**[enter fullscreen](http://moodle.city.ac.uk/mod/page/view.php?id=580574)**

**Session 3 Exercises**

1. (a) Adapt the hsbSketch from the lecture notes (copied below) from the lecture notes to show a slice through the HSB colour space that holds saturation constant and instead varies hue and brightness (I use the term 'slice' because we can see this as a 2-dimensional plane cut through the 3-dimensional colour volume).

|  |
| --- |
| // Draws a slice though HSB colour space  // Jo Wood, 26th January, 2016    float bri;   // Use to set colour brightness    void setup()  {    size(400,250);    bri = 75;   // Try changing this value between 0-100      colorMode(HSB,width,height,100); // Use HSB colour space.  }    void draw()  {    for (int x=0; x<width; x++)    {      for (int y=0; y<height; y++)      {          stroke(x,y, bri);          point(x,y);      }    }      noLoop();   // Draw once only.  } |

1. (b) Adapt the code to produce a second sketch that holds hue constant and varies saturation and brightness.
2. Adapt the globalTemp sketch (reproduced below) from the lecture notes to use an alternative Brewer colour scheme that reflects the data being used. How does your scheme cope with the negative temperature change in 1970?   
     
   Note you will have needed to add the giCentreUtils library to Processing for this to work (you only need to do this once, so if you have already done it, you do not need to add it a second time).

|  |
| --- |
| import org.gicentre.utils.colour.\*;   // For colour tables.    // Sketch to show surface temperature changes using a Brewer colour scheme.  // Jo Wood, 26th January, 2016    float temp1960,temp1970,temp1980,temp1990,temp2000,temp2010;    ColourTable cTable;   // Will store a Brewer colour table.    void setup()  {    size(400,150);    stroke(180);    textAlign(CENTER);      cTable = ColourTable.getPresetColourTable(ColourTable.OR\_RD,0,1);      temp1960 = 0.06;    temp1970 =-0.04;    temp1980 = 0.18;    temp1990 = 0.34;    temp2000 = 0.55;    temp2010 = 0.70;  }    void draw()  {    background(255);      fill(cTable.findColour(temp1960));    rect(width\*.05,50,width/8,height/3);      fill(cTable.findColour(temp1970));    rect(width\*.20,50,width/8,height/3);      fill(cTable.findColour(temp1980));    rect(width\*.35,50,width/8,height/3);      fill(cTable.findColour(temp1990));    rect(width\*.50,50,width/8,height/3);      fill(cTable.findColour(temp2000));    rect(width\*.65,50,width/8,height/3);      fill(cTable.findColour(temp2010));    rect(width\*.80,50,width/8,height/3);      fill(0);    text("Global surface air temperature anomaly",width/2,20);    text("5-year mean, base 1951-1980. Source: NASA, 2010",width/2,40);    text("1960",width\*.11,height-30);    text("1970",width\*.26,height-30);    text("1980",width\*.41,height-30);    text("1990",width\*.56,height-30);    text("2000",width\*.71,height-30);    text("2010",width\*.86,height-30);      noLoop();     // Draw once only.  } |

1. ***Data Challenge:*** [airTemperatures.tsv](http://gicentre.org/datavis/session03/data/airTemperatures.tsv) (right-click on this link and Save as...) is a table representing changes in global air temperature in the last 130 years. Using the techniques you have learned last week and this week, try to produce a graphical representation of all or some of the data represented in this table.

**Check on Learning Outcomes**

To ensure that you have achieved the outcomes associated with this session, consider the following, which allow you to evaluate your progress.

 Can I distinguish RGB from HSB colour spaces?  
 Could I create a set of colours of different hues but fixed brightness and saturation?  
 Could I create a set of colours of constant hue but varying brightness and saturation?  
 Can I identify the level of measurement of a data type and find an appropriate colour scheme to represent it?  
 Could I write a sketch that uses giCentre Utiltities to create ColorBrewer palettes?