A quick guide to the use of the cloud based IrriSAT app

Supporting materials for IrriSAT workshops

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The material contained in this document is supporting material for the IrriSAT Workshops. This guide provides a quick step by step tutorial for using the cloud/online based IrriSAT app which is being created as part of the Cotton RDC funded project *Benchmarking water use efficiency and crop productivity in the Australian Cotton Industry*.

The cloud based IrriSAT app automates satellite processing and information delivery of Landsat and Sentinel satellite data and provides water management information across a range of scales. The IrriSAT app can be found at https://irrisat-cloud.appspot.com/ and accessed on most web enabled devices – iphone, ipad, PC, etc.

Step 1: Open your web browsers and navigate to the IrriSAT app website https://irrisat-cloud.appspot.com/ you should see the following screen displayed. Turn off any pop up blockers in your browser.
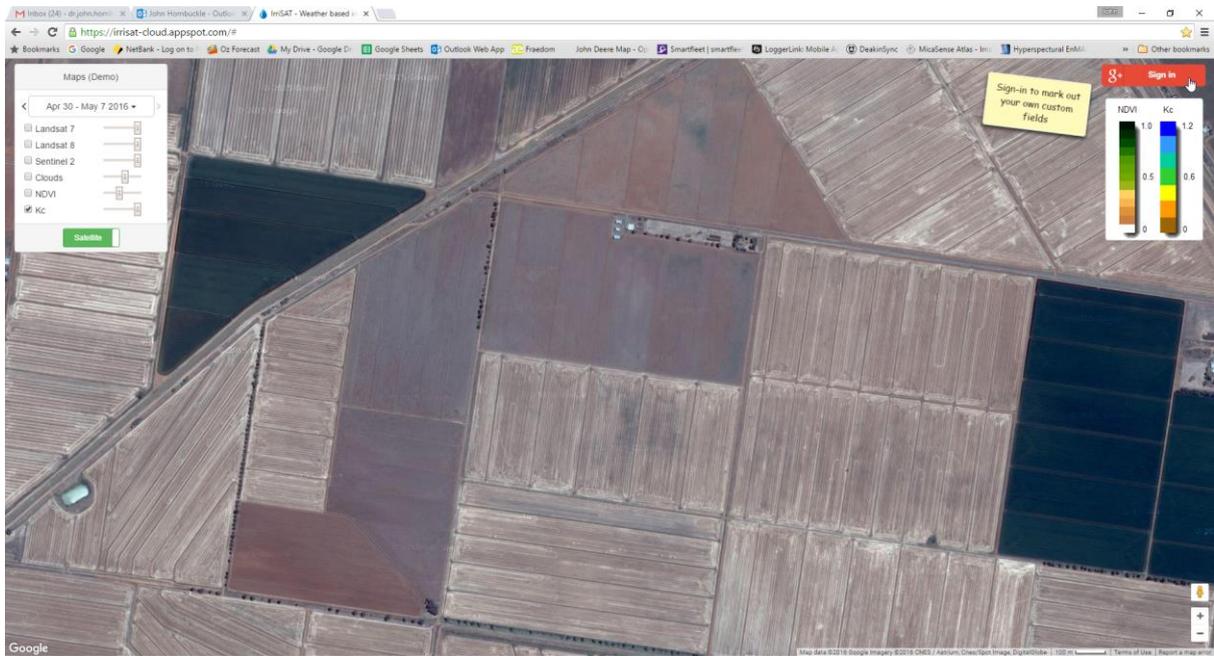

