

ACEDP Lake Tai Water Pollution Treatment Project

ACEDP太湖水污染治理项目

Newsletter

项目通讯

Issue 5 (Jan.~ July, 2011)

第五期 (2011年1月~2011年7月)



Lake Tai, Dongshan, Suzhou Municipality

➤ Project Activities (January 2011~ July 2011) 项目活动 (2011年1月~2011年7月)

Highlights: 本期关注:

- Review of the Lake Tai Master Plan 评估《太湖流域水环境综合治理总体方案》
- Integrated River Basin Management Study Tour to Australia 流域综合管理赴澳工作访问
- Model Factsheets for Industry & Commercial Customers 为工商业用户制作模板指导手册
- Sediment Capping Trials 底泥覆盖试验
- Extension Kick-off Workshop and Working Meetings 项目延展启动研讨会和工作会议

➤ Australian Highlights 澳大利亚经验

- Bayesian Network 贝叶斯网络

Foreword 序言

WELCOME to the July 2011 edition of the ACEDP Lake Tai Water Pollution Treatment Project Newsletter. Since January 2011 the Project has successfully conducted a series of activities including the development of industry factsheets for 'liquid pollution discharge' in Suzhou; follow-up work on the Management of Algae blooms including sediment capping trials and the revision of Suzhou's Alert Levels Framework; and the conduct of a high level study tour to Australia on Integrated River Basin Management (IRBM). The Project also commenced two (2) Extension activities: Policy Application of Catchment Modelling and Non Point Source Pollution Management (Extension 1); and Policy Orientated Optimisation of Wastewater Treatment in Lake Tai (Extension 2) which extends partnerships with Australian Agencies eWater Cooperative Research Centre, Ellenbank Research Centre (Department of Primary Industries Vic) and Hunter Water Corporation; and Chinese research institutions Nanjing Institute of Geography and Limnology and Jiangsu Academy of Environmental Science.

With considerable efforts devoted by Australian and Chinese partners, the Project Extension will be implemented over the following months. We believe the Project Extension will strengthen the project achievements and deepen the understanding of policy application for the environmental and water system management of the Lake Tai Basin.

欢迎您打开2011年7月刊《ACEDP太湖水污染治理项目“项目通讯”》。自2011年1月起，项目成功实施了一系列项目活动：为苏州“液体污染排放”制作行业指导手册、包括底泥覆盖试验和苏州藻类预警级别框架修订的藻华管理后续工作，并进行了一次高级别流域综合管理赴澳工作访问。另外，项目启动了两个延展活动：小流域模型和农场面源污染管理的政策应用（Ex1）及政策导向的太湖流域污水处理优化（Ex2）。籍此，项目与以下澳大利亚和中国机构扩展了合作关系：eWater合作研究中心、维多利亚州第一产业部Ellenbank研究中心、亨特水务公司、中科院南京湖泊地理研究所和江苏省环科院。

在中澳双方的共同努力之下，项目延展部分将会在未来数月获得很好的实施。我们相信，项目延展将会巩固项目的成果，并深化对太湖流域环境和水管理政策应用的理解。

Nigel Murphy

Project Director 项目主任

AUS Cluster Lead by Earth Systems Consulting

Earth Systems 公司领导的澳洲都市系统集团



PROJECT BRIEFING

项目简介

THE Australia and China Environmental Development Partnership (“ACEDP” hereafter) is a five-year, \$25m Australian Government, AusAID initiative with the objective of supporting and improving policy development in China in the area of environmental protection and natural resources management. ACEDP aims to facilitate enduring partnerships between Australian and Chinese agencies, institutions and individuals engaged in national environmental policy development and implementation through a combination of high level policy dialogue, capacity building measures and collaboration on discreet activities that demonstrate good environmental governance.

ACEDP Lake Tai Water Pollution Treatment Project (“Project” hereafter) is implemented by the AUS Cluster lead by Earth Systems Consulting, and the Chinese counterpart ICC-NDRC. The Project was launched in August 2009. The objective of the Project is to increase awareness of IRBM approaches including institutional governance, science based management, and technical measures for pollution and algal control. The Municipalities of Suzhou and Huzhou respectively located along the bank of the Lake Tai were nominated as the pilot cities of the Project.

During the reporting period the Project was awarded 2 extension activities: 1) Policy Application of Catchment Modelling and Non Point Source Pollution Management; and 2) Policy Orientated Optimisation of Wastewater Treatments in Lake Tai”.

