DETECTING CLOUDS (Cloud Masking)

In this lab we are going to explore cloud detection, using a manual approach. We often use spectral tests to determine if a pixel is cloudy or cloud free. You will use McIDAS-V to determine these thresholds for various spectral channels. As you select your threshold, you will enter it in the table below.

Open McIDAS-V, In the McIDAS-V window, look for the tab View (above the image frame).
Click on View -> Properties – uncheck "Auto-set Projection -> OK

Open the file Cloud_MODIS_LAB7.mcvz as a McIDAS-V bundle. Turn on and off various channels to observe which spectral regions are sensitive to the dust and cloud regions.

To select a threshold:

Right-mouse click on the grey scale below 11 um Surface/Cloud. That opens a new window - the **Color Table Editor**. Make sure the **Actively set color** box is checked and select a color by clicking in the color box. You can also change from red colors, but dragging the pointer on the color scale to the right of the box. Now, on the scale above place your point at some temperature (the pointer will look like a paint brush). If you left click on that point and move the cursor, holding the mouse button down, to the left or right, all those brightness temperatures will turn that color. You will see those colors applied to regions in your image. Note the **History** arrows in the upper right of the **Color Table Editor** – you can use those arrows to restore previous selections. See example figure below. Once you are satisfied, enter it in the table below (or write it down – I will collect various values from the groups). So for example, in the example below I would write down for BT11 < 260K (which, looking at the image – is not a very good threshold to distinguish clear from cloud).

Rather than click **OK** in the **Color Table Editor** – you might just want to minimize the box, so you can come back to it later.

Move on the next channel. Make sure you are viewing the channel whose color table you are editing. Once you select thresholds for more than one spectral channel, you can compare the results by switching back and forth between the scenes.
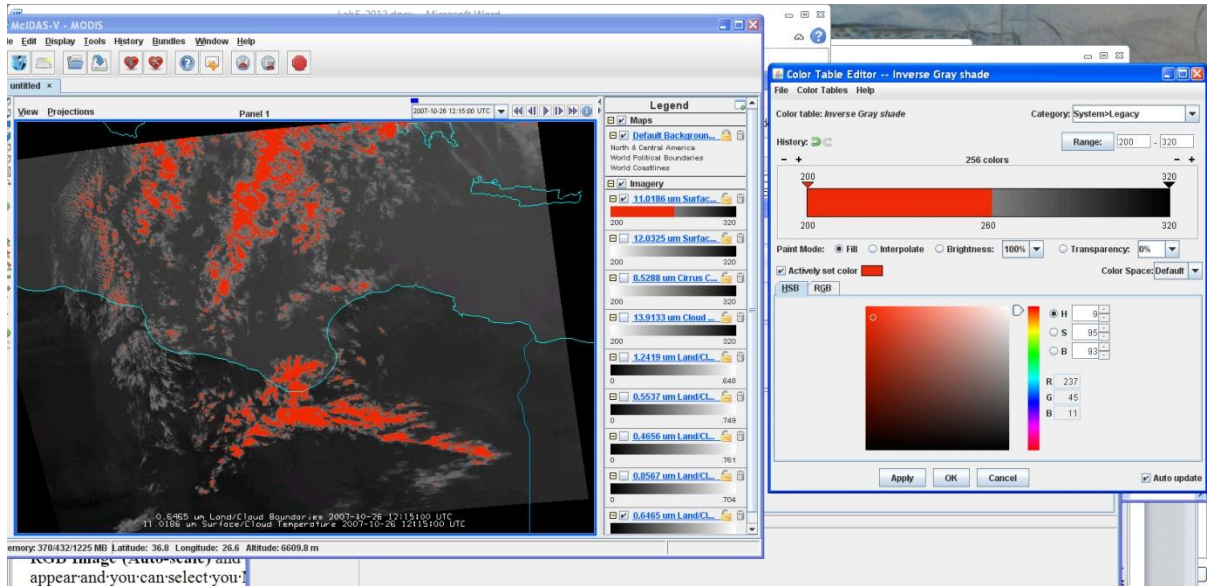
Cloud detection table

Channel	Threshold for cloud over ocean	threshold for cloud over land
Reflectance .86 micron		
Reflectance .65 micron		
Reflectance .46 micron		
Reflectance .55 micron		
Reflectance 1.2 micron		
BT 11 micron		
BT 13.9 micron		
BT 12 micron		
BT 8.5 micron		
Your tests		
BT difference between		
Solar ratio test		