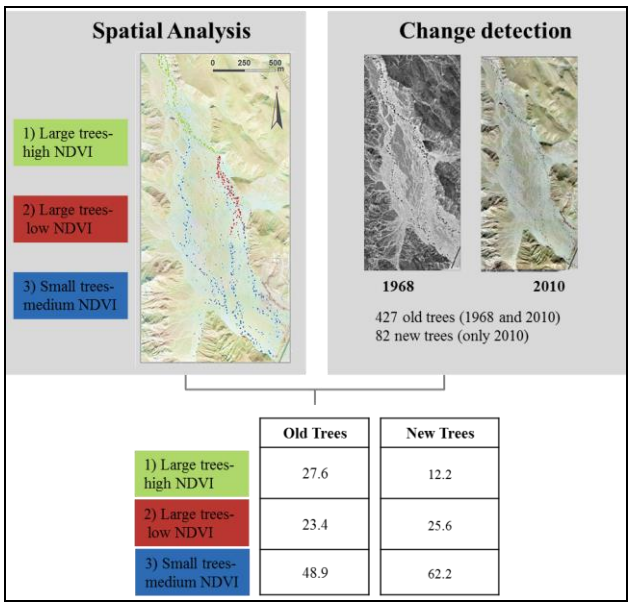

Figure 4. Outline of the spatial analysis and change detection integration technique and results.

3. CONCLUSION

In this work we have use the spatial distribution of different attributes of acacia trees as an indicator of past and present hydrological regimes within different segments of the *Wadi* Lack of spatial correlation between tree size and health status is as we suggest, the result of spatial-temporal changes in the water supply. Comparison of tree size distribution and NDVI values distribution revealed section in the wadi that experienced a reduction in the water availability and on the other hand, a section that was subjected to an increase in water supply in the last flash flood and possibly in last decade, in relation to the past.

The results of the change detection supported our findings of changes in the geo-hydrology regime. In the area that was subjected to a decrease of water supply, less new trees were found then would be expected if no changes in the conditions of the wadi occurred. Likewise, more new trees were found in the section that experienced improve in the water supply.

This study demonstrate the potential of remote sensing and spatial statistical analysis for identifying and explaining ecological spatial heterogeneity. The technique we suggest can be implemented to other tree populations in arid environments to help assess the vegetation condition and dynamics of those ecosystems.

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