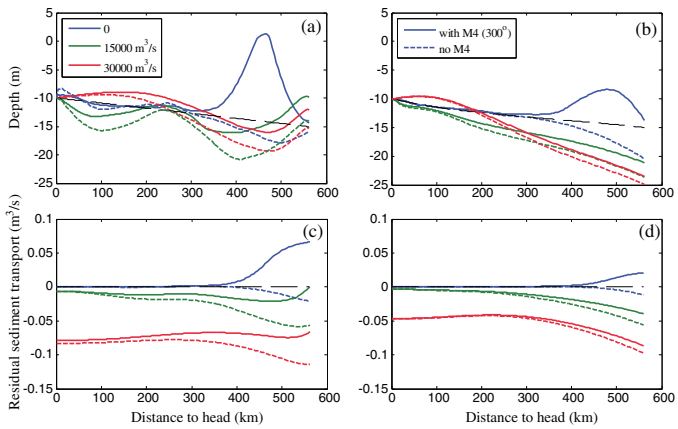


Fig. 8. (a,b) Bed profiles after 4000 morphodynamic years and (c,d) tidal residual sediment transport over 4000 years in the convergent basin as shown in Figures 8a and 8c and in the rectangular basin as shown in Figures 8b and 8d. The black dashed lines indicate the initial bed profiles in Figures 8a and 8b and indicate the zero level in Figures 8c and 8d.

Numerous research efforts have been devoted to understanding estuarine morphodynamics under tidal forcing. However, the impact of river discharge on estuarine morphodynamics is insufficiently examined. Inspired by the Yangtze Estuary, this work explores the morphodynamic impact of river discharge in a 560 km long tidal basin based on a 1-D model (Delft3D). The model considers total load sediment transport and employs a morphodynamic updating scheme to achieve long-term morphodynamic evolution. We analyze the role of Stokes drift, tidal asymmetry, and river discharge in generating tidal residual sediment transport. Model results suggest that morphodynamic equilibrium is approached within millennia by vanishing spatial

gradients of tidal residual sediment transport. We find that the interaction between ebb-directed Stokes return flow/river flow with tides is an important mechanism that flushes river-supplied sediment seaward. Increasing river discharge does not induce continuously eroded or accreted equilibrium bed profiles because of the balance between riverine sediment supply and sediment flushing to the sea. An intermediate threshold river discharge can be defined which leads to a deepest equilibrium bed profile. As a result, the shape (concavity or convexity) of the equilibrium bed profiles will adapt with the magnitude of river discharge. Overall, this study reveals the significant role of river discharge in controlling estuarine morphodynamics by supplying sediment and reinforcing ebb-directed residual sediment transport.

Variability and trend in the hydrology of the Yangtze River, China: Annual precipitation and runoff.

Chen, J., Wu, X.D., Finlayson, B.L., Webber, M., Wei, T.Y., Li, M.T., Chen, Z.Y., ***Journal of Hydrology,*** 2014, 513: 403-412.

The catchment of the Yangtze River in China has a long history of human occupation and the intensity of human impacts has increased markedly since economic reforms began in the late 1970s. In order to try to assess the impact of these changes on the hydrology of the river, we analyse both the annual flows of the Yangtze River and annual temperature and precipitation for the Yangtze catchment for the period 1955–2011 and for the three sections of the catchment, Upper, Middle and Lower as defined by the location of the gauging stations at Yichang, Hankou and Datong respectively. Mean annual temperature increases downstream from 12.7°C in the Upper to 16.0°C in the Lower section. A significant increasing trend in mean annual temperature is detected over the period 1955–2011 in the whole catchment and all sub-sections. Mean annual precipitation for the whole catchment is 1045 mm ranging from 859 mm in the elevated Upper section to 1528 mm in the Lower section. Precipitation variability is low by world standards with an annual Cv of 0.066. Using the Mann–Kendal and Rank Sums tests we do not find any trend in precipitation in the catchment. Mean annual runoff for the whole catchment is 515 mm ranging from 421 mm in the Upper Catchment to 838 mm in the Lower Catchment. Runoff variability is also low by world standards with an annual runoff Cv of 0.129. For the Middle Catchment we find a small but statistically significant increase in runoff and the runoff ratio over the period 1955–2011, possibly caused by change in the nature of the surface due to accelerated urbanization post 1980 and increased area of water storage. Overall, annual runoff in the Yangtze River shows little response to the major changes occurring in the basin. In a multiple correlation analysis of discharge, precipitation, dam volume, population and GDP, only precipitation is significantly correlated with discharge, explaining 80% of the variance. Wide-spread reporting of the impact of development on the annual water yield of the Yangtze, especially the impact of dams and notably the Three Gorges Dam, are not supported by this analysis.

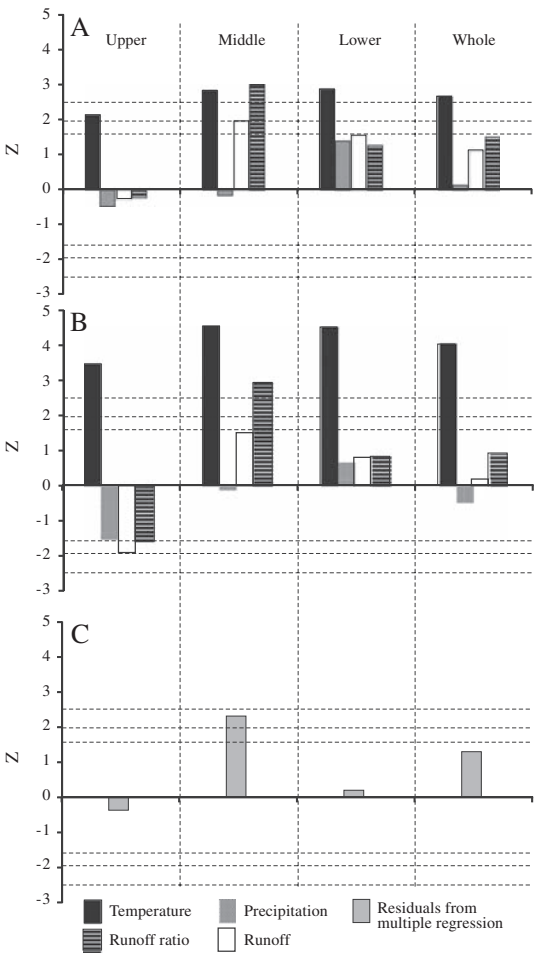


Fig. 4. Trends of variables and multiple regression residuals over the period 1955–2011 in the Upper, Middle, Lower and Whole Yangtze catchment. Dashed lines denote confidence levels of 90%, 95% and 99%. Positive Z scores mean an increasing trend and negative a decreasing trend. (A) Rank Sums Test trends of temperature, precipitation, runoff and the runoff ratio (median of 1981–2011 and of 1955–1980); (B) Mann–Kendall trends of temperature, precipitation, runoff and runoff ratio; (C) Mann–Kendall trend of runoff residuals from a multiple regression of runoff against temperature and precipitation.

Detection of the Three Gorges Dam influence on the Changjiang (Yangtze River) submerged delta.
Dai, Z.J., Liu, J.T., Wei, W., Chen, J.Y., ***Scientific Reports,*** 2014, 4: 6600.

While most large river-deltas in the world are facing the risk of subsidence and erosion in the Anthropocene, it is suspected that the Changjiang submerged delta (CSD) could be subjected to the impacts of the world's largest dam, the Three Gorges Dam (TGD). Here we firstly indicate that the CSD went through high accumulation (1958–1978); slight accumulation (1978–1997), slight erosion (1997–2002); and high accumulation (2002–2009), despite the 70% reduction of the sediment load from upstream since the operation of the TGD in 2003. Meanwhile, at the depocenter of the submerged delta, the accumulation maintained a high rate of 10 cm/yr during 1958–2009. This suggests on a longer term, the distal sediment source from the upstream had little effect on the CSD. Within this time frame the changes in the partition of sediment load among the branching channels of the Changjiang Estuary could likely control the shifting of the depocenter of the CSD on a decadal time scale. Episodic extreme floods and storm surges also increased the magnitude of deposition and erosion of the CSD on short-term scales. A re-evaluation of the impacts of TGD on the CSD is urgently needed.

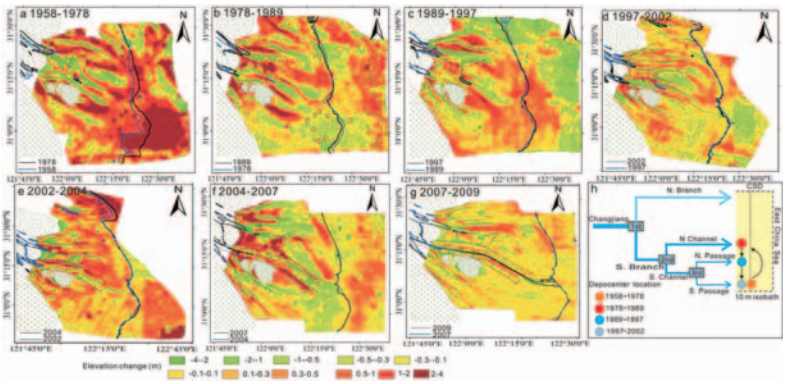


Fig. 3. Bathymetric changes and changes in the depocenter location during different periods, was drawn by software ArcGis 9.3 (a–g: bathymetric changes; h: depocenter changes; contour labeled at a–e: 10 m intervals).

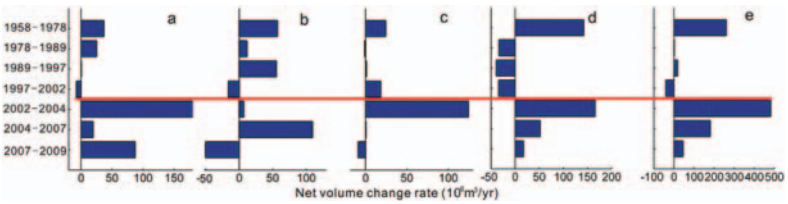
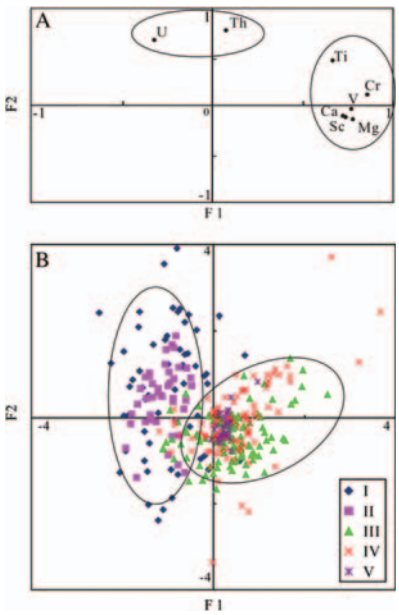


Fig. 4. Net volume changes between erosion and accretion during different intervals: a: the region above the -10 m isobath between the N. Channel and N. Passage; b: the region above the -10 m isobath between the N. and S. Passages; c: the region of the Nanhui Shoal and S. Passage above the -10 m isobath; d: the seaward region below the -10 m isobath; e: the entire submerged delta; The red line shows the demarcation between the pre-TGD and post-TGD eras.

China's Yangtze delta: Geochemical fingerprints reflecting rever connection to the sea.
Gu, J.W., Chen, J., Sun, Q.L., Wang, Z.H., Wei, Z.X., Chen, Z.Y., ***Geomorphology,*** 2014, 227: 166-173.

This study investigates sediment source to sink relating the connection of the Yangtze River to the sea. A sediment borehole (PD) on the river coast, penetrating thick Quaternary sediments and thin sediments of late Pliocene age down to the bedrock, recorded a change in sediment provenance through time. Geochemical elements and magneto-stratigraphy help identify five zones. *Zone I* (the late Pliocene–the Early Pleistocene), characterized by Pb, Th, U, Ba, La, Ce, Nd, Hf, Y, Zr, Nb and Mn, indicates a local sediment provenance. This means that the study area was a localized sub-basin. *Zone II* (the Early Pleistocene–the mid-stage of the Early Pleistocene), with remarkable high Fe, K, As and Rb implies a new sediment provenance joining the sub-basin from the middle Yangtze reach after the opening of the Zhenjiang Gorge. *Zone III* (the mid-stage of Early Pleistocene–the Middle Pleistocene), featured by Ti, V, Cr, Sr, Sc, Cu, Co, Ni, Mg, Ca, Na and P suggests a further extension of sediment provenance to the upper Yangtze basin, where a large block of the E'mei basalt and carbon-ate occurs. This suggests that the Three Gorges valley linking the upper and middle Yangtze reaches had developed by that time. *Zones IV* and *V* (the Middle Pleistocene–the Holocene) have shown their geochemical similarity to *Zone III*. Discrimination ratio f(Cr, Th), f(La) and f(K, La), a new approach developed for tracing sediment provenance,



confirms a basin-wide sediment source through *Zones III–V*. These together witness a progressive extension of the sediment provenance towards the upper Yangtze basin, corresponding to the long-term tilting effect of the Cenozoic Topographic Reversal of the eastern China continent. The timing of the Yangtze River running through into the East China Sea appears at ca. 1.0–1.2 Ma (bottom of *Zone III*).

Fig. 5. (A) Factor analysis for the diagnostic elements of Ti, V, Cr, Sc, Ca, Mg, Th and U in core PD; (B) the loading of the diagnostic elements of core PD on F1 and F2.

Magnetic fingerprinting of hydrodynamic variations and channel erosion across the turbidity maximum zone of the Yangtze Estuary, China.

Dong, C.Y., Zhang, W.G., He, Q., Dong, Y., Yu, L.Z., ***Geomorphology,*** 2014, 226: 300-311.

Magnetic measurements were conducted on surface sediments and suspended particles collected across the turbidity maximum zone of the Yangtze Estuary, in order to examine the spatial distribution of magnetic mineral assemblages and the factors responsible for this distribution. The results indicate that magnetic properties are dominated by ferrimagnetic grains. Bulk magnetic susceptibility (χ) and saturation isothermal remanent magnetization (SIRM) values show positive correlations with the proportion of the >63 μm fraction in the North Channel, while anhysteretic remanent magnetization (χ_{ARM}) is significantly correlated with the proportion of the <16 μm fraction in both surface sediments and suspended particles. Such a bimodal distribution of ferrimagnetic minerals in the sand and finer fractions is confirmed by particle size-specific measurements. Sediments in the North Chan-nel have the highest χ and SIRM values but lowest χ_{ARM}/SIRM ratios, which is consistent with the coarsest particle size due to strong hydrodynamics, i.e. currents. Within each channel, χ and SIRM values are higher in sediments from shallower water depth due to energetic conditions resulting from waves. Compared with surface sediments, suspended particles have lower χ and SIRM values but higher χ_{ARM}/SIRM ratios due to lower sand fractions. The increasing trend of χ_{ARM}/SIRM of suspended particles along the pathway of sediment transport indicates weakening hydrodynamics from the inner estuary to the outer estuary. Diagenesis is another factor influencing magnetic properties in addition to particle size. Channel erosion leads to local exposure of buried sediments on the channel bed. As a result of a stronger diagenetic imprint, they show magnetic properties different from the recently deposited sediments. Our results indicate that magnetic properties cannot only indicate spatial variations in hydrodynamics, but also provide insight into sediment erosion/deposition processes. Combined granulometric and magnetic methods can therefore be used to interpret hydrodynamics and track changes in estuary morphology.

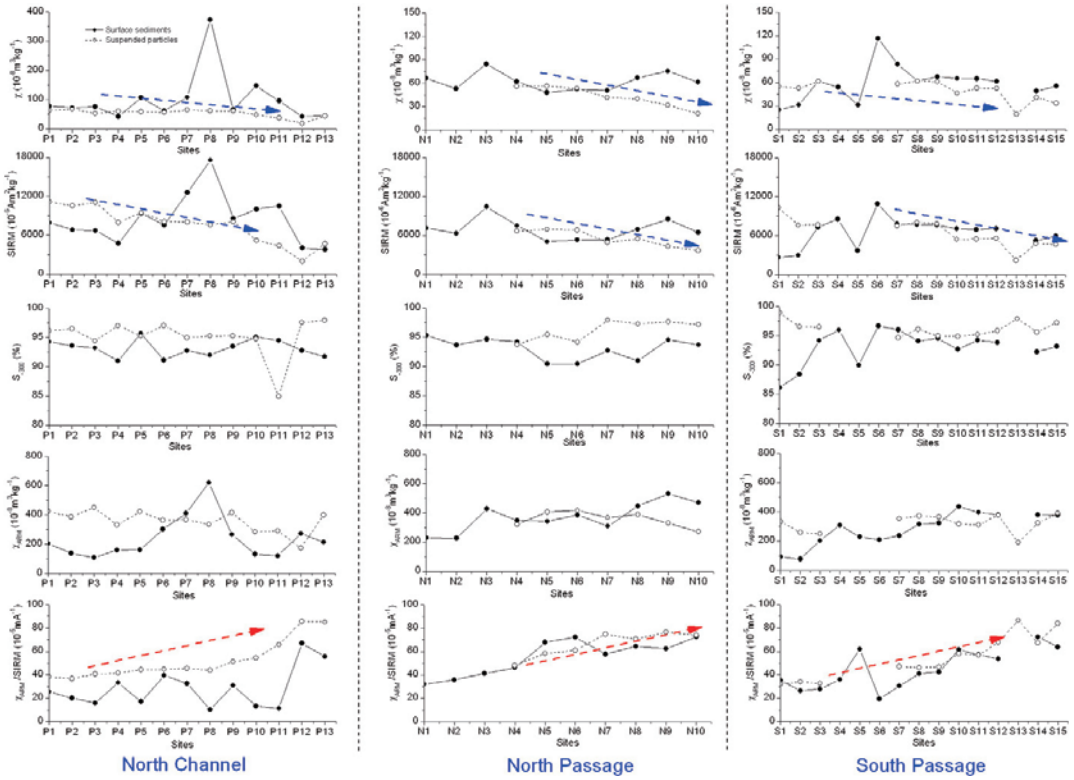


Fig. 4. Variations in bulk magnetic properties of surface sediments and suspended particles along the three transects. The dashed arrow line depicts the trend observed for suspended particles. Solid circles: surface sediments; open circles: suspended particles.

Sources and distribution of organic matter in thirty five tropical estuaries along the west coast of India-a preliminary assessment.

Pradhan, U.K., Wu, Y., Shirodkar, P.V., Zhang, J., Zhang, G.S., ***Estuarine, Coastal and Shelf Science,*** 2014, 151: 21-33.

Studies characterizing the sources of organic matter (OM) to the west coast of India (WCI) and its continental shelf are limited. This study examined sedimentary OM in 35 estuaries along the WCI using molecular biomarkers (lignin phenol), elemental ratio (C/N), and stable carbon isotope ($\delta^{13}C$) values. Multivariate statistical techniques, such as cluster analysis, identified similar sedimentary chemical properties among the estuaries and their distribution patterns highlight the strong control of geographical provenance on sedimentary OM composition from south to north along the WCI. Results of an end-member mixing model reveal that terrigenous sources (C_3 plants, C_4 plants, and soil) contribute ~80% of estuarine OM, with the remaining 20% derived from marine sources (marine plankton and estuarine macrophytes). In the estuaries of large rivers, such as the Narmada and Sabarmati rivers, C_4 plants and soil OM were found to be the dominant contributors of OM, which is likely the result of an abundance of C_4 vegetation and agriculture in their catchment areas.

High OC (organic carbon content) of sediments (0.5-5%) from the WCI estuaries indicates that large amounts of OM are present in the sediments. The sources of OM (plant and soil) shift substantially throughout the study area, corresponding to changes in land use patterns along the Western Ghats. Sediments with low nitrogen contents (C/N > 15-20) and degraded lignin ($(Ad/Al)_V$=0.4-0.6 and $DHBA/_V$=0.16-0.34) were observed in all estuaries, indicating humification and/or degradation of OM originating from terrestrial plants (bio-degradation) and soil (demineralization). The collective results of this study illustrate the benefits of using biomarkers (lignin phenols) along with C/N and $\delta^{13}C$ values for evaluating land use changes and the impacts of land use changes on aquatic ecosystems.

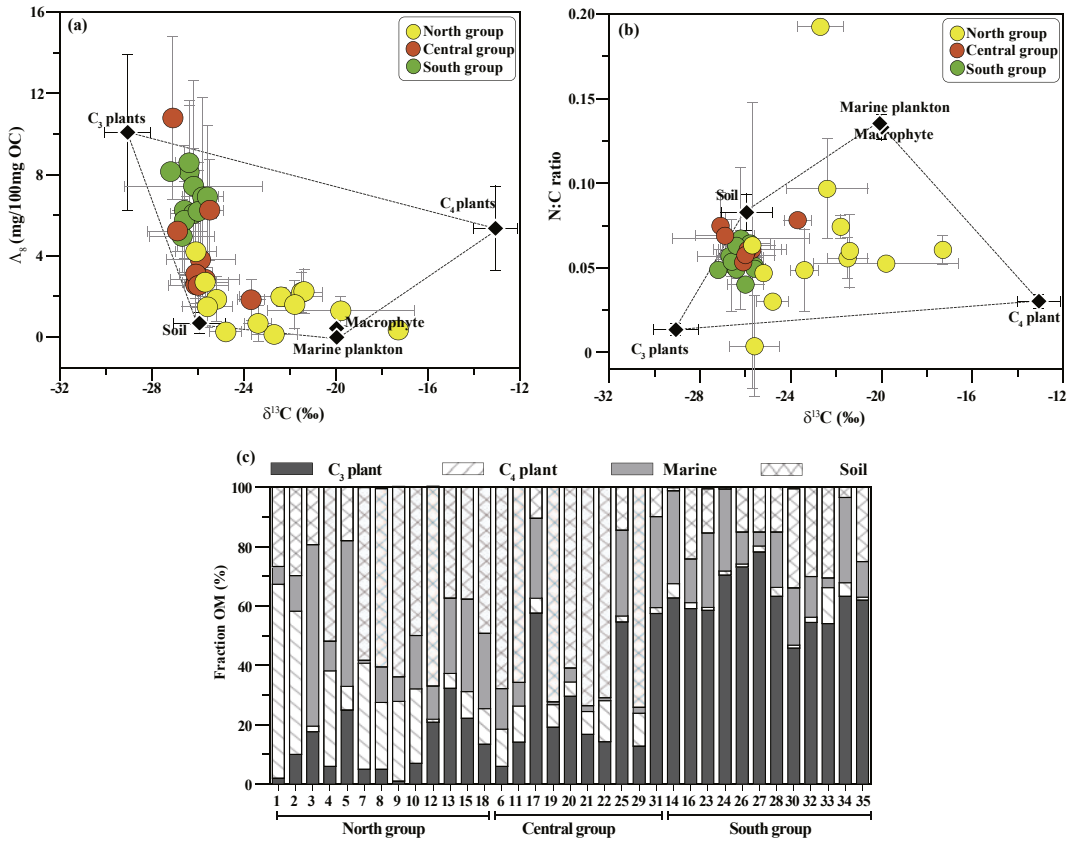


Fig. 6. End-member mixing plot of different group estuaries showing different compositional signatures of estuarine sediment along the WCI when plotted with their limits of (a) Λ_8 and $\delta^{13}C$ (b) N/C and $\delta^{13}C$. (c) Quantified proportion of end-member contribution to the estuarine sediments of different estuaries based on mixing model results.

Modelling lateral entrapment of suspended sediment in estuaries: The role of spatial lags in settling and M-4 tidal flow.

Yang, Z.Y., de Swart, H.E., Cheng, H.Q., Jiang, C.J., Valle-Levinson, A., ***Continental Shelf Research,*** 2014, 85: 126-142.

