

SÃO PAULO, BRAZIL | AN EMERGING MEGACITY

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Advanced GIS

OVERVIEW

São Paulo, Brazil is one of the fastest growing urban metropolises in the world. In 1970, about 5 million people inhabited the city and surrounding areas of São Paulo. Today, that number has increased to about 19 million and is projected to grow to a whopping 25 million by 2020. With this intense population growth comes equally extreme urban development and installation of impervious surfaces. Impervious surfaces threaten a variety of environmental consequences including severe flooding, water quality, habitat destruction, and contributions to climate change. This study seeks to identify the extent of urban growth using interdisciplinary remote sensing technology and GIS.

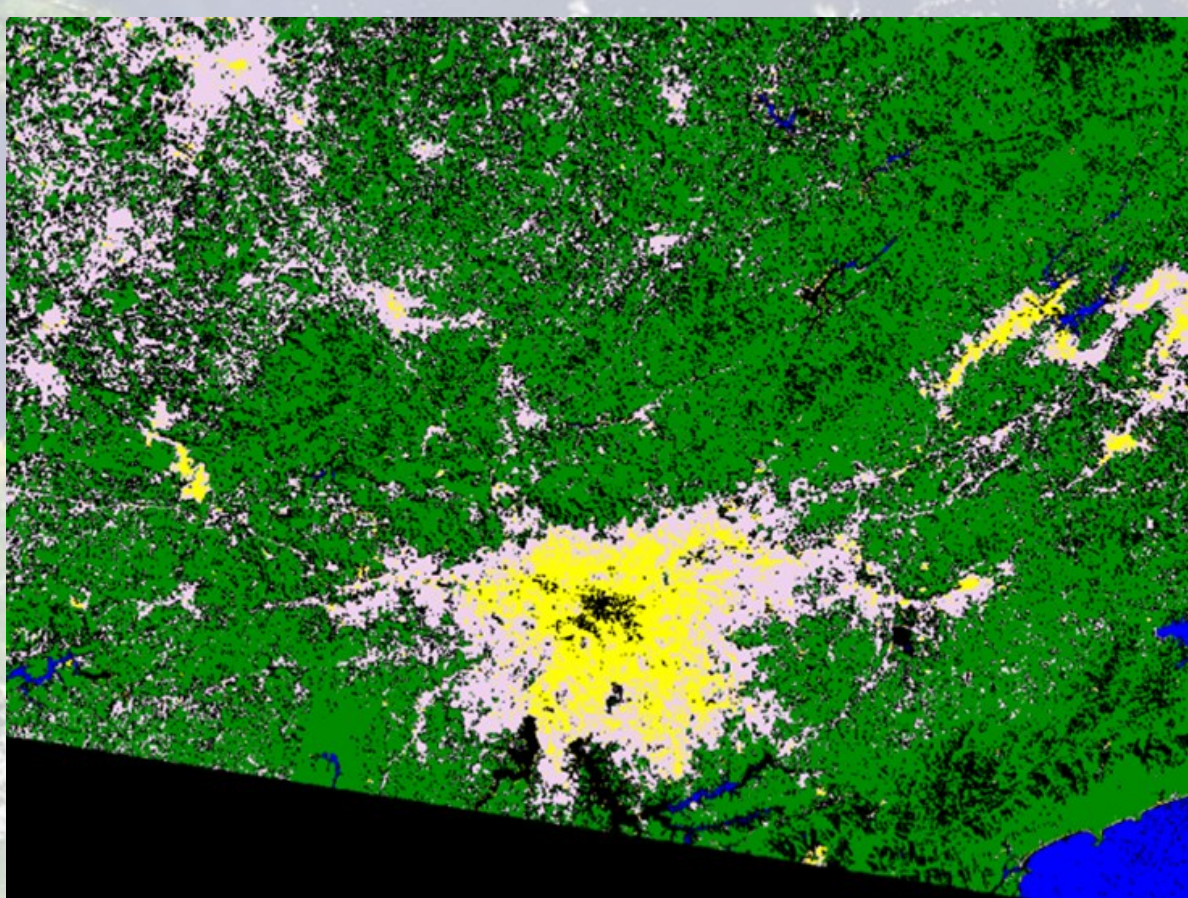
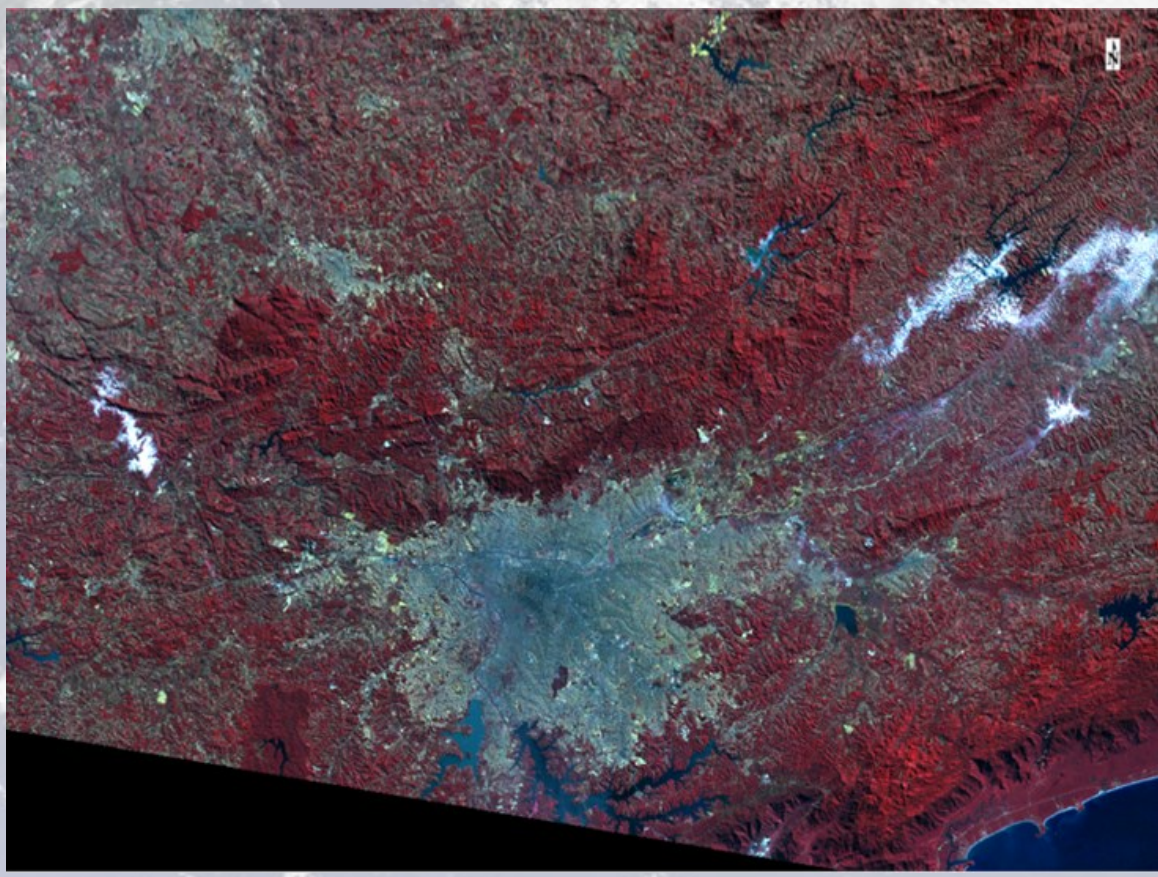
1980



2002



CLASSIFICATION METHODOLOGY



Images were acquired using USGS Earth Explorer from four distinct time periods and satellites:

- (1)Landsat 2—June 27, 1981
- (2)Landsat 4—June 27, 1992
- (3)Landsat 7—June 7, 2002
- (4)Landsat 8—May 12, 2013

Each was classified using Spectral Angle Mapper (SAM) classification techniques. At left, a false composite of Image 1 (above) and the classified image (below) are displayed. This process was repeated in Envi for each of the four images. Once completed, files were exported

to ArcGIS for further analysis. Results are shown below both as individual images by year and overlaid in the large central image.

