DEVELOPING HIGH RESOLUTION REMOTE SENSING TECHNOLOGY INTO AN ADVANCED KNOWLEDGE MANAGEMENT SYSTEM TO MONITOR AND ASSESS WATER RESOURCES

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Introduction. This project has the aim to advance the application of Remote Sensing by using high resolution, near real-time remote sensing technology in combination with field monitoring data.

Materials and methods. Initially, a conceptual water resources knowledge management framework needs to be developed to enquire and collect relevant information for water resources management and decision making. This project uses high resolution remote sensing data to develop advanced algorithms for assessing and monitoring water resources for river basin water resource management. The data is provided by Kazakhstan state company 'KGS'(Kazakhstan Garysh Sapary). The project will use Remote Sensing data procured from a high resolution (1 m panchromatic and 4 m multispectral). We are interested in using VHR images to understand and study the water resources with a view to apply high resolution remote sensing technology and advanced image processing using advanced algorithms and statistical pattern recognition to considerably advance the ability to monitor and assess water resources.

Results and discussion. This project has developed a conceptual prototype for a knowledge management platform including a Digital Elevation Model, Bathymetry models and an inventory of water resources key information that integrates a remote sensing application at its core. With the mapping and geo-spatial analysis of information as a basis, it is anticipated that the integration of real-time monitoring provides a comprehensive knowledge management systems to support water resource management and environmental engineering decision making processes in regulatory and public agency organizations.

Conclusions. It is anticipated that the development of a real-time online monitoring and assessment capability based on genetic algorithms and statistical pattern recognition has potential to find significant, customized application to advance the management of water resources and environmental systems by enabling real time and remote monitoring of physical and hydraulic attributes of water resources. The integration of advanced algorithms to assess and monitor water resources for river basin water resource management into a prototype for a water resource monitoring capability that is complementary to on the ground field observation stations is novel.

Acknowledgments. We thank the Ministry of the Environment and Water Resources for supporting this project.