The effect of the joint action of M_2 and M_4 tidal flow, residual flow and spatial settling lag on the lateral entrapment of sediment is examined in tidally dominated estuaries with an idealized model that assumes along-estuary uniform conditions. Approximate solutions are obtained for arbitrary cross-channel bed profiles by scaling and perturbation analysis. The hydrodynamics include externally driven M_2 tidal flow, externally and internally driven M_4 tidal flow and residual flow driven by horizontal density gradient, river discharge and nonlinear advection. The sediment concentration includes a mean component, an M_2 component driven by bed erosion and an M_2 component driven by both bed erosion and inertial terms. Sediment availability is calculated by imposing a morphodynamic equilibrium condition. The model is applied to a transect in the James River estuary where data of flow and suspended sediment concentration are available. Two types of sediment are separately considered, viz., fine silt and coarse silt. Residual advective transport of sediment by the lateral flow induces trapping of sediment over the left shoal (looking landward). Model results also show that the incorporation of M_4 tidal flow and spatial settling lag leads to a second sediment trapping region over the right shoal. Model results are qualitatively in good agreement with the observations.

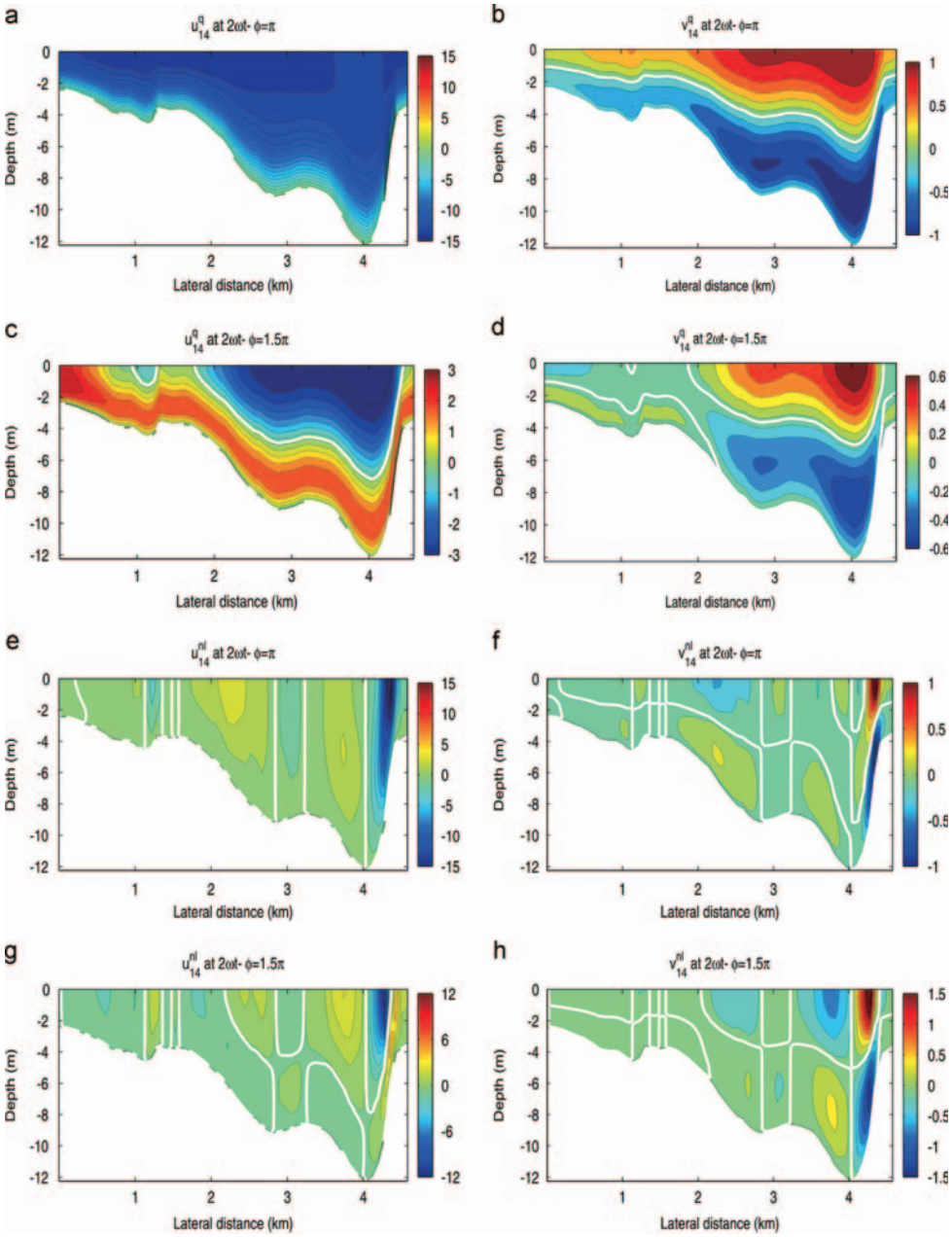


Fig. 10. Transverse distribution of components of along-estuary M_4 tidal flow (left column) and lateral M_4 tidal flow (right column) at maximum flood ($2\omega t\text{-}\phi=\pi$) and at slack after flood ($2\omega t\text{-}\phi=1.5\pi$) of the externally imposed M_4 tidal discharge, for a transect in the James River estuary. The upper four panels depict the M_4 tidal flow forced by external M_4 tidal discharge. The lower four panels depict the M_4 tidal flow induced by advection terms. The white contours indicate the zero values. Units of velocity in all the panels are cm s^{-1}. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Controls on suspended sediment concentration profiles in the shallow and turbid Yangtze Estuary.
Liu, J.H., Yang, S.L., Zhu, Q., Zhang, J., ***Continental Shelf Research,*** 2014, 90: 96-108.

The vertical distribution of suspended sediment in continental shelf waters has significant implications for water quality, aquatic ecology, and sediment transport. Nevertheless, there have been relatively few systematic field studies aimed at determining whether a general vertical trend in suspended sediment concentration (SSC) exists, or how any such vertical trend can be expressed mathematically. In this study, based on 402 individual SSC profiles measured hourly during 16 dual-tide voyages at 8 stations in the outer Yangtze Estuary, we found that SSC followed an average depth profile that was smoothly concave-up. This average profile, and the relationship between SSC and height above the seabed, was exponential (R^2>0.99). In comparison, the traditional Rouse equation based on hydrodynamics describes the measured average SSC profile poorly, in that the greater the distance from the near-bed height (where the reference SSC is taken), the greater the deviation of the simulated SSC from the measured SSC. However, in this study, a new approach was developed to overcome this flaw in the Rouse equation, which divides the equation into two parts. One part uses a reference SSC from a near-bed level, and an upwards decreasing coefficient, in the same way as the conventional Rouse equation. Conversely, the other part uses a reference SSC from at the water surface, and a downwards decreasing coefficient. Our modified hydrodynamics-based equation expresses the measured SSC well, with an R^2 between the simulated and measured SSCs exceeding 0.99. According to the average SSC profiles, the near-bed SSC was 2.8 times greater than the SSC at the water surface (close to the value of 3 suggested for modeling studies in the absence of empirical data), and the depth-averaged SSC was 1.8 times greater than the SSC at the water surface. We also found that the average SSC profile showed a uniform (from water surface to seabed) decline in SSC (25%) in response to the dramatic decline in the suspended sediment load supplied by the Yangtze River over the past three decades. However, the shape and vertical ratio of the average SSC profile have changed little, which suggests that the general form of the SSC profile is determined mainly by local hydrodynamics and sediment properties, and not by fluvial sediment supply.

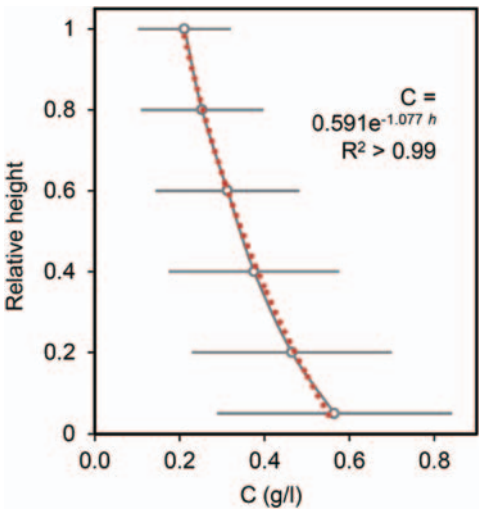


Fig. 7. Average SSC (C) profiles and standard deviation for the individual observa-tions (based on the 402 individual SSC profiles). *H* represents relative height. The dotted line indicates the regression trends.

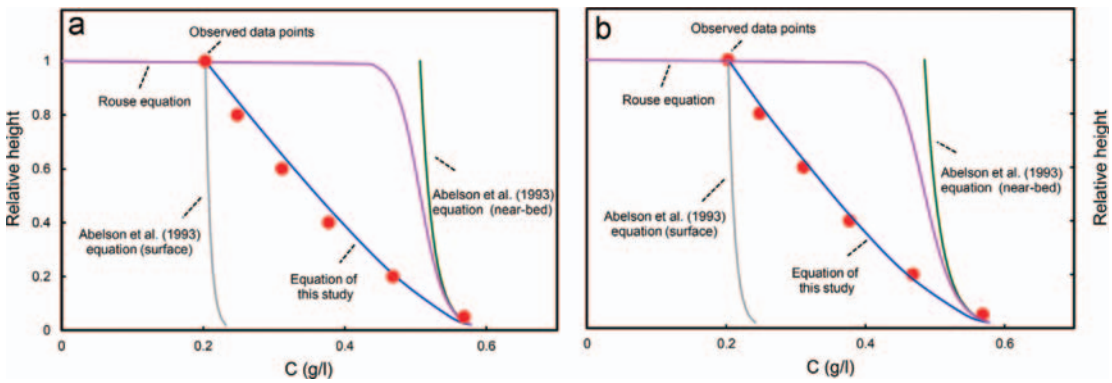


Fig. 8. Comparison between calculated and observed SSC (C) profiles. Observed data points: average of the measured SSC.

海岸动力地貌与动力沉积过程
Coastal Morphodynamics and Sedimentary Process

Intra-tidal sedimentary processes associated with combined wave–current action on an exposed, erosional mudflat, southeastern Yangtze River Delta, China.

Zhu, Q., Yang, S.L., Ma, Y.X., ***Marine Geology,*** 2014, 347: 95-106.

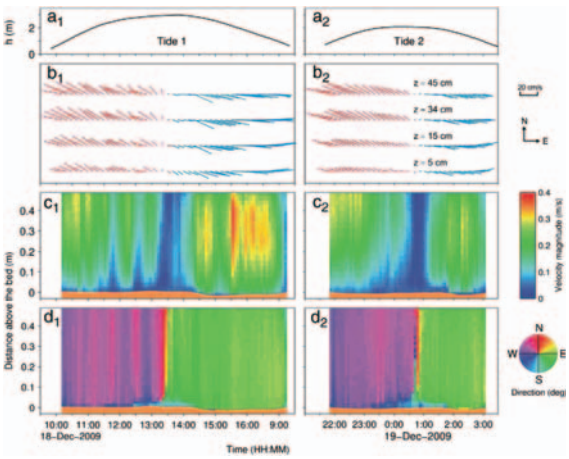


Fig. 5. Time series of (a) water depth obtained from SBE-26plus SEAGAUGE, (b) current velocity vectors, (c) current velocity magnitudes and (d) directions obtained from PCADP. Sub-scripts 1 and 2 represent Tides 1 and 2, respectively. In panel (b), vector directions are: north is up; right is east. In panels (c) and (d), orange bottom represents sediment bed.

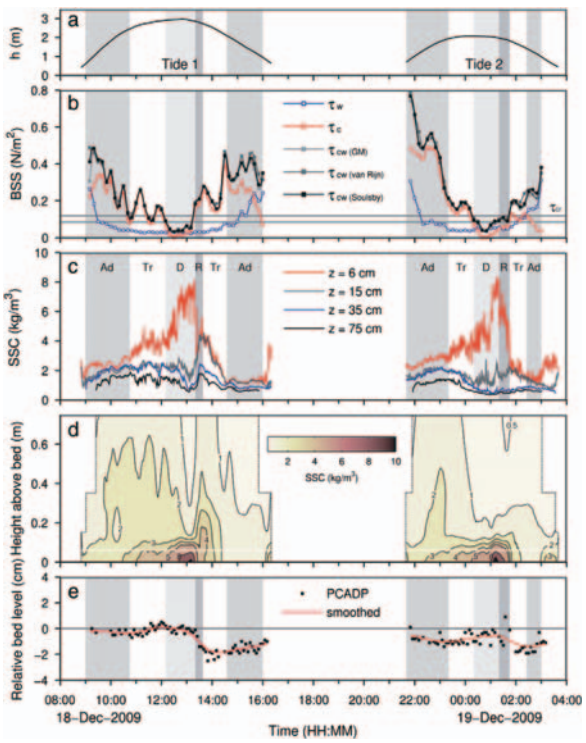


Fig. 6. Time series of (a) water depth (h) obtained from SBE-26plus SEAGAUGE, (b) bed shear stress (BSS), (c) suspended sediment concentration (SSC) obtained from the OBS-3As at different heights (z) above the sediment surface, (d) smoothed SSC contours, and (e) relative bed level changes (BLC) obtained from PCADP. Ad, D, and R in panel (c) represent the stages of advection, deposition, and resuspension stages, respectively, while Tr indicates transition stages. In panel (d), the SSCs below 6 cm above the bed surface (marked by a thin white band) were projected by interpolating the SSC from the given four heights. The dotted lines that bound the shaded contours indicate the end of SSC measurements due to fall in water level. The darkest 'core' in panel (d) indicates an SSC of >10 kg/m^3.

Numerous deltaic coasts in the world are eroding in response to a decline in sediment supply as a consequence of river damming. Near-bed sediment dynamics are key mechanisms of erosion and deposition. To understand the sediment dynamics of an exposed, erosional mudflat on the delta front of the Yangtze River, China, we measured wave parameters, near-bed current profiles (for 30 layers located up to 50 cm above the seabed), suspended sediment concentration (SSC) profiles (at 6, 15, 35, and 75 cm above the seabed), bed-level changes, and sediment properties, at a low flat site. We found that bed shear stresses induced by waves can be important to sediment dynamics on the mudflat, even in periods of offshore winds. SSC-measurements close to the seabed revealed the presence of a highly dynamic fluid mud layer. At the high tides, SSC at the near-bed 6-cm layer increased to >8kg/m^3, as a result of sediment deposition from the overlying water column. During the ebb tides, however, an increase in hydrodynamic variations resulted in resuspension, and the near-bed SSC was reduced to <2kg/m^3. The bed-level changes predicted on the basis of bed shear stresses due to combined wave–current action (τ_{cw}), critical bed shear stress for erosion (τ_{cr}), and SSC were in good agreement with the results measured using a Pulse-Coherent Acoustic Doppler Profiler (PCADP) and a triple-rod manual method. In contrast, the calculated bed-level changes on the basis of bed shear stresses induced by only currents or waves instead of τ_{cw} were far from the observed results. This study therefore highlights the importance of employing combined wave–current action and measurements close to the sediment surface in coastal sediment dynamics.

Characteristics of the Changjiang plume and its extension along the Jiangsu Coast.

Wu, H. Shen, J., Zhu, J.R., Zhang, J., Li, L., ***Continental Shelf Research,*** 2014, 76: 108-123.

The major patterns of the Changjiang plume have been identified based on the Empirical Orthogonal Function and the freshwater flux analysis of the long-term model simulations driven by the climatological and realistic forcings. Dynamic natures of these patterns with respect to realistic forcings were analyzed. It was found that the Changjiang plume extends in three pathways: besides the two well-known major pathways that are spreading offshore to the northeast during the summer season and alongshore to the south in the winter season, a new pathway has been identified that occurs in both summer and autumn seasons as a small portion of the plume turns left and extends along the Jiangsu Coast, in a direction opposite to that of the coastally trapped wave (the upstream direction). Although its magnitude is smaller than the other two, it could be an important nutrients source for the frequently occurring algal blooming in that region. The major mechanism driving this plume branch is the tide-induced Stokes drift along the Jiangsu Coast, which results from the progressive tide from the East China Sea. This upstream-ward Stokes drift ends at ~33.5°N where it collides with the downstream-ward Stokes drift resulting from the rotating tide in the Yellow Sea. Consequently, the offshore Eulerian residual current is generated to move the diluted water offshore. Wind can also modulate this northward plume branch, however its effects are only significant during the neap tide.

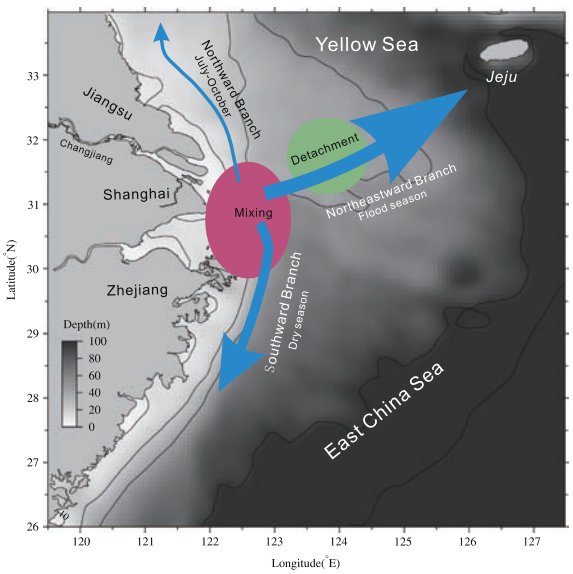


Fig. 14. Schematic map of the major patterns of the Changjiang plume. Arrows signify the three major plume branches. The purple patch represents the mixing-active region. The green patch is the detached plume region. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Evaluation of the combined threat from sea-level rise and sedimentation reduction to the coastal wetlands in the Yangtze Estuary, China.

Wang, H., Ge, Z.M., Yuan, L., Zhang, L.Q., ***Ecological Engineering,*** 2014, 71: 346-354.

In recent decades, the prospect of climate change, in particular sea level rise (SLR) and its impacts on low-lying coastal areas has generated worldwide attention. The coastal wetlands located in the Yangtze Estuary, with their low elevation and decreasing sediment loading, are susceptible to both SLR and anthropogenic activities. Taking the Chongming Dongtan wetlands as a study area, two scenarios of SLR were evaluated: the present trend (1980–2010) of SLR 2.6 mm/yr (PSLR) and the IPCC A_1F_1 scenario of 5.9 mm/yr (HSLR). In addition, two scenarios of sedimentation rate were adopted for the Yangtze Estuary: the current sedimentation rate (CSR) and a reduced sedimentation rate of half of the present rate (1/2CSR). The combined effects of SLR and sedimentation reduction were evaluated by projection of the combinations of these phenomena for 2025, 2050 and 2100, using a Sea Level Affecting Marshes Model (SLAMM). The results showed that the combined effects of sea-level rise, reduced sedimentation and land subsidence could result in a considerable decrease in or even complete loss of the coastal wetland habitat in the Chongming Dongtan nature reserve, particularly under the medium-term (2050) and long-term (2100) scenarios. Without proper mitigation measures, the potential decrease in and loss of habitats and ecosystem services is inevitable. Such mitigation measures should be considered in the future for securing the coastal wetland ecosystems, which include the management of sedimentation, the rehabilitation and re-creation of wetland habitat and the control and limitation of reclamation.

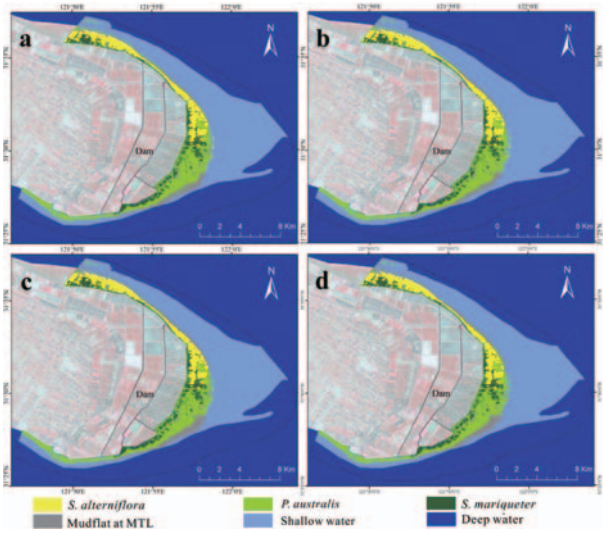


Fig. 3. Spatial projection of the coastal wetlands (above mean tidal level) at the Chongming Dongtan nature reserve over the short-term (2008-2025) duration under the scenarios of (a) the present trend of SLR (PSLR) + current sedimentation rate (CSR); (b) the high-level SLR of IPCC A_1F_1(HSLR) + CSR; (c) the PSLR + the half of the current sedimentation rate (1/2CSR) and (d) the HSLR + 1/2CSR.

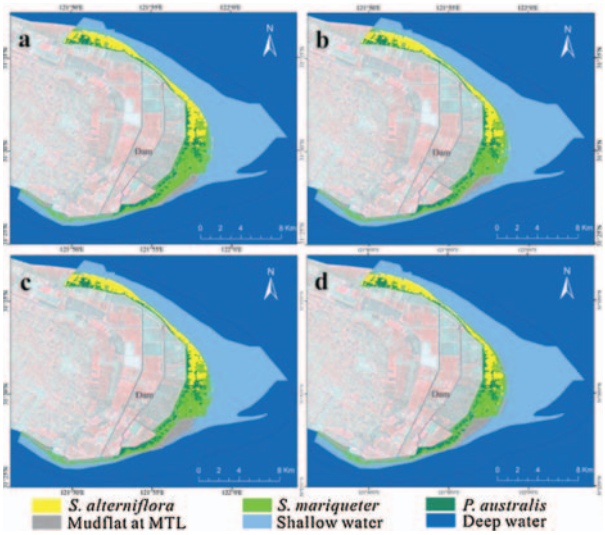
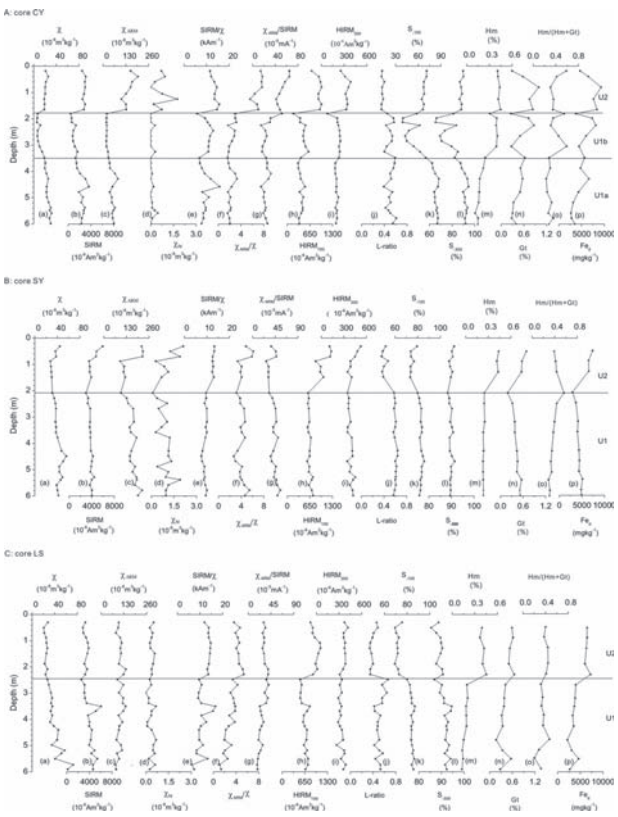


Fig. 5. Spatial projection of the coastal wetlands (above mean tidal level) at the Chongming Dongtan nature reserve over the medium-term (2008-2050) under the scenarios of (a) PSLR + CSR; (b) HSLR + CSR; (c) PSLR + 1/2CSR and (d) HSLR + 1/2CSR.

Magnetic and diffuse reflectance spectroscopic characterization of iron oxides in the tidal flat sequence from the coastal plain of Jiangsu Province, China.

Dong, Y., Zhang, W.G., Dong, C.Y., Ge, C., Yu, L.Z., ***Geophysical Journal International,*** 2014, 196(1): 175-188.



