

CYPRUS UNIVERSITY OF TECHNOLOGY
FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING AND GEOMATICS



MSc Dissertation

**SMART METHOD FOR DETERMINING
EVAPOTRANSPIRATION INTENDED FOR WATER
RESOURCES MANAGEMENT IN CYPRUS:
THE CASE STUDY OF POLIS CHRYSOCHOUS**

Demetris A.D.Christofi

Limassol, 2013

CYPRUS UNIVERSITY OF TECHNOLOGY
FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING AND GEOMATICS

**SMART METHOD FOR DETERMINING
EVAPOTRANSPIRATION INTENDED FOR WATER
RESOURCES MANAGEMENT IN CYPRUS:
THE CASE STUDY OF POLIS CHRYSOCHOUS**

Demetris A.D.Christofi

Limassol, 2013

APPROVAL PAGE

MSC DISSERTATION

**SMART METHOD FOR DETERMINING
EVAPOTRANSPIRATION INTENDED FOR WATER
RESOURCES MANAGEMENT IN CYPRUS:
THE CASE STUDY OF POLIS CHRYSOCHOUS**

PRESENTED BY

DEMETRIS.A.D.CHRISTOFI

Dissertation Supervisor: Dr. Diofantos Hadjimitsis

Committee Member: Dr. Evangelos Akylas

Committee Member: Dr. Lysandros Pantelidis

CYPRUS UNIVERSITY OF TECHNOLOGY

September, 2013

Copyrights

Copyright © Demetris. A.D.Christofi, 2013

All rights reserved.

The approval of the thesis by the Department of Civil Engineering and Geomatics of Cyprus University of Technology does not necessarily imply acceptance of the views of the author on behalf of the department.

The greatness of my wife was a key factor for my success in undergraduate studies , as well in postgraduate studies , so it is righteous dedicated to my beloved Afroula and only...

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to my supervisor Associate Professor Dr. Diofantos G. Hadjimitsis, Dr. Giorgos Papadavid and Dr. Athos Agapiou for their great support. Thanks are given to the Remote Sensing Lab of the Cyprus University of Technology for supporting the dissertation fieldworks.

§ , 1-β° "-##

The goal of his Dissertation thesis focuses on the phenological cycle of a specific crop, measuring Crop Height (CH) and Leaf Area Index (LAI) and attempts to correlate the with VI (Vegetation Indices) for deployment of a model contributing with the aid of remote sensed data manage hydrological needs via ETc, for a specific crop in a specific area . It will be a case study for the black eyed bean crop, the ground truth data will be collected in different area and time, later to be compared predicted values from developing satellite maps of LAI/CH. The phenological cycle of beans is in summertime , a suitable time window for monitoring the crop phenological stages during the period of composing my Dissertation thesis. Models involved with crop canopy factors will spatially enforce with remote sensed data and ground truth data that will verify and guide the remotely sensed data. The crop that is under study will provide the Vegetation indices from spectroradiometric measurements during the crops phenological stages. Crop canopy factors that we employ for the certain method, such as Leaf Area Index (LAI) and Crop Height (CH) are in the need of those indices.

Results will be the combination of remotely sensed data providing the VI, ground truth data, plotted in a model abstracted from bibliography, providing LAI and CH predictions from remote sensed data, such as satellite image LAI/CH maps.

Conclusively the target goal will be established providing the Leaf Area Index and Crop Height values for the crop under study (area of the Polis Chrysochou bay, Paphos), evaluation with LAI/CH maps, in different area and time (Mandria village area, Paphos), expecting the predicted LAI/CH values to match with the values of Ground measurements (Mandria village area, Paphos).