

气候变化与黄河流域 水资源管理

Climate Change Adaptation and Water Resources Management in the Yellow River Basin

研究背景 Background

中国-联合国气候变化伙伴
框架项目包括12个中国政府部
门和9个联合国机构，共同开展
气候变化、环境和能源领域的
活动。

气候变化与黄河流域水资源
管理案例研究的目的是评估黄河
流域的水资源现状，气候变化对
水资源的影响及水文因素的相应
变化对经济、社会等的作用，通
过对现状的分析和未来气候变化
及其影响的趋势分析，为政策、
制度、办法、规划、战略等的制
订和实施提出建议。



China Climate Change Partnership Framework (CCCCP), a cooperation project in the field of Climate Change, Environment and Clean Energy, involves twelve Chinese government organizations and nine UN agencies.

The research of Climate Change Adaptation and Water Resources Management in the Yellow River Basin is to assess present Yellow River water resources, Yellow River water variations and hydrological elements variations due to climate change and responding change in society and economy. The project will provide support for policy making, institutional development, establishment of planning and strategies etc. through analyzing present situation, future climate change and future changing trends due to climate change.



黄河项目区 Yellow River Basin

中国第二大河黄河，是
中华民族的母亲河。她发源
于青藏高原，流经九省后注
入渤海。黄河流域795,000
km²土地上生活着一亿多人
民。黄河流域快速的经济和
社会发展使黄河在历史的洪
水威胁之外又面临着水资源
短缺、水污染严重、生态退
化等一系列新的挑战。这些
挑战迫切要求进一步强化黄
河流域综合管理。

The Yellow River is the second longest river in China, originating in the Qinhai-Tibetan Plateau in western China. It runs for some 5,500 km across the vast North China Plain, traversing nine provinces before draining into the Bo Hai Sea. Its catchment area of 795,000 km² is home to 110 million people or about 8.7% of China's population. As the cradle of the northern Chinese civilization and the centre of China's current political, economic and social development, the river is known as "the mother river of China". Prolonged drought, floods and pollution combined with high demand from booming agricultural, industrial and urban sectors are challenging China to take remedial measures and implement a more integrated approach to managing its water resources.



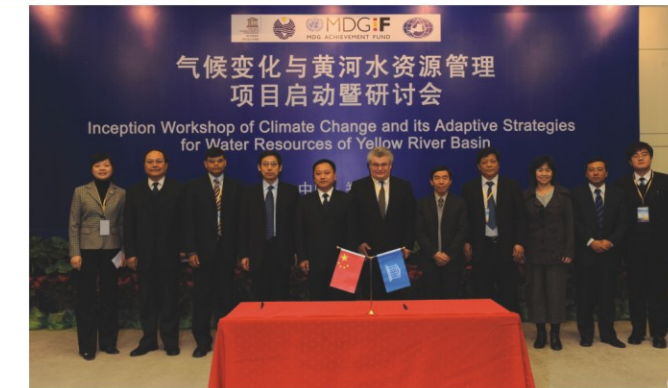
气候变化及影响因素
降水减少
水资源总量减少、水质退化

政策框架、立法及水资源管理
主要挑战
泥沙淤积
环境流量
洪水干旱

Climate change and variability
Declining tendency in rainfall
Declining quality and quantity
Policy framework, legislation and water management

The main challenges
Managing sedimentation
Meeting environmental water requirements
Coping with floods and droughts

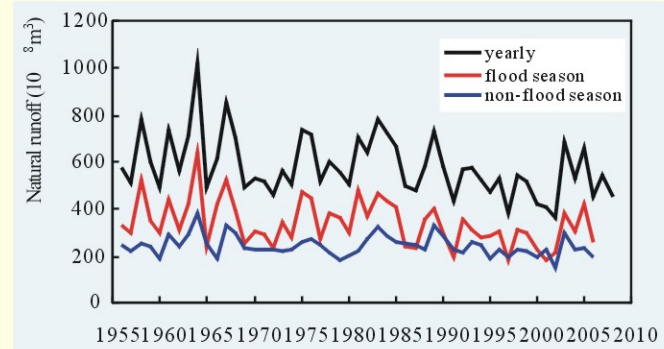
主要活动 Major Activities



1. 项目启动会
Launch ceremony
2. 培训讲座
Training lectures
3. 专家咨询会
Seminar
4. 项目研讨
Workshop
5. 公众参与
Stakeholder meeting
6. 项目考察
Field visit
7. 国际研讨会
International workshop
8. 项目研究
Research team

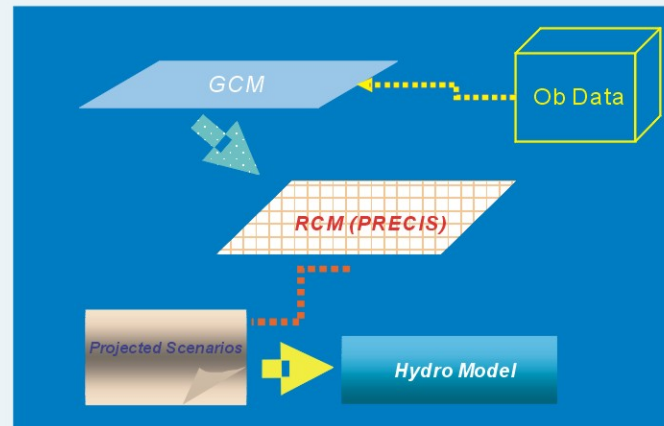


1. 水文因子变化及未来气候变化条件下变化趋势 Hydrological variations and future changing trends due to climate change