In this paper, we present the results of research on a coastal lowland Holocene tidal flat se-quence in order to explore the variations in magnetic mineralogy during the process of tidal flat sedimentation and subsequent land formation. Three cores (~6 m in length) were collected from the coastal plain in Jiangsu Province, China, and investigated with magnetic measurements, diffuse reflectance spectroscopy (DRS) and free iron oxide (Fe_d) analyses. The tidal flat sequence shows a fining-upward trend, and the top ~2 m of each core with redoximorphic feature was interpreted to be a salt marsh facies in origin. Unmixing of isothermal remanent magnetization acquisition curves identify magnetite and maghemite as well as highcoercivity hematite and goethite, with the latter iron oxides confirmed by DRS analysis. Enrichment of goethite, hematite and maghemite occurs in the salt marsh deposits in comparison to the lower intertidal and subtidal deposits,

Figure 5. Magnetic properties and iron oxides of core CY (a), SY (b) and LS (c). Hm and Gt are estimated concentrations for hematite and goethite, respectively.

with goethite being the dominant iron oxide. The changes in hard isothermal remanent magnetization acquired in field above 100 mT field ($HIRM_{100}$) and the S_{-100} ratio largely reflect the presence of medium-coercivity maghemite in absolute content and relative proportions, respectively. The approach used for iron oxide characterization may offer an efficient diagnostic tool for recognizing sediments or soils subjected to redox condition oscillation elsewhere and contribute to studies of iron cycling in (palaeo-)environmental researches.

The impact of the change in vegetation structure on the ecological functions of salt marshes: the example of the Yangtze estuary.

Li, X.Z., Ren, L.J., Liu, Y., Craft, C., Mander, U¨., Yang, S.L., ***Regional Environmental Change,*** 2014, SI, 14(2): 623-632.

Salt marshes worldwide are faced with threats from rising sea levels and coastal development. We mea-sured changes in salt marsh vegetation structure using remote sensing and its consequences for carbon seques-tration, wave attenuation, and sediment trapping ability using remotely sensed imaging, field measurement data, and the published literature data pertaining to the Yangtze Estuary, a rapidly urbanizing area in Eastern China. From 1980 to 2010, the total area of vegetated salt marsh decreased by 17 %, but the vegetation structure changed more dramatically, with the ratio of *Phragmites/Spartina/Scirpus* changing from 24:0:76, to 77:0:23, 44:13:43, and 33:39:28 in 1980, 1990, 2000, and 2010, respectively. Carbon sequestration increased slightly from 1980 to 2010, with the dramatic shifts in plant species composition. The total length of seawall inadequately protected by salt marsh vegetation increased from 44 km in 1980 to 300 km in 2010. Sediment accretion increased (from 8 to 14 mil-lion m^3/year) due to the spread of *Spartina*, which to some extent compensated the loss of total vegetated area in the salt marsh. Changes in the delivery of functions were not linearly related to the change in the area of vegetated salt marsh, but more from the combined effect of changing vegetation structure, sediment input, and land reclamation. Under threat of sea-level rise, protection and maintenance of vegetation structure outside the seawall are of great importance for the safe economic development inside the seawall.

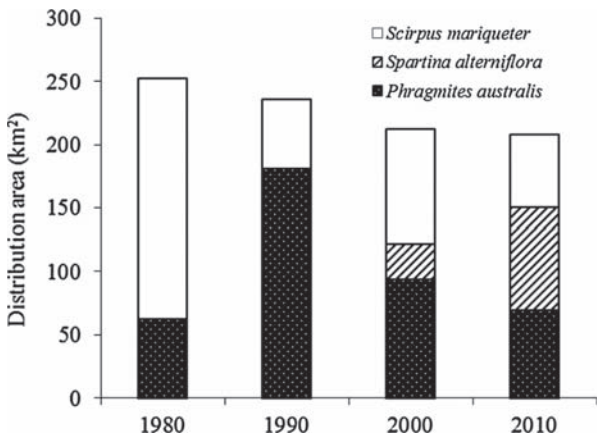


Fig. 3. Change in vegetation structure in the salt marshes of the Yangtze Estuary

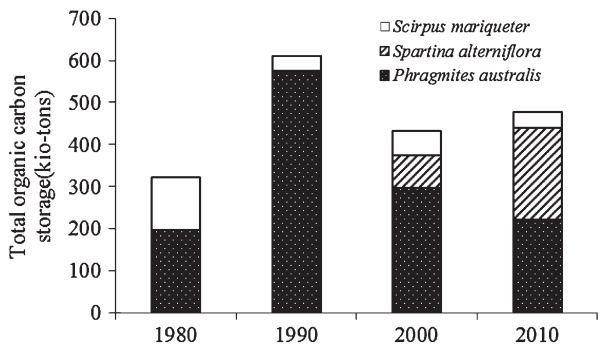


Fig. 4. Carbon storage capacity change in the vegetated salt marshes of the Yangtze Estuary

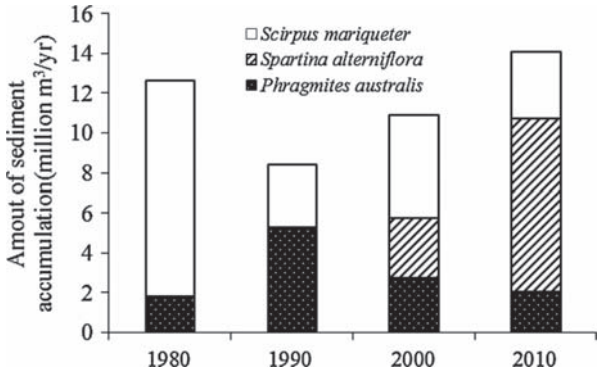


Fig. 5. The estimated change in sedimentation accumulation ability in various years

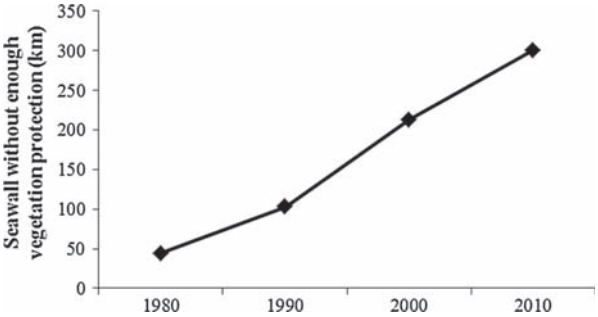


Fig. 6. The estimated change in seawall with insufficient salt marsh vegetation protection in various years

Effects of intertidal wetland vegetation and suspended sediment on flow velocity profiles and turbulence characteristics.

Wang, X.Y., Yuan, D.L., He, Q., Wang, X.K., ***Estuarine, Coastal and Shelf Science,*** 2014, 146: 128-138.

Intertidal wetland vegetation has an important role in flow structure, suspended sediment movement and geomorphology evolution. This study performed a flume experiment using *Scirpus mariqueter* from the field to investigate the impact of wetland vegetation on flow structure. The experimental plans were designed based on the relative depth of flow depth to vegetation height, i.e., non-submerged, moderately submerged and completely submerged conditions. Based on the measured Reynolds stress distribution, the classical mixing length hypothesis was used to derive the new velocity profiles inside the canopy. The good agreement of the results demonstrated that this method can be used to predict the velocity distribution of the submerged flow with flexible vegetation. Through statistical analysis combined with the theory of the boundary layer and sediment movement dynamics, the turbulence intensity and fine sediment distributions within the canopy were also obtained. The results reveal the mechanism of the effect of vegetation on the water and sediment of tidal flat in theoretical terms and enhance the understanding of hydrodynamics within the canopy.

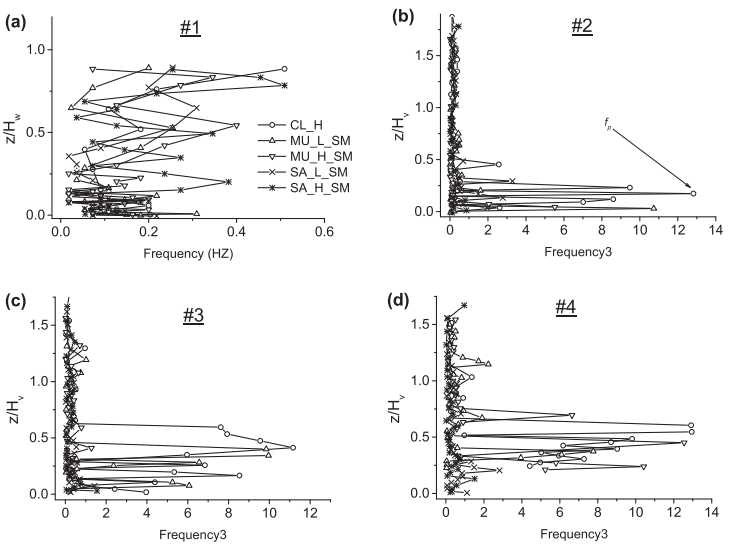


Fig. 6. The Fast Fourier transform of instantaneous velocity. Completely submerged vegetation of (a) profile #1 depicted in Fig. 1; (b) profile #2; (c) profile #3; (d) profile #4.

Optical closure for the remote-sensing reflectance based on accurate radiative transfer approximations: The case of the Changjiang (Yangtze) River Estuary and its adjacent area, China.

Sokoletsky, L.G., Shen, F., ***International Journal of Remote Sensing,*** 2014, 35 (11-12) (SI): 4193-4224.

Optical closure exercises are pivotal for evaluating the accuracy of water quality remote-sensing techniques. The agreement between radiometrically derived and inherent optical property (IOP)-derived above-water spectral remote-sensing reflectance $R_{rs}(\lambda)$ is necessary for resolving IOPs, the diffuse attenuation coefficient, and biogeochemical parameters from space. We combined spectral radiometric and IOP measurements to perform an optical closure exercise for two optically contrasting Chinese waters – the Changjiang (Yangtze) River Estuary and its adjacent coastal area in the East China Sea. The final aim of our investigation was to compare two derivations of $R_{rs}(\lambda)$: $R_{rs}(\lambda)$, derived from radiometric measurements; and $R_{rs}(\lambda)$, derived from simultaneous IOP measurements. Five subsequent steps have been taken to achieve this goal, including (1) estimation of the $R_{rs}(\lambda)$ from radiometric measurements; (2) scattering correction for the non-water spectral absorption coefficient $a_{pd}(\lambda)$; (3) estimation of the below-water spectral remote-sensing reflectance $r_{rs}(\lambda)$ from IOPs measurements;(4) the estimation of the $R_{rs}(\lambda)$ from the $r_{rs}(\lambda)$ values; and (5) the comparison between the $R_{rs}(\lambda)$ derived from radiometric and IOP measurements. All steps were realized by using both direct measurements and different models based on radiative transfer theory. Results demonstrated that the impact of the errors caused by the scattering correction procedure and conversion of radiometric quantities into $R_{rs}(\lambda)$ may be rather significant, especially in the long-wavelength spectrum range. Nevertheless, spectral features were similar between these $R_{rs}(\lambda)$ sets for all waters – from relatively clear to very turbid. Exploiting this fact allows use of the spectral reflectance ratios for remote sensing of the estuarine and coastal Chinese waters.

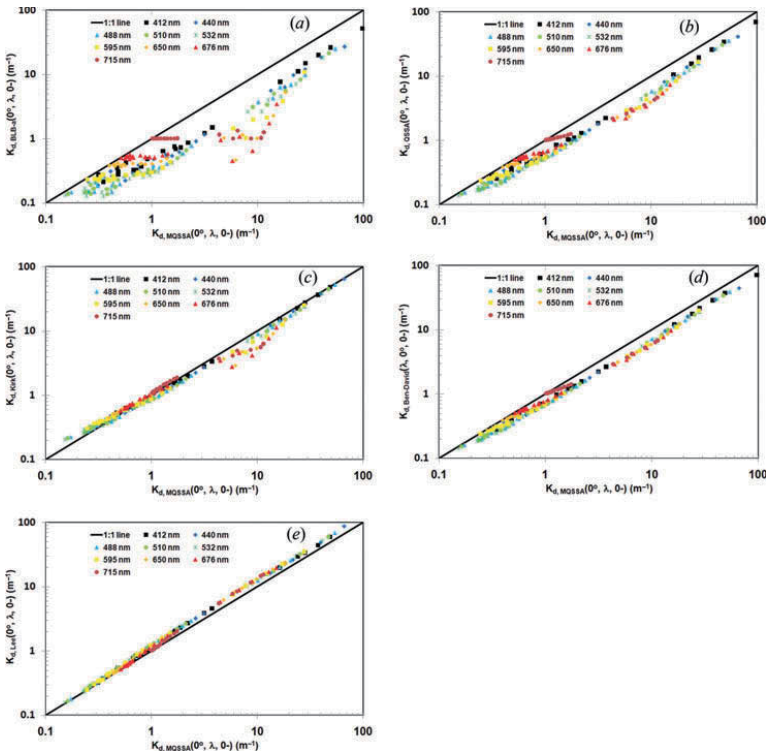


Fig. 7. A comparison of $K_d(0°, \lambda, 0-)$ computed by the MQSSA method, $K_{d,\,MQSSA}$, with the same quantity computed by BLB-a (*a*), QSSA (*b*), KM (*c*), BDM (*d*), and LM (*e*) models.

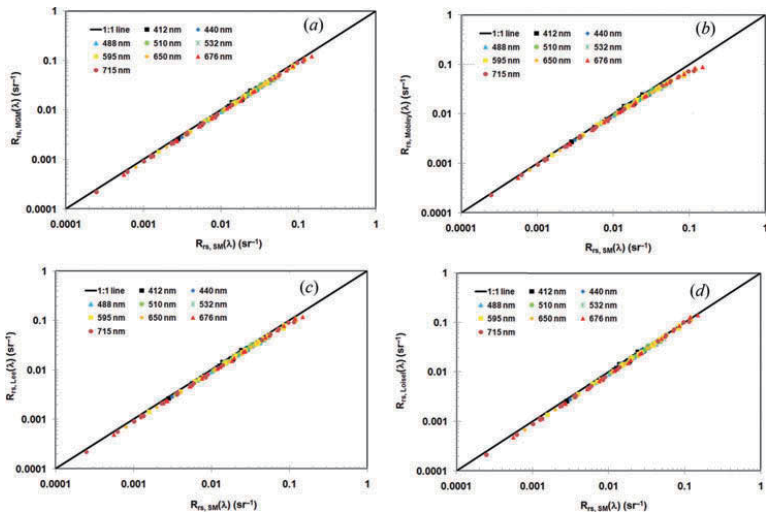


Fig. 11. A comparison of $R_{rs}(\lambda)$ computed by the SAM model with the $R_{rs}(\lambda)$ computed by MGM (*a*), Mobley (*b*), Lee (*c*), and Loisel (*d*) models.

Satellite multi-sensor mapping of suspended particulate matter in turbid estuarine and coastal ocean, China.
Shen, F., Zhou, Y.X., Peng, X.Y., Che, Y.L., ***International Journal of Remote Sensing,*** 2014, 35(11-12) (SI): 4173-4192.

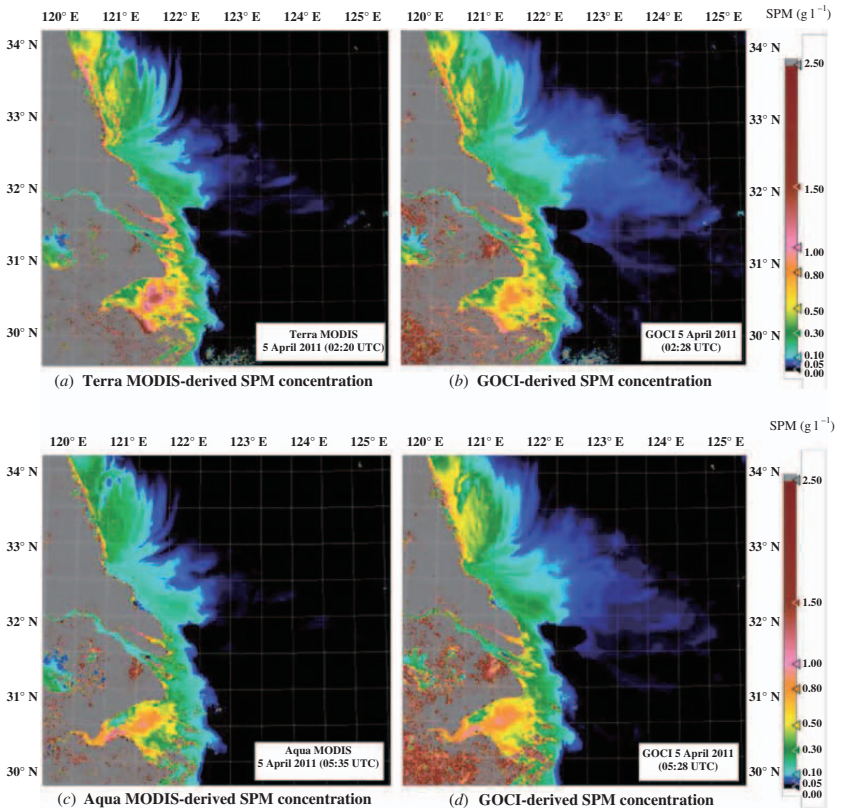


Fig. 4. Two pairs of synchronous images captured on 5 April 2011, Terra MODIS-derived SPM at 2:20 UTC (*a*) *versus* GOCI-derived SPM at 2:28 UTC (*b*) and Aqua MODIS-derived SPM at 5:35 UTC (*c*) *versus* GOCI-derived SPM at 5:28 UTC (*d*). (*a*) Terra MODIS-derived SPM concentration; (*b*) GOCI-derived SPM concentration; (*c*) Aqua MODIS-derived SPM concentration; (*d*) GOCI-derived SPM concentration.

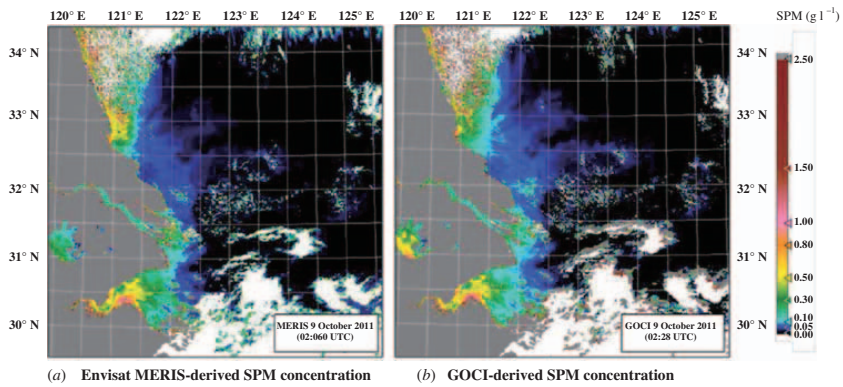


Fig. 6. One pair of synchronous images captured on 9 October 2011, GOCI-derived SPM at 2:28 UTC *versus* Envisat MERIS-derived SPM at 2:06 UTC. Envisat MERIS-derived SPM concentration; GOCI-derived SPM concentration.

In this work, five ocean-colour sensors, the Moderate Resolution Imaging Spectroradiometer aboard the Terra satellite (Terra MODIS), Moderate Resolution Imaging Spectroradiometer aboard the Aqua satellite (Aqua MODIS), Medium Range Imaging Spectrometer aboard the Environmental Satellite (Envisat MERIS), Medium Resolution Spectral Imager aboard the FY-3 satellite (FY-3 MERSI), and Geostationary Ocean Colour Imager (GOCI), were selected to examine the compatibility of an algorithm proposed for suspended particulate matter (SPM) retrieval and concordance of satellite products retrieved from different oceancolour sensors. The results could effectively increase revisit frequency and complement a temporal gap of time series satellites that may exist between on-orbit and off-orbit. Using *in situ* measurements from 17 cruise campaigns between 2004 and 2012, the SPM retrieval algorithm was recalibrated so as to be universal and adapted for multi-sensor retrievals. An inter-comparison of multi-sensor-derived products showed that GOCI-derived SPM and Envisat MERIS-derived SPM had the best fitting on a 1:1 scatterplot, with a statistic regression slope of 0.9617 and an intercept of 0.0041 (in units of g l^{-1}), respectively. SPM products derived from three sensors with nearly synchronous transit, Envisat MERIS, Terra MODIS, and FY-3 MERSI, exhibited excellent accordance with mean differences of 0.056, 0.057, and 0.013 g l^{-1} in

three field fixed stations, respectively, in the Yangtze estuary. Terra MODIS-derived SPM with GOCI-derived SPM, except in the high SPM waters of Hangzhou Bay, and Aqua MODIS-derived SPM with GOCI-derived SPM, except in the moderate SPM waters of the South Branch and south of the Subei Coast, showed a good correspondence. Meanwhile, synchronous multi-sensor-derived SPM with concurrent *in situ* SPM time series observed in fixed field stations mostly displayed a good correspondence. Results suggest that the algorithm is feasible and compatible for SPM retrieval by multiple sensors.

Ecosystem-based coastal zone management: A comprehensive assessment of coastal ecosystems in the Yangtze Estuary coastal zone.

Yuan, L., Ge, Z.M., Fan, X.Z., Zhang, L.Q., ***Ocean & Coastal Management,*** 2014, 95: 63-71.

The comprehensive assessment of ecosystems is highlighted as one of the most important parts of ecosystem-based management (EBM) that must be addressed. In this paper, taking Chongming Dongtan coastal zone in the Yangtze Estuary as a case study, an example of the EBM approach to the assessment of ecosystem quality and degradation response to human impacts was presented. The spatiotemporal dynamics of the coastal ecosystems in the study area during the period 1990-2008 were analysed. The three main ecosystem types in the region: the natural wetland ecosystem, the agricultural ecosystem and the suburban ecosystem, were assessed for the period 2000-2008 through the application of an index of ecosystem degradation (EDI). The results indicated that large-scale reclamation and the invasion of an exotic plant *Spartina alterniflora* had threatened the ecosystem health of the natural wetland and caused its degradation. The production structure in agriculture needed to be improved and the amount of chemical fertilizer and pesticide application needed to be reduced, because they caused the degradation in the agricultural ecosystem. The area and population of the suburban ecosystem had grown substantially, which could not keep a pace with a healthy working and living environment. Based on these results, management strategies were proposed to minimize and/or reduce future degradation and impact. The methodology developed in this study is applicable elsewhere where coastal zones are under pressure.

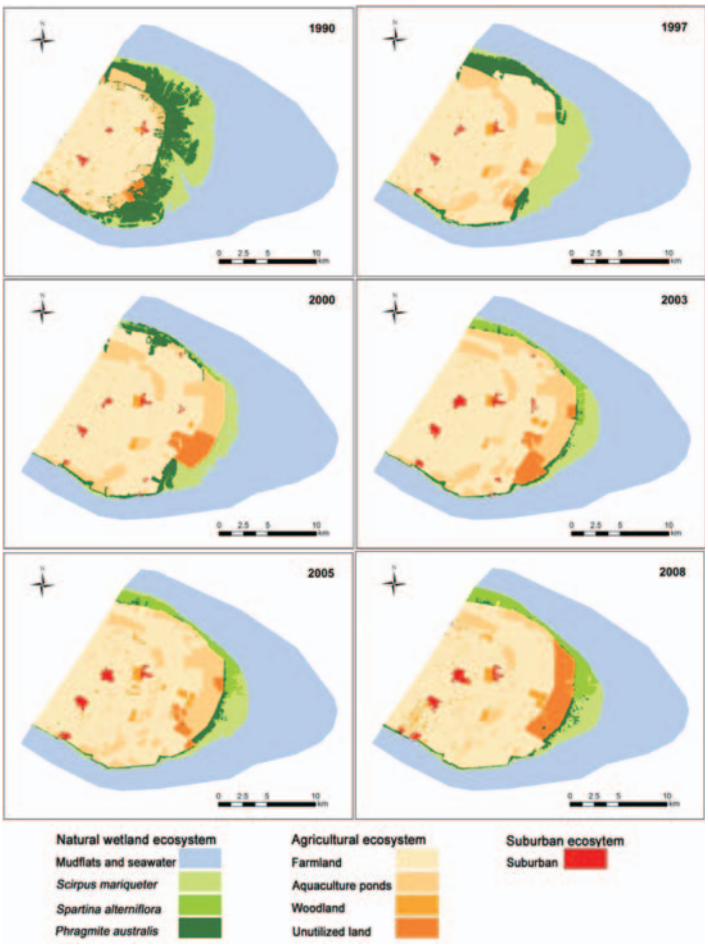


Fig. 2. The spatio-temporal dynamic of the ecosystems for the period of 1990-2008 in the Chongming Dongtan coastal zone.

