

# Temperature Monitoring System

## User Documentation

### Requirements

All of the files mentioned in the manual are located on [cdops.fnal.gov](http://cdops.fnal.gov). To view or make any changes to the files, admin access is needed.

All of the files relating to the project reside in either two directories:  
D:\temp\_monitoring\ and D:\inetpub\wwwroot\

# Updating the map

## Overview

Updating the map is a simple process, but not a drop-in replacement. The python program crops and re-sizes a source image to produce a consistent and controllable final image. The data needed to perform these operations are located in the data XML file. There are 14 different pieces of data that must be provided.

- cropX1: low X crop point (pixels)
- cropY1: low Y crop point (pixels)
- cropX2: high X crop point (pixels)
- cropY2: high Y crop point (pixels)
- sizeX: size of the final image (pixels)
- sizeY: size of the final image (pixels)
- originmapX: origin point of coordinate system (pixels)
- originmapY: origin point of coordinate system (pixels)
- endmapX: origin point of coordinate system (pixels)
- endmapY: origin point of coordinate system (pixels)
- originbuildingX: end point of coordinate system (feet)
- originbuildingY: end point of coordinate system (feet)
- endbuildingX: end point of coordinate system (feet)
- endbuildingY: end point of coordinate system (feet)

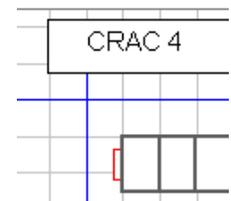
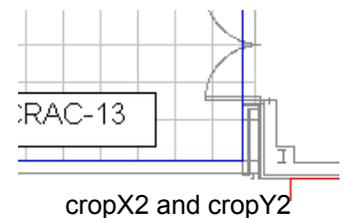
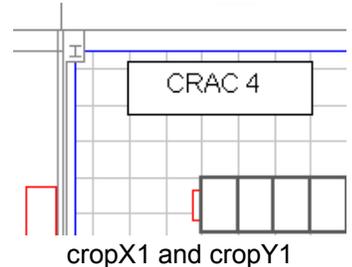
## Tips on choosing points:

**Crop points:** X1 must be less than X2 and Y1 must be less than Y2. Other than that, any points may be used, but choosing points that are near the example will produce nice output maps.

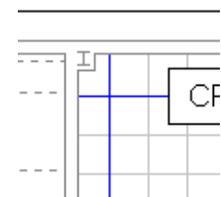
**Size points:** There is no need to change these numbers when changing source maps.

**Origin points:** These numbers are used to set up the coordinate system. The locations are different for every room. While the actual pixel value is different from map to map, the value MUST correspond to the locations shown on the side. The originbuilding values are both 0.

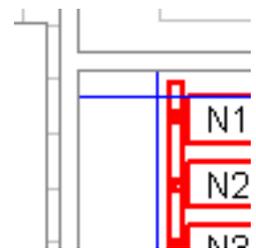
**End points:** There is more leeway with the end values, because they only need to agree with themselves. endbuilding is the distance (in feet) of a chosen point from the origin point, and endmap is the absolute pixel value of that same point. The point MUST occur on a tile intersection, as the program cannot handle non-integer numbers. Refer to the image below as an example. (It is GCC-CRA, and each tile is two feet)



