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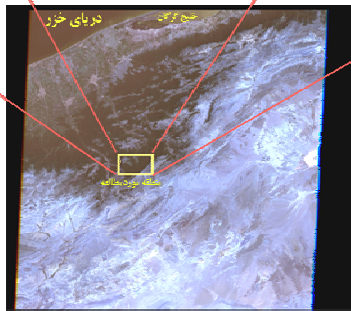
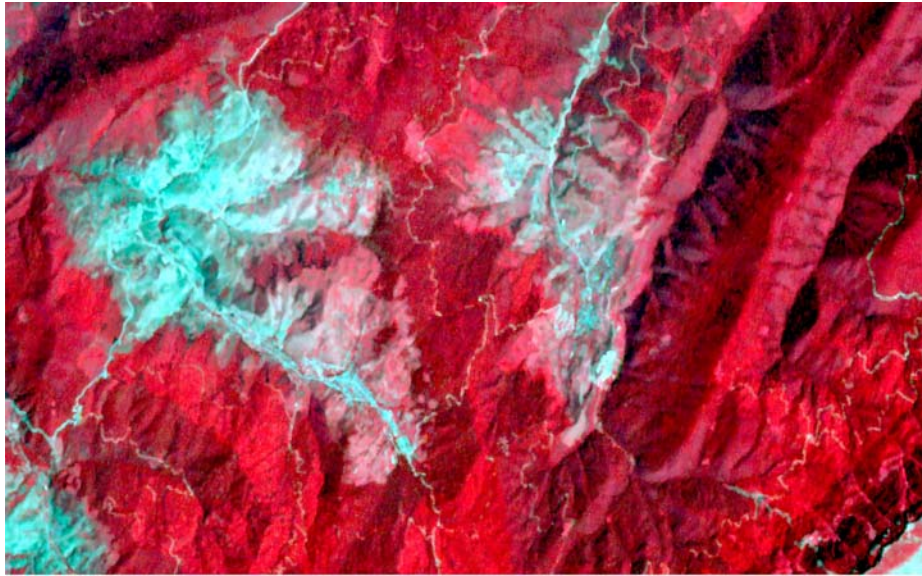
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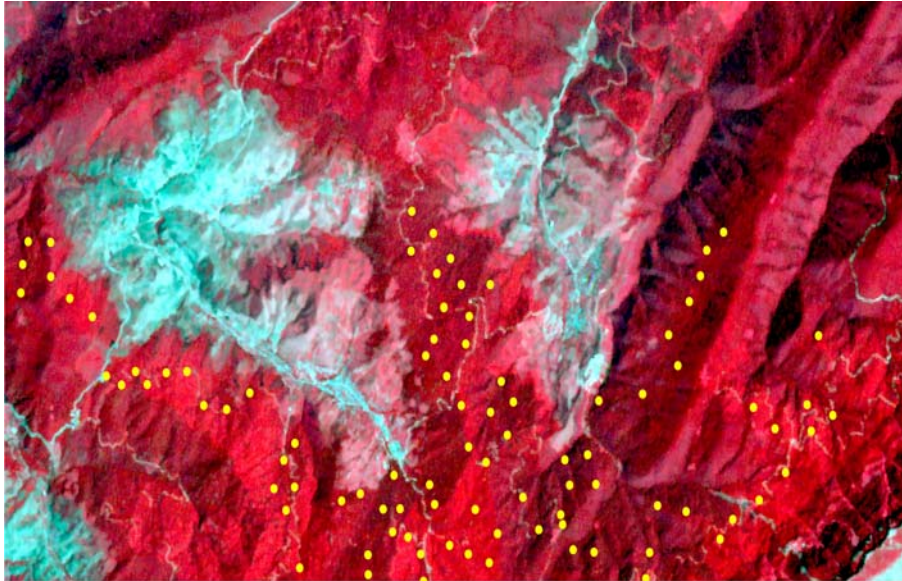
ETM +

