

Title	Version 1.1 of Environment Agency CASI data from the NCAVEO 2006 Field Campaign.
Document created by	Emma Rockall
Date	9 th September 2008
Revision history	09 Sept 2008 Correction of spectral band centre wavelengths and fwhm values and production of new ENVI header files
Description	The CASI-3 files in this dataset are supplied prior to geometric correction which can be undertaken by the user with the EASGeo software provided.
Data files in the set	<p><i>Radiometrically corrected images and .hdr files (ENVI format):</i> e.g. C060617_0945</p> <p><i>Pixel Position Maps:</i> e.g. G060617_0945_xy_SAR10</p> <p><i>Navigation data:</i> e.g. C060617_0945_xy_sar_10.txt</p> <p><i>Documentation:</i> Flight log: chilbolton_casi.pdf CASI3 Wavelength correction for NCAVEO.pdf</p> <p><i>EASGeo software:</i> easgeo.sav envi_easgeo_v1.sav EASGeo_for_ENVI.pdf</p>
PI of this data set	Dr Kyle Brown, Science Group Technology, Environment Agency Kyle.brown@environment-agency.gov.uk
Terms of use (see NEODC website for the full version)	<p>The data may be used for all non-commercial research/project work undertaken by the NCAVEO network, in particular to learn about cal-val issues.</p> <p>If you wish to use the data set please contact the PI listed above. If you intend to publish a paper or give a presentation based on, or making significant use of these data, please consider including the PI(s) as co-author(s) at an early stage in the process.</p> <p>In all cases where the data are used in a presentation or publication, an acknowledgement must be given: for example, "<i>Data from the NCAVEO 2006 Field Campaign are provided courtesy of NCAVEO via the NERC Earth Observation Data Centre (NEODC). CASI data were supplied by the Environment Agency.</i>" All CASI images, processed or unprocessed, should show '© Environment Agency 2006'</p>

** Please note that Chilbolton data do not meet Environment Agency quality assurance standards due to cloud and cloud shadows **

Eight flight lines were acquired on 17th June 2006 using an Itres Instruments Compact Airborne Spectrographic Imager (CASI-3), onboard a Cessna 404 aircraft operated by the UK Environment Agency (EA). The CASI-3 was operated in hyperspectral mode, with 32 spectral bands (Table 1) and a nominal ground resolution of 1m. The Environment Agency identified a possible spectral shift problem in the CASI-3 instrument during June 2006. The problem was corrected but it is still

unknown how much the spectral shift occurred during data collection for NCAVEO. The document 'CASI3 Wavelength correction for NCAVEO.pdf' provides further details.

The filename convention is 'CYYMMDD_HHMM' where 'C' symbolises Chilbolton and time relates to the start time (GMT) of the flightline.

Geometric correction

The CASI-3 data collected during the NCAVEO 2006 cal/val campaign can be geometrically corrected and registered to the British National Grid using the EASGeo correction package and data from on-board sensors, both available with this dataset. The Environment Agency introduced this simple geo-correction tool in 2006 for use with IDL Virtual Machine but has updated it for ENVI. Details on how to install and use EASGeo for ENVI can be found in document 'EASGeo_for_ENVI.pdf' in the EASGeo folder.

The data provided for geometric correction are:

1. Level 1 radiometrically corrected CASI image data.
2. Image files containing the geometrically corrected xy pixel positions of the Level 1 data.
3. Navigation files that contain information from on-board sensors. The navigation data are in two forms:
 - A) As an individual text file per image. Each line in the file represents one line in the imagery. The position data are relative to Ordnance Survey Great Britain '36 datum. The attitude data have been calibrated so that they represent the attitude of the CASI sensor head.
 - B) As a complete trajectory for the flight. The position data are in UTM WGS 84. The attitude data have been calibrated to represent the attitude of the aircraft.