Source (Part): ACEDP Website

<http://www.acedp-partnership.org/en/default.aspx>

“中澳环境发展伙伴项目”（如下简称“ACEDP”）为期五年，由澳大利亚发展署出资2500万澳元，旨在帮助中国加强环境保护和自然资源管理及在相关方面的政策支持。ACEDP通过高层政策对话、能力建设以及环境整治示范活动等多方面的合作，使中澳两国政府机构、组织和个人参与国家环境政策的制订和实施，促进两国间持续的伙伴关系。

“ACEDP太湖水污染治理项目”（以下简称“项目”）由Earth Systems公司领导的澳洲都市系统集团（AUS Cluster）负责实施。本项目的中方合作伙伴是国家发改委国际合作中心。项目成功于2009年8月正式启动，目的是促进流域综合管理体制变革，提高机构的科学管理能力，及交流控制蓝藻治污的技术方法。太湖沿岸的苏州市和湖州市为本项目的两个试点城市。

在项目报告期内，两个延展活动获得了批准：1) 流域模型和面源污染管理的政策应用；2) 政策导向的太湖流域污水处理优化。这些活动将成为今后一个时期的主要项目工作内容。

部分信息来源：ACEDP网站

<http://www.acedp-partnership.org/en/default.aspx>

PROJECT IMPLEMENTATION PARTNERS

BOTH the Chinese Partner and its Australian counterpart are included in the project implementation partners.

Chinese Implementation Partner

International Cooperation Center, National Development and Reform Commission (ICC-NDRC)

Chinese Local Implementation Partner

Suzhou Municipal Development and Reform Commission (MDRC) and Huzhou MDRC

Australian Implementation Partner

AUS Cluster Lake Tai consortium lead by Earth Systems Consulting

The Cluster comprises Earth Systems, Hyder Consulting, Melbourne Water, Victorian Environment Protection Authority (EPA), and Victorian Department of Sustainability and Environment (DSE).

The eWater Cooperative Research Centre (CRC), Department of Primary Industries (Vic DPI) and Hunter Water Corporation will be involved in the implementation of the two Project extension activities.

For more information, please visit the Website below:

ICC-NDRC <http://www.icc-ndrc.org.cn/>
Suzhou MDRC <http://www.fgw.suzhou.gov.cn/>
Huzhou MDRC <http://fgw.huzhou.gov.cn/>
Earth Systems <http://www.earthsystems.com.au/>
Hyder Consulting <http://www.hyderconsulting.com/>
Melbourne Water <http://www.melbournewater.com.au/>
Victorian EPA <http://www.epa.vic.gov.au/>
Victorian DSE <http://www.dse.vic.gov.au/>
Victorian DPI <http://new.dpi.vic.gov.au/>
eWater CRC <http://www.ewater.com.au/>
Hunter Water <http://www.hunterwater.com.au/>

项目执行方

项目执行方包括中方执行机构和澳方执行机构两部分。

中方执行机构

国家发改委国际合作中心

中方地方执行机构

苏州市发改委、湖州市发改委

澳方执行机构

澳洲都市系统集团并由Earth Systems公司牵头组成的“太湖项目组”

项目组成员包括Earth Systems公司、Hyder Consulting公司、墨尔本水务、维多利亚州环保署和维多利亚可持续和环境部等。

两个项目延展的执行将包括eWater合作研究中心（CRC）、维多利亚第一产业部和亨特水务公司。

更多详情，请访问以下网站

国家发改委国际合作中心 <http://www.icc-ndrc.org.cn/>

苏州发改委 <http://www.fgw.suzhou.gov.cn/>

湖州发改委 <http://fgw.huzhou.gov.cn/>

Earth Systems公司 <http://www.earthsystems.com.au/>

Hyder Consulting 公司<http://www.hyderconsulting.com/>

墨尔本水务 <http://www.melbournewater.com.au/>

维多利亚州环保署 <http://www.epa.vic.gov.au/>

维多利亚可持续和环境部 <http://www.dse.vic.gov.au/>

维多利亚第一产业部 <http://new.dpi.vic.gov.au/>

eWater合作研究中心 <http://www.ewater.com.au/>

亨特水务公司 <http://www.hunterwater.com.au/>

PROJECT ACTIVITIES (JAN. 2011~JUL. 2011)

Review of the Lake Tai Master Plan

The Lake Tai Master Plan was reviewed in Beijing city on the 22nd of October 2010 and with follow-up consultation with representatives from the NDRC Department of Regional Economy; Jiangsu Lake Tai Management Office; and the Lake Tai Basin Authority. The objectives of the activity were to consult with stakeholders involved in the Lake Tai Master Plan and identify gaps and future needs to improve the Lake Tai Master Plan and IRBM governance in the Basin through inputs into the upcoming midterm review.

