Preparing requests for annotating gridded areas in Env-DATA

Steps to prepare a request for annotating over a gridded area using the Env-DATA System. For more information see www.movebank.org/node/6607. These requests provide raster output for analysis and visualization over a bounding box. We recommend that users ensure that the output resolution reflects that of the original products, which varies by source. Here are general steps to calculate the input parameters:

1)   Define the corners and range of the bounding box of interest. Write down the following: Range (longitude, degrees):
Range (latitude, degrees):
NW corner (long, lat):
SE corner (long, lat):

2)   Identify the environmental datasets/variables you want to annotate and their resolutions. A summary of resolutions is on Movebank under Env-DATA > Data Products, or you can browse on Movebank—click on the "i" next to any variable to see the resolution.

3)   Calculate the pixel size (number of values) for the grid. This should be roughly the same as or less than the resolution of the source product. If you want > 2000 pixels in lat or long, we recommend breaking the results into multiple tiles. Do this separately for latitude and longitude if needed. Here's the basic equation:

number of pixels = range requested (in degrees) * source resolution (in pixels/degree)

Remember that 1 degree = 60 arc-minutes = 3600 arc-seconds. If you need to convert between degrees and meters, each degree of latitude is approximately 111 km apart, while the longitudinal conversion depends on

the latitude. You can calculate this for the latitude of your area using an online calculator like this one: https://www.nhc.noaa.gov/gccalc.shtml.

Examples: Calculations for three products available in EnvDATA to cover the fisher study area in LaPoint et al. (2013, doi:10.5441/001/1.2tp2j43g). Bolded values are what you enter at "Define the grid to annotate".

1) The range of the dataset is location.long: -73.94 to -73.39
location.lat: 42.70 to 42.85

To define our bounding box, let's round up and use a slightly larger area to make calculations easy and give some extra background to the maps. Range (longitude): -74 to -73 = 1 deg
Range (latitude): 42.5 to 43 = 0.5 deg
NW corner (long, lat): **-74, 43**
SE corner (long, lat): **-73, 42.5**

2) Here are two example data products...
ASTER DEM: 1 arc-second (~23 m at 43 deg lat)
GlobCover: 20 arc-seconds (~450 m at 43 deg lat)

3) ...and the calculations.
ASTER DEM (1 arc-second)
longitude: 1 deg * 3600 arc-sec/deg * 1 pixel/arc-sec = **3600** pixels
latitude: 0.5 deg * 3600 arc-sec/deg * 1 pixel/arc-sec = **1800** pixels (or because our latitude range is half of the longitude range and the resolution is in degrees, you can just use 3600*.5)

Consider breaking this request into 2 tiles because >2000 pixels in longitude are requested. Also consider what you will use the data for: if you are just creating a small map, you could request half the pixels (1800 x 900) and still be able to produce a print-quality map.

GlobCover (20 arc-seconds)
longitude: 1 deg * 3600 arc-sec/deg * 1 pixel/20 arc-sec = **180** pixels latitude:
0.5 deg * 180 pixels = **90** pixels