The final thematic change detection shows an increase in urbanization in the western region of the Maricopa County. Through classical statistical analysis, there is a 3.25% increase in pixel percent from 1990 to 2010 for the human development zones. Instead of expanding the city limits to unoccupied land, the new developments occurred from old agricultural areas. One theory includes the price of establishing utilities is cheaper to pre-established electrical, water, and sewer lines. Another theory involves the low rent price for agricultural lands, is ideal for expansion because these areas are still within proximity to Phoenix. Either way, from 1990 to 2010 Phoenix had an increase in urban areas.

The raster change detection indicates the change in groundwater potential from 1990 to 2010. A large potential decrease appears in the northern half of the region. This area represents the newly developed urban zones and a change in land soil from loam to roads. These areas will experience an increase in surface runoff and a decrease in surface infiltration. The study area’s southern region experienced an increase in groundwater potential. New sand and gravel deposits in this area, coupled with increased vegetation, has intensified the infiltration in this region. One issue however comprises of the bedrock having a severe decrease in size. Extreme weathering would not change the landscape in this semiarid region in only 20 years; thus, the classification scheme needs reevaluation for future projects.

The band collection statistics determines the correlation between the reclassified land cover types change and reclassified groundwater potential. With a 1 to -1 relationship, there is a negative correlation between these layers. Overall, the increasing urban areas have a direct correlation in decreasing the groundwater potential. The results indicate how humans had an impact on the groundwater supply in Phoenix, AZ. With projections indicating double the population in 2010, the area should be monitored if groundwater is to remain the major source of water.