The discussions identified a wide range of issues, gaps and future strengthening needs for the Master Plan. Overall it was believed that the Master Plan represents best current knowledge, however participants believed that all aspects of the plan will require on-going strengthening in future years.

The highest priority needs identified by the consultation can be summarized as follows:

- Improved coordination and harmonization of governments and their agencies at the different levels;
- A strengthened role of the leading group and possible consideration of a Basin Management Committee;
- Increased understanding by leaders of the measures and timeframe that will be required to achieve the Master Plan targets;
- Better enforcement of existing laws and standards and issue of stricter standards;
- Innovation with respect to market based and other self-regulating approaches to reduce pollution discharge and the resources needed for strict enforcement;
- Acceleration of industry restructuring;
- An increased focus on the control of NPS and other rural sources of pollution. These

项目活动

(2011年1月~2011年7月)

评估《太湖流域水环境综合治理总体方案》

2010年10月22日，由国家发改委地区经济司、江苏省太湖水污染防治办公室和太湖流域管理局组织了评估《太湖流域水环境综合治理总体方案》（以下简称“太湖总体方案”）的后续咨询活动。该活动的目的是通过与太湖总体方案中涉及的利益相关者交流，找出存在的差距和未来需求，并通过即将实施的太湖总体方案的中期审查，以改善太湖总体方案和流域综合管理的实施。

该讨论确定了太湖总体方案中广泛存在的问题、差距和未来需要加强的需求。总体而言，太湖总体方案的现有知识体系是比较好的，但参与者相信，太湖总体方案的很多方面可以在未来得到加强。

此次咨询活动鉴定的优先领域包括：

- 改进不同层面的政府和机构之间的协调和统一；
- 加强太湖领导小组的职责，并考虑建立一个流域管理委员会；
- 提高政府官员对实现总体方案所需措施和时间进度的理解；
- 更好的落实当前的法律和相关标准，并颁布更加严格的标准；



PROJECT ACTIVITIES
(JAN. 2011~JUL. 2011)

项目活动

(2011年1月~2011年7月)

sources and control measures are widely seen as the most significant weakness in the knowledge base and the Master Plan;

- Further development of the Lake Tai Basin Decision Support System so that it better represents water quality and control measures in order to support planning and management;
- Improved algal bloom early warning systems;
- An improved Lake Tai Basin information sharing platform which accesses data from all sources, includes registration and categorization of enterprises and which is accessible to the public according to defined protocols;
- Increased and better targeting of investment to achieve Master Plan goals and timelines;
- Strengthening of a range of technical measures to strengthen the plan: WWTP performance, waste water recycling, management of pollution from rural areas, use and disposal of harvested algae;
- Increased participation of the public especially rural residents and of enterprises so that pollution can be controlled better and more efficiently; and
- Increased monitoring of pollution sources, algal blooms and plan implementation is required.

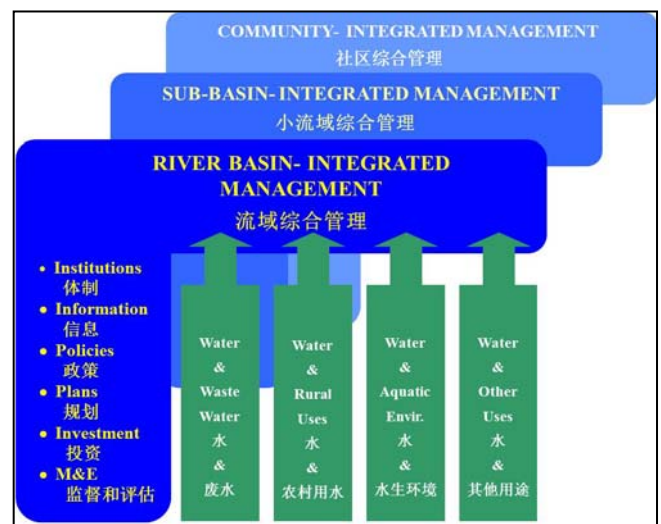
These findings were used in the design of the IRBM study tour so that experiences in Australia could be investigated as well as for Chinese members to explain their approaches and experiences to the Australian side.

The issues and priorities were also to be reviewed and prioritized during the remainder of the project. The priorities were also to be used in the promotion of longer term partnerships that might follow-on from this project.

