**Environmental variables**

Datasets associated with the Environment theme include mean monthly rainfall, original forest cover, and surface water cover. These variables were collected from three separate sources and summarized at the municipal level using ArcGIS (ArcMap 10.2), based on the 2010 Brazilian county map. Users interested in accessing original disaggregated environmental variables can access these data from the original sources indicated below.

1. *Rainfall* reports average monthly accumulated rainfall and length of dry season within the study region based on raster data from January 2000 to December 2010. Original raster data are available on a grid resolution of 0.25˚x 0.25˚ lat./lon and were acquired from the National Aeronautics and Space Administration’s (NASA) Tropical Rainfall Measuring Mission (TRMM), product TRMM 3B43. After isolating our study area and converting raster to point in ArcGIS, point values for monthly accumulated rainfall were averaged within municipalities. When no point fell within a given municipality, the rainfall point nearest to the municipality centroid was used. Next, municipal values for monthly accumulated rainfall were averaged over the 2000-2010 period. Length of dry season was calculated as the number of consecutive months with average monthly rainfall below 100 mm. Original data can be accessed directly on-line at: <http://gdata1.sci.gsfc.nasa.gov/daac-bin/G3/gui.cgi?instance_id=TRMM_Monthly>.
2. *Original Forest Cover* displays total forested area (Km2) and percent forest cover per municipality estimated at the time Brazil’s “discovery” by Europeans in 1500. These data are derived from a Brazilian vegetation map produced by IBGE. Original maps display all vegetation types, but data presented here include only forest vegetation classes. Using ArcMap, we subset the Legal Amazon states and calculated forest area for each municipality. Total forest area corresponds to the aggregation of the following original vegetation classes: *Vegetação Ombrófila Aberta*, *Vegetação Ombrófila Aberta Aluvial*, *Vegetação Ombrófila Aberta Submontana*, *Vegetação Ombrófila Aberta Terras Baixas*, *Campinarana/Floresta Ombrófila*, *Floresta Ombrófila /Floresta Estacional*, *Floresta Estacional* *Decidual*, *Floresta* *Estacional* *Decidual* *Submontana*, *Floresta Estacional Semidecidual*, *Floresta* *Estacional Semidecidual Aluvial*, *Floresta Estacional Semidecidual Submontana*, *Floresta Estacional Semidecidual Terras Baixas*, *Floresta Ombrófila Densa*, *Floresta Ombrófila Densa* *Aluvial*, *Floresta Ombrófila Densa Montana*, *Floresta Ombrófila Densa Submontana*, *Floresta* *Ombrófila Densa Terras Baixas*. Shape files of the original vegetation map can be downloaded from ftp://geoftp.ibge.gov.br/mapas\_tematicos/mapas\_murais/shapes/vegetacao/.
3. *Water Cover* is derived from the MODIS (Moderate Resolution Imaging Spectroradiometer) Water Mask, which can be accessed at http://modis.gsfc.nasa.gov/data/dataprod/mod44w.php. This dataset relied primarily on data from the Shuttle Radar Topography Mission and was supplemented with MODIS 250 m data as necessary36 with data collected between 2000-2008. The spatial resolution of the dataset is 250 m. Using ArcGIS, the worldwide dataset was constrained to fresh water bodies within our Amazon study region, and polygons representing water areas were aggregated by municipality. From these data, total water cover area and percent cover was calculated for each municipality.

The **ENVIRONMENT** database contains the following fields:

1. MUNIC\_CODE: Municipal Code as defined by IBGE, consisting of seven numbers. The first two numbers identify the state.

2. MUNICIP: Name of municipality.

3. RAIN\_JAN0010: Average January accumulated rainfall, 2000-2010.

4. RAIN\_FEB0010: Average February accumulated rainfall, 2000-2010.

5. RAIN\_MAR0010: Average March accumulated rainfall, 2000-2010.

6. RAIN\_APR0010: Average April accumulated rainfall, 2000-2010.

7. RAIN\_MAY0010: Average May accumulated rainfall, 2000-2010.

8. RAIN\_JUN0010: Average June accumulated rainfall, 2000-2010.

9. RAIN\_JULY0010: Average July accumulated rainfall, 2000-2010.

10. RAIN\_AUG0010: Average August accumulated rainfall, 2000-2010.

11. RAIN\_SEP0010: Average September accumulated rainfall, 2000-2010.

12. RAIN\_OCT0010: Average October accumulated rainfall, 2000-2010.

13. RAIN\_NOV0010: Average November accumulated rainfall, 2000-2010.

14. RAIN\_DEC0010: Average December accumulated rainfall, 2000-2010.

15. RAIN\_AVGMONTH: Average monthly accumulated rainfall 2000-2010 (mm).

16. DRYSEASON: Length of the dry season – number of months in a year when 2000-2010 average accumulated rainfall was below 100mm.

17. MUNIC\_AREA: Area of the municipality, in square kilometers.

18. WATER\_KM2: Area of the municipality covered by fresh water, in square kilometers.

19. PROP\_WATER: Proportion of the municipality covered by fresh water.

20. ORIGFOREST\_KM2: Area of municipality originally covered with forest vegetation around the time of Brazil’s discovery in 1500, in square kilometers.

21. PROP\_ORIGFOREST: Estimated proportion of the municipality covered with forest vegetation around the time of Brazil’s discovery in 1500.