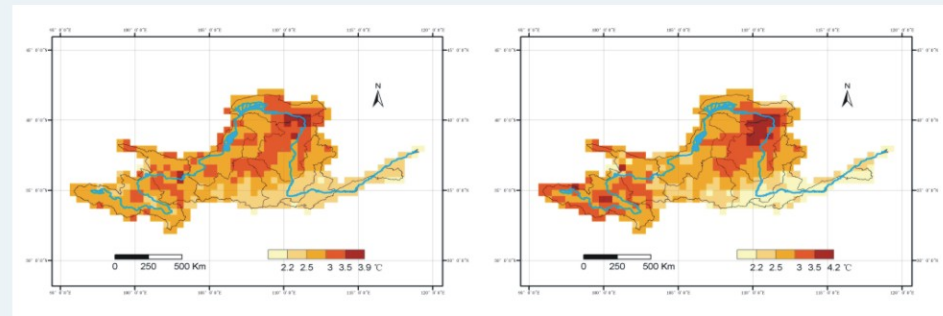


黄河流域天然径流量变化图
Hydrograph of annual runoff in the YRB

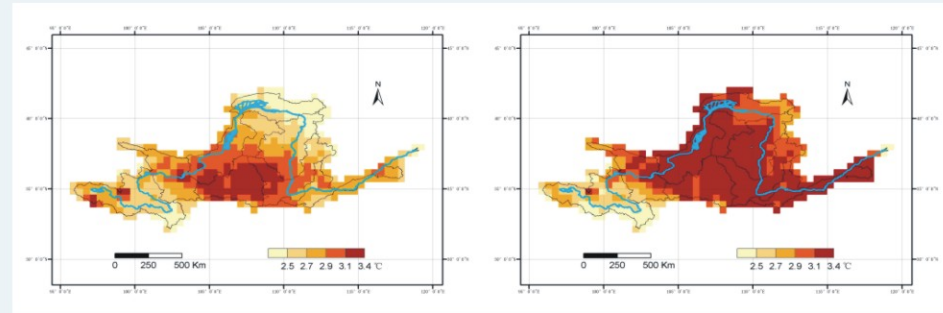
2. 黄河流域气候变化情景预测 Climate change scenarios development



利用GCM模式和区域气候模式嵌套建立动力降尺度模型示意图
Downscaling model



2050年A2（左）和B2情景（右）下1月平均气温的变化
Average temperature change under A2 (left) & B2 (right) scenarios in January 2050



2050年A2（左）和B2情景（右）7月平均气温的变化
Average temperature change under A2 (left) & B2 (right) scenarios in July 2050



3. 气候变化影响评估及适应性对策研究 Climate change impacts and adaptation

黄河流域水资源对气候变化影响和适应性

- ◎ 水资源变化的特征和未来趋势
- ◎ 人类用水需求（工业用水、农业用水、城市用水）
- ◎ 环境流量
- ◎ 水量分配和调度
- ◎ 黄河流域供水保障及水安全
- ◎ 应对气候变化的水资源适应性管理对策

黄河流域主要自然生态系统对气候变化影响的脆弱性和适应性

- ◎ 黄河源区生态与环境的影响（冰川冻土、植被及生态）
- ◎ 黄土高原土壤侵蚀的脆弱性分析（水土保持、水沙综合管理）
- ◎ 黄河中下游湿地保护的适应性对策

气候变化对黄河流域农业影响和适应性

- ◎ 气候变化对小麦等主要农作物的影响
- ◎ 作物生长对未来气候变化的脆弱性
- ◎ 黄河流域气候与粮食安全的影响分析
- ◎ 农业生产适应性对策



Yellow River water resources variations and adaptability

- ◎ Yellow River water resources variations and future change trends
- ◎ Human water demands (industrial water use, agricultural water use and urban water use)
- ◎ Environmental water requirements
- ◎ Water allocation and regulation
- ◎ Yellow River water supply and water security
- ◎ Climate change adaptive Yellow River water management

Vulnerability and adaptability of Yellow River major natural ecosystem

- ◎ Impacts of climate change on ecology and environment in the Yellow River source area (glaciers, vegetation and ecology)
- ◎ Soil erosion in the Loess Plateau and its vulnerability (water and soil conservation, integrated water and sediment management)
- ◎ Adaptive wetland protection and management in the middle and lower Yellow River

Impacts of climate change on Yellow River agriculture and adaptive agricultural development

- ◎ Impacts of climate change on main crops
- ◎ Vulnerability of crop growing in the context of climate change
- ◎ Climate change and food security in Yellow River Basin
- ◎ Adaptive agricultural development

极端事件及灾害管理

- ◎ 暴雨洪水
- ◎ 干旱
- ◎ 高温
- ◎ 冰凌灾害
- ◎ 沙尘暴
- ◎ 山地灾害
- ◎ 适应性对策研究

Extreme events and disaster management

- ◎ Rainstorm and flooding
- ◎ Drought
- ◎ High temperature
- ◎ Ice flooding
- ◎ Sandstorm
- ◎ Mountain area-prone disaster
- ◎ Adaptive solutions



气候变化适应性对策示意图 Climate change adaptive solutions