A magnetic record of heavy metal pollution in the Yangtze River subaqueous delta.

Dong, C.Y., Zhang, W.G., Ma, H.L., Feng, H., Lu, H.H., Dong, Y., Yu, L.Z., ***Science of the Total Environment,*** 2014, (476-477): 368-377.

The rapid industrial development in the Yangtze River watershed over the last several decades has drawn great attention with respect to heavy metal pollution to the Yangtze River estuary and nearby coastal areas. In this study, a 236 cm long sediment core was retrieved from the Yangtze River subaqueous delta (122°36′E, 31°00′N) in 2008 and analyzed for magnetic properties and geochemical compositions to investigate heavy metal pollution history. The activity of ^{137}Cs peaked at depth 140 cm, with a broad plateau between 120 cm and 140 cm, suggesting an average sedimentation rate of 3.11 cm yr^{-1} for the upper 140 cm layer. Magnetic susceptibility (χ), saturation isothermal remanent magnetization (SIRM), anhysteretic remanent magnetization (χ_{ARM}) and heavy metal enrichment factors (EF) all showed an upward increase trend above depth 140 cm, suggesting that increased ferrimagnetic mineral concentration was accompanied by heavy metal enrichment in the sediment. Geochemical and granolumetric analyses showed that sediment sources and particle sizes played minor roles in the variations of magnetic properties. The effect of diagenesis, which can lead to the selective removal of magnetic minerals, was noticeable in the lower part of the core (140–236 cm). Co-variation between magnetic properties (χ, SIRM and χ_{ARM}) and EF of Cu and Pb suggests that the elevated ferrimagnetic mineral concentration can be used as an indicator of heavy metal pollution in the reconstruction of environmental changes in estuarine and coastal settings.

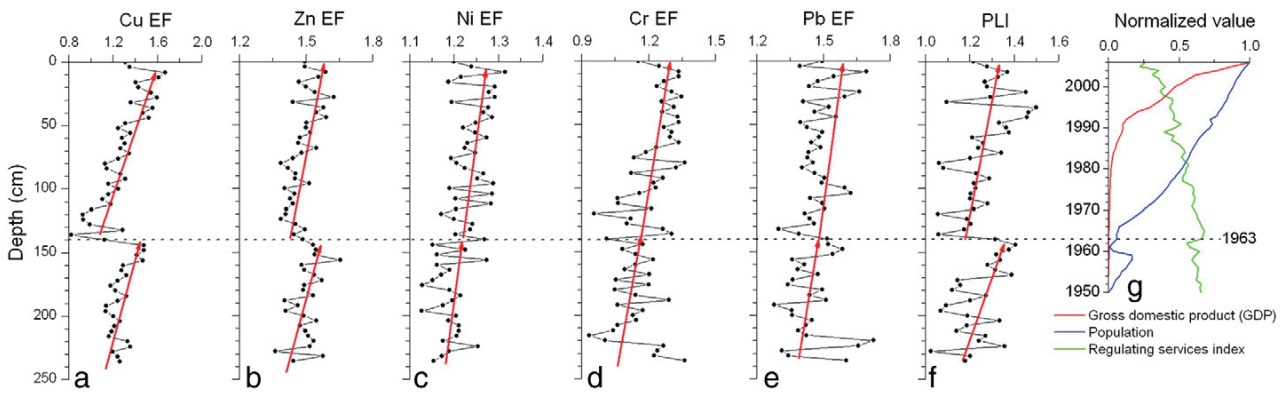
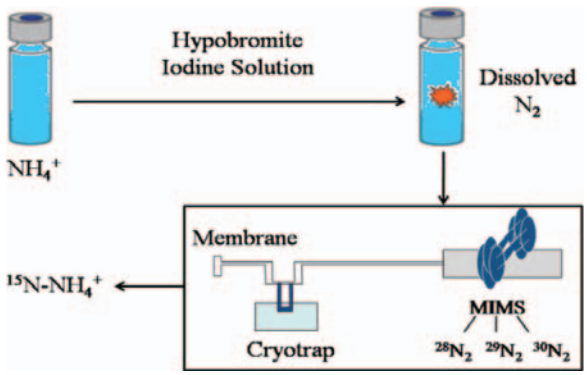


Fig. 8. (a–e) Calculated heavy metal enrichment factor (EF) values of core CX32, (f) pollution load index (PLI) and (g) their comparison with GDP, population and regulating service index variations in the lower Yangtze basin (g, Dearing et al., 2012).

河口海岸生态与环境
Estuarine and Coastal Ecology and Environment

A novel membrane inlet mass spectrometer method to measure ($^{15}NH_4^+$) for isotope-enrichment experiments in aquatic ecosystems.

Yin, G.Y., Hou, L.J., Liu, M., Liu, Z.F., Gardner, W.S., ***Environmental Science & Technology,*** 2014, 48(16): 9555-9562.



Nitrogen (N) pollution in aquatic ecosystems has attracted much attention over the past decades, but the dynamics of this bioreactive element are difficult to measure in aquatic oxygen-transition environments. Nitrogen-transformation experiments often require measurement of ^{15}N-ammonium ($^{15}NH_4^+$) ratios in small-volume ^{15}N-enriched samples. Published methods to determine N isotope ratios of dissolved ammonium require large samples and/or costly equipment and effort. We present a novel ("OX/MIMS") method to determine N isotope ratios for $^{15}NH_4^+$ in experimental waters previously enriched with ^{15}N compounds. Dissolved reduced ^{15}N (dominated by $^{15}NH_4^+$)is oxidized with hypobromite iodine to nitrogen gas ($^{29}N_2$ and/or $^{30}N_2$) and analyzed by membrane inlet mass spectrometry (MIMS) to quantify $^{15}NH_4^+$ concentrations. The N isotope ratios, obtained by comparing the $^{15}NH_4^+$ to total ammonium (via autoanalyzer) concentrations, are compared to the ratios of prepared standards. The OX/MIMS method requires only small sample volumes of water (ca. 12 mL) or sediment slurries and is rapid, convenient, accurate, and precise (R^2 = 0.9994, p < 0.0001) over a range of salinities and $^{15}NH_4^+$ ratios. It can provide data needed to quantify rates of ammonium regeneration, potential ammonium uptake, and dissimilatory nitrate reduction to ammonium (DNRA). Isotope ratio results agreed closely (R = 0.998, P = 0.001) with those determined independently by isotope ratio mass spectrometry for DNRA measurements or by ammonium isotope retention time shift liquid chromatography for water-column N-cycling experiments. Application of OX/MIMS should simplify experimental approaches and improve understanding of N-cycling rates and fate in a variety of freshwater and marine environments.

Molecular and structural characterization of dissolved organic matter during and post cyanobacterial bloom in Taihu by combination of NMR spectroscopy and FTICR mass spectrometry.

Zhang, F.F., Harir, M., Moritz, F., Zhang, J., Witting, M., Wu, Y., Schmitt-Kopplin, P., Fekete, A., Gaspar, A., Hertkorn, N., ***Water Research,*** 2014, 57: 280-294.

Seasonal molecular changes in dissolved organic matter (DOM) isolated from Tai Lake (Taihu) both during (June) and following (November) an algal bloom event in 2007 were characterized by nuclear magnetic resonance spectroscopy (NMR) and Fourier transform ion cyclotron resonance (FTICR) mass spectrometry. Considerable biosignatures were present in summer DOM, yet with a near absence of algal extract compounds. Extensive molecular alteration resulting from multistep and massively parallel biotic and subordi-nated abiotic transformations of algal biomass to DOM included loss and synthesis of carbohydrates, fundamental changes of aromatic compounds and progressive formation of carboxyl-rich alicyclic compounds (CRAM). The DOM transformation from summer to fall resulted in smaller molecules, increased abundance of CHNO continuous molecular series and overall molecular diversity. Analysis of MS-derived compositional networks placed summer DOM in-between the algal extract and fall DOM. Metabolic pathway annotation by means of high-resolution mass analysis provided a wide range of pathways associated with secondary metabolites in DOM and more basic ones like carbohydrate

metabolism characteristic of algal extract compounds. Overall, the time-dependent molecular signa-ture of Taihu DOM was likely dominated by microbial metabolism rather than abiotic chemical transformations. Results from this study indicate that high-resolution organic structural spectroscopy resolves meaningful structural detail out of complex environ-mental mixtures and has the potential to contribute significantly to future functional biodiversity studies.

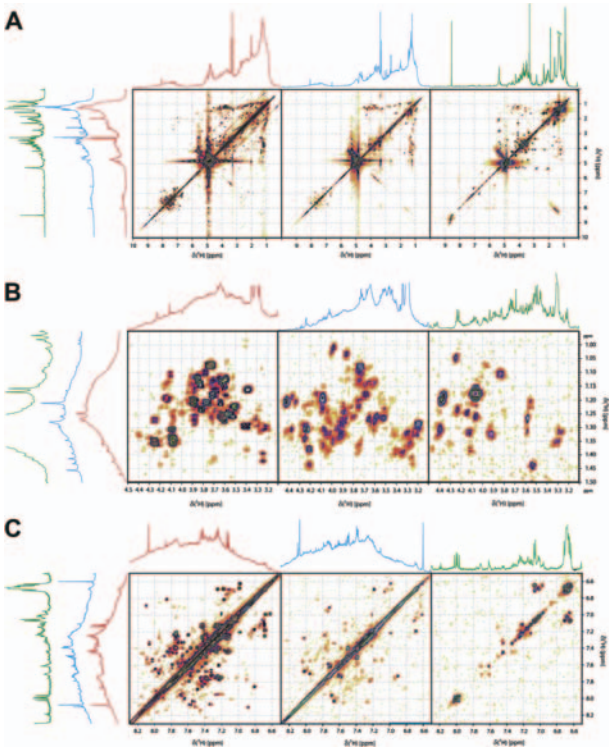


Fig. 2. COSY NMR spectra and ^{1}H NMR projection spectra of (left, red) non-bloom DOM (November), (middle, blue) bloom DOM (June) and (right, green) green algal extract; A: entire chemical shift range; B: section of C-HC-HC-O cross peaks; C: aromatic C-C_{ar}H-C_{ar}H-C cross peaks, indicating differential selectivity of transformation of oxygenated aliphatics and aromatic lake metabolite signature upon conversion into DOM. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

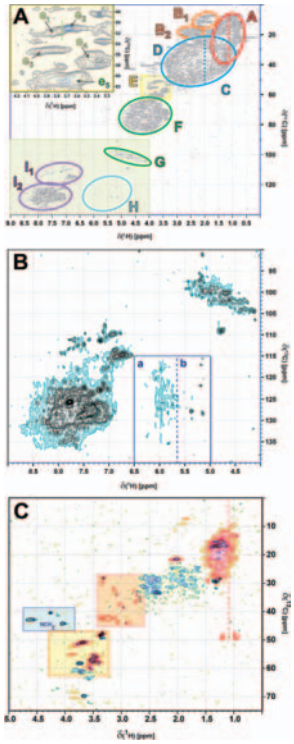


Fig. 3. (A) ^{1}H, ^{13}C HSQC NMR spectrum of non-bloom DOM (November) with chemical shift ranges conforming to specific chemical units (cf. text); the yellow insert indicates methoxy chemical environments: see Fig. S2. The green box conforms to area (B). Aromatic HSQC cross peaks indicate faster relaxation of five membered ring

Occurrence and behavior of antibiotics in water and sediments from the Huangpu River, Shanghai, China.

Chen, K., Zhou, J.L., ***Chemosphere,*** 2014, 95: 604-612.

This study aims to determine the occurrence and behavior of five classes of 20 antibiotics in both water and sedimentary phases in the Huangpu River, which supplies drinking water to Shanghai City, China. Of the 20 antibiotics, sulfonamides showed the highest concentrations in water samples (34–859 ng L-1) while tetracyclines (average concentration at 18 μgkg-1 dry weight) and macrolides (12 μgkg-1 dry weight) dominated in sediment samples. The spatial distribution of antibiotics showed that the main pol-luting sources into the river were animal farming sites and the tributaries downstream of the Yuanxie River. In addition, linear relationships between log Koc and log Kow, and between log Koc and log molecular weight, were demonstrated, suggesting the importance of contaminant properties in inter-phase behavior. The environmental risk assessment revealed that some antibiotics, in particular sulfamethoxazole could cause medium damage to daphnid in the aquatic ecosystem.

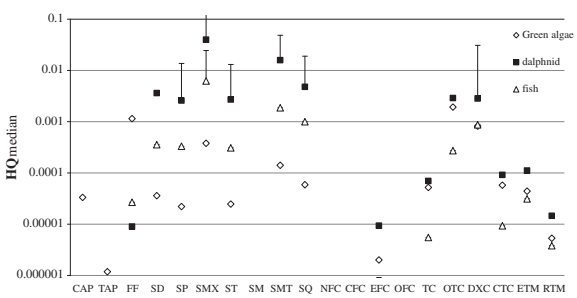


Fig. 4. The risk assessment of antibiotics in the surface water of the Huangpu River, Shanghai, China, showing the median HQ values (symbols) and the maximum HQ values (bars).

Application of passive sampling in assessing the occurrence and risk of antibiotics and endocrine disrupting chemicals in the Yangtze Estuary, China.

Shi, X., Zhou, J. L., Zhao, H., Hou, L.J., Yang, Y., ***Chemosphere,*** 2014, 111: 344-51.

Polar organic chemical integrative sampler (POCIS) was used in assessing the occurrence and risk of 12 widely used antibiotics and 5 most potent endocrine disrupting chemicals (EDCs) in the Yangtze Estuary, China. During laboratory validation, the kinetics of pollutant uptake by POCIS were linear, and the sampling rates of most compounds were raised by flow rate and salinity, reaching the highest values at salinity 14‰. The sampling rates varied with the target compounds with the EDCs showing the highest values (overall average = 0.123 L d^{-1}), followed by chloramphenicols (0.100 L d^{-1}), macrolides (0.089 L d^{-1}), and finally sulfonamides (0.056 L d^{-1}). Validation in the Yangtze Estuary in 2013 showed that the field sampling rates were significantly greater for all compounds except bisphenol A, in comparison to laboratory results, and high-frequency spot sampling is critical for fully validating the passive sampler. The field studies show that antibiotics were widely detected in the Yangtze Estuary, with concentrations varying from below quantification to 1613 ng L^{-1}, suggesting their widespread use and persistence in estuarine waters. The dominating pollutants in July were sulfonamides with a total concentration of 258 ng L^{-1} and in October were macrolides with a total concentration of 350 ng L^{-1}. The calculation of risk quotient suggested that sulfapyridine, sulfaquinoxaline and erythromycin-H_2O may have caused medium damage to sensitive organisms such as fish.

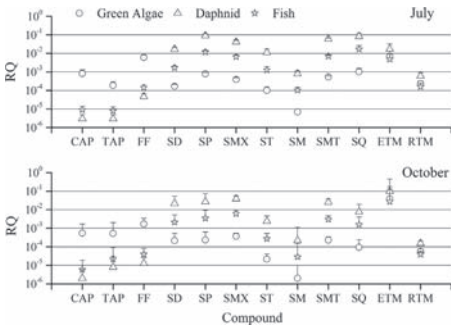


Fig. 4. The risk assessment of antibiotics in the Yangtze Estuary. The different symbols represent the mean RQ values for the three different organisms, while the bars represent the maximum RQ values for those organisms.

Impacts of salt marsh plants on tidal channel initiation and inheritance.

Schwarz, C., Ye, QH., van der Wal, D., Zhang, L.Q., Bouma, T., Ysebaert, T., Herman, P.M.J., ***Journal of Geophysical Research- Earth Surface,*** 2014, 119(2): 385-400.

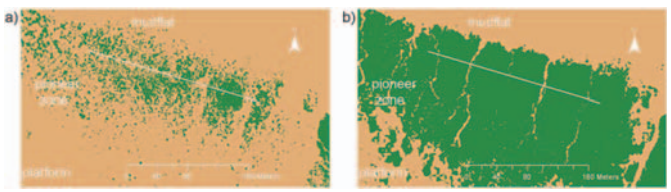


Fig. 8. Digitized aerial photographs showing the salt marsh expansion (green) and channel development on a bare mudflat (brown) at Walsoorden, Scheldt estuary, Netherlands. The development from (a) 2004 to (b) 2008 is shown.

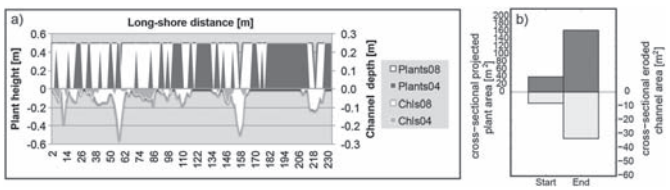


Fig. 9. (a) Long-shore profile at Walsoorden in 2004 and 2008 at its maximum erosion zone (see also white line Figure 7). (b) A comparison between the cross-sectional projected plant area (dark gray) and the cross-sectional eroded channel area (light gray) along the long shore profile at this two time points (2004 and 2008).

At the transition between mudflat and salt marsh, vegetation is traditionally regarded as a sustaining factor for previously incised mudflat channels, able to conserve the channel network via bank stabilization following plant colonization (i.e., vegetation-stabilized channel inheritance). This is in contrast to recent studies revealing vegetation as the main driver of tidal channel emergence through vegetation-induced channel erosion. We present a coupled hydrodynamic morphodynamic plant growth model to simulate plant expansion and channel formation by our model species (*Spartina alterniflora*)during a mudflat-salt marsh transition with various initial bathymetries (flat, shoal dense, shoal sparse, and deep dense channels). This simulated landscape development is then compared to remote sensing images of the Yangtze estuary, China, and the Scheldt estuary in Netherlands. Our results propose the existence of a threshold in preexisting mudflat channel depth, which favors either vegetation-stabilized

channel inheritance or vegetation-induced channel erosion processes. The increase in depth of preexisting mudflat channels favors flow routing through them, consequently leaving less flow and momentum remaining for vegetation-induced channel erosion processes. This threshold channel depth will be influenced by field specific parameters such as hydrodynamics (tidal range and flow), sediment characteristics, and plant species. Hence, our study shows that the balance between vegetation-stabilized channel inheritance and vegetation-induced channel erosion depends on ecosystem properties.

Multi-proxy evidence for compositional change of organic matter in the largest tropical (peninsular) river basin of India.

Pradhan, U.K., Wu, Y., Shirodkar, P.V., Zhang, J., Zhang, G.S., ***Journal of Hydrology,*** 2014, 519: 999-1009.

The distribution and compositional changes of organic matter (OM) within the Godavari river system is increasingly influenced by reduced monsoon rainfall and an increased number of damming. To track these changes stable isotopes of organic carbon and lignin phenols were analyzed in total suspended matter (TSM), sediments, agriculture soils and plants from Godavari basin. The results indicated that the upper tributaries drained heavier carbon ($\delta^{13}C_{org}$ = -20.4 ± 2.2‰) than the lower tributaries ($\delta^{13}C_{org}$ = -25.4 ± 1.5‰) owing to the regional vegetation in the upper to lower basins. OM originating from algae near dam impoundments was incorporated into TSM and sediment due to extreme drought condition. The organic carbon (OC) content was higher in TSM and in the sediment of the region after the middle reach dam (Sriram Sagar) than before (2.2 ± 1.6 vs. 1.0 ± 0.1% OC and 2.1 ± 2.3 vs. 0.6 ± 0.2% OC, respectively). The lignin yield (Λ8) was lower in TSM and in the sediment after the dam impoundment than before (0.37 vs. 1.94 mg/100 mg OC and 2.9 ± 1.1 vs. 5.4 ± 2.3 mg/100 mg OC, respectively) due to an increased contribution of lignin free OC from algae and degraded soil. Less rainfall and dam impoundments enhanced the fraction of labile OM from freshwater algae and an estuarine phytoplankton bloom in the study year. Our study is the first reporting lignin fluxes from an Indian monsoonal river (Godavari). The flux of lignin phenols of 7.26X10^9 g yr^{-1} is much lower than those of most world rivers except the rivers from polar arctic.

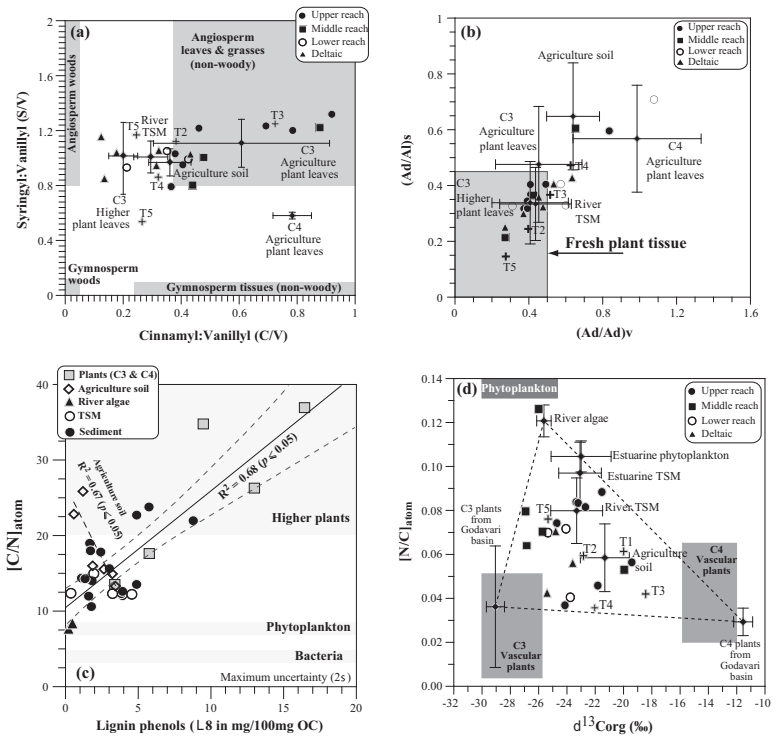


Fig. 4. Elemental, stable isotopic and CuO oxidation product ratios of different samples (TSM, sediment, agriculture soil and C3 and C4 plants) from Godavari river basin. Tributary sediments are presented as plus sign in the graph and their names as T1: *Pravara*, T2: *Purna*, T3: *Pranahita*, T4: *Manjira*, T5: *Sabri*. End member compositional ranges are highlighted in gray color and adapted from Hedges and Mann (1979), Hedges et al. (1986), Goñi and Hedges (1992). Ranges of $[C/N]_{atom}$ of different end members (plants, plankton and bacteria) in Fig. 4c are adopted from Hedges et al. (1997).

Demographic response of cutlassfish (*Trichiurus japonicus and T. anhaiensis*) to fluctuating palaeo-climate and regional oceanographic conditions in the China seas.

He, L.J., Zhang, A.B., Weese, D., Li, S.F., Zhang, J., ***Scientific Reports,*** 2014, 4: 6380.

Glacial cycles of the Quaternary have heavily influenced the demographic history of various species. To test the evolutionary impact of palaeo-geologic and climatic events on the demographic history of marine taxa from the coastal Western Pacific, we investigated the population structure and demographic history of two economically important fish (*Trichiurus japonicus and T. nanhaiensis*) that inhabit the continental shelves of the East China and northern South China Seas using the mitochondrial cytochrome b sequences and Bayesian Skyline Plot analyses. A molecular rate of 2.03% per million years, calibrated to the earliest flooding of the East China Sea shelf (70-140 kya), revealed a strong correlation between population sizes and primary production. Furthermore, comparison of the demographic history of T. japonicus populations from the East China and South China Seas provided evidence of the postglacial development of the Changjiang (Yangtze River) Delta. In the South China Sea, interspecific comparisons between T. japonicus and T. nanhaiensis indicated possible evolutionary responses to changes in palaeo-productivity that were influenced by East Asian winter monsoons. This study not only provides insight into the demographic history of cutlassfish but also reveals potential clues regarding the historic productivity and regional oceanographic conditions of the Western Pacific marginal seas.

