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Pattern-Greeness-Biomass Relationships in semi-arid shrublands along a Climatic Gradient

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Semi-arid shrublands are characterized by the high diversity of vegetation, soil and bare rock patterns. Understanding spatial changes in biomass productivity is fundamental to the assessment of current and future impacts from climate change and desertification. Precipitation is a primary determinant of these ecosystems productivity, but there is lack of real data on its spatial distribution. Vegetation greeness is regarded as an indicator of the actuall distribution of rainfall, and earlier studies had shown that shrub patterns highly influence their rainfall use efficiency. Thus, this study integrates the assessment of Pattern-Greeness-Biomass relationships along a climatic gradient between the Mediterranean ecosystems of the Judean Mountains and the desert fringe Bata of the Northern Negev.
Remote sensing provides efficient means of studying these relationships across wide regions. Using high resolution imagery it is possible to estimate shrubs' biomass based on allometric relationships and to mapp these shrubs greeness based on spectral ratios. Patch pattern properties of ecosystems along the climatic gradient can be also mapped by employing well known fragmentation metrics.
During the conference we will present the results of the assessment of Pattern-Greeness-Biomass relationships using Color air-photographs of the Judean Mountains – Negev Desert transition zone. These relationships would be then analysed with reference to the identification of threshold zones across these transition and their potential shift under climate change and desertification pressures.