Step 2: Now click on the red google "Sign in" button on the right upper corner of the screen and log in with your google account. If you don't have a Google account then you can create a free account here: https://accounts.google.com/signup Once signed in you will see a guide note asking you to add management units if none exist.
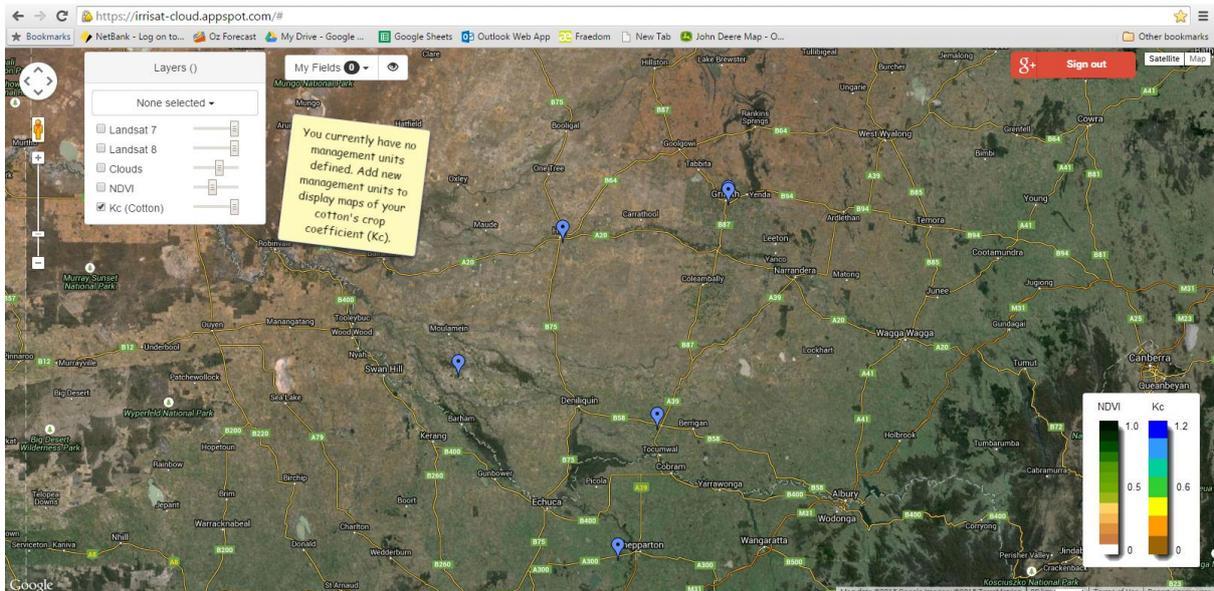

