Abstract

Irrigation scheduling is a planning and decision making process, the primary decision being: how much water to apply and when to apply it. Agricultural field figures can be obtained either by direct measurements with sensors placed close to the soil, or by remote sensing with sensors placed in aircrafts or satellites. In remote sensing data are obtained from the electromagnetic wave reflected by soil and vegetation, especially in the bands of visible light, infra-red and microwaves. Microwaves reflection and absorption are strongly affected by soil and vegetation water content, making it possible to estimate these characteristics with the help of radiometric sensors. However, conducting the measurements at land level is advantageous over remote sensing, since it is not affected neither by weather nor field surface conditions. Besides, larger amount of data with better resolution in space and time can be obtained at land level if a large number of special purpose sensors is used. This paper proposes a newly method based on direct measurements using wireless sensor network (WSN) to map the vegetation water content in order to estimate the soil moisture in agricultural fields in coincident with RADARSAT-2 multipolarized information. The soil moisture is evaluated over six wheat fields. Results show that, the relative error in retrieving the soil moisture can be degraded through direct measurements by using WSN.
Irrigation Scheduling using WSN

References

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Index Terms

Computer Science

Wireless

Keywords

Wireless Sensor Network  Distributed Measurement  Remote Sensing  Vegetation  Water Content

Soil Moisture