MASTER UNIVERSITARIO II LIVELLO

GEO-G.S.T.

Geospatial, Science & Technology

Abstract della tesi

TITOLO DELLA TESI: **APPLICAZIONE DI MAPPAGGIO DELLE AREE IRRIGATE IN AMBIENTE MEDITERRANEO MEDIANTE L'UTILIZZO DI TECNICHE DI TELERILEVAMENTO**

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The use of water in the world is growing by 1% every year and the agricultural sector is the most water-driven. Therefore, water stress level is expected to grow in many areas of the world. In this context, an efficient water management is desirable. Knowing the mapping of irrigated lands makes for a proper water resource management, as well as an identification of unauthorized withdrawals. This study presents a methodology for identifying irrigated areas in automatic and semi-automatic ways through the use of the open source software QGIS. Starting from free and open-access Sentinel-2 satellite imagery. It was possible to estimate the extension of irrigated surfaces in the District Q102,5 in the "Plain of Catania" area. To do so, we proceeded with a multi-temporal analysis of vegetation index NDVI and then applied classification algorithms. This thesis starts from the basic assumption that in semi-arid regions (such as Mediterranean regions) high vegetational trends can only be sustained through irrigation. Furthermore, the irrigated surfaces were used as input for the estimation of the region of interest (ROI) irrigation needs volume. This has been evaluated having previous knowledge of the crops present in the ROI and following FAO guidelines for the ETc estimate.