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Measurement of remote sensing in desert plants recovery

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Key points : plant recovery ,remote sensing ,ecological water supply ,NDVI , the downstream of Tarim river

To offer an index of the remote sensing test quantity for the plants living in arid desert area , we prefer the contracting method in this paper , To stop 30a in 2000 and a water(Li Xia ,2006) the bank of the lower reaches of the Tarim River with vegetation MODIS-NDVI change analysis .

The summary of the searching area and the methods The researching area is water interception area lays in the downstream of Tarim river includes Yinsu , Kaerdayi and Alagan sections , plants mainly distribute in the area . With MODIS-NDVI data (geometry corrected and the corrected errors are within one cell) that describe the growing period (May to October) in 2000-2006 .We set the equation according to the NDVI collected before the water supply & after the water supply and the contract section NDVI in corresponding time . (D : the plants recovery degree ; N : NDVI after the water supply ; No : NDVI before the water supply ; Nw : the contract section NDVI .)

$$D = (N - N_o) / (N_w + M_o) \quad (1)$$

Results and analysis

Analysis the MODIS-NDVI trend between before water supply and after water supply Exact the MODIS-NDVI s average of the data mentioned which is vertical to the watercourse and far away from the watercourse 0~2km with the ERDAS-IMAGIN G soft . The results show that : the NDVI increases when the water supply continues but the increasing slows down when the water extents . The average of Yinsu , Kaerdayi and Alagan s NDVI are 43 .7% ,35 .5% ,20 .8% .

The analysis on the before & after water supply and the depth of the underground water changing trend

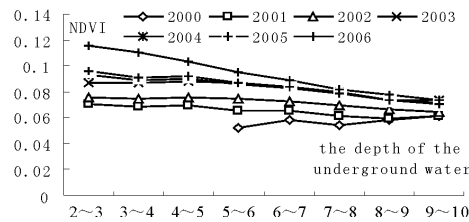


Figure 1 Study area in 2000-2006 NDVI relations with the groundwater level .

We paint the graphs on the NDVI and the average of the depth of the underground water when the plants are in growing periods of one year .Shown in graph 1 . As we can know from graph 1 that the NDVI has no evident relationship with the depth of the underground water before the water supply . But after the water supply , NDVI increase evidently in different depth of the water , less deeper means more increasing . And the NDVI increases more with the count of water supply added .

The analysis of the plants recovery degree

According to (1) ,we calculate the plants recovery degree inYinsu , Kaerdayi and Alagan and paint graph 2 . From graph 2 ,we can get the information that the plants recover more and more with the water supply continues .Yinsu is closest to the reservoir and it's recovery is best , Kaerdayi follows Yinsu and show the trend that closing to Yinsu . But the plants recovery degree in Alagan decreases gradually .

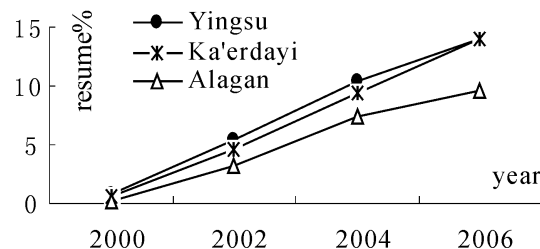


Figure 2 Vegetation restoration of the section .

Conclusions Plants recover gradually after the ecological water supply , and the speed of recovery and the degree depend on the time lasts of water supply and the depth of underground water . The recovery degree of NDVI is a contracting fixed quantity of the remote sensing to evaluate the plants recovers in the arid-desert area .