- 创新市场机制和其它自我调节方式，减少污染排放；
- 加速加快产业结构重组；
- 加强面源污染和其它农村地区污染源的控制，这方面被认为是总体方案和知识基础的最突出的不足之处；
- 进一步建立太湖决策支持系统，使水质和控制措施能够更好的支持规划和管理；
- 改进藻类预警系统；
- 改进太湖流域信息交流平台，此平台应可提供所有方面的信息，包括企业注册分类，并通过协议向公众开放；
- 投资能够更加针对、符合总体方案的目标和时间进度；
- 促进公共参与，尤其是农村地区群众和社会企业，以更好、更有效的控制污染；
- 提高污染源、藻类和总体方案执行的监测。

上述优先领域已设计在流域综合管理赴澳工作访问的活动日程中，以便中方成员学习澳大利亚经验的同时，也可以向澳方更好地介绍自身的方法和经验。

其中的问题和优先事项也将在项目的其余部分优先审查。这些优先事项将更促进长期的合作伙伴关系发展，并可能从这个项目上开始后续推广使用。



PROJECT ACTIVITIES (JAN. 2011~JUL. 2011)

Alert Levels Framework Development Study Tour to Australia

The review of the Lake Tai water quality monitoring systems and the revision of the Lake Tai alert levels framework (ALF) for algae bloom control commenced with a kick off meeting in Suzhou on 10th March 2011, followed by a working visit to Australia between 20th and 26th March 2011. This activity was coordinated by the AUS Lake Tai Cluster and National Reform and Development Commission, International Cooperation Centre and led by experts from the Water Research Centre, University of Adelaide; South Australia Water; and the National Institute of Geography and Limnology, Chinese Academy of Science. It also involved a team of government officials from Suzhou Environmental Protection Bureau, Water Resource Bureau, Meteorological Bureau; and Development and Reform Commission.

This activity was concluded in April when the team met in Suzhou to finalise the draft ALF and agree on steps for its implementation.

A total number of 5 delegates attended in the ALF working visit to Australia which included representatives from the NDRC and Suzhou authorities. Mr. Chang Hao, a division director of NDRC ICC led the Chinese delegation. The visit was organised and led by Professor Justin Brookes from Adelaide University and Dr. Mike Burch from South Australia Water (SA Water).

During the 5 day stay in Adelaide, the Chinese delegation visited SA Water and worked with ex-

项目活动

(2011年1月~2011年7月)

发展藻类预警级别框架 (ALF) 赴澳 工作访问活动

2011年3月10日，针对回顾太湖水质监测系统 and 修订太湖藻类预警级别框架 (ALF) 的要求，太湖项目组在苏州市召开了行前会议，并在2011年3月20日至26日组织了赴澳工作访问。此次活动由澳洲都市系统集团和国家发展与改革委员会 (国际合作中心) 共同协调组织，并由阿德莱德大学水研究中心、南澳大利亚水厂和中国科学院南京地理与湖泊研究所的专家领导。参与方包括苏州市环保局、水利局、气象局和发展与改革委员会。

四月底，代表团在苏州完成藻类预警级别框架草案，并就其实施步骤达成共识。

共有5名代表参加了此次工作访问，其中包括来自国家发改委国际合作中心和苏州市各政



PROJECT ACTIVITIES (JAN. 2011~JUL. 2011)

perts to revise the Lake Tai ALF. Both the Australian experts and the Chinese delegates shared their working experiences in the context of the framework, emergency responses and the technical guidance. The two Australian experts gave participants a number of suggestions which might be applied to the Lake Tai ALF in the future. Furthermore, the Chinese delegates from Suzhou Water Bureau and Meteorological Bureau made comments regarding algal blooms control from their perspective. At the end of the tour, the delegation had successfully completed a revised draft of the Lake Tai ALF (Suzhou). Mr. Chi Zhonghua from Suzhou EPB stated that the Chinese delegation would take the revisions back to Suzhou and apply them after further consultation with responsible agencies.

The Project conducted a follow-up workshop on 7th July 2011, to discuss the drafted ALF for Lake Tai (Suzhou) with a total attending of 30 people. At this meeting it was agreed that the aspects of the revised ALF for Suzhou would be considered at the next annual review meeting.



