

multispectral scanner with only three spectral bands but a spatial resolution of 20 meters per pixel. It also includes a panchromatic scanner (0.51 to 0.73 μm) with a spatial resolution of 10 meters per pixel (see Figure 6.5). In summary, LANDSAT TM scanner has a higher spectral resolution (because it divides the spectrum into more bands) while the SPOT system has a higher spatial resolution

Temporal resolution refers to the repeat cycle of a satellite. LANDSAT and SPOT are both polar-orbiting satellites that orbit the earth at less than 1000 km and image a relatively small swath of about 200 km on each pass. LANDSATs 4 and 5 image the same spot on the earth every 16 days. SPOT has a repeat cycle of 26 days. The *Advanced Very High Resolution Radiometer* (AVHRR) sensor is an example of a system with a coarser spatial resolution but a higher temporal resolution (Figure 6.6). The scanner has been deployed on a series of polar-orbiting satellites from the National Oceanic and Atmospheric Administration (NOAA) and has a repeat period of between four and five days. Spatial resolution is much lower. Each pixel represents between 1 km to 4 km. AVHRR divides the spectrum into five bands (0.58 – 0.68 μm , 0.72 – 1.10 μm , 3.55 – 3.93 μm , 10.5 – 11.5 μm , and 11.5 – 12.5 μm). AVHRR imagery is used for the evaluation of snow cover, flood monitoring, vegetation mapping, soil moisture analysis, and fire detection (Lillesand and Kiefer 1987, 596).

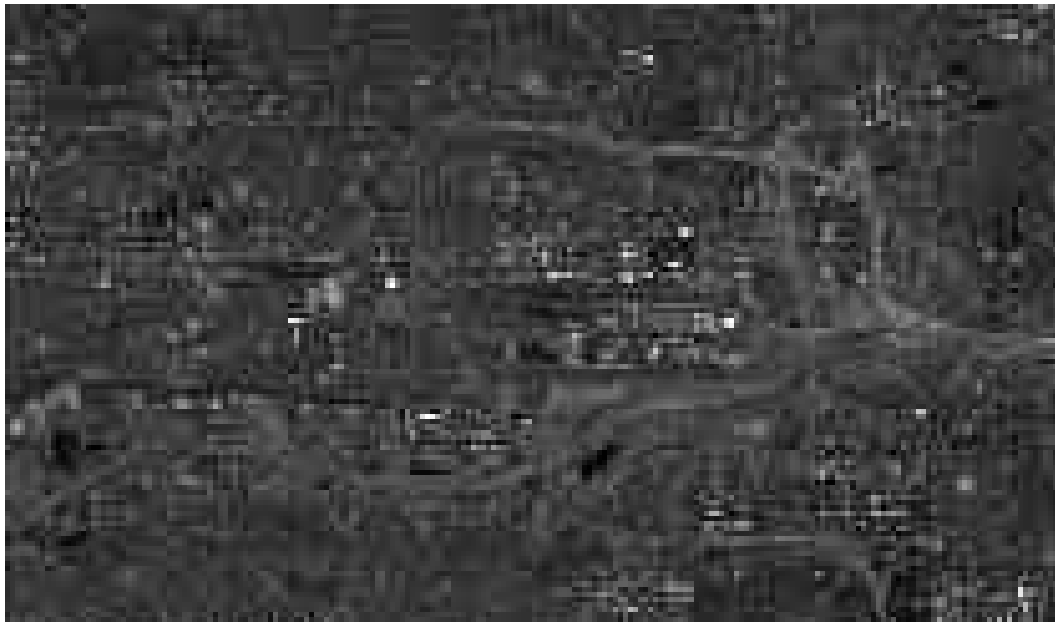


Figure 6.5 A portion of a panchromatic SPOT image of Phoenix, Arizona. The spatial resolution is 10 meters per pixel. The airport is visible in the middle of the image and the central business district is toward the upper-left. The image was acquired on January 12, 1994.