

SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)  
Integrated Applications End-to-End Solutions (1)

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GRAPELOOK: SPACE BASED SERVICES TO IMPROVE WATER USE EFFICIENCY OF  
VINEYARDS IN SOUTH AFRICA**Abstract**

Availability of water resources and efficient water management practices are well acknowledged global challenges for the years to come. In South Africa, water is a limited resource and there is strong competition for the utilisation of the water between the urban, industrial and agriculture sectors. The National Water Act (1998) states that water should be used efficiently. It has to be reserved for basic human needs and for protecting aquatic eco-systems, with agriculture having a lower priority. However, agriculture remains of high economic importance as it contributes to export, employment and livelihood. The challenge is to reduce the usage of irrigation water (currently responsible for 43% of the water usage from surface water resources in Western Cape) whilst maintaining production. As the grape industry represents a major sector in the Western Cape, the optimal management of irrigation water in vineyards is a serious concern for the related ministries in South Africa.

In 2010, WaterWatch BV - a Dutch firm that operates at the transition area between remote sensing science and operational applications of hydrological processes and water management issues - initiated a project called GrapeLook (Space Based Services to Improve Water Use Efficiency of Vineyards in South Africa). The project is executed in partnership with the University of KwaZulu-Natal and is funded by the Western Cape Provincial Department of Agriculture (supported by the Department of Agriculture, Forestry and Fisheries and the Dutch Embassy) with additional funding of the Integrated Applications Promotion (IAP) programme of the European Space Agency.

The objectives of this project are the development, integration and validation of sustainable end-to-end services to optimize the utilization of water and fertilizers in South-African vineyards. The system integrates techniques using multiple space assets and terrestrial technologies (e.g. in situ sensors). During the 2010-11 growing season, the project provided weekly updates on crop water and nitrogen status. The objective was to optimize resource utilization, reduce input costs and reduce environmental impacts. After the completion of the project and the positive assessment of the business opportunity, WaterWatch will roll-out the pre-operational services into a commercial phase (2012).

This paper will present the system's technical set-up, the field work accomplished in South Africa and the challenges faced during the project. It will show the users' needs for such services, the suitability

of satellite systems to fulfil these needs and an early assessment of the added-value of the solution as evaluated by the end-users.