项目活动

(2011年1月~2011年7月)

府机构代表。工作访问团团长由国家发改委国际合作中心常皓处长担任。此次访问由来自阿德莱德大学的Justin Brookes教授和来自南澳大利亚水厂的Mike Burch博士组织并协调。

在为期5天的访问期间，中国代表团参观了南澳水厂，并与澳大利亚专家共同编制了适用于太湖流域的藻类预警级别框架。澳大利亚的专家和中国代表们分享了各自在藻类预警工作中涉及的框架运行、应急响应和技术指导等方面的经验。两名澳大利亚专家给出了可以在未来应用于太湖藻类预警级别框架的诸多建议。此外，来自苏州市水利局和气象局的代表们从他们的角度提出了控制藻华问题的意见。工作访问结束时，代表团成功地完成了一份苏州太湖藻类预警级别框架草案。来自苏州市环保局的池中华处长表示代表团会将该草案带回苏州，与有关部门进一步磋商和讨论之后进行应用。

项目在2011年7月11日举行了后续活动研讨会，讨论这份（苏州）太湖预警级别框架草案，与会者30人。会议中各方同意为苏州修订的藻类预警级别框架将在下次年度审核会议上纳入考虑。

PROJECT ACTIVITIES (JAN. 2011~JUL. 2011)

Integrated River Basin Management Study Tour to Australia

A study tour to Australia on Integrated River Basin Management was conducted between 20th–31st March 2011. The tour was attended by representatives from the NDRC; the International Engineering Consulting Corporation (lead consultant for the Governments mid-term review of the Lake Tai Master-plan); Suzhou and Huzhou municipal governments; and the Lake Tai Basin Authority. The tour travelled to Melbourne, Canberra and Townsville. The delegation was led by Mr Gao Guangqian Deputy Director General, NDRC General Office.

The objective of the tour was to examine the governance needs and approaches at the river basin level as well as at the municipal level in Australia, in order to accurately address the needs of the NDRC and the management of Lake Tai as well as the Municipalities.

While in Melbourne the delegation had meetings with the EPA; Melbourne Water; the Department of Sustainability and Environment; and the Australia China Centre for Water Resources Research. The delegates were given an extensive history of the water reform in Australia, and were introduced to a state's perspective of the management of the Murray Darling Basin. The delegates then travelled to Canberra for meetings with AusAID; the Department of Sustainability, Environment, Water, Population and Communities; the National Water Commission; the Murray Darling Basin

项目活动

(2011年1月~2011年7月)

流域综合管理赴澳工作访问活动

2011年3月20日至31日，一个中国官员代表团进行了流域综合管理赴澳工作访问。此次访问由国家发改委、中国国际工程咨询公司（太湖总体方案中期评估的执行咨询公司）、苏州市和湖州市政府以及太湖流域管理局的代表参加，并在墨尔本、堪培拉和汤斯维尔举行相关的会议。该代表团由国家发展改革委办公厅副主任高光前先生带领。

此次访问的目的是审查澳大利亚在河流流域级别以及市政级别的管理需求和方法，以更好地解决市政一级在管理太湖流域所面临的问题。

在墨尔本期间，中国代表们分别参加了与维多利亚环保局、墨尔本水务、可持续发展与环境部以及中国和澳大利亚水资源研究中心的会议。这些部门向中国代表们阐述了澳大利亚水务改革的历史，并介绍了墨累达令河流域管理的现状。代表们随后前往堪培拉，与澳大利亚国际发展署、可持续发展与环境水利保护部、人口和社区管理会、国家水资源委员会、墨累达令河流域管理局



PROJECT ACTIVITIES (JAN. 2011~JUL. 2011)

Authority; and CSIRO. During this time the delegates were given a federal perspective on the management of water resources, and how the Commonwealth effectively works with the states. It was also shown how science is used to help us to manage and predict the water resources all around Australia. In Townsville the delegation met with the Townsville City Council and the Great Barrier Reef Marine Park Authority. This provided the delegation with information on what can be achieved at a local level to maintain effective management of waterways, and how a federal authority works within a smaller community on an area of national significance.

Roundtable discussions which occurred in both Melbourne and Canberra gave the Chinese delegates a chance to present the initiatives that they are implementing in Lake Tai and gave the Australian experts the opportunity to ask questions. Presentations were given by Mr Lu Dongsen, Mr Qu Yonghui and Ms Zhu Mei.

Throughout the study tour both the delegates and the Australian representatives explored the similarities and the differences of their situations and were able to identify areas in which they could learn from each other.

