

Project no. 1	<i>Integrating remote sensing and hydrological modeling for groundwater resources assessment and sustainable use in the North China Plains</i>
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<p>The water resources of the North China Plains (NCP) are under pressure due to an increasing population and the associated needs of water for households, industry and agriculture. Over the years, large areas of forest and native vegetation areas have been converted into arable land and intensive groundwater irrigation systems with annual double cropping is now commonplace. This has impacted evapotranspiration and groundwater recharge significantly, with groundwater levels showing continuously declining trends in many parts. In general, the surface water and groundwater resources and their seasonal and annual variation and use are only vaguely known which hinders proper water resources management. The existing hydrological data base for this huge region is insufficient to support such assessments. Satellite data offer an attractive alternative/supplement to traditional data and are well suited for application in a distributed hydrological model such as MIKE SHE. Satellite data will be used for land use classification and identification of the land use changes which has occurred over the years within a selected sub-area of the NCP. MODIS data will be used for vegetation parameterization and for better estimates of actual evapotranspiration and various satellite-based products for precipitation will be retrieved and tested. A transparent calibration and validation procedure for the distributed hydrological model will be developed before the model is used for scenario analysis. The overall objective of the PhD study is to develop a combined remote sensing and modeling approach to develop recommendations for sustainable land and water use within the NCP.</p> <p>As the research involves communication with Chinese population and authorities the successful candidate should possess appropriate language skills.</p>	