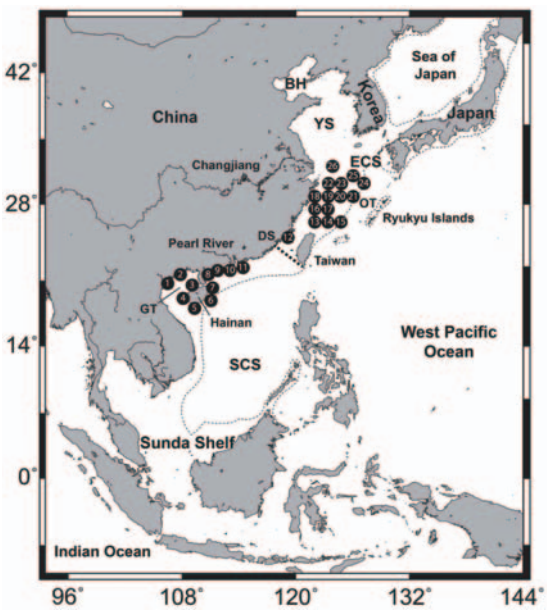


Fig. 1. Map of the East China and northern South China Seas from which individuals of *Trichiurus japonicus* and *T. nanhaiensis* were sampled for this study. Individual sampling sites are listed in Table1. The shoreline of the LGM (-130 m) is indicated by thin dashed line and the boundary of the East China Sea and South China Sea is indicated by thick dashed line. BH=Bohai Sea, YS=Yellow Sea, ECS=East China Sea, SCS=South China Sea, OT=Okinawa Trough, DS=Dongshan, GT=Gulf of Tonkin. Map was created in software Generic Mapping Tools (GMT v3.1.1; http://gmt.soest.hawaii.edu/).

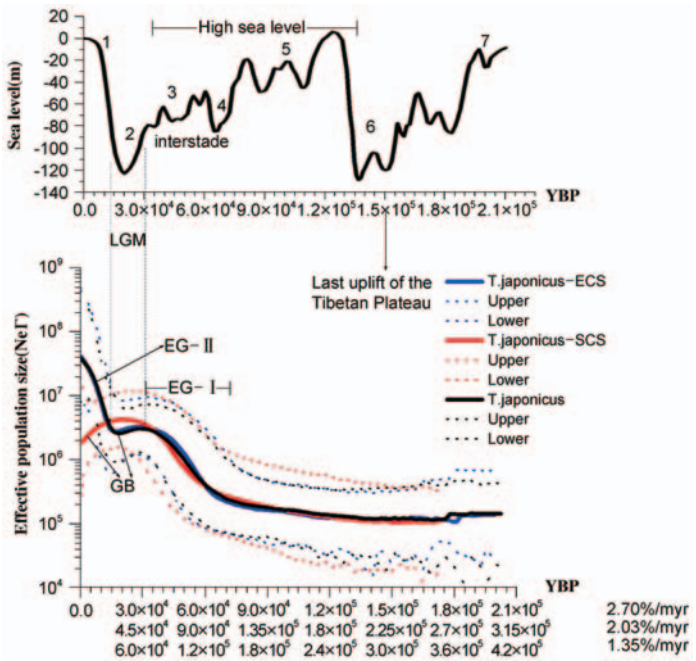


Fig. 4. Sea-level changes and demographic history of *T. japonicus* over the past 315 kya (2.03% per myr). Top panel: Sea level fluctuations through marine oxygen isotope stages (MIS) are redrawn from Waelbroeck et al.[83]. Bottom panel: BSPs of *T. japonicus*, including both of the geographic groups (East China Sea and northern South China Sea). Solid lines indicate the median estimate, and dotted lines indicate 95% credibility intervals. Expansion growth (EG) and genetic bottleneck (GB) through time (years before present, YBP) are also indicated.

Community dynamics and activity of ammonia-oxidizing prokaryotes in intertidal sediments of the Yangtze Estuary.
Zheng, Y.L., Hou, L.J., Newell, S., Liu, M., Zhou, J.L., Zhao, H., You, L.L., Cheng, X.L., ***Applied and Environmental Microbiology,*** 2014, 80(1): 408-419.

Diversity, abundance, and activity of ammonia-oxidizing bacteria (AOB) and ammonia-oxidizing archaea (AOA) were investi-gated using the ammonia monooxygenase subunit (amoA) in the intertidal sediments of the Yangtze Estuary. Generally, AOB had a lower diversity of amoA genes than did AOA in this study. Clone library analysis revealed great spatial variations in both AOB and AOA communities along the estuary. The UniFrac distance matrix showed that all the AOB communities and 6 out of 7 AOA communities in the Yangtze Estuary were statistically indistinguishable between summer and winter. The studied AOB and AOA community structures were observed to correlate with environmental parameters, of which salinity, pH, ammonium, total phosphorus, and organic carbon had significant correlations with the composition and distribution of both communities. Also, the AOA communities were significantly correlated with sediment clay content. Quantitative PCR (qPCR) results indicated that the abundance of AOB *amo*A genes was greater than that of AOA *amo*A genes in 10 of the 14 samples analyzed in this study. Potential nitrification rates were significantly greater in summer than in winter and had a significant negative correlation with salinity. In addition, potential nitrification rates were correlated strongly only with archaeal *amo*A gene abundance and not with bacterial *amo*A gene abundance. However, no significant differences were observed between rates measured with and without ampicillin (AOB inhibitor). These results implied that archaea might play a more important role in mediating the oxidation of ammonia to nitrite in the Yangtze estuarine sediments.

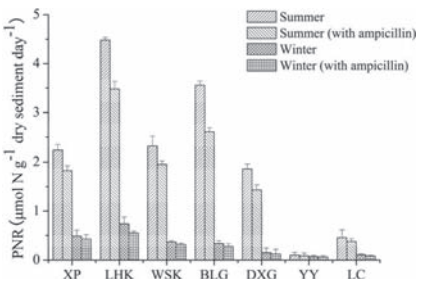


Fig. 6. Potential nitrification rates (PNR) in the intertidal sediments of the Yangtze Estuary incubated with and without ampicillin. The error bars are standard deviations of triplicate incubations. Ampicillin at 1 g liter^{-1} was used as an antibiotic to inhibit ammonia-oxidizing bacteria.

An Estimation of Nutrient Fluxes via Submarine Groundwater Discharge into the Sanggou Bay — A Typical Multi-species Culture Ecosystem in China.
Xilong Wang, Jinzhou Du, Tao Ji, Tingyu Wen, Sumei Liu, Jing Zhang

Submarine groundwater discharge (SGD) is now recognized as an important process of land/ocean interactions in the coastal zone (LOICZ). In the present work, we report the initial results of the SGD-derived nutrient fluxes into the Sanggou Bay, Shandong, China, in June 2012. This bay is a typical multi-species culture ecosystem with aquaculture activities such as kelp, scallops, shrimp, and oyster. By using a $^{224}Ra/^{228}Ra$ activity ratio (AR) apparent age model, the average residence time of water in the bay was estimated to be 5.12 days, which was comparable with the flushing time of 6.08 days. Based on the non-conservative inventory of ^{226}Ra and ^{228}Ra in the water column, the average SGD fluxes into the bay were evaluated to be (2.59 ~ 3.07)×10^{7} m^{3}·d^{-1}, and the SGD-derived nutrient fluxes (mol/month) were DIN (dissolved inorganic nitrogen)=(1.16 ~

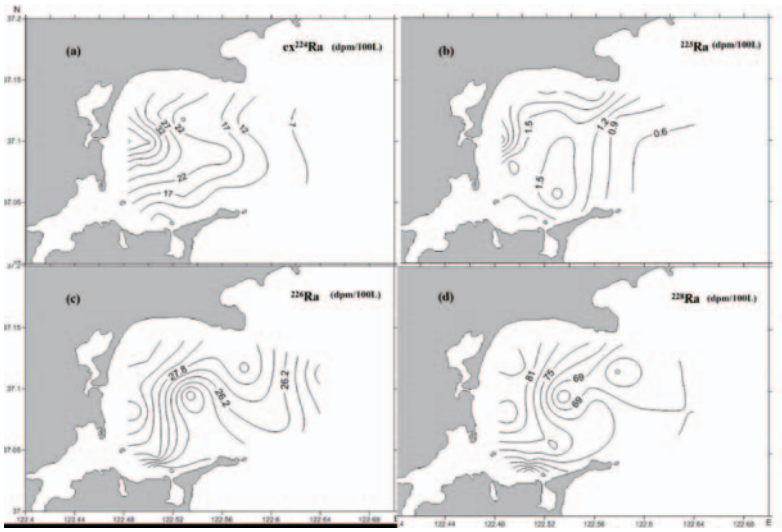


Fig. 4. Contour plots of ex^{224}Ra (a), ^{223}Ra (b), ^{226}Ra (c) and ^{228}Ra (d) (dpm/100 L) in surface water of Sanggou Bay in June 2012.

1.38)×10^8, DIP (dissolved inorganic phosphorus)=(4.17 ~ 4.92)×10^5, and DSi (dissolved silicon)=(6.33 ~ 7.50)×10^6. Meanwhile, the riverine inputs of nutrients to the bay were an order of magnitude lower than the SGD-derived inputs for DIN and DIP. To balance the nutrient budget, it requires fertilizer input of N (~4.76×10^7 mol/month) and P (~5.58×10^6 mol/month) for aquaculture activities. The fertilizer is a major fraction of DIP input compared with SGD. SGD-driven nutrient fluxes may play an important role for nutrient recycling and are required to support the high density of aquaculture activities in the Sanggou Bay.

Suspended microplastics in the surface water of the Yangtze Estuary System, China: First observations on occurrence, distribution.

Zhao, S.Y., Zhu L.X., Li, D.J., ***Marine Pollution Bulletin,*** 2014, 86(1-2): 562-568.

Levels of microplastics (MPs) in China are completely unknown. This study characterizes suspended MPs quantitatively and qualitatively for the Yangtze Estuary and East China Sea. MPs were extracted via a floatation method. MPs were counted and categorized according to shape and size under a stereomicroscope. The MP densities were 4137.3 ± 2461.5 and 0.167 ± 0.138 n/m3, respectively, in the estuarine and the sea samples. Plastic abundances varied significantly in the estuary. Higher densities in three sea trawls con-firmed that rivers were the important sources of MP to the marine environment. Plastic particles (>5 mm) were observed with a maximum size of 12.46 mm, but MPs (0.5–5 mm) constituted more than 90% by number of items. The most frequent geometries were fibres, followed by granules and films. Plastic spherules occurred sparsely. Transparent and coloured plastics comprised the majority of the particles. This study provides clues in understanding the fate and potential sources of MPs.

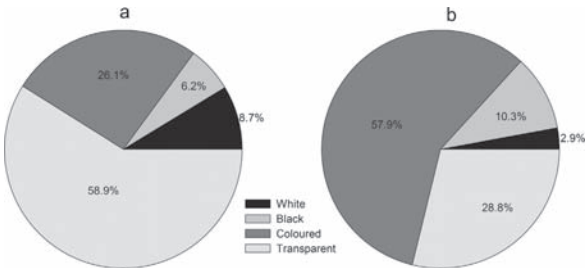


Fig. 3. Composition of coloured microplastic sampled in the (a) Yangtze Estuary and (b) East China Sea.

Can primary production contribute non-labile organic matter in the sea: Amino acid enantiomers along the coast south of the Changjiang Estuary in May.

Zhu , Z.Y., Wu, Y., Zhang, J., Dittmar, T., Li, Y., Shao, L., Ji, Q., ***Journal of Marine Systems,*** 2014, 129: 343-349.

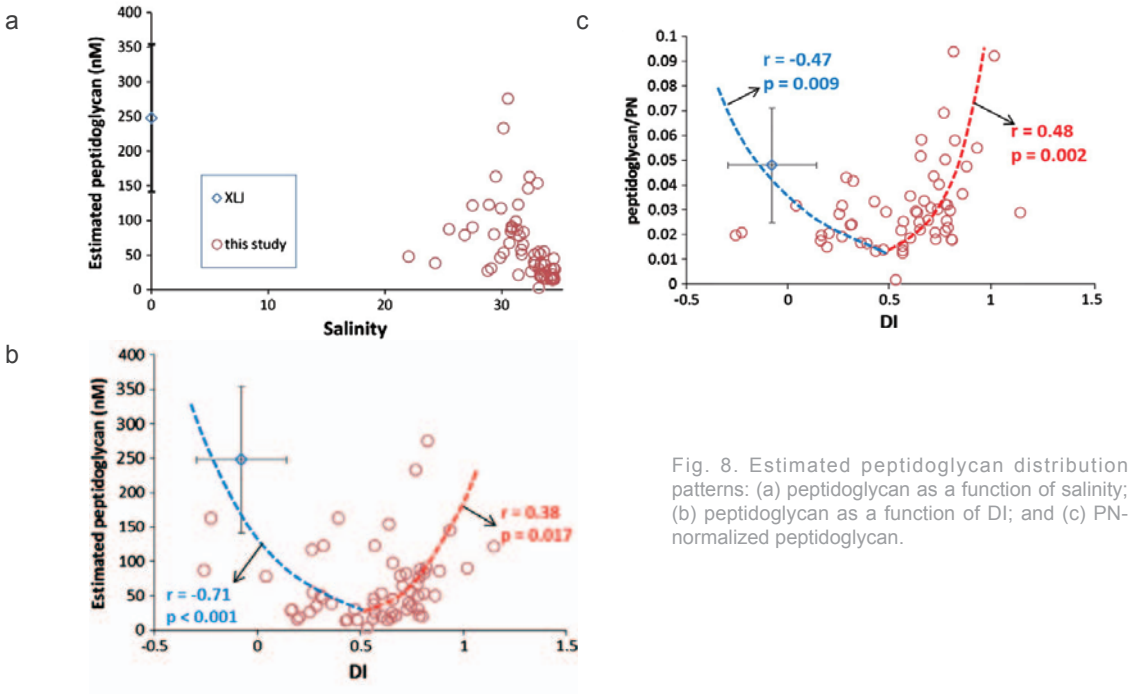


Fig. 8. Estimated peptidoglycan distribution patterns: (a) peptidoglycan as a function of salinity; (b) peptidoglycan as a function of DI; and (c) PN-normalized peptidoglycan.

Amino acid enantiomers (AAEs) in suspended particulate organic matter (OM) were measured along the coast south of the Changjiang Estuary in May to determine the origin and nature of estuarine particulate OM. The degradation index (DI) for amino acid yields revealed that fresh OM corresponded to depletion of dissolved inorganic nitrogen, whereas degraded OM corresponded to excess nutrients. This indicates coupling between OM degradation and nutrient regeneration in surface waters. Two clearly different trends were found for the amino acid con-tent of total particulate nitrogen. Offshore samples were characterized by amino acid enrichment (91%), whereas inshore samples were depleted in amino acids (14%), probably because of terrestrial impacts during the previous winter. Compared to samples previously taken from the lower Changjiang reaches (Shao et al., 2011), samples of surface coastal waters can be clearly identified by the D/L ratio of selected AAE, indicating the potential of AAEs for identifying OM sources. Peptidoglycan estimated on the basis of D-AAEs, ranged from 3 to 275 nM. For fresh particulate OM (DI>0.5), the peptidoglycan concentration was positively correlated with OM freshness and particulate-nitrogen-normalized peptidoglycan was comparable to or even higher than that in terrestrial OM. This suggests that estuarine and coastal zones make a significant contribution to non-labile OM production. Further analysis suggests that heterotrophic bacteria and Synechococcus are notable contributors.

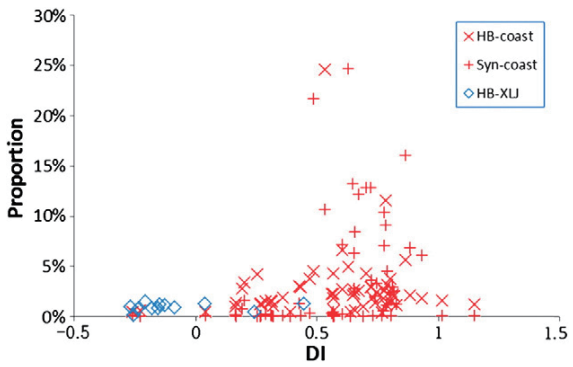


Fig. 9. Proportion of peptidoglycan contributed by prokaryotic cells. (HB, heterotrophic bacteria; Syn, *Synechococcus;* Syn data were not available for station XLJ).

A multi-proxy study of sedimentary humic substances in the salt marsh of the Changjiang Estuary, China.
Zhang, Y.L., Du, J.Z., Zhao, X., Wu, W.S., Peng, B., Zhang, Z., ***Estuarine, Coastal and Shelf Science,*** 2014, 151: 295-301.

To better understand the origin, composition, and reactivity of sedimentary humic substances (HSs) in salt marshes in the Changjiang Estuary, HS samples were isolated from a sediment core that was collected from the Eastern Chongming salt marsh. Chemical and spectroscopic methods were used to analyze the features of these HSs. The results indicate that the studied HSs in the salt marsh sediments are mainly terrestrial-derived and that the sedimentary organic matter (SOM) in the top layer may contain more organic matter from marine sources and/or autochthonous materials due to the dramatic decreasing of the sediment supply as a result of damming. The degradation of labile carbohydrates and proteins and the preservation of refractory lignin components dominate the early diagenetic reactions of SOM in the salt marsh area. The average contents of the carboxylic groups in FAs and HAs are 11.64 ± 1.08 and 7.13 ± 0.16 meq/gC, and those of phenolic groups are 1.95 ± 0.13 and 2.40 ± 0.44 meq/gC, respectively. The content of carboxylic groups increased with increasing depth, while there were no obvious changes in the content of phenolic groups. The average concent ration of total proton-binding sites is approximately 12.5 μmol/g sediment for the studied HSs. These values may provide insight into the migration and fate of HS-bound contaminants in sediments and the overlying sea water in the salt marsh areas of the Changjiang Estuary.

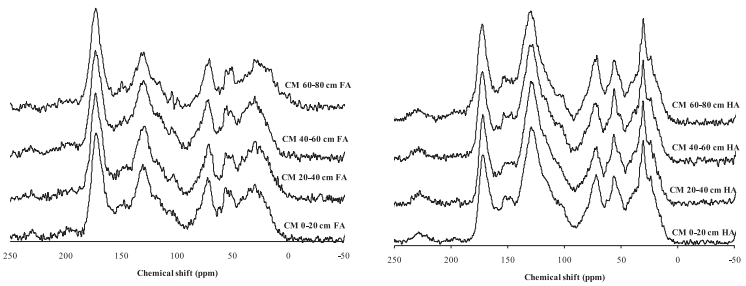


Fig. 2. The CPMAS ^{13}C NMR spectra of all of the fulvic acids and humic acids in the sediment from the Eastern Chongming Island.

Phytoplankton dynamics and its further implication for particulate organic carbon in surface waters of a tropical/subtropical estuary.

Zhu, Z.Y., Liu, S.M., Wu, Y., Li, Y., Zhang, J., Hu, J., ***Estuaries and Coasts,*** 2014, 1-12.

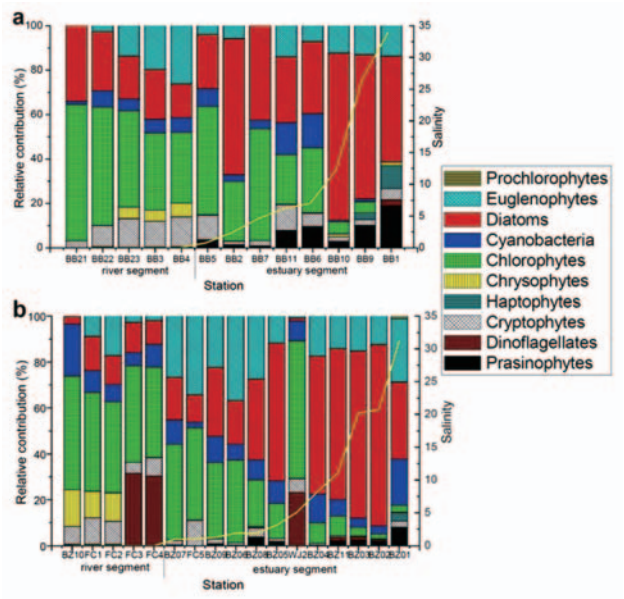


Fig. 3. Phytoplankton contribution to total CHLa as estimated by CHEMTAX (a 2007, b 2008; for 2007, total CHLa=CHLa; for 2008, total CHLa=CHLa+DVCHLa; *yellow line* indicates the salinity)

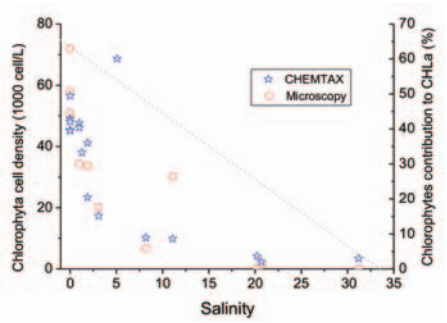


Fig. 4. Chlorophytes extinction along with salinity in summer of 2008 (*dashed line* indicates the conservative dilution)

Phytoplankton succession along with salinity in estuaries not only influences the riverine ecosystem but also interferes our understanding of riverine materials (e.g., organic carbon) transport to the sea. Four cruises were conducted in a mid-size river and its estuary (i.e., the Wanquan River) to elucidate the riverine phytoplankton decease along increasing salinity and to quantify the amount of algal particulate organic carbon (POC) present in the system at different seasons. CHEMTAX calculations suggested that chlorophytes were the main chlorophyll a (CHLa) contributor in the dissolved inorganic phosphorus-limited river, which contributed over 60 % of the total CHLa. Microscopy further revealed that the dominant species was *Scenedesmus* sp. In the estuary, phytoplankton succession along with salinity in the estuary was observed. Chlorophyte contribution to total CHLa dramatically decreased from over 60 % in the river (S=0) segment to <2 % in the estuary (i.e., 0<S<30), whereas simultaneously, diatoms increased from <3 % to over 80 %. Microscopy revealed that *Scenedesmus* sp. was dramatically removed with increasing salinity, and the cell density de-creased from over 540×10^3 cell/L (S=0) to almost 0 when S>20, suggesting the removal of riverine algae in the estuary. The mean algal POC concentration ranged from 80 μg/L (summer) to 140 μg/L (winter), and the riverine algal POC accounted for 6–56 % of the bulk riverine POC. The annual flux of riverine algal POC was estimated to be 660 tons.

Reconstruction of anthropogenic eutrophication in the region off the Changjiang Estuary and central Yellow Sea: From decades to centuries.

Zhu, Z.Y., Wu, Y., Zhang, J., Du, J.Z., Zhang, G.S., ***Continental Shelf Research,*** 2014, 72: 152-162.

