



Lesson 7: Quantifying Land Changes over Time Using Landsat Appendix 2

About Pervious and Impervious Surfaces (Land Cover Types)

When rain falls or the snow melts on pervious surfaces such as grassland or fields, that water percolates through the ground, reaching and replenishing our ground-water supply. But when rain or snow falls on surfaces such as pavement and sidewalks, it can't get through. Those surfaces are impervious to water. The water glides along the pavement and picks up contaminants along the way such as oil, gas, fertilizers, sediment and even bacteria. When the water does finally reach a pervious surface, or a water body, it can be full of all these pollutants. That can introduce a huge surge of contamination into our water supply. On the other hand, when precipitation falls on pervious surfaces, it gradually penetrates the ground, and many contaminants are naturally filtered out before they reach the ground-water supply.

"There is a link between impervious surfaces within a watershed and the water quality within the watershed. In general, once 10-15 percent of an area is covered by impervious surfaces, increased sediments and chemical pollutants in runoff have a measurable effect on water quality. When 15-25 percent of a watershed is paved or impervious to drainage, increased runoff leads to reduced oxygen levels and impaired stream life. When more than 25 percent of surfaces are paved, many types of stream life die from the concentrated runoff and sediments." (NASA Goddard Space Flight Center News Release, "New Satellite Maps Provide Planners Improved Urban Sprawl Insight."

<http://www.gsfc.nasa.gov/gsfcc/earth/landsat/sprawl.htm>)