Step 3: Now add some management units, which are simply areas you are interested in looking at crop coefficient and water use data from. To do this click on + icon next to "My Fields" as shown
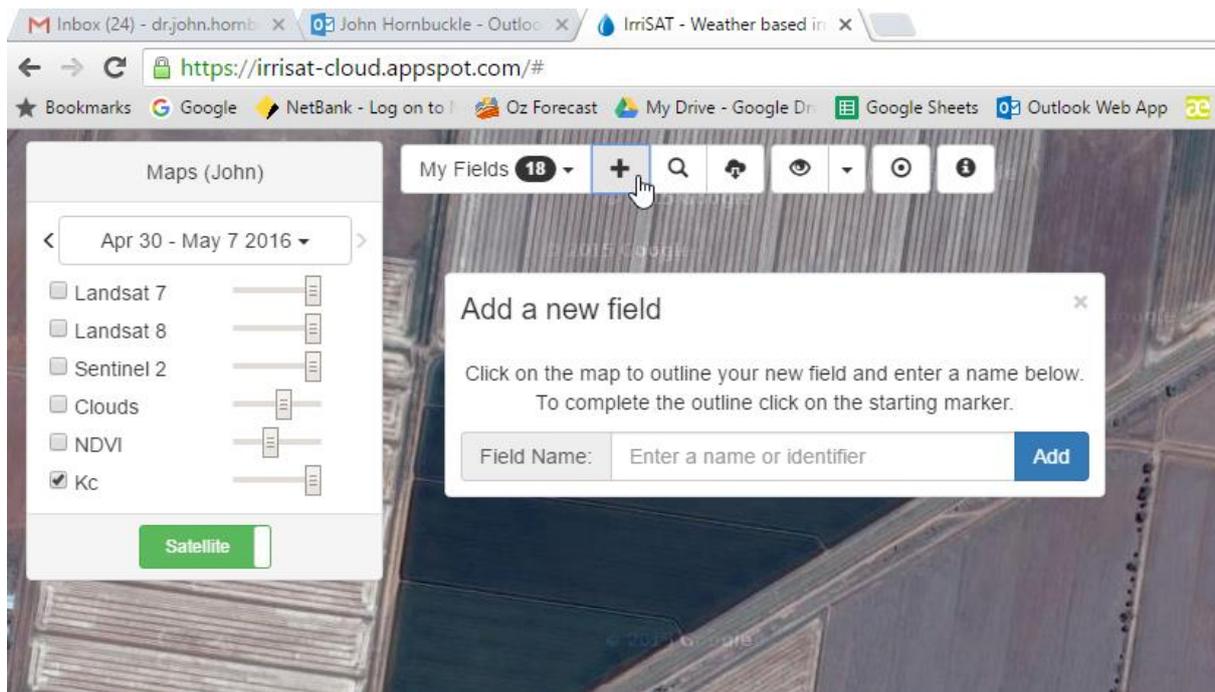