Anthropogenic activities are known to induce estuarine and coastal eutrophication. However, the eutrophication history over a longer time scale (e.g., over hundreds of years) is often missing, and this perspective is important for an objective assessment of recent-decades anthropogenic activities. To reconstruct eutrophication history in this region, two sediment cores were taken, core E4 in the region off the Changjiang Estuary in the coast of East China Sea, and core E2 in the central Yellow Sea. High sedimentation rate (3.8 cm/yr) of core E4 enabled us to reconstruct a detailed anthropogenic eutrophication history for the past 70 years, while the history at least back to 1855 was further revealed via core E2. Sedimentary nitrogen isotopes ($\delta^{15}N$) in core E4 showed a gradually depleting trend from 5‰ (1930s) to 3.8‰ in the top, which is consistent with the increasing riverine nitrogen flux over the past few decades. A negative relationship was found between total sedimentary Chl*a* (=preserved chlorophyll a + its degradation products) and

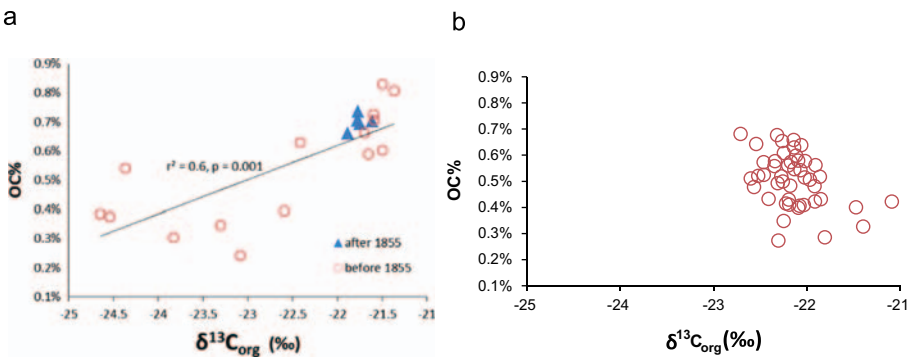


Fig. 8. $\delta^{13}C_{org}$ (‰) plotted against OC% for core (a) E2 and (b) E4 under the same scale.

decreased from 5.1‰ (before 1855) to 4.4‰ (at top layer). As normalized fossil cyanobacterial pigment (zeaxanthin) showed a decreasing trend from before 1855 to the top of the core, we propose that the decreasing sedimentary $\delta^{15}N$ after 1855 was not due to assimilation of atmospheric nitrogen, but due to excess nutrients input to the central Yellow Sea, which promoted primary production. This is further proved by preserved pheopigments, which continuously increased from 41.7 nmol g OC^{-1} (before 1855) to 251 nmol g OC^{-1} (at top layer) in core E2. Besides revealing the eutrophication history, big history events were also recorded, including the 1998 flood of the Changjiang River (core E4) and the shift of the Yellow River mouth in 1855 (core E2).

$\delta^{15}N$(r^2=0.68), suggesting the promotion of estuarine productivity by chemical fertilizer-N. Preserved diagnostic pigments ratio (peridinin/fucoxanthin) further suggests that after 1995, the influence of dinoflagellates has been increasing compared to diatoms. At a longer time scale (i.e., core E2), sedimentary $\delta^{15}N$ also

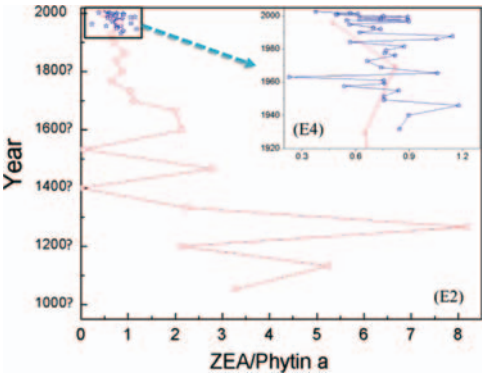


Fig. 9. Normalized ZEA by Phytin a for both cores plotted against sediment age.

Use of ^{222}Rn to trace submarine groundwater discharge in a tidal period along the coast of Xiangshan, Zhejiang, China.

Wen, T.Y., Du, J.Z., Ji, T., Wang, X.L., Deng, B., ***Journal of Radioanalytical and Nuclear Chemistry,*** 2014, 299: 53-60.

^{222}Rn is one of the operative tracers for sub-marine groundwater discharge (SGD), which plays a significant role in the land–ocean interaction of the estuarine and coastal regions. By the distribution pattern of ^{222}Rn in atmosphere, groundwater and surface seawater, in a full tidal period (25 h) in March 2012, SGD was estimated along the coast of Xiangshan, Zhejiang, China. Rn activity in Xiangshan coast was in range of $2.4X10^4$–$1.7X10^5$ Bq/m^3 with an average of $9.6X10^4$ Bq/m^3 for groundwater; $0.2X10^2$–$2.8X10^2$ Bq/m^3 with an average of $1.1X10^2$ Bq/m^3 for surface seawater. ^{222}Rn activities in groundwater were much greater than those in surface water, suggesting that the major source of radon came from coastal groundwater discharge. Rn fluxes of atmospheric emissions, sediment, and of Ra in situ decay can be negligible in this study, but the tidal effects play a crucial role in Rn fluxes. Using a radon inventory equilibrium model, we estimated that the average SGD was 13.2 cm/day and the average terrestrial SGD flux was $1.8X10^8$ m^3/day. Furthermore, SGD may have a vital impact on the composition and structure of nutrients in seawater, and contribute to eutrophication events occurring in spring season along the coast of the East China Sea.

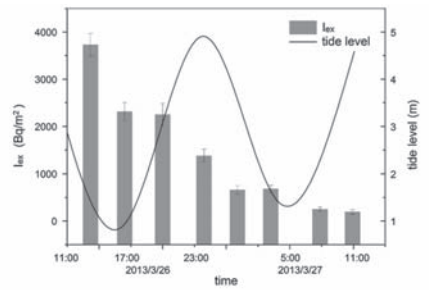


Fig. 2. Variations of excess ^{222}Rn inventory with tide level

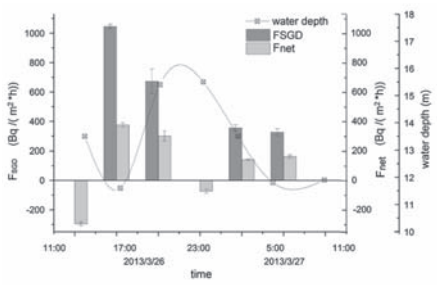


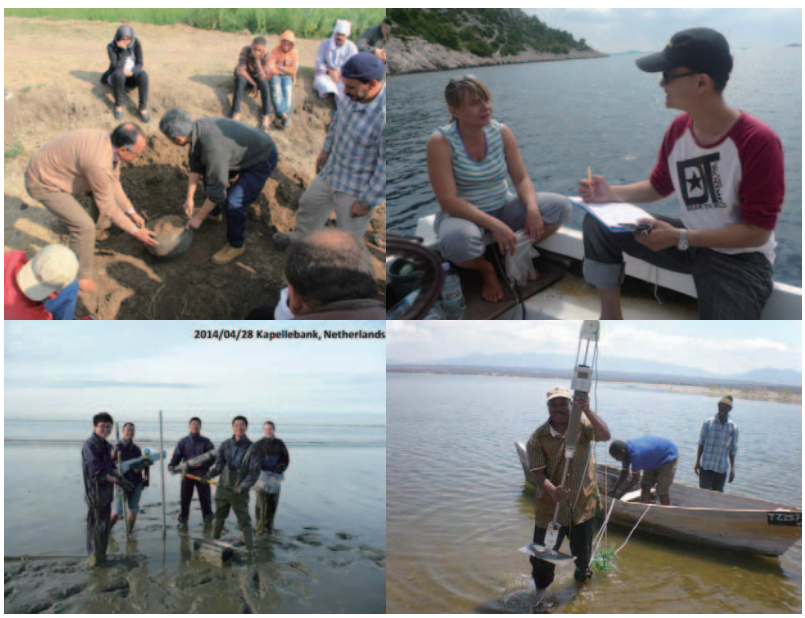
Fig. 3. Net inventory and SGD flux of Xiangshan over time

交流与合作
Academic Exchange & Cooperation

实验室在“111”创新引智计划等项目的支持下，积极开展国际交流与合作，目前承担了“龙计划”3期、澳大利亚国家科学研究基金会中-澳国际合作项目“长江中下游淡水资源与气候变化”等国际合作项目10项。
With the support from “111 Project” and other funding resources, SKLEC is active in international exchange and cooperation. Currently, SKLEC is involved in a number of internationally cooperation projects, such as the ESA-MOST Dragon 3 programme, and China-Australia Cooperation Project of Australia Research Council “Freshwater Resources and Climate Change in the Middle and Lower Reaches of the Yangtze River”.

2014年实验室接待国内外学者、专家来室合作研究与学术交流90多人次。50余人次参加国际学术会议并进行学术交流，其中邀请报告(含大会报告4次)。主/承办4次国际会议、1次暑期班以及2次国内学术研讨会。2014年实验室共举办学术报告近100场次。
In 2014, more than 90 scholars visited SKLEC. Members of SKLEC attended international conferences for more than 50 person-times, including 3 invited talks and plenary lectures. In 2014, SKLEC hosted four international conferences, one summer school, as well as three national conferences. In total, nearly 100 lectures were given in SKLEC.

2014年，实验室科员人员前往世界各地进行野外联合考察，包括2014年2月，与埃及Kafrelsheikh大学的同行共同开展了全新世尼罗河三角洲野外调查；2014年4月，与荷兰代尔夫特理工大学（TU Delft）的科研人员，在荷兰Kapellebank潮滩成功实施了潮滩水沙运动联合观测；2014年9月，与纳尔逊曼德拉非洲理工大学的科研人员，在Pangani流域实施了野外样品采集工作；2014年9月，中国-克罗地亚科技合作项目在KRKA River Estuary开展联合考察。
In 2014, SKLEC members carried out a number of field works abroad. In February, the investigation of Holocene evolution in the Nile delta was carried out by researchers from ECNU and Kafrelsheikh University. In April, we successfully carried out hydrodynamic and sedimentary investigation on the Kapellebank tidal flat, the Netherlands, with researchers from TU Delft. In September, our researchers carried out sampling in the Pangani river basin, Tanzania, with researchers from the Nelson Mandela African Institute of Science and Technology.



新增国际合作项目介绍
Brief Introduction of New International Cooperation Project

科技部中国-克罗地亚科技合作项目：贫营养/富营养河口中有机质的生物地球化学行为对比：以脂类和氨基酸对映体为例(6-8)
Chinese-Croatian Scientific and Technological Cooperation: A comparison of organic matter biogeochemistry in oligotrophic and eutrophic estuary: illustrated by lipids and amino acid enantiomers (2014.1.1-2015.12.30)

本项目由科技部资助，中方承担单位为华东师范大学，外方为鲁德尔博斯科维奇研究所。项目以我国海南文昌河（八门湾）和克罗地亚克尔卡河口为研究对象，通过已经积累的观测资料与结果，结合现场观测与采样并进行实验室分析，基于关键生物标志物及营养盐、有机碳等指标，开展富营养（文昌河）和贫营养（克尔卡河）条件下，有机质不同成分在河口的分布、控制因素对比研究；并进一步结合脂类等生物标志物为技术手段，开展不同营养背景水平下，河口区域食物网在物质基础和能量水平上的对比研究。

The quality and cycling of organic matter (OM) in the sea is tightly connected to the global changes and human activities. The synergetic effect of combining the expertise of different methodological approaches and knowledge of the two groups from Shanghai and Zagreb is crucial to investigate tightly entangled processes and pathways of the OM production and cycling in seas. Special attention will be paid on transfer of knowledge to young scientists that are included in the project. The project proposes a multi-methodological approach with focus on the opposing marine regimes: eutrophic Changjiang Estuary and oligotrophic East Adriatic Sea. The project will apply and combine a wide range of methods and tools to investigate how opposing trophic status and human pressure reflects in OM quality and cycling.

在研国际合作项目进展
Progress of International Cooperation Projects

国家自然科学基金国际(地区)合作与交流项目：长江河口和Ems河口细颗粒泥沙动力过程及其影响因素(51061130544)

NSFC International (Regional) Cooperation and Exchange Program: Fine Sediment Dynamic Process in the Yangtze River Estuary and Ems Estuary and Influencing Factors (2011.01-2014.12)

2014年，根据项目计划的要求，项目组进行了1次长江河口现场观测，并在前三年已完成的研究工作的基础上，着重对长江河口不同河道细颗粒泥沙含量、悬沙与床沙交换，以及对地形地貌的冲淤过程的关系进行研究。已发表中英文论文4篇，待刊论文6篇，并邀请荷方合作者Huib E. de Swart教授于2014年12月来实验室讲学和学术交流。

In 2014, according to the project plan, one field work was carried out. Particular attention was paid to fine suspended sediment concentration, exchange of suspended sedment with bed sediment, depositional and erosional cycle in the main channels. Four papers have been published and six papers are ready to be published. The Dutch partner, Prof. Huib E. De Swart was invited to visit SKLEC in December 2014.

中国科技部与欧洲空间局合作项目—龙计划3期：河口沉积羽流及潮滩对人类活动和气候变化的响应 (DRAGON 3 Id. 10555)

The ESA-MOST Dragon 3 Cooperation: Variations of Estuarine Turbid Plumes and Mudflats in Response to Human Activities and Climate Change(2012.06-2016.06)

2014年度，项目的主要工作有4个方面：1)分析极轨卫星产品(如悬浮颗粒物浓度，SPM)的季节、年际变化及对上游减沙的响应，分析了静止轨道卫星产品SPM的日变化及对潮流的响应；2)海洋水色多传感器的反演参数(如遥感反射率Rrs和SPM)的交叉对比及地面验证，以检验反演算法的兼容性和卫星产品的一致性；3)浑浊海域(如黄东海)剖面浮标生物-光学参数的自动观测；4)改进和再校准固有光学特性(IOPs)、漫衰减系数(Kd)和SPM的反演算法。

In 2014, the main work focused on: 1) analysis of seasonal and interannual variations in satellite-derieved products (e.g. Suspended Particulate Matter, SPM) and its response to the decreased Yangtze river discharges; 2) cross comparison of satellite-derived products, e.g. remote-sensing reflectance (Rrs) and SPM concentration from multiple ocean-color sensors in order to validate compatibility of algorithms and consistency of satellite products; 3) diurnal and vertical observations for bio-optical properties dynamics from autonomous profiling floats in turbid coastal ocean, e.g. in the East China Sea and Yellow Sea; and 4) improving and recalibrating the retrieval algorithms for inherent optical properties (IOPs), diffuse attenuation coefficient (Kd) and SPM.

国际科学基金委员会项目：长江口溶解有机氮研究：以氨基酸手性对应体为例(A/5112-1)
International Foundation for Science (IFS): A Study on Dissolved Organic Nitrogen in the Yangtze Estuary: Begin with Amino Acids Enantiomers (2012.02-2014.02)

2014年，项目研究发现：1)浙闽水域表层水体的颗粒氮(PN)自表向底呈下降趋势，另外在表层水光合作用活跃；2)该区域内表层水体的氨基酸对映体中，GABA是表层水中含量最低的氨基酸，也是与底层水相比表层水中唯一的低含量氨基酸。3)用基于氨基酸计算得到的肽聚糖来定量表示惰性有机物，我们发现长江下游惰性有机物含量比河口低；4)我们由此认为，河口和近海区域，陆源输入刺激的细菌生长，促进了惰性有机物的产生。基于流式细胞数据，我们直接测定了细菌的丰度并定量估算得到细菌对惰性有机质的贡献达到50%。5)与海洋相比，河口海岸区域较浅，悬浮的惰性有机物很容易沉降至海底埋藏。这是陆源输入刺激海洋固碳的一个新途径，是河口海岸区域产生惰性有机质的潜在机理，是对气候变化的正反馈。2014年度，项目完成学术论文3篇。
In 2014, the main findngs are: 1) particulate nitrogen (PN) in the surface waters off the Zhemin coastal waters decreased downwards, indicating the vivid photosynthesis activities; 2) GABA is the most depleted amino acids in the surface waters, and it is also the only amino acids that shows lower concentration in the surface waters relative to the near-bottom waters; 3) we use the peptidoglycan (calculated based on amino acids) to quantitatively represent the refractory organic matter and found that refractory organic matter concentration in the lower reaches of the Changjing River is lower than in the surface waters off the estuary; 4) we suggests that bacteria promoted by strong terrestrial input is generating refractory organic matter in the estuary and coastal regions. Based on flow cytometry data, we further quantitatively estimate the contribution from bacteria to refractory organic matter is as high as 50%; 5) As estuary and coastal regions are shallow regions compared to open ocean, the suspended refractory organic matter can be easily settled to the seabed and finally buried in the sediment. Hence, this would be a pathway that terrestrial input enhance carbon sequestration in the ocean and this can be regarded as a positive feedback. Three papers were published in 2014.

学术会议
Workshops & Conferences

中坦流域与海岸学术研讨会
Sino-Tanzania Workshop on Coastal and Catchment Research

2014年3月12日至14日，“中国-坦桑尼亚流域与海岸学术研讨会”在上海召开。来自纳尔逊•曼德拉非洲理工大学(NM-AIST)的KaroliNjau和Alfred Muzuka教授和实验室的师生共20余位参加了本次研讨会。2014年12月16-19日，来自坦桑尼亚达累斯萨拉姆大学的Alfonse Dubi教授来访。双方学者就河口海岸研究，以及海洋工程课程设置等方面进行了交流，并就潜在的合作项目和未来师生交流等达成了初步协议。
During March 12-14, 2014, the Sino-Tanzania workshop on Coast and Catchment Study was held in Shanghai. More than 20 scientists and students from the Nelson Mandela African Institute of Science and Technology (NM-AIST) and SKLEC attended the workshop. During December 16-19, 2014, Prof. Alfonse Dubi from University of Dares Salaam, Tanzania visited SKLEC. Scientists from both sides discussed about estuarine and coastal research and course on ocean engineering. They also reached preliminary agreements on potential collaborating projects and staff and student exchanges in the furture.

中-美-澳河口动力学术研讨会
SKLEC-WHOI-SIMS Joint Workshop on Estuarine Dynamics

2014年5月5日，中-美-澳河口动力学术研讨会在上海召开。来自美国伍兹霍尔海洋研究所、澳大利亚新南威尔士大学、悉尼海洋科学研究所、美国南卡罗来纳大学和麻省理工大学的专家学者以及我室的十余位科研人员参加了此次研讨会，就未来科研合作和人才培养达成了协议。

The workshop was held at SKLEC during May 5-6 of 2014 . The scientists and students from Woods Hole Oceanographic Institution (WHOI), the University of New South Wales (UNSW), Institute of Marine Science (SIMS), the University of South Carolina (USC), and the University of Massachusetts (MIT) participated in the workshop, together with scientists from SKLEC. An agreement on research collaboration and people exchange was reached.

第240期东方科技论坛“河口近海环境中新型污染物研究”学术研讨会
Workshop on Emerging Pollutants in Estuarine and Coastal Environments

2014年6月16-17日，第240期东方科技论坛在上海沪杏图书馆举行，会议执行主席由中国工程院院士、中国环境科学院研究员段宁先生担任。国家“千人计划”入选者、华东师范大学周俊良教授是此次研讨会的召集人。此次会议的主题是河口近海环境中新型污染物研究，来自国内外20余家科研院所和大专院校的40位专家学者参加了会议。

During June 16-17, 2014, the 240th Eastern Forum of Science and Technology was held at Shanghai Huxin Library. Prof. Duan Ning, Academician of the Chinese Academy of Engineering, chaired the forum. Prof. Zhou Junliang from SKLEC organized this meeting. The theme of this workshop was emerging pollutants in estuarine and coastal environments. More than 40 experts from more than 20 institutions attended the workshop.

IMBER ClimEco4暑期班
IMBER ClimEco4 summer school

2014年8月4-9日，由实验室承办的国际“海洋生物地球化学与生态系统整合研究”(Integrated Marine Biogeochemistry and Ecosystem Research，IMBER)项目第四届暑期班(ClimEco4)在我校举行。暑期班邀请了10位国内外相关领域的专家前来授课，共51位来自25个国家和地区的优秀研究生和青年学者齐聚一堂，共同探讨全球气候变化背景下的海洋生态系统与人类社会之间的相互作用。

During August 4-9, 2014, the fourth IMBER summer school, ClimEco4, was held at SKLEC. ClimEco4 focused on building capacity and fostering research at the interface of natural and

human systems, by bringing together 51 participants and 10 leading researchers (totalling 40 from APN countries) from a range of marine science and socio-economic disciplines.

第二届国际河口海岸学论坛
The 2nd International Estuarine and Coastal Symposium

2014年10月16-17日，第二届国际河口海岸学论坛在上海召开。论坛得到高等学校学科创新引智计划(“111计划”)“河口海岸水安全”项目的支持。来自荷兰、美国、英国、德国、挪威、中国等八个国家的60余名科研人员参加了本次会议，组织了21场精彩的学术报告。
The 2nd International Estuarine and Coastal Symposium was held on October, 16-17, 2014. This meeting was supported by the 111 Project Sustaniability of Water Resources in Estuarine and Coastal Environment. More than 60 experts from eight countries, including the Netherland, USA, UK, German, Norway and China, joined the meeting.

中国海洋湖沼学会“全球变化下的海洋与湖沼生态安全”学术交流会“河口海岸环境演变与安全”专题
Session “Marine and Lake Ecological Safety under Global Change” of the Marine and Lake Ecological Safety under Global Change Conference organized by the Chinese Society for Oceanology and Limnology

2014年10月26-28日，中国海洋湖沼学会学术交流会在南京召开，实验室协办了“全球变化下的海洋与湖沼生态安全”分会，含专题报告22个。来自海洋地质、河口海岸学、近海工程等相关学科方向的40多名专家、学者参加了此次专题会议。
During October 26-28, 2014, the Marine and Lake Ecological Safety under Global Change Conference of Chinese Society for Oceanology and Limnology was held in Nanjing. SKLEC convened the session “Environmental Evolution and Safety of Estuary and Coast”. This session consisted of 22 oral presentations. More than 40 experts in the fields of marine geology, estuarine and coastal study and coastal engineering attended the meeting.

中巴河口海岸学术研讨会
Sino-Pakistan Joint Workshop on Estuarine and Coastal Research

2014年12月16-23日，巴基斯坦国家海洋研究所的Monawwar Saleem所长和SaminaKidwai博士来访，就APN国际合作项目、下一步的合作计划以及联合培养博士生等事宜进行交流。
On December 16-23, 2014, Dr. Monawwar Saleem, Director of National Institute of Oceanoography, Pakistan, and Dr. Samina Kidwai visited SKLEC. During their visit, issues on APN project, collaboration plan and joint Ph.D. student training were discussed.

