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| Title | Description of Version 1.0 of the Leaf Area Index data from the Chilbolton test site, collected as part of the NCAVEO 2006 Campaign. |
| Document created by | Emma Rockall |
| Date | 4 th August 2008 |
| Revision history | 31 January 2007 First release. 04 August 2008 Conversion to NASA Ames Format |
| Purpose | To describe the field sampling and data reduction applied to the LAI data collected with the LAI2000 instruments. |
| Data files in the set | lai2000_nfc06_ryrw_20060615_10.txt lai2000_nfc06_rygw_20060615_10.txt lai2000_nfc06_rybw_20060615_10.txt lai2000_nfc06_ryyw_20060615_10.txt lai2000_nfc06_ryww_20060615_10.txt lai2000_nfc06_bkrb_20060614_10.txt lai2000_nfc06_bkgb_20060614_10.txt lai2000_nfc06_bkbb_20060614_10.txt lai2000_nfc06_bkyb_20060614_10.txt lai2000_nfc06_bkwb_20060614_10.txt lai2000_nfc06_bcwr_20060615_10.txt lai2000_nfc06_bcyr_20060615_10.txt lai2000_nfc06_bcrr_20060615_10.txt lai2000_nfc06_bibr_20060615_10.txt lai2000_nfc06_bicr_20060615_10.txt |
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| Research Assistant | Dr Paul Bowyer, University College London. Martin DeKauwe, University College London. |
| Terms of use (see NEODC website for the full version) | 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. 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. 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).</i> " |

Introduction

Leaf Area Index measurements were made in three fields planted with different crop types, Brockley (spring barley), Big Croft (oil seed rape) and Rickyard (winter wheat). Measurements were carried out over 14-15 June 2006 as part of the NCAVEO field campaign.

LAI2000 instrument

LAI measurements were made with the LAI2000 instrument loaned from INRA, France (Inst. Ref: N4431).

- Shadow cap: 180 degrees.
- Measurement configuration: one top of canopy reading (reading A in files) followed by one bottom of canopy (reading B in files).

Within the main sensor the LAI2000 instrument has five separate silicon detectors arranged in concentric rings. When radiation is projected onto the detector each ring sees a different range of zenith angles, up to a maximum 74° field of view. There is no response at zenith angles between 74° and 90°. The sensor is filtered to respond only to radiation below 490nm to minimise the impact of leaf reflectance and transmittance on measured values. The outputs of the five detectors are measured simultaneously for each above or below canopy measurement.

Sampling strategy

Five sample points were located within tramlines in each field and their position determined using dGPS. Five 10 metre long transects were set-up, centred on each of these points and marked with coloured flags. These flags marked the longitudinal extent of each Elementary Sampling Unit (ESU). The 'width' of the area sampled within the crop was determined by the reach of the instrument, estimated to be around 1 metre.

Where possible measurements were made according to the pre-established NCAVEO protocols, i.e. between the coloured flags. At Rickyard and Brockley measurements were made every 1m between the two flags (of the same colour), starting at the red flag then proceeding through the green, blue, yellow and white flags. At Big Croft a modified sampling strategy was adopted because the oil seed rape canopy was too high and dense to permit use of the pre-established sampling strategy. Here, again 10 measurements were made at each flag (note the flags were arranged around the edges of the field), but these were done in an arc around each flag, starting at the white flag, then yellow, red, blue, and green. The order can be checked in the data files by looking at the time of data collection.

Measurement conditions and date

Brockley: overcast sky; 14 June 2006.

Big Croft: broken cloud typical of a British summer day, had to wait long periods between measurements in some cases, this will be observable in the files; 15 June 2006.

Rickyard: broken cloud typical of a British summer day, had to wait long periods between measurements in some cases, this will be observable in the files; 15 June 2006.

File numbering

Each file contains the data collected at one flag, as indicated by the four character code in the file name (e.g. ryrw). The first two letters indicate the field name, followed by the flag colour and crop type:

Field name

| | |
|-----------|-----------|
| RY | Rickyard |
| BK | Brockley |
| BC | Big Croft |

Flag colour

| | |
|----------|--------|
| R | Red |
| G | Green |
| B | Blue |
| Y | Yellow |
| W | White |

Crop type

| | |
|----------|---------------------------|
| W | Wheat (Rickyard) |
| B | Barley (Brockley) |
| R | Oil seed rape (Big croft) |

Coordinates

The geographic co-ordinates in the data file have been calculated to allow for the offset of sample measurements from the tramlines, and these should be taken as the definitive locations of the individual samples. The values of eastings and northings were calculated from dGPS measurements of the ESU centre point and are thought to be accurate to approximately ± 1 metre.

Individual locations of sampling sites in Big Croft (oil seed rape) have not been recorded due to problems of access that resulted in modification of the survey technique.

Time

All times reported in the files are GMT, not British Summer Time.

Note

1. '*Dark_error*' is the instrument reading when no light is being received by the sensors.
2. '*Time_delay*' is the time between measurements of above canopy diffuse intensity and the following below canopy measurements.

Related references

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Jonckheere, I., S. Fleck, et al. (2004). "Review of methods for in situ leaf area index determination Part 1. Theories, sensors and hemispherical photography." Agricultural and Forest Meteorology **121**: 19-35.

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