Step 4: You will now be presented with the following option to add a new field as shown. You can use the pan and zoom functions (Botton right of screen) to locate your field of interest or your mouse wheel and hold and drag.
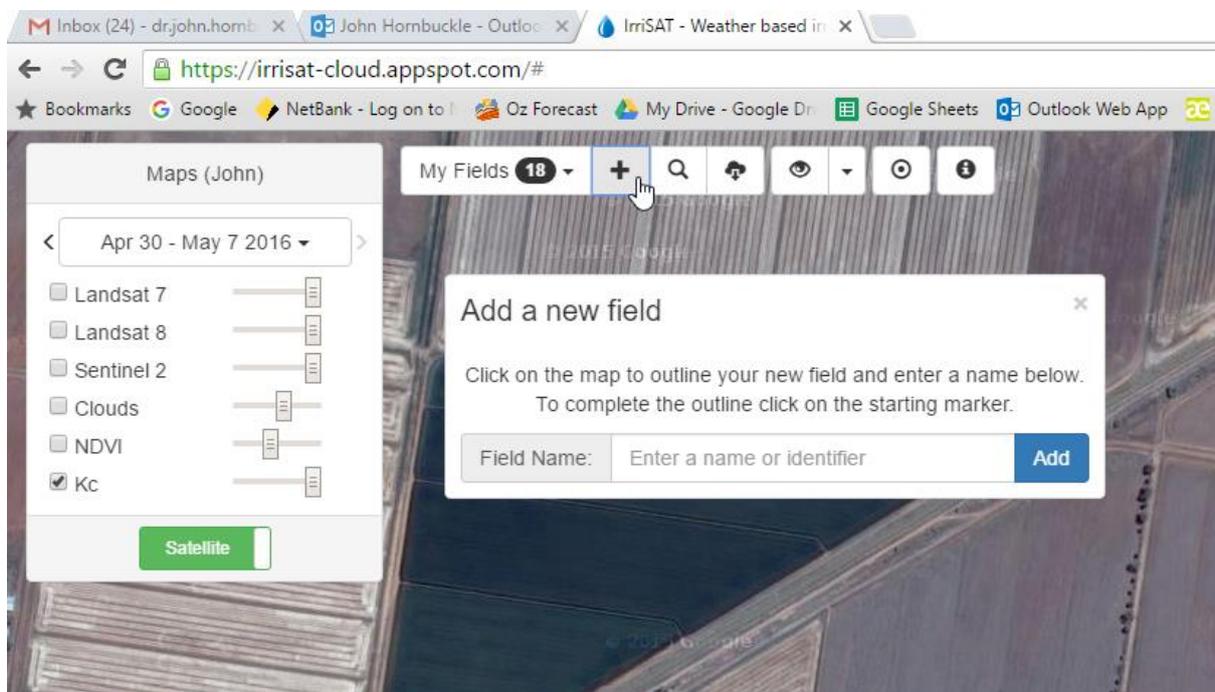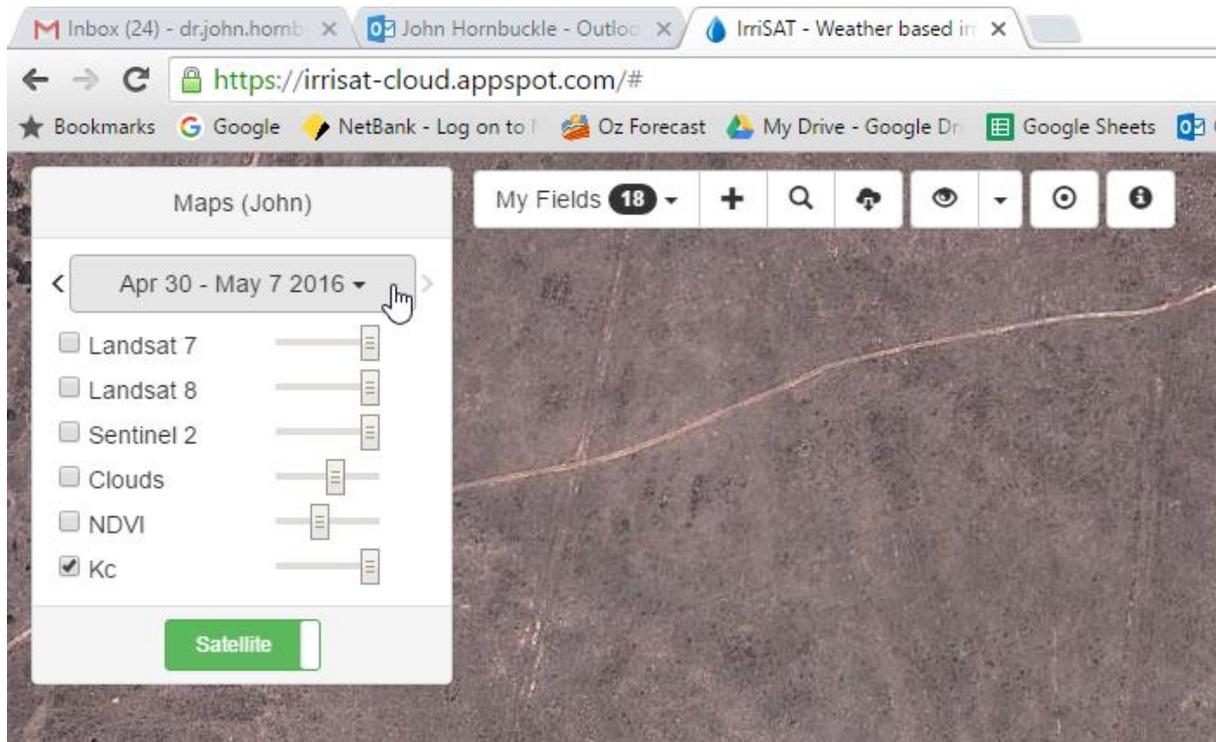