项目活动

(2011年1月~2011年7月)

署以及澳大利亚联邦科学与工业研究组织 (CSIRO) 进行了会谈。在此期间, 代表们听取了从联邦的角度如何管理水资源的建议, 以及如何使社会组织与国家之间有效地合作。会议进一步阐述了如何利用科学知识以帮助澳大利亚各地机构管理和预测水资源的现状。代表团还参观了汤斯维尔市议会和大堡礁海洋公园管理局。这将让代表们进一步学习到如何在地方一级实现并维持有效的水路管理, 以及联邦当局是如何与一个相对较小的社区协作以完成这些具有国家意义的水资源保护工作。

在墨尔本和堪培拉组织的圆桌会议讨论中, 中方代表们阐述了正在太湖实施的污染治理方案, 并与澳大利亚的专家们进行了讨论。中方由陆东森先生、曲永会先生和朱玫女士作相应的报告。

在整个访问活动中, 中澳双方代表探讨了两国在流域综合管理方面的相似情况以及存在的差异, 并确定了可以相互借鉴经验的一些领域。



PROJECT ACTIVITIES
(JAN. 2011~JUL. 2011)

**Point Source Nutrient Pollution Control
– Model Factsheets for Industry & Commercial Customers**

From January 2011 a small Chinese government team from Suzhou led by Mr Yang Jide, Director of the Suzhou Institute for Environment collaborated with Australian experts to develop a model factsheet on ‘greasy waste’ for commercial liquid pollution discharge customers in Suzhou. A workshop for Point Source Nutrient Pollution Control follow-up activity was held in Suzhou on July 11th 2011 to review the outcomes from this exercise.

The purpose of this meeting was to: Present and assess the draft model factsheet; identify successes and challenges of current greasy waste collection and disposal system; and discuss best practice engagement and information dissemination and steps that could be taken to further strengthen the trade waste framework in the two municipalities.

Participants at the workshop generally believed that the development of such factsheets for commercial and industrial liquid pollution discharge clients was beneficial for engagement purposes and useful in communicating roles and responsibilities of respective government divisions and clients. During the meeting SZ DRC made a commitment to publish the model factsheet and provide it to the SZ Administration Service Center for dissemination. It was also agreed that this work would be communicated more broadly to other municipalities in the Basin.

项目活动

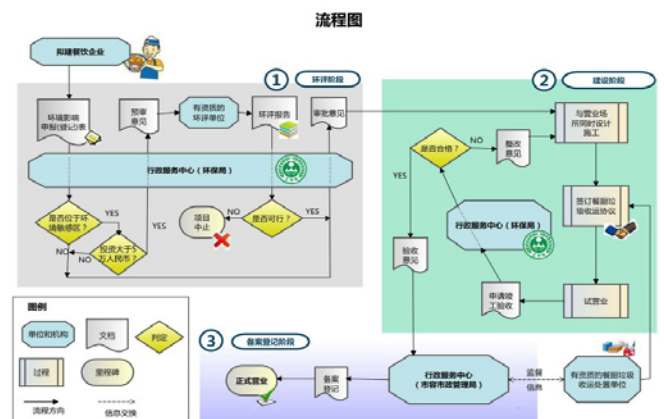
(2011年1月~2011年7月)

点源营养物污染控制——为工商业用户制作模板指导手册

自2011年一月开始，由苏州市环境科学研究所所长杨积德先生领导的一政府小组与澳方专家合作，为苏州工商业排污用户制作了一份“餐厨垃圾”模板指导手册。点源营养物污染控制后续活动研讨会于2011年7月11日在苏州召开，检验该活动的成果。

本次会议的目标是：展示并评估模板指导手册讨论稿；识别当前餐厨垃圾收运和处置系统的成就与挑战；讨论最优实践方法和宣传方式，以及未来在两个城市中加强污染物交易框架的可能步骤。

与会成员普遍认为，这样的一份专为有排污需求的工商业客户制作的指导手册益处良多，既可以增进公众对于太湖水质保护的参与程度，又可在各政府部门及排污用户之间起到促进交流的作用。在会上，苏州发改委承诺将把该指导手册印刷成册，提供至苏州市行政服务中心并供目标用户取阅使用。会上各方达成了共识，应将此项工作成果与流域内其他城市进行交流。



PROJECT ACTIVITIES (JAN. 2011~JUL. 2011)

Sediment Capping Trials

Sediment capping trials were conducted by NIGLAS with support from the University of Adelaide from February to April 2011. The trials examined the phosphorus stripping and binding potential of two materials, Phoslock (a modified clay product) and Algalblock (a specialised form of precipitated calcium carbonate).

Trials result were presented by NIGLAS at a workshop held in Suzhou on 11th July., 2011. The presentation highlighted a commonly held view by lake scientists that wind events are highly correlated to algal bloom events and that the wave action may be leading to the re-suspension of sediments.

