



Abstract / Résumé

Topic/Thème

Management of irrigation schemes at different scales

Title of the paper/Titre de l'article

Application of remote sensing technology to improve a gravity-flow irrigation scheme management

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Abstract:

Sustainable agricultural production, combined with water saving, but without compromising the production of food demanded by a growing population, is a current challenge, requiring an effective compromise between economic efficiency, social equity, environmental sustainability and security.

Collective irrigation districts play a decisive role in Portuguese agriculture and require the adaptation to the new water management paradigm, through a change in technology and practices compatible with farmers' technical know-how and economic sustainability.

The modernization of agriculture is increasingly dependent on the application of Precision Agriculture (PA) technologies, and in this way, Remote Sensing (RS) techniques became essential tools for their effective application. Data provided with the required frequency and spatial resolution allows a continuous monitoring of the crop growth and can be very helpful in several processes of crop and irrigation management. Due to its operationality and constant progress, RS is being used for the management of irrigation schemes at different scales. Particularly at district level, and according to the methodology used, the combination of RS imagery (Sentinel-2A, 2B and Landsat 8), Unmanned Aerial Vehicles data (use of drones

equipped with hyperspectral, multispectral, thermal and photogrammetric cameras) and ancillary ground data (soil types, crop characteristics, meteorological), provides temporal and spatial information about the net irrigation requirements at on-farm level, and about the water distributed by conveyance system, as managed by Water Users' Association. In Lis Valley Irrigation District, the support of RS has been recognized to assess: i) mapping of irrigated areas, for crop identification; ii) crop water requirements and water accounting; iii) management of sector water distribution; iv) development of precision irrigation and v) management of the drainage riparian vegetation.

This study, integrated in the activities of the Lis Valley Water Management Operational Group, recognized the contribution of applying spatial information overtime in a systematic way, at multiple scales, namely to support agricultural management and optimize the use of water, energy and economic resources.

Keywords: Operational Groups, Lis Valley Irrigation District, gravity-flow irrigation district, remote sensing.