境外专家学者来访
Oversea Visiting Scholars

List of Visitors

专家 Visiting Scholar	单位 Affiliation	备注 Remark
Ulo Mander	爱沙尼亚塔图大学 Tartu University, Estonia	“111计划”骨干 Member of “111 project”
Brian Finlayson	澳大利亚墨尔本大学 The University of Melbourne, Australia	“111计划”骨干 Member of “111 project”
Gerhard Kattner	德国极地研究所 Alfred Wegener Institute, Helmholtz Center for Polar and Marine Research, German	“111计划”骨干 Member of “111 project”
Norbert Hertkorn	德国慕尼黑亥姆霍兹慕尼黑中心 Helmholtz Zentrum Muenchen, German	“111计划”骨干 Member of “111 project”
Marcel J.F. Stive	荷兰代尔夫特理工大学 TU Delft, the Netherlands	“111计划”骨干 Member of “111 project”
Hubrecht de Vriend	荷兰代尔夫特理工大学 TU Delft, the Netherlands	“111计划”骨干 Member of “111 project”
Zhengbing Wang	荷兰代尔夫特理工大学 TU Delft, the Netherlands	“111计划”骨干 Member of “111 project” 长江学者讲座教授 Visiting Changjiang scholar
Bob Su	荷兰特伦特大学 Twente University, the Netherlands	“111计划”骨干 Member of “111 project”
Wouter Verhoef	荷兰特伦特大学 Twente University, the Netherlands	“111计划”骨干 Member of “111 project”
Huib de Swart	荷兰乌特勒支大学 Utrecht University, the Netherlands	“111计划”骨干 Member of “111 project”
Willard S. Moore	美国南卡罗来纳大学 University of South Carolina, USA	“111计划”骨干 Member of “111 project”
Rocky Geyer	美国伍兹霍尔海洋研究所 Woods Hole Oceanographic Institution, USA	“111计划”骨干 Member of “111 project”
Ronald Thom	美国西北太平洋国家实验室 Pacific Northwest National Laboratory, USA	“111计划”骨干 Member of “111 project”
Zhaoqing Yang	美国西北太平洋国家实验室 Pacific Northwest National Laboratory, USA	“111计划”骨干 Member of “111 project”
Christopher Craft	美国印第安纳大学 Indiana University, USA	“111计划”骨干 Member of “111 project” Wetlands 副主编 Deputy editor of Wetlands
Tsehaie Woldai	南非金山大学 University of Wits, South Africa	“111计划”骨干 Member of “111 project”
Anton Korosov	挪威卑尔根大学 University of Bergen, Norway	“111计划”骨干 Member of “111 project”

专家 Visiting Scholar	单位 Affiliation	备注 Remark
Timothy Ian Eglinton	苏黎世联邦理工大学 ETH Zürich, Switzerland	“111计划”骨干 Member of “111 project”
Ian Townend	英国HR Wallingford公司 HR Wallingford, UK	“111计划”骨干 Member of “111 project”
Barry Thornton	英国James Hutton研究所 The James Hutton Institute, UK	“111计划”骨干 Member of “111 project”
John A Dearing	英国南安普顿大学 University of Southampton, UK	“111计划”骨干 Member of “111 project”
Readman Jameswilliam	英国普利茅斯海洋实验室 Plymouth Marine Laboratory, UK	“111计划”骨干 Member of “111 project”
Xiaohua Wang	澳大利亚新南威尔士大学 The University of New South Wales, Australia	中澳合作 Joint Research
Monawwar Saleem	巴基斯坦国家海洋研究所 National institute of Oceanography, Pakistan	中巴合作 Joint Research
Samina Kidwai	巴基斯坦国家海洋研究所 National institute of Oceanography, Pakistan	中巴合作 Joint Research
Sven Nielsen	丹麦技术大学 Technical University of Denmark , Denmark	
Thorsten Dittmar	德国奥登堡大学海洋环境生物化学研究所 Institute for Chemistry and Biology of the Marine Environment (ICBM) Carl von Ossietzky University, Oldenburg, German	
Tim Jennerjahn	德国国家莱伯尼茨热带海洋生态中心 Leibniz Center for Tropical Marine Ecology, German	
Kai Jensen	德国汉堡大学 University of Hamburg, German	
Vladimir Shulkin	俄罗斯科学院远东分院太平洋地理研究所 Pacific Geographical Institute, Far Eastern Branch of the Russian Academy of Sciences, Russia	中俄合作 Joint Research
Pavel Tishchenko	俄罗斯科学院远东分院太平洋海洋研究所 Pacific Oceanological Institute, Far Eastern Branch of the Russian Academy of Sciences, Russia	中俄合作 Joint Research
Doxaran David Pierre	法国国家科学研究中心 French National Center for Scientific Research (CNRS), France	开放课题 SKLEC Open Fund recipient
Gi Hong	韩国海洋科学技术研究所 Korea Institute of Ocean Science & Technology, South Korea	
B.C. van Prooijen	荷兰代尔夫特理工大学 TU Delft, the Netherlands	
D.C. Maan	荷兰代尔夫特理工大学 TU Delft, the Netherlands	

专家 Visiting Scholar	单位 Affiliation	备注 Remark
Natan Hoefnagel	荷兰内梅亨大学 Radboud University Nijmegen, the Netherlands	
Sara Faye Harpenslager	荷兰内梅亨大学 Radboud University Nijmegen, the Netherlands	
Yingying Tang	荷兰内梅亨大学 Radboud University Nijmegen, the Netherlands	
Annieke Borst	荷兰内梅亨大学 Radboud University Nijmegen, the Netherlands	
William A. Gough	加拿大多伦多大学 University of Toronto , Canada	
David M. Irwin	加拿大多伦多大学 University of Toronto, Canada	
Yongsong Huang	美国布朗大学 Brown University, USA	
Jian Shen	美国弗吉尼亚海洋科学研究所 Virginia Institute of Marine Science, USA	上海千人 Shanghai Thousand Talents
Keqi Zhang	美国弗罗里达国际大学 Florida International University, USA	上海千人 Shanghai Thousand Talents
John Lee Stutsman	美国华盛顿大学 University of Washington, USA	
Chen Changshen	美国麻省理工大学 University of Massachusetts, USA	华东师范大学紫江学者讲座教授 Zi Jiang Scholar
Zhenghong Tang	美国内布拉斯加大学林肯校区 University of Nebraska-Lincoln, USA	
Michael Bender	美国普林斯顿大学 Princeton University, USA	
王一男 Yinan Wang	美国斯坦福大学 Stanford University, USA	开放课题 SKLEC Open Fund recipient
Mark Baskaran	美国韦恩州立大学 Wayne State University, USA	高端外专 High-end Foreign Experts
Anton Korosov	挪威卑尔根大学 University of Bergen, Norway	
Richard Bellerby	挪威水环境研究所 Institute of Water Research, Norway	外专千人 Recruitment Program of Foreign Experts
郭新宇 Xinyu Guo	日本爱媛大学 Ehime University, Japan	
Rui Bao	苏黎世联邦理工大学 ETH Zürich, Switzerland	
Alfonse Dubi	坦桑尼亚达累斯萨拉姆大学 University of Dar es Salaam, Tanzania	中非合作 Joint Research

专家 Visiting Scholar	单位 Affiliation	备注 Remark
Karoli Njau	坦桑尼亚纳尔逊·曼德拉非洲理工大学 The Nelson Mandela African Institute of Science and Technology, Tanzania	中非合作 Joint Research
Alfred Muzuka	坦桑尼亚纳尔逊·曼德拉非洲理工大学 The Nelson Mandela African Institute of Science and Technology, Tanzania	中非合作 Joint Research
Peter Steinberg	悉尼海洋科学研究院 The Sydney Institute of Marine Science, Australia	中澳合作 Joint Research
Moninya Roughan	悉尼海洋科学研究院 The Sydney Institute of Marine Science, Australia	中澳合作 Joint Research
Wayne Stephenson	新西兰奥塔哥大学 University of Otago, New Zealand	
Ping Dong	英国邓迪大学 University of Dundee, UK	
Jeanette Rotchell	英国赫尔大学 University of Hull, UK	海外高层次专家 Overseas High-level Experts

开放基金
SKLEC Research Fund

2014年，实验室在研开放基金26项，共105万元，新增开放基金13项，共81万元。
There were 26 on-going projects funded by SKLEC with a total of 1.05 million RMB in 2014, and 13 new projects amounted to 0.81 million RMB.

2014年河口海岸学国家重点实验室开放基金获得者
Recipients of SKLEC Research Fund in 2014

姓名 Name	课题名称 Title	单位 Affiliation
Christiaan van der Tol	Dynamics of the Ecology and Climate of the Yangtze Estuary (DECY)	The University of Twente
侯小琳 Hou Xiaolin	基于I-129和Cs-137示踪的我国黄、东海的物质输送研究 Investigation of material transportation in the Yellow Sea and the East China Sea using anthropogenic I-129 and Cs-137	中国科学院地球环境研究所 Institute of Earth Environment, CAS
张衡 Zhang Heng	互花米草入侵对长江口盐沼湿地鱼类生境利用策略的影响机制 Impact of spartina alterniflora on the habit use by wetland fishes in the Yangtze Estuary	中国水产科学研究院东海水产研究所 East China Sea Fisheries Research Institute, CAFS
王初 Wang Chu	崇明东滩盐沼有机碳动力输移、积累和来源示踪研究 Sources, transportation and accumulation of organic carbon in the salt marsh of the eastern Chongming island	上海师范大学 Shanghai Normal University
Jeanette M. Rotchell	Mapping of biological impacts caused by estrogenic chemicals in Chinese coastal waters	University of Hull
李爽 Li Shuang	波状底床湍流边界层大涡模拟 Large eddy simulation of turbulence boundary layer over wavy bed	浙江大学 Zhejiang University
殷杰 Yin Jie	气候变化背景下海岸带城市洪灾风险评估研究——以上海市为例 Flood risk assessment for coastal cities in the context of climate change—a case study of Shanghai	浙江工商大学 Zhejiang Gongshang University
王一男 Wang Yinan	利用表面数值模拟技术再现全新世长江口的古地貌演变过程 Reproducing Holocene geomorphic processes and stratigraphic evolution of Yangtze River mouth system using surface-based modeling	Standford University
刘锋 Liu Feng	磨刀门河口拦门沙区域泥沙输运及其沉积地貌效应 Sediment transportation at the bar area in the Modaomen river mouth and its implication for geomorphological evalution	中山大学 Sun Yat-Sen University
Dr. Daniel A. Shilla	Environmental forensics-fingerprinting organic matter sources and trophic interactions in an estuary using fatty acid biomarkers and stable isotopes	University of Dar es Salaam
张超 Zhang Chao	长江河口盐沼湿地互花米草生长对增温的响应 Response of growth of Spartina alterniflora to elevated temperature in salt marsh in the Yangtze Estuary	华东师范大学 East China Normal University
陈蕾 Chen Lei	河口湿地Fe(III)还原微生物多样性与胞外磁铁矿结构的关系 The relationship between iron-reducing microbial diversity and extracellular magnetite structure in estuarine wetland	中国科学院烟台海岸带研究所 Yantai Institute of Coastal Zone Research, CAS
徐鹏 Xu Peng	潮汐应变在象山港泥沙输运中起作用吗? Does tidal straining play a role in sediment transport of Xiangshan Bay?	上海海洋大学 Shanghai Ocean University

邀请报告
Invited Presentations at International Conferences & Workshops

2014年实验室有55人次参加国际学术会议并进行学术交流，其中邀请报告(含大会报告)4次。
Members of SKLEC attended international conferences for more than 55 person-times, including 4 invited talks and plenary lectures.

Zhongyuan Chen, Sediment delivery and ecohealth of mega-estuaries: comparing the Yangtze and the Nile - ***Monsoon Asia Integrated Regional Study (MARIS),*** Apr.7-10, Beijing.

Lijun Hou, A Novel MIMS method to measure 15-NH_4^+ from nitrogen-isotope enriched experiments in aquatic ecosystems - ***Joint Aquatic Sciences Meeting 2014,*** May. 15-22, USA.

Hui Wu, Extension of the Changjiang River plume in response to the realistic forcing: a model-guided study - ***Korea-China Workshop on Marine Research Cooperation in the Yellow and East China Seas,*** Jun. 24-26, South Korea.

Weiguo Zhang, Sediment source fingerpringting using mineral magnetic approach: an example from the Yangtze River Estuary - ***The 2nd Sino-Portuguese Workshop on Collaborative Research of Marine Sciences,*** Oct. 22-26, Portugal.

论文专著
List of Peer Reviewed Publications

2014年，实验室在国内外重要刊物上共发表学术论文160多篇，其中国外刊物85篇，国内重要刊物69篇，在国际会议论文集或专集上发表论文3篇，出版专著1册、图集1册、科普读物1本。
In 2014, More than 160 peer-reviewed papers and books were published, among which 85 were published in international journals, 69 in national journals, 3 in international conference proceedings. Members of SKLEC published 3 books.

国外刊物发表论文列表
List of International Peer Reviewed Publications

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专著、编著
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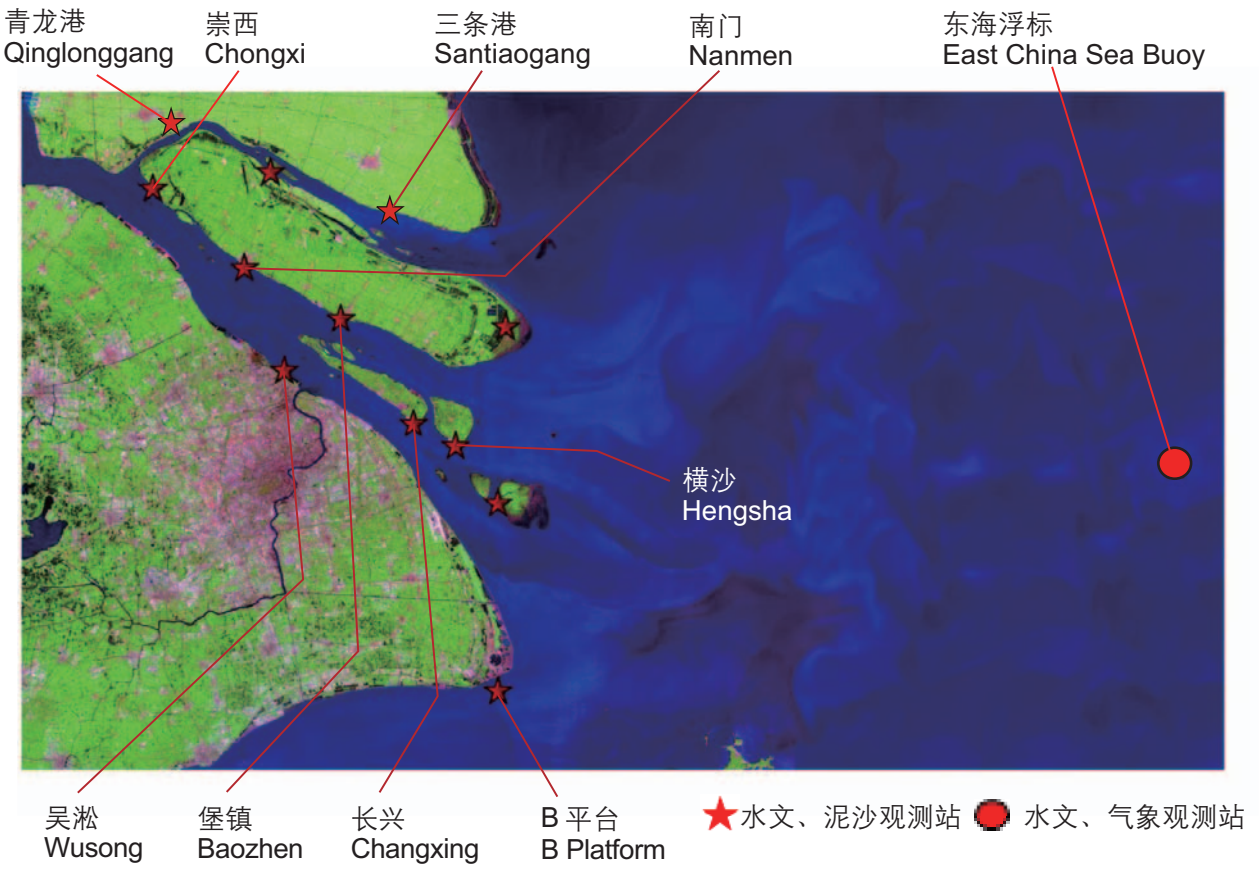
*说明：*表示通讯作者。*

*Ps: * refers to corresponding author.*

平台与仪器
Facilities & Equipments

2014年，实验室现有野外台站横沙、长兴、堡镇、南门、崇西以及大通测站工作正常。此外，实验室每两个月在大通站实施一次定期采样观测。

In 2014, the hydrological observation stations, namely Hengsha, Changxing, Baozhen, Nanmen, Chongxi, and Datong work well. Water and sediment sampling were carried out at the Datong Station every two months.



长江河口及东海野外观测站分布图
Observation Stations in the Yangtze River Estuary and East China Sea

新增仪器
New Equipments

新增野外大型仪器设备(20万元以上)
New Instruments for Field Survey

设备名称 Equipment	生产厂商 / 型号 Manufacturer / Type
多波束测深系统/ Multi-beam Sounding System	Teledyne Reson A/S / SeaBat7125

人才培养
Student Programs

2014年实验室在读的研究生251人，其中博士研究生125人，硕士研究生126人。
There are 244 postgraduate students in SKLEC, including 129 Ph.D. students, and 115 M.Sc. students.

学位授予
Degrees Offered

硕士学位：自然地理学；地图学与地理信息系统；物理海洋学；海洋化学；海洋生物学；海洋地质；生态学；环境科学；港口、海岸及近海工程
M.Sc. Programs: Physical Geography; Cartography and Geographic Information Systems; Physical Oceanography; Marine Chemistry; Marine Biology; Marine Geology; Ecology; Environmental Science; Port, Coastal and Offshore Engineering

博士学位：自然地理学；河口海岸学；生态学；环境科学
Ph.D. Programs: Physical Geography; Estuarine and Coastal Science; Ecology; Environmental Science

入学新生与毕业学生
The Freshmen and Graduates

2014年实验室共招收研究生67人，其中博士生29人，硕士生38人，招收的博士生中直博生13人、硕博连读6人、留学生3人。2014年共毕业37人，其中博士生7人，硕士生30人，陈俊、任璘婧、宋兵被评为2014年上海市优秀毕业生。
Sixty-seven (67) students were enrolled in 2014, including 29 Ph.D. and 38M.Sc. students. Thirty-seven (37) students graduated in 2014, including 7Ph.D. and 30 M.Sc. students. Chen Jun, RenLinjing and Song Bingwere honored as Outstanding Graduate Student of Shanghai.

博士毕业生
List of Ph.D. Graduates

自然地理学/Physical Geography

姓名 Name	导师 Supervisor	毕业论文题目 Thesis	就业单位 Employment
刘建华 Liu Jianhua	杨世伦 Yang Shilun	长江口门附近海域悬沙时空变化和输运研究—以崇明东滩附近海域为例 The study of the temporal and spatial variation and transport of suspended sediment in nearshore water area of Yangtze Estuary: a case study from nearshore waters off eastern Chongming Island	福建海洋所 Fujian Institute of Oceanography
王利花 Wang Lihua	周云轩 Zhou Yunxuan	长江河口及邻近海域表层水体关键动力参数的遥感反演研究及应用 Remote sensing retrieval study and application of the surface key kinetic parameters in the Yangtze Estuary and its adjacent waters	成都信息工程学院 Chengdu University of Information Technology

姓名 Name	导师 Supervisor	毕业论文题目 Thesis	就业单位 Employment
杨忠勇 Yang Zhongyong	程和琴 Cheng Heqin	潮汐河口河槽悬沙侧向捕集机制研究 Mechanism of lateral sediment entrapment in tidal estuaries	三峡大学 China Three Gorges University
宋兵 Song Bing	李珍 Li Zhen	全新世长江三角洲初始发育及其主要影响因素探讨 Initiation of Changjiang (Yangtze) delta and its primary factors during the Holocene	国家海洋局第一海洋研究所 The First Institute of Oceanography, State Oceanic Administration of China
董艳 Dong Yan	张卫国 Zhang Weiguo	南通滨海地区全新世沉积物磁性特征及其古环境意义 Magnetic properties of Holocene sediments from the coastal region of Nantong and their paleoenvironmental implications	南通大学 Nantong University

河口海岸学/Estuarine and Coastal Science

姓名 Name	导师 Surpervisor	毕业论文题目 Thesis	就业单位 Employment
裘诚 Qiu Cheng	朱建荣 Zhu Jianrong	长江河口盐水入侵对气候变化和重大工程的响应 The responses of saltwater intrusion to climate change and major projects in the Changjiang River estuary	上海市水文总站 Shanghai Hydrological Station

生态学/Ecology

姓名 Name	导师 Surpervisor	毕业论文题目 Thesis	就业单位 Employment
邹维娜 Zou Weina	张利权 Zhang Liquan	上海地区典型沉水植物光谱特征研究及其应用 A study on spectral characteristics of typical submerged aquatic vegetation in Shanghai and its application	上海应用技术学院 Shanghai Institute of Technology

硕士毕业生 List of M.Sc. Graduates

自然地理学/Physical Geography

姓名/Name	导师/Supervisor	姓名/Name	导师/Supervisor
陈雨/Chen Yu	沈芳/Shen Fang	胡进/Hu Jin	李占海/Li Zhanhai
张晓娅/Zhang Xiaoya	杨世伦/Yang Shilun	赵方方/Zhao Fangfang	李占海/Li Zhanhai
周锐/Zhou Rui	李珍/Li Zhen	彭翔翼/Peng Xiangyi	沈芳/Shen Fang

地图学与地理信息系统/Cartography and Geographic Information Systems

姓名/Name	导师/Supervisor	姓名/Name	导师/Supervisor
李炳南/Li Bingnan	蒋雪中/Jiang Xuezhong	乔远英/QiaoYuanying	程和琴/Cheng Heqin
薛靖波/Xue Jingbo	蒋雪中/Jiang Xuezhong	张林/Zhang Lin	周云轩/Zhou Yunxuan

海洋化学/Marine Chemistry

姓名/Name	导师/Supervisor	姓名/Name	导师/Supervisor
沈冰良/Shen Bingliang	吴莹/Wu Ying	罗光富/Luo Guangfu	邓兵/Deng Bing
邵锡斌/Shao Xibin	吴莹/Wu Ying		

生态学/Ecology

姓名/Name	导师/Supervisor	姓名/Name	导师/Supervisor
孙培英/Sun Peiying	李秀珍/Li Xiuzhen	张海燕/Zhang Haiyan	陆健健/Lu Jianjian
陈俊/Chen Jun	李秀珍/Li Xiuzhen	姜雪/Jiang Xue	李小平/Li Xiaoping
刘广鹏/Liu Guangpeng	李道季/Li Daoji	任璘婧/Ren Linjing	李秀珍/Li Xiuzhen
严格/Yan Ge	张利权/Zhang Liquan		

环境科学/Environmental Science

姓名/Name	导师/Supervisor	姓名/Name	导师/Supervisor
赵迪/Zhao Di	侯立军/Hou Lijun	史晓东/Shi Xiaodong	侯立军/Hou Lijun
游丽丽/You Lili	侯立军/Hou Lijun		

港口、海岸及近海工程/Port, Coastal and Offshore Engineering

姓名/Name	导师/Supervisor	姓名/Name	导师/Supervisor
陈泾/Chen Jing	朱建荣/Zhu Jianrong	胡小雷/Hu Xiaolei	张国安/Zhang Guoan
计娜/Ji Na	程和琴/Cheng Heqin	林唐宇/Lin Tangyu	朱建荣/Zhu Jianrong
吴晗/Wu Han	杨世伦/Yang Shilun	谢华亮/Xie Hualiang	戴志军/Dai Zhijun
张迨/Zhang Dai	何青/He Qing	赵长进/Zhao Changjin	丁平兴/Ding Pingxing

公派留学
Oversea Study Supported by China Scholarship Council

2014年，实验室共有8位学生获公派留学资格，赴美国、英国、德国、丹麦攻读学位或接受联合培养。
Eight students received China Scholarship Council scholarships to study abroad (USA, UK, Germany and Denmark) for Ph.D. degrees to be afforded either fully by oversea institutions or jointly with SKLEC.

博士研究生/Ph.D. Degree to be Offered by Oversea Institute

姓名 Name	申报国别/地区 Country/Region	留学单位 Oversea institute
胡浩/Hu Hao	英国/UK	赫尔大学/ University of Hull
任璘婧/Ren Linjing	丹麦/Denmark	奥胡斯大学/ Aarhus University
赵长进/Zhao Changjin	德国/German	基尔大学/Christian-Albrechts University Kiel

联合培养/Ph.D. Degree to be Offered Jointly with SKLEC

姓名 Name	国内导师 Supervisor	申报国别/地区 Country/Region	留学单位 Oversea institute
王锦龙/Wang Jinlong	杜金洲/Du Jinzhou	美国/USA	韦恩州立大学 Wayne State University
赵世烨/Zhao Shiye	李道季/Li Daoji	美国/USA	伍兹霍尔海洋研究所 Woods Hole Oceanographic Institution
钱伟伟/Qian Weiwei	周云轩/Zhou Yunxuan	美国/USA	佛罗里达国际大学 Florida International University
陈艇/Chen Ting	王张华/Wang Zhanghua	英国/UK	拉夫堡大学 Loughborough University
傅强/Fu Qiang	李道季/Li Daoji	美国/USA	奥本大学 Auburn University

海外研修
Oversea Visiting

2014年，实验室有9位同学赴美国、荷兰、英国进行交流访学。
Nine students went abroad (USA, the Netherlands, and UK) as visiting students.