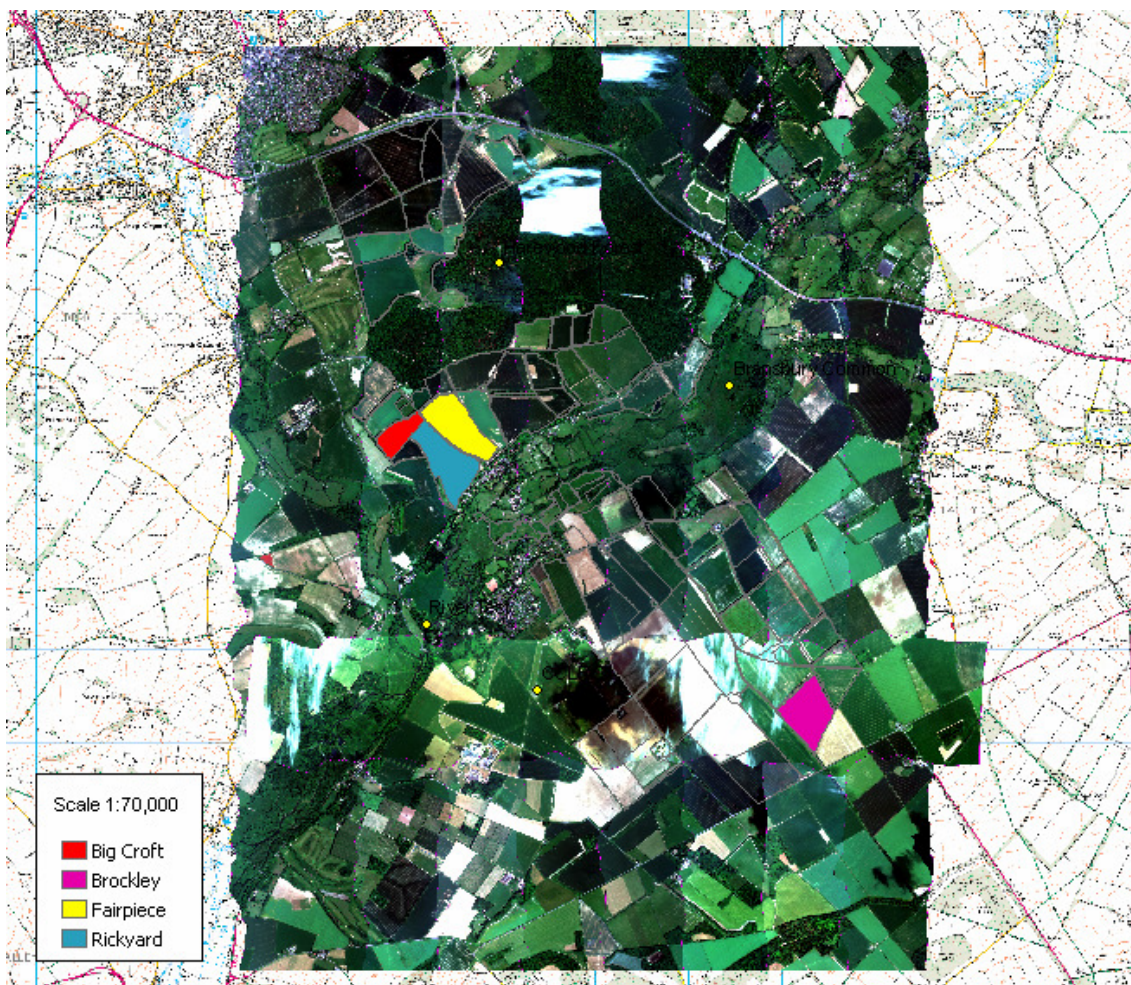


Figure 1 Visualisation of geometrically corrected Environment Agency CASI flightlines, from ArcMap GIS, showing the 8 north-south flights and 1 east-west. Chilbolton Observatory (CCLRC) and fields used during the campaign (Big Croft, Brockley, Fairpiece, Rickyard) are also highlighted.

Table 1 List of wavelengths for the 32-band multispectral mode CASI-3 images.

Band Number	Centre wavelength (nm)	Full-width half maximum (nm)
1	400.08	6.56
2	406.33	6.54
3	413.14	7.08
4	420.45	7.54
5	428.21	7.96
6	436.38	8.38
7	444.95	8.76
8	453.92	9.18
9	463.32	9.62
10	473.17	10.08
11	483.52	10.62
12	494.44	11.22
13	505.99	11.88
14	518.25	12.64
15	531.33	13.50
16	545.32	14.48
17	560.32	15.54
18	576.47	16.74
19	593.87	18.06
20	612.66	19.52
21	632.96	21.10
22	654.91	22.82
23	678.65	24.66
24	704.30	26.66
25	732.01	28.78
26	761.91	31.02
27	794.12	33.40
28	828.77	35.90
29	865.99	38.52
30	905.87	41.26
31	948.54	44.08
32	994.07	47.00