Step 5: Now click on the corners of your field to outline it as shown. When finished click on the starting point and a polygon covering your field will be shown.
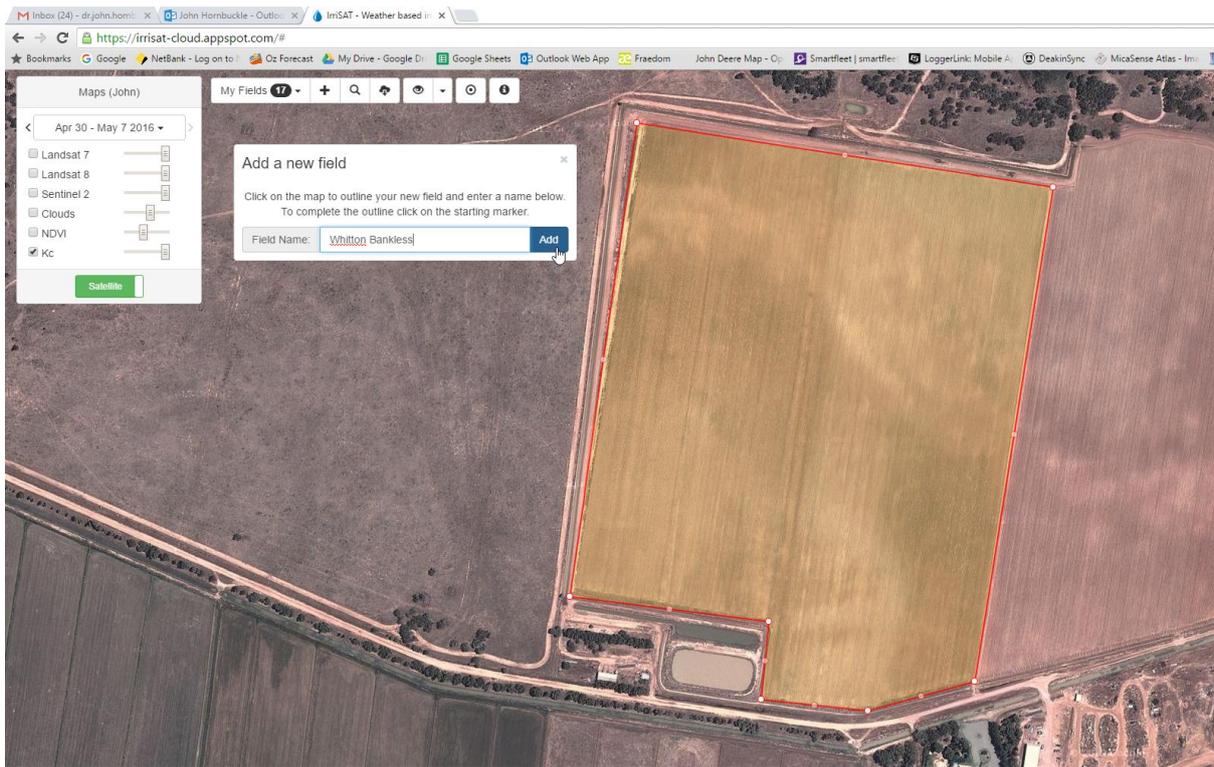
Step 6: Now add a field name and click the "Add button"
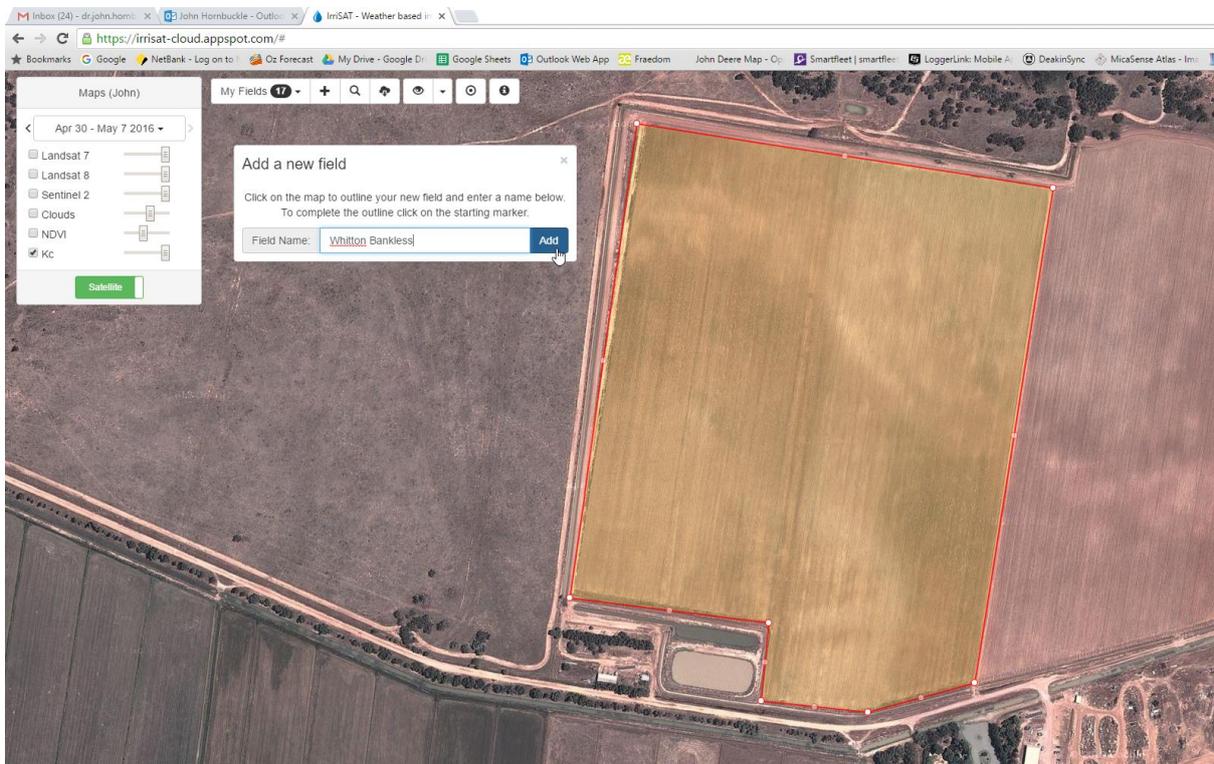
You will now see that a field has been added and also that the date selection drop down is showing a date and is now operational.

Step 7: Now click on the NDVI tick box and drag the transparency slider across to the right as shown. Select a date in the growing season. You will now see the NDVI data shown. Have a play with different dates and moving around the countryside to see the irrigated crops and changes over the season in NDVI values by changing dates.


Step 8: Now click on the Kc tick box. This will display the crop coefficient for the fields you have drawn.

You can also use the slider bars next to the tick boxes to fade in and out the NDVI and Kc layers over the data.

Step 9: OK now have a play and look at your crop for different dates using the drop down date menu. This will show how your crop coefficient changes over seasons and also the spatial patterns of crop growth