姓名/Name	访学单位/Visiting institute	起止时间/Date
张敏/Zhang Min	英国沃林福特水文研究所/HR Wallingford Ltd, UK	2013.07-2014.01
曹浩冰/Cao Haobing	荷兰皇家海洋研究所/Royal Netherlands Institute for Sea Research	2013.12-2014.09
王一鹤/Wang Yihe	美国弗吉尼亚海洋研究院/Virginia Institute of Marine Science	2014.03-2014.08
朱琴/Zhu Qin	荷兰代尔夫特理工大学/Delft University of Technology	2014.04-2014.06
王希龙/Wang Xilong	联合国教科文组织荷兰水教育学院/UNESCO-IHE	2014.06-2014.08
栾华龙/Luan Hualong	荷兰代尔夫特理工大学/Delft University of Technology	2014.10-2015.09
葛灿/Ge Can	美国蒙特克莱尔州立大学/Montclair State University	2014.09-2014.12
杨海飞/Yang Haifei	美国路易斯安那州立大学/Louisiana State University	2014.09-2015.09
王恒/Wang Heng	荷兰皇家海洋研究所/Royal Netherlands Institute for Sea Research	2014.09-2015.09

其它国/境外交流 Other activities abroad

姓名/Name	地点	内容	时间/Date
赖晓鹤/Lai Xiaohe	埃及尼罗河三角洲/ the Nile Delta, Egypt	野外调查/ Field work	2014.02
曹文红/Cao Wenhong	台湾浊水溪/ Chou-shui River, Taiwan, China	野外调查/ Field work	2014.04-2014.05
王晓娜/Wang Xiaona	北极“黄河站”/ The Arctic Huanghe Station	野外调查/ Field work	2014.06
郭超/Guo Chao	荷兰Westerschelde潮滩/ Westerschelde, the Netherlands	野外调查/ Field work	2014.04-2014.05
主洪飞/Zhu Hongfei	越南海洋研究所/ Institute of Oceanography, Vietnam	短期培训班/ Short-term Course Training	2014.04
王福强/Wang Fuqiang	俄罗斯彼得大帝湾和绥芬河口/ Peter The Great Bay and Razdolnaya River Estuary	野外调查/ Field work	2014.10-2014.11
王腾/Wang Teng	美国缅因大学奥罗诺分校/ The University of Maine	项目交流/ Academic exchange	2014.08
朱礼鑫/Zhu Lixin	美国缅因大学奥罗诺分校/ The University of Maine	项目交流/ Academic exchange	2014.08
Selemani Juma Rajabu	坦桑尼亚Pangani河流域/ Pangani River basin	野外调查/ Field work	2014.10-2014.11
Maureen Mzuza	马拉维Shire河流域/ Shire River basin, Malawi	野外调查/ Field work	2014.6-2014.9
Nguyen Thi Thu Hien	越南红河流域/ Red River basin, Vietnam	野外调查/ Field work	2014.1-2014.2

研究生科研成果
Research Achievements by Graduate Students

2014年研究生发表第一作者论文50篇，占实验室第一作者论文总数的69%，其中SCI/SCIE论文30篇(I区文章1篇，II区7篇)，占实验室SCI/SCIE论文的60%。实验室学生中有4人次参加国际学术会议，其中2人做口头报告。
The graduate students published 50 papers as first authors, among which 30 papers were published in SCI/SCIE journals. Four (4) students attended international conferences with2 oral presentations.

2014年5月，经上海市教育委员会、上海市学位委员会审核，我室2012届河口海岸学专业博士生黄德坤学位论文“基于核素示踪的长江口、东海和海南东部近海泥沙的沉降过程”入选2013年上海市研究生优秀成果(学位论文)。
The Ph.D. dissertation “Applications of radionuclides to trace the source, transport pathways and depositions of sediments in the Changjiang Estuary, East China Sea and coastal environment of east Hainan”, submitted by Huang Dekun, who graduated in 2012, was awarded the Outstanding Dissertation of Shanghai Graduate Students by Shanghai Municipal Education Commission and Academic Degree Committee of Shanghai in May.

公众服务
Outreaches

为促进优秀大学生之间的思想交流，扩大河口海岸学国家重点实验室在国内相关院校中的影响力，提高实验室研究生生源质量，由我校研究生院主办，河口海岸学国家重点实验室承办的“2014年河口海岸学优秀大学生夏令营”于2014年7月14日至18日在我校举行。通过高校推荐和河口海岸学国家重点实验室的选拔，共有来自国内二十多所高校的28名大学生参加本次夏令营。
Under the guide of East China Normal University, SKLEC hosted Excellent Students’ Summer School of Estuarine and Coastal Science during 14th -18thJuly, 2014. After recommendation from universities and SKLEC’s selection, finally, there were 28 excellent students participated in the programe.

2014年5月23日，实验室开展了主题为“河口海岸，我们共同的家园”的公众开放日活动，活动吸引了60多人报名参加，包括大学教师、在校学生、工人、公司白领等。
On 23 May, 2014, SKLEC open day was held with the topic of “Estuaries and Coasts: Our Common Homeland”. By giving lectures and tours on the laboratory as well as estuarine museum of Shanghai, this activity attracted more than 60 people including children, students, workers, and university teachers.

2014年7月17日，全国青少年高校科学营华东师范大学分营来自全国各地的60名高中生及6位带队教师参观了河口海岸学国家重点实验室。我室宗海波博士和顾靖华工程师为营员们讲解了我室的发展历史及对国家和地方做出的贡献，展示了新型海洋作业设备。
Members of the National Youth Science Camp, consisting of 60 high school students and 6 teachers, visited SKLEC on 17th July, 2014. Dr. ZongHaibo and Mr. Gu Jinghua introduced about SKLEC and its scientific achievements, and the technologies and equipments used for marine studies.

2014年9月27日，华东师范大学国土经济学会组织了地理科学学院35名2014级学生参观了河口海岸学国家重点实验室，他们来自于的不同专业。
Thirty-five (35) freshmen from School of Geography Science of ECNU visited SKLEC on 27 September, 2014. They were introduced about the history, research activities and facilities of SKLEC.

我室张树义教授著的《带着学生去北极》获得科技部颁发的2014年全国优秀科普作品奖，2014年5月出版了《行走北极——一个科学家和一群优秀学生的基地科考之旅》。
The book “Bringing Students to the Arctic”, written by Prof. Zhang Shuyi, was awarded the National Excellent Popular Science Book Prize by MoST in Dec. 2014. Prof. Zhang also published a new book entitled “Walking in the Arctic: a scientific exploration journey by a scientist and a group of outstanding students” in May.

学位评定分委员会

主　任: 周云轩
副主任: 何　青、张卫国
委　员: 丁平兴、戴志军、杜金洲、李道季、李秀珍、沈　芳

SKLEC Committee for Academic Degree Assessment

Chair: Zhou Yunxuan
Deputy Chair: He Qing, Zhang Weiguo
Members: Ding Pingxing, Dai Zhijun, Du Jinzhou, Li Daoji, Li Xiuzhen, Shen Fang

研究队伍
Research Staff

- 2014年，重点实验室引进研究人员6人，现有固定人员63人(其中研究人员54人，技术人员7人，管理人员2人)。
  Six research members joined SKLEC in 2014. There are 63 fulltime members, including 54 academic research members, 7 technical members and 2 administrative members.
- 引进国家杰出青年科学基金获得者张树义教授。
  Prof. Zhang Shuyi, the recipient of Excellent Scientist Foundation of NSFC, joined SKLEC.
- 引进国家“外专千人计划”入选者Richard Bellerby教授。
  Prof. Richard Bellerby, who was selected into the Recruitment Program of Foreign Experts (also named Thousand Talents Program for High-level Foreign Experts), joined SKLEC.
- 引进国家“青年千人计划”入选者周旭辉教授。
  Prof. Zhou Xuhui, who was selected into the Recruitment Program of Global Youth Experts (also named Youth Thousand Talents Program), joined SKLEC.
- 重点实验室客座教授王小华和杨昭庆入选“上海市千人计划”。
  Adjunct Prof. Wang Xiaohua and Prof. Yang Zhaoqing were funded by the Shanghai Recruitment Program of Global Experts (also named Thousand Talents Program of Shanghai).
- 重点实验室客座教授Mark Baskaran入选国家外专局“高端外国专家项目”。
  Adjunct Prof. Mark Baskaran was founded by the “High-end Foreign Experts Recruitment Program” that is organized by the State Administration of Foreign Experts Affairs of China.

研究团队
Research Clusters

水沙动力学及工程应用研究中心 Center for Hydrodynamics, Sediment Dynamics, Estuarine and Coastal Engineering (HydroSDECE)	主任：何青 成员：丁平兴、李九发*、程和琴、朱建荣、吴辉、宗海波、葛建忠、王宪业 Director: He Qing Members: Ding Pingxing, Li Jiufa*, Cheng Heqin, Zhu Jianrong, Wu Hui, Zong Haibo, Ge Jianzhong, Wang Xianye
动力地貌与沉积研究中心 Center for Morphodynamics and Sedimentation	主任：陈沈良 成员：杨世伦、戴志军、张国安*、李占海、李茂田*、张二凤*、韦桃源 Director: Chen Shenliang Members: Yang Shilun, Dai Zhijun, Zhang Guo'an*, Li Zhanhai, Li Maotian*, Zhang Erfeng*, Wei Taoyuan
沉积环境演变研究中心 Center for Paleo-Environmental Changes	主任：张卫国 成员：陈中原、蒋辉*、王张华、李珍*、陈庆强、孟翊*、孙千里*、陈静*、年小美 Director: Zhang Weiguo Members: Chen Zhongyuan, Jiang Hui*, Wang Zhanghua, Li Zhen*, Chen Qingqiang, Meng Yi*, Sun Qianli*, Chen Jing*, Nian Xiaomei

海洋生物地球化学研究中心 Center for Chemistry Oceanography and Marine Biogeochemistry	主任：杜金洲 成员：张经、吴莹、邓兵、张芬芬、朱卓毅、张瑞峰、何利军、叶祁* Director: Du Jinzhou Members: Zhang Jing, Wu Ying, Deng Bing, Zhang Fenfen, Zhu Zhuoyi, Zhang Ruifeng, He Lijun, Ye Qi*
水环境研究中心 Center for Aqua Environment	主任：李道季 成员：周俊良、李小平、程金平、杨毅*、施华宏、侯立军、高磊、郑亮、徐江 Director: Li Daoji Members: Zhou Junliang, Li Xiaoping, Cheng Jinping, Yang Yi*, Shi Huahong, Hou Lijun, Gao Lei, Zheng Liang, Xu Jiang
湿地生态研究中心 Center for Coastal Wetland Ecosystems	主任：张利权 成员：李秀珍、童春富、袁琳、闫中正、葛振鸣、许媛 Director: Zhang Liquan Members: Li Xiuzhen, Tong Chunfu, Yuan Lin, Yan Zhongzheng, Ge Zhenming, Xu Yuan
遥感与地理信息研究中心 Center for Remote Sensing and Geo-Information Systems	主任：沈芳 成员：周云轩、蒋雪中、Leonid Sokoletsky、田波 Director: Shen Fang Members: Zhou Yunxuan, Jiang Xuezhong, Leonid Sokoletsky, Tian Bo

* 兼职人员/ Adjunct members

固定人员
Faculty and Staff

教授 Professors

姓名 Name	研究专长 Research Interests	Email
陈吉余院士 Mr. Chen Jiyu Academician of CAE	河口海岸 Estuarine and Coastal Research	jychen@sklec.ecnu.edu.cn
陈庆强 Mr. Chen Qingqiang	海洋沉积学；环境与生物地球化学 Marine Sedimentology; Environmental Geochemistry & Biogeochemistry	qqchen@sklec.ecnu.edu.cn
陈沈良 Mr. Chen Shenliang	海岸动力地貌；三角洲侵蚀与脆弱性 Coastal Morphodynamics; Delta Erosion and Vulnerability	slchen@sklec.ecnu.edu.cn
陈中原 Mr. Chen Zhongyuan	河流-三角洲沉积地貌过程；水文地貌过程；环境考古 River-Delta Sedimentological and Geomorphological Processes; Geoarchaeology	z.chen@sklec.ecnu.edu.cn
程和琴 Ms. Cheng Heqin	河口海岸动力沉积学；工程地貌与环境；海岸带管理 Estuarine and Coastal Dynamic Sedimentation; Engineered Morphodynamics and Environment; Integrated Coastal Management	hqch@sklec.ecnu.edu.cn
程金平 Ms. Cheng Jinping	环境毒理学 Environmental Toxicology	jpcheng@sklec.ecnu.edu.cn

姓名 Name	研究专长 Research Interests	Email
戴志军 Mr. Dai Zhijun	河口海岸动力地貌 Estuarine and Coastal Morphodynamics	zjdai@sklec.ecnu.edu.cn
丁平兴 Mr. Ding Pingxing	潮滩动力学及数值模型；波-流与泥沙输运 Coastal Dynamics and Numerical Modeling; Sediment Transport by Waves and Currents	pxding@sklec.ecnu.edu.cn
杜金洲 Mr. Du Jinzhou	同位素海洋学；环境放射化学 Oceanography of Isotopes; Environmental Radiochemistry	jzdu@sklec.ecnu.edu.cn
何青 Ms. He Qing	河口海岸水动力学；河口海岸泥沙运动学 Estuarine and Coastal Hydrodynamics; Estuarine and Coastal Sediment Transport	qinghe@sklec.ecnu.edu.cn
侯立军 Mr. HouLijun	环境地理学；环境地球化学 Environmental Geography; Environmental Geochemistry	ljhou@sklec.ecnu.edu.cn
李道季 Mr. Li Daoji	生物海洋学；河口和近岸海域生态系统 Biological Oceanography; Estuarine and Coastal Ecosystem	daojili@sklec.ecnu.edu.cn
李小平 Mr. Li Xiaoping	生态修复；湖泊富营养化控制和土壤/沉积物修复 Ecological Restoration; Eutrophication Control and Soil/ Sediment Remediation	xpli@sklec.ecnu.edu.cn
李九发 Mr. Li Jiufa	河口潮汐、潮流和泥沙运动；河口海岸沉积过程；海岸工程 Tidal Current and Sediment Movement in Estuary; Estuarine and Coastal Sedimentation; Coastal Engineering	jfli@re.ecnu.edu.cn
李秀珍 Ms. Li Xiuzhen	景观生态学；湿地生态学；遥感与地理信息系统应用 Landscape Ecology; Wetland Ecology; Application of Remote Sensing and GIS	xzli@sklec.ecnu.edu.cn
李珍 Ms. Li Zhen	全新世气候变化；三角洲演化；孢粉学 Holocene Climate Change; Delta Evolution; Palynology	zli@sklec.ecnu.edu.cn
Mr. Richard Bellerby	碳的海洋生物地球化学循环；海洋酸化 Marine Carbon Biogeochemical Cycles; Ocean Acidification	Richard.Bellerby@niva.no
沈芳 Ms. Shen Fang	河口近岸水色遥感；遥感技术与GIS综合应用 Coast / Ocean Colour Remote Sensing; Integrated Applications of GIS and Remote Sensing Technology	fshen@sklec.ecnu.edu.cn
施华宏 Mr. Shi Huahong	生态毒理学；生物监测；环境与健康 Ecotoxicology; Biomonitoring; Environment and Health	hhshi@des.ecnu.edu.cn
王张华 Ms. Wang Zhanghua	河口-三角洲沉积地貌环境演变 Sedimentary and Morphological Evolution of Estuary and Delta	zhwang@geo.ecnu.edu.cn
吴莹 Ms. Wu Ying	海洋有机地球化学；海洋生物地球化学 Marine Organic Geochemistry; Marine Biogeochemistry	wuying@sklec.ecnu.edu.cn
杨世伦 Mr. Yang Shilun	海岸湿地沉积动力过程；河口对流域变化的响应 Sediment Dynamic Processes in Coastal Wetlands; Estuarine Response to Impacts from River Basin;	slyang@sklec.ecnu.edu.cn

姓名 Name	研究专长 Research Interests	Email
俞立中 Mr. Yu Lizhong	环境磁学；环境过程；环境演变与可持续发展 Environmental Magnetism; Environmental Processes; Environmental Change and Sustainable Development	lzyu@admin.ecnu.edu.cn
张经　院士 Mr. Zhang Jing Academician of CAS	生物地球化学与化学海洋学 Biogeochemistry and Chemical Oceanography	jzhang@sklec.ecnu.edu.cn
张利权 Mr. Zhang Liquan	植物生态学；湿地生态学；景观生态学 Plant Ecology; Wetland Ecology; Landscape Ecology	lqzhang@sklec.ecnu.edu.cn
张树义 Mr. Zhang Shuyi	河口及海洋生物的分子生态与进化； 与蝙蝠相关的多学科交叉研究 Molecular Ecology and Evolution Research on Estuarine and Marine Organisms; Multi-disciplinary Research on Bats	syzhang@bio.ecnu.edu.cn
张卫国 Mr. Zhang Weiguo	环境磁学；环境演变；环境污染 Environmental Magnetism; Environmental Change; Environmental Pollution	wgzhang@sklec.ecnu.edu.cn
周俊良 Mr. Zhou Junliang	污染物河口地球化学；新型污染物分析；污染物毒理学 Estuarine Pollutant Geochemistry; Emerging Contaminant Analysis; Environmental Toxicity	jlzhou@sklec.ecnu.edu.cn
周旭辉 Mr. Zhou Xuhui	全球变化生态学；生态系统生态学 Global Change Ecology; Ecosystem Ecology	zxuhui14@163.com
周云轩 Mr. Zhou Yunxuan	海岸带资源与环境遥感；土地利用与覆盖变化； 地理信息系统应用 Coastal Zone Remote Sensing; LUCC; Application of GIS	zhouyx@sklec.ecnu.edu.cn
朱建荣 Mr. Zhu Jiangrong	河口海岸海洋动力学；河口海岸海洋数值模式 Estuarine, Coastal and Ocean Dynamics; Estuarine, Coastal and Ocean Model;	jrzhu@sklec.ecnu.edu.cn

副教授Associate Professors

姓名 Name	研究专长 Research Interests	Email
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高磊 Mr. Gao Lei	河口海岸地区营养盐的生物地球化学过程 Nutrient Biogeochemistry in Estuarine and Coastal Areas	lgao@sklec.ecnu.edu.cn
葛振鸣 Mr. Ge Zhenming	气候变化与生态系统碳过程；生态模型；湿地生态学 Climate Change & Ecosystem Carbon-process; Ecological Model; Wetland Ecology	zmge@sklec.ecnu.edu.cn
蒋雪中 Mr. Jiang Xuezhong	河口海岸遥感与GIS应用；河口海岸变化及其人类活动响应 Remote Sensing & GIS, Their Applications in Coastal and Estuarine Area; Coastal and Estuarine Change and Its Response of Human Activity	xzjiang@sklec.ecnu.edu.cn
Mr. Leonid Sokoletsky	内陆和近海水域光学模型; 卫星水质监测 Ocean and inland waters optical model; Satellite water quality monitoring	sokoletsky.leonid@gmail.com

姓名 Name	研究专长 Research Interests	Email
李占海 Mr. Li Zhanhai	河口海岸沉积动力学 Coastal and Estuarine Sediment Dynamics	zhli@sklec.ecnu.edu.cn
童春富 Mr. Tong Chunfu	湿地生态学与系统生态学 Wetland Ecology and Systems Ecology	cftong@sklec.ecnu.edu.cn
吴辉 Mr. Wu Hui	河口海岸动力过程及其三维数值模拟；盐水入侵 Estuarine Dynamics and 3D Numerical Simulation; Saltwater Intrusion	hwu@sklec.ecnu.edu.cn
袁琳 Ms. Yuan Lin	湿地生态；资源环境遥感 Wetland Ecology; Remote Sensing Monitoring of Nature Resource	lyuan@sklec.ecnu.edu.cn
张芬芬 Ms. Zhang Fengfeng	新技术(核磁共振、Raman光谱等)应用于海洋学的研究 Application of New Techniques (NMR and Raman spectroscopy) in Marine Science	ffzhang@sklec.ecnu.edu.cn
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宗海波 Mr. Zong Haibo	波-流与泥沙输运 Sediment Transport under Waves and Currents	hbzong@sklec.ecnu.edu.cn
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瞿建国　副教授 Mr. Qu Jianguo, Associate Professor	无机分析 Inorganic Elements Analysis	崔莹　工程师 Ms. Cui Ying, Engineer	有机及无机分析 Organic and Inorganic Elements Analysis
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固定人员在国际期刊和国际组织任职情况
Serving in International Academic Organizations and Journals

Name	International Organizations/Journals	Position	Term of Service
陈中原	IGBP/LOICZ	SSC Member	2009-
	Environmental Management of Enclosed Coastal Seas	SPC Member	2004-
	IAG-Large Rivers Working Group	Member	2001-
	International Association of Geomorphologists	Representative of China	2001-
	Geomorphology	Editorial board member	2001-
	Estuarine, Coastal and Shelf Science	Associate Editor	2013.1-
程和琴	Journal of Geology, Geophysics and Geosystems	Editorial board member	2009-
程金平	Bulletin of Environmental Contamination and Toxicology	Editorial board member	2013.1-
何利军	Open Journal of Marine Science	Editorial board member	2011.5-2016.4
	Marine Life Sciences	Editorial board member	2013.4.15-
	Biological Segment	Technical editor	2014-
何青	INTERCOH	SSC Member	2003-

Name	International Organizations/Journals	Position	Term of Service
侯立军	Journal of Marine Science: Research and Development	Editorial board member	2012.6-
	American Journal of Environmental Monitoring	Editorial board member	2014.8-
	Earth Sciences	Editorial board member	2014.9-
李秀珍	International Association for Landscape Ecology	Council Chair	2011-2015
	Ocean and Coastal Management	Associate Editor	2014.10-
	Journal of Conservation Planning	Editorial board member	2001-
	Ecological Engineering	Editorial board member	2008.8-
	Wetlands Ecology and Management	Editorial board member	2012.8-
张经	IOC/WESTPAC-CorReCAP	Project Leader	2008-
	IGBP/IMBER -Capacity Building Working Group	Chair	2009-
	SCOR-Committee on Capacity Building	Member	2009-
	Water, Air and Soil Pollution	Editorial board member	1994-
	Water, Air and Soil Pollution: Focus	Editorial board member	1999-
	Journal of Marine Systems	Editorial board member	2008-
张卫国	Current Pollution Reports	Editorial board member	2014-
	Estuarine, Coastal and Shelf Science	Editoral board member	2013-
周俊良	Scientific World Journal	Editorial board member	2009-
	ISRN Oceanography	Editorial board member	2011-
	Estuarine, Coastal and Shelf Science	Guest Editor	2013-2014
周云轩	Froniter of Earth Science	Associate Editor	2008-2015
	Ocean & Coastal Management	Editorial board member	2011-2015

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法国居里大学，博士(1994.12)
中科院动物研究所，助理研究员、研究员(1995-2006)
华东师范大学生命科学院，教授(2006-2014)
华东师范大学河口海岸学国家重点实验室，教授(2014.7-)

研究专长：
河口及海洋生物的分子生态与进化
与蝙蝠相关的多学科交叉研究

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Education and Work Experience:
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Professor, School of Life Science, ECNU (2006-2014)
Professor, SKLEC, ECNU (2014.7-)

Research Interests:
Molecular Ecology and Evolution Research on Estuarine and Marine Organisms;
Multi-disciplinary Research on Bats

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英国普利茅斯大学和普利茅斯海洋实验室，博士(1994)
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Postdoctoral Investigator, Woods Hole Oceanographic Institution (1995)
Researcher, University of Bergen (1998-2001)
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Research Interests:
Marine Carbon Biogeochemical Cycles;
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Research Interests:
Global Change Ecology;
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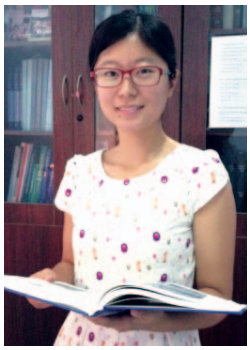
新聘人员
New Faculty



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中国海洋大学，博士(2013.12)
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Protozoan Taxonomy and Phylogeny

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