Results of the trial suggest that:

- It is reasonable to conclude that the application of both Algalblock and Phoslock could reduce the P load regenerated from the sediment.
- Compared with Algalblock, Phoslock has higher efficiency to strip P in water column and block the P release from sediments.
- Phoslock and Algalblock had the poten-

项目活动

(2011年1月~2011年7月)

底泥覆盖试验

底泥覆盖试验是在2011年2月到4月间，由中科院南京地理湖泊研究所（NIGLAS）在阿德莱德大学的支持下进行的。试验检验了两种试剂：锁磷剂（Phoslock，一种改性粘土产品）和灭藻剂（Algalblock，一种特殊形式的碳酸钙沉积物）的固磷和脱磷性能。

试验结果由南京地湖所于7月11日在苏州召开的研讨会上对项目各方进行汇报。南京地湖所重点提出了一个湖泊科学研究者所支持的观点，即风与藻华事件之间具有高度的相关性，其原因可能是风引起的湖面波浪导致湖底沉积物再悬浮，从而引发藻华。

试验结果显示：

- 锁磷剂和灭藻都能够通过分隔上覆水和沉积物，有效降低由沉积底泥中再次释放的磷负荷。
- 与灭藻剂相比，锁磷剂在试验培养水柱中对底泥磷的固定和水中磷的脱除效率更高。
- 在太湖不同区域，除磷效率与剂量有关。两种试剂的有效作用时间不同。

PROJECT ACTIVITIES
(JAN. 2011~JUL. 2011)

项目活动

(2011年1月~2011年7月)

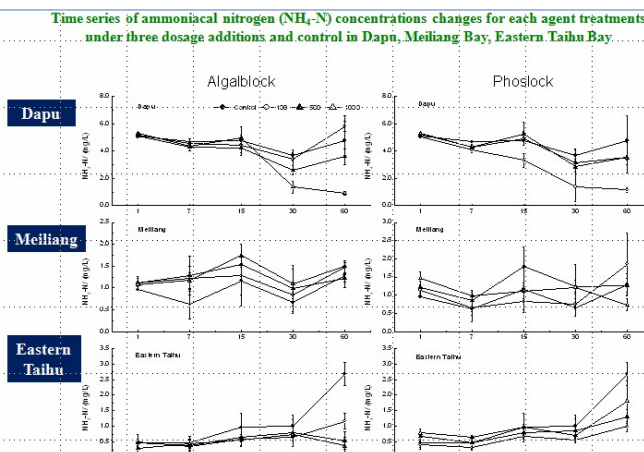
tial to alter the microbial processes of coupled nitrification and denitrification.

- The capping layer deposited over the sediments from Phoslock component could change the physical and chemical nature of the bottom sediments, and the metal element Lanthanum (La) could be released into water column.

- 锁磷剂和灭藻剂均可能改变微生物的硝化和反硝化偶联过程。
- 应用锁磷剂时，覆盖材料沉降到沉积物表面会改变底泥的物理、化学性质，金属元素镧释放到试验培养水柱中，可造成长期生态毒性问题。

Workshop participants agreed that while sediment capping presented an opportunity for assisting in the management of existing sediments in the Lake, issues such as toxicity and cost / size of lake would require further study. The correlation between wind and sediment re-suspension was also highlighted as a key area for future research, and if verified, the identification and research into methods for addressing this issue.

研讨会成员同意底泥覆盖方法展示了一种可能的污染管理方法，可以帮助处理现存太湖底泥中的营养污染物，但解决累积毒性、使用成本和太湖面积等问题还需要进一步研究。风与底泥再悬浮的相关性研究也是受关注的领域，此课题的定义和研究方法也应该继续论证。



PROJECT ACTIVITIES (JAN. 2011~JUL. 2011)

Extension Kick-off Workshop and Working Meetings

A three-day kick-off workshop for Extension 1 including field trips to Dongshan catchment and Xingeng village demonstration farm was conducted in Suzhou on July 12th-14th, 2011.

The purpose of the kick-off workshop was to bring together high level government decision makers and technical experts from China and experts from Australia to:

- Provide an overview of the Source Catchment Model and Bayesian Network approaches outlining the purpose of these models and how they are intended to inform policy and management decisions;
- Decide study objects of catchment modeling and farm component, and formalise the Working Groups and TORs for both components; and
- To present, refine and confirm extension (Ex1) project's objectives and activities with input from key stakeholders.

