**Purpose:** Calculates metrics (mean, sum, median, etc). for a variable of interest within grids of specified sizes.

**Version Control:** Likely many versions of this function

**Libraries**:, PBSmapping, RColorBrewer

**Function Arguments Summary**

1. **Data**: The data, the data should be structured in 4 columns, "ID", "X coordinates", "Y

coordinates", and "Variable of interest (Z)"

1. **domain**.**poly**: The spatial extent of the data we are interested in. A polygon of some sort

covering the area of interest.

1. **lvls**: The categories of the variable of interest (Z), used for creating a bin of colors for the

plot.

1. **bcol**: The bin color palette, see ?brewer.pal help for options. Default ="YlGnBu"
2. **border**: Adds a column “border” to the pdata output, not sure what this is used for.

Default = 1

1. **FUN**: How to summarize the data within a grid cell. Default = mean any function could be

called.

1. **grid**.**size** The size of the grid. Default = 1/60 (i.e. 1 minute if data are decimal degrees)

**Section 1**

This function create a grid of specified size (default when using lat/lon data = 1 minute grids). A data frame with ID, X, Y, and a variable are needed along with a bounding polygon to define the area to be gridded. The grid is created from the min/max values of the X and Y coordinates. All cells within the each grid are identified and these are aggregated using some function defined in the call to the function. Be aware the behaviour of point on grid cell boundaries needs to be considered. The **new default** for this program is to put boundary data into the cell with the smallest PID value (e.g. if a value is on the boundary of grid with the PID of 1,2, 53, 194 the value would be grouped with PID 1. In previous versions these boundary values were placed in all grids with the shared value, not a good behaviour for our data.

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