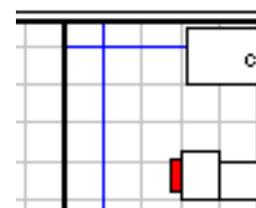
The origin point GCC-CRA



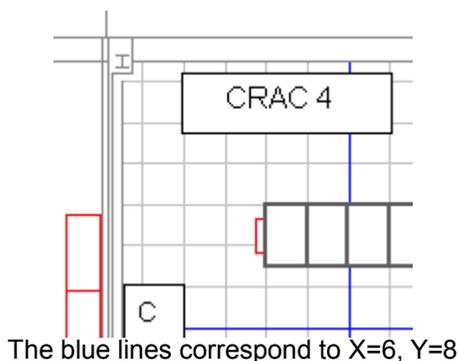
The origin point GCC-CRB



The origin point GCC-NRA



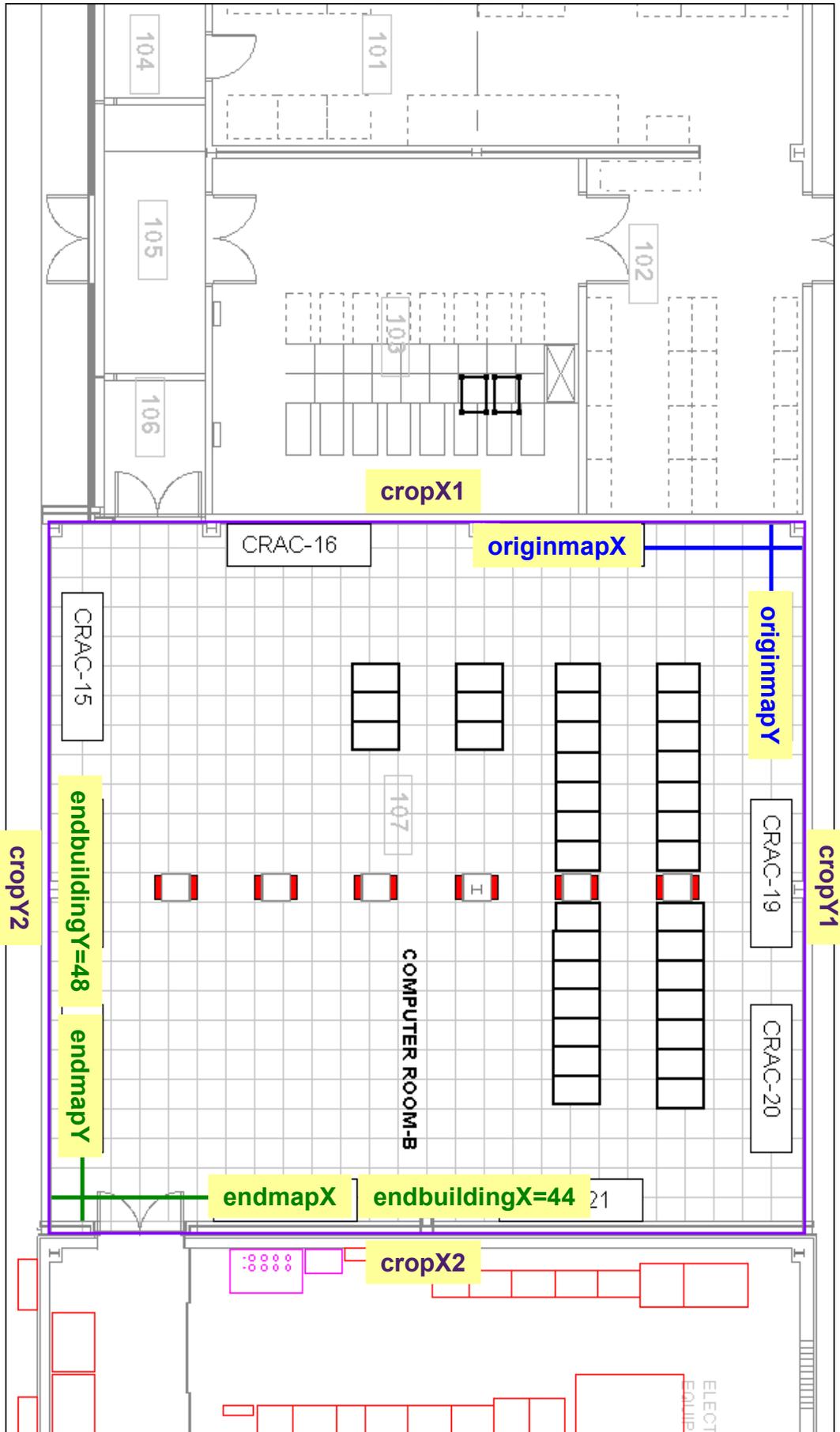
The origin point LCC-108



The blue lines correspond to X=6, Y=8

# Sample raw map with selected values shown

(Color required)



# Updating Thresholds

## Overview

Thresholds are stored in the data xml file in the folder for the room it represents. Depending on the room there may be 2 or 4 thresholds. The threshold tag takes two parameters (type and bound) and a value. Type indicates which aisle the threshold affects (hot or cold) and the bound indicates which end of the value spectrum to contain (low or high).

## Example

To change the low threshold on the hot aisle from 40 to 55, change the following line of XML from  
`<threshold type="hot" bound="low">40</threshold>` to  
`<threshold type="hot" bound="low">55</threshold>`

To change the high threshold for the cold aisle from 85 to 80, change the following line of XML from  
`<threshold type="cold" bound="high">85</threshold>` to  
`<threshold type="cold" bound="high">80</threshold>`