During the kick-off meetings, Australian experts introduced the two models and explained how they could be used to understand

项目活动

(2011年1月~2011年7月)

项目延展启动研讨会和工作会议

项目延展(Ex1)于2011年7月12至14日在苏州举行了一个为期三日的启动研讨会,包括到东山流域和新埂村示范农场的现场考察活动。

启动研讨会的目的是将高层政府决策制定者和中澳专家汇聚一堂,以便:

- 为源流域模型和贝叶斯网络提供一个总览,描述这些模型方法的目的,以及怎样使用这些工具为政策和管理决策制定提供信息和帮助;
- 决定流域模型和农业面源污染研究的具体对象,确定两个子项的工作组成员,并划分各自的责任范围;
- 展示、细化并明确项目延展1的目标和具体活动内容,包括明确关键参与各方



PROJECT ACTIVITIES (JAN. 2011~JUL. 2011)

nutrient transport processes and inform management decisions.

Suzhou organisers led the workshop participants and the Australian experts to a field trip to Dongshan catchment and the demonstrating village named Xingeng which has already conducted many trials in controlling rural non-point source pollution .

After the fieldtrip, two meetings with the project working groups were also held. These meetings were important in facilitating relationship building among team members and Australian experts and discussing implementation requirements in detail.



项目活动 (2011年1月~2011年7月)

需提供的支持和投入。

在启动会上，澳方专家介绍了两个模型：源流域模型和贝叶斯网络，并解释了如何将它们用于理解营养物输送过程和知情管理决策。

苏州方面组织研讨会与会者和澳方专家赴东山流域和新埂村示范农场进行了现场考察。该农场已经试验了很多农业面源污染管理措施。

实地考察之后，项目工作组举行了两次工作会议。在这些会议中，工作组组员与澳方专家初步熟悉，建立了良好的合作关系，并讨论了项目实施细节。



AUSTRALIAN HIGHLIGHTS

澳大利亚经验

Bayesian Network

Bayesian Networks are an alternative technique to conventional modelling (Pearl, 1988) for investigating multi-factor problems such as those associated with resource management (Ames, 2002; Ames and Neilson, 2001; Dlamini, 2010; Molina et al. 2010; Newton, 2010; Varis, 1997; Varis and Kuikka, 1999).

Bayesian Networks represent uncertainty in knowledge and use probability theory to manage uncertainty by explicitly representing the conditional probability dependencies between variables. In addition Bayesian Network software provides an intuitive graphical visualisation of the knowledge, including the interactions among the various sources of uncertainty.

Consequently, Bayesian Networks can be used to both illustrate the effects of changes to input variables (i.e. demonstrate the effects of a variable having a particular value) on output variables (forward propagation) and, if desired, the effects of changes to the output variables on the probability distributions of antecedent variables (backwards propagation), with surprising simplicity.

(David Nash, Murray Hannah. *Using Monte-Carlo simulations and Bayesian Networks to quantify and demonstrate the impact of fertiliser best management practices. Environmental Modelling & Software 26 (2011), 1079-1088*).

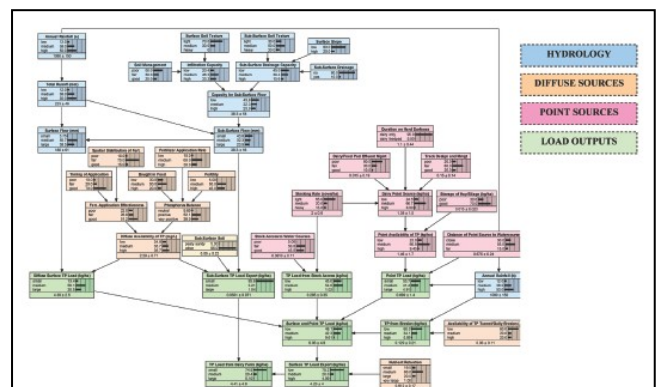
贝叶斯网络

贝叶斯网络是一个传统模型替代技术 (Pearl, 1988)，它特别长于研究多因子问题，尤其是与资源管理有关的课题 (Ames, 2002; Ames and Neilson, 2001; Dlamini, 2010; Molina et al. 2010; Newton, 2010; Varis, 1997; Varis and Kuikka, 1999)。

贝叶斯网络以信息表征不确定性，利用概率论知识，通过使用显函数表达不同变量之间条件概率的相关性对不确定性进行管理。贝叶斯网络软件将所有的信息、各种不确定性及之间的相互作用以一个直观的图表形式呈现。

因此，贝叶斯网络可以被用于图解输入变量变化对输出变量的影响（即演示为一个输入变量赋予某值的效果，正向传播）；如果需要，还可以展示输出变量的变化对前置变量概率分配的影响（逆向传播）。其使用方法很简单。

(大卫·纳什，穆雷·汉纳，使用蒙特卡洛模拟和贝叶斯网络量化演示肥料优化管理措施的影响。*Environmental Modelling & Software 26 (2011), 1079-1088*)。



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