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Orthorectification

ETM+

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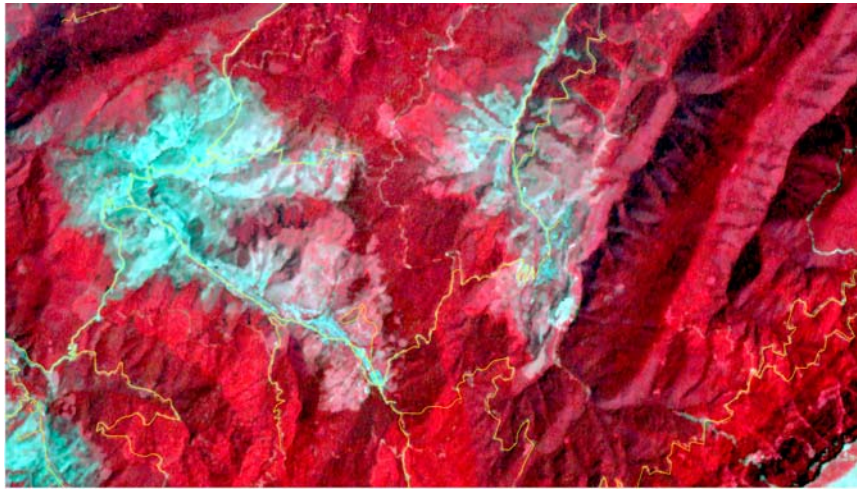
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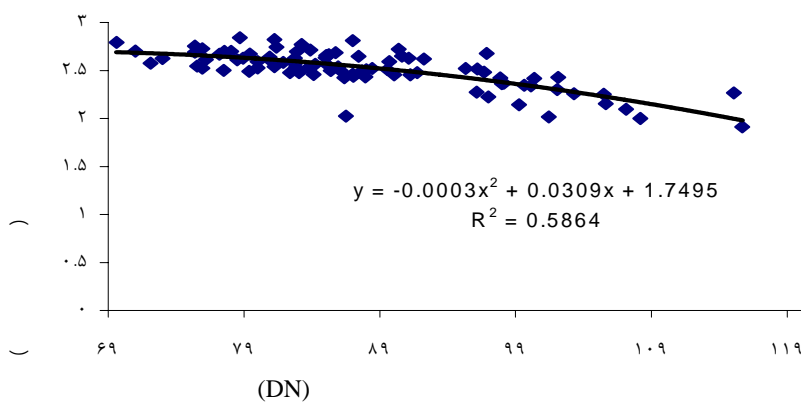
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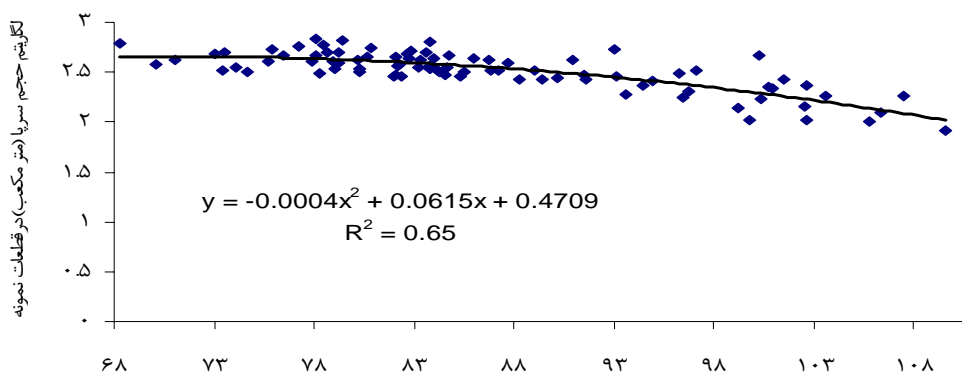
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ارزش های طیفی متناظر با قطعات نمونه در باند ۴ ادغام یافته با باند PAN

PAN

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(r = -0.70, p<0.01)

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ETM+

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(r = -0.80 , p<0.01)

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Investigation on the Capability of Landsat7 ETM+ data for Standing Volume Estimation of Beech Stands (Case Study: Sangdeh Forests)

R. Khorrami¹, A. A. Darvishsefat² and M. Namiranian²

¹ Scientific Staff, Research Center of Agriculture and Natural Resources of Mazandaran, I. R. Iran

² Associate prof, Faculty of Natural Resources, University of Tehran, I.R. Iran

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Abstract

In order to investigate the capability of Landsat7 ETM+ data to estimate standing volume of pure beech stands, the data of this sensor dated June 2001 were used. This study was carried out in Farim forests in an area measuring over 2,000 ha. Orthorectification of image was performed using ephemeris data, GCPs and a precise DEM, and its result was verified using roads vector layer. In order to study the relationship between standing volume and multispectral satellite data, ninety five 60m×60m sample plots were selectively established in the forest. Sampling was performed in pure beech stands located on the north-facing slopes. In each plot, DBHs greater than 12.5 cm were measured and the standing volume of trees were determined based on a local tariff table. The position of each plot was also recorded by GPS and a digital map of the sample plots was prepared using these positions. Digital numbers related to each plot were extracted from spectral bands. The resulting RMS error of orthorectification was 0.85 pixel. Desired coincidence between the roads layer of digital topographic maps and the rectified image indicated high precision of the orthorectification. Based on Pearson's correlation coefficient, data in NIR band and NIR fused with Pan showed the highest correlation, with the standing volume with correlation coefficients of -0.70 and -0.72, respectively. In regression analysis, for infrared band, the highest correlation coefficient with standing volume in simple linear and binominal models were obtained -0.74 and -0.76, respectively, and for fused band 4, these coefficients were -0.77 and -0.80, respectively.

Keywords: Landsat7 ETM+, Standing volume, Beech stands, Verification Correlation and Regression analysis