

## PRACTICAL 8 – CHANGE DETECTION



1. Go to [http://www.geography.dur.ac.uk/ForestSAFE/ForestSAFE\\_ASP/ForestSAFE\\_Online\\_CD.asp](http://www.geography.dur.ac.uk/ForestSAFE/ForestSAFE_ASP/ForestSAFE_Online_CD.asp)
2. Type in  
**Username:** ChangeDetection  
**Password:** Demo
3. Explore the site. The diagram below provides the tools available to extract the information from the datasets:

### SITE DIAGRAM

The diagram shows the ForestSAFE Information System interface. It includes a top navigation bar with 'GIS Controls', 'ForestSAFE', 'ZOOM IN', 'EXTENT', 'INFORMATION', and 'HELP!!!'. Below this is a 'Background' section with a dropdown menu (1) and a legend (2) for various forest types. A 'Search for compartment' section (3) has a text input and a 'SUBMIT' button. A central map area is labeled 'Click on map below to interact with datasets'. To the right, there are 'LOCATION' and 'Test Area' sections, including a 'HEIGHT CHANGE' section with a year selection dropdown (5) and a scale bar. An 'INFORMATION' section at the bottom right contains fields for 'Compt. Number', 'Field Class', 'Year Planted', 'Species (Mixture)', 'Landuse', and 'Soil Type'. A copyright notice for the Forestry Commission is at the bottom.

### SATELLITE IMAGES TO MONITOR FOREST CHANGE

	<p>The drop down box (1) allows you to select a background image. The options are three Landsat satellite images at 5 year intervals (1989, 1995 &amp; 2001), and a Timeseries image which combines information on each of them to highlight where change has occurred. The key for this is at 2 on the diagram.</p>
	<p>The search tool enables you to zoom to particular subcompartments by entering their ID number. (3 on diagram)</p>
<p>THE TOOLBAR (4 on diagram)</p>	
	<p>Click to zoom to the full extent of the test area. You can then zoom back in with the Zoom In tool below.</p>
	<p><b>Zoom in</b> to an area of interest by dragging to draw a box around it or clicking to zoom in by a set factor.</p>

 INFORMATION	Select the <b>Information Tool</b> and then click on the map. Information on any compartment within the Forestry Commission subcompartment database will become available and <b>height data</b> estimated from Satellite data will be <b>displayed in the Height Results Area (4)</b> on diagram)
 ForestSAFE	This button returns you to the main ForestSAFE webpage.

4. Use the dropdown box (1) to explore how the area has changed through time using the three Landsat images (1989, 1995 and 2001)

>>> Can you see

- a) forest plantings develop
- b) areas of felling
- c) regrowth of felled areas

Comments:

5. Select the **Timeseries layer** from the dropdown box (1). Look at the legend (2) and compare with the images from step one.

(the time series contains 3 years of information)

>>> How does Timeseries image match with the changes you were noticing in section one?

Comments:

6. Forest Height predictions to monitor change

Enter each of the five compartment numbers in Table 1 separately into the search box (3) and press enter, or click “SUBMIT” to zoom to the compartment.

Use the “INFORMATION” tool from the main Toolbar (4) and click within the blue boundary. Estimates of tree heights that have been predicted using the satellite images will be presented to you in area 5.

>>> Using the predicted heights, the three Landsat images and the Timeseries image, can you provide an interpretation of what are the likely changes that have taken place at the following sites? (e.g. Fellings? Plantings? Regrowth?)

Compartment ID	Colour in Timeseries Image	Likely change in forest conditions occurring on the ground?
<b>1162</b>		
<b>1394</b>		
<b>12821</b>		
<b>87</b>		
<b>47</b>		

7. Click “EXTENT” in the main toolbar to zoom back out to the whole area.
8. Click the white on green X in area ③ to clear compartment selection.
9. Select the Timeseries Image as a backdrop
10. In the GIS Layers section to the left of the main image
11. Turn off the “FC boundaries” by unchecking its tick box.
12. Turn on the “WGS Boundaries” by checking its tick box

Three sites will be highlighted. Although generated specifically for this practical these areas, ringed in yellow, represent examples of woodland grant scheme boundaries. For the purposes of the practical, they are areas for which private foresters have been provided grant funding to stock with trees.

13. **Ensuring the Timeseries Image is selected**, Zoom to each one with the “ZOOM IN” tool in the main toolbar and, using the “INFORMATION” tool to get height predictions, consider the use of Satellite Imagery for Woodland Grant Scheme monitoring.

>>> Can you see this method being of use by the Forestry Commission for monitoring the compliance to the grant scheme?

Comments: