

Hydrological estimation using NOAA-AVHRR satellite data

Cesar Rebella, Carlos Di Bella

INTA

cdibella@cnia.inta.gov.ar

During the last thirty years, the hydrological conditions on the Pampa's Region of Argentina (South America), where the main agricultural productions of the country are located, have changed significantly. Throughout this period, increasing precipitations impacted, together with others economical and technological factors, over the expansions of the agricultural area and the production of the main cultivated crops. Until the present, there are not accurately estimations of the influence of this changes in land use/cover over the energy and hydrological balances at the regional level. In this work, applying the approaches developed for Di Bella et al. (2000), starting from monthly information provided by the satellite NOAA-AVHRR (Pathfinder series) in the visible, near infrared and thermal infrared bands (channels 1, 2 and 4, respectively), it was carried out an estimate of Real Evapotranspiraciyn (ETR) for the period 1980-2000. The study area included the provinces of Buenos Aires, La Pampa, Cyrdoba, Santa Fe and Entre Rios). In the are predominates agricultural cultivations (soybean, wheat, sunflower or maize), natural grasslands and intermediate situations. It has not been detected significant differences in the interannual values of accumulated ETR during the annual hydrological cycles (yearly accumulation) or the seasonal ETR (summer or winter growing period) with vegetable development among the different conditions. This analysis has allowed to separate the influence of modifications in the ETR for changes in land use/cover and rainfall over water flows and phreatic levels.