



Analysis the temporal and spatial impact of water harvesting on Aforestation processes, at the Northern Negev region, Israel

E. Argaman, R. Egozi, and N. Goldshlager

Soil Erosion Research Station, Ministry of Agriculture & Rural Development. Israel

Water availability in arid regions is a major limiting factor, which affect plant development. Therefore, knowledge about preliminary and ongoing spatial & temporal conditions (e.g. land surface properties, hydrological regime and vegetation dynamics) can improve greatly afforestation practice. The Ambassadors forest is one of the Jewish National Fund (JNF) new afforestation projects (initiated on 2005), which rely on water harvesting irrigation systems, located at the northern Negev region, Israel. Temporal and spatial processes are studied utilizing ground, air-borne and space-borne techniques for assessment of surface processes, that take place due to significant land-use change. Since 2005 the area shows significant variation of surface energy balance components which impact the spatial and temporal forest generation. Both human and climate affect these parameters, hence their influence is essential for future study of the region. Parameters of surface Albedo & Temperature and Vegetation dynamics are gathered by space-borne sensors (e.g. MODIS, Landsat & ALI) and verified at field scale in conjunction with ground-truth measurements of climate and soil properties. In addition, the project study various scenarios that might result from diverse climate trajectories that impact soil formation factors and therefore forest development. Preliminary results show that surface physical & ecological properties had changed significantly since the afforestation project began, comparing previous years. Sharp increase of surface albedo detected since 2005 that raised from 0.25 to 0.32, while vegetation density, estimated from NDVI, had dropped from annual average of 0.21 down to 0.13 during 10-year time period. These changes are related to human interference. The current paper presents the first phase of the long-term study of the Remote Sensing analysis and the current surface monitoring phase.