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CONTROL ID: 1483089**TITLE:** An Integrated Study of Ecological and Hydrological Processes in the Heihe River Basin, Northwest China

ABSTRACT BODY: This presentation provides an overview of a major new research initiative supported by the National Natural Science Foundation of China for an integrative study of ecological principles, hydrological processes and socioeconomic considerations in the Heihe River Basin (HRB) in northwest China. The HRB is an inland watershed located at the center of the arid zone in East Asia, stretching from the Qilianshan Mountains in the south to the Gobi desert in the north bordering China's Inner Mongolia Autonomous Region and Mongolia (Figure 1). The total area of the Heihe River Basin is approximately 130,000 km², covering a wide range of climatic, geographical, ecological and hydrogeological conditions, from the high-altitude alpine ecosystem with glaciers and permafrost in the upper HRB, to the intensively irrigated agricultural ecosystem in the middle HRB, to the fragile, thinly vegetated desert ecosystem in the lower HRB. The new research initiative builds on the existing observatory infrastructure and long-term ecohydrological datasets since the 1950s. It seeks to reveal the complex interactions across multiple spatiotemporal scales between the basin hydrologic cycle and diverse ecosystem functioning in a water-limited environment with about 60 new, well-coordinated research projects supported for the next five years. These projects may be categorized into five groups: 1) Basin-wide transect sampling, airborne and remote sensing experimentation to collect vegetation, soil, DEM, ET, and other relevant data and build comprehensive databases and data services; 2) Observation, measurement and modeling of regional climate variability, precipitation and water resources distribution, ecosystem productivity, and development of framework for integrated models and decision support systems; 3) Study of the upper HRB, with emphasis on glaciers, snow, and permafrost; 4) Study of the middle HRB, with emphasis on surface-groundwater interactions and agriculture water use efficiency; and 5) Study of the lower HRB, with emphasis on desert vegetation and terminal lakes. The data and findings from these projects are to be synthesized and integrated into a basin-scale ecological-hydrological-economic model to provide stronger scientific underpinning for more sustainable water resource management that maximizes the economic benefits without irreparably damaging the ecosystems.

CURRENT SECTION/FOCUS GROUP: Global Environmental Change**CURRENT SESSION:** GC019. Environmental, Socio-economic and Climatic Change in Northern Eurasia and Their Feedbacks to the Global Earth System**INDEX TERMS:** [1879] HYDROLOGY / Watershed, [1836] HYDROLOGY / Hydrological cycles and budgets, [1813] HYDROLOGY / Eco-hydrology, [1847] HYDROLOGY / Modeling.**AUTHORS/INSTITUTIONS:** G. Cheng, H. Xiao, Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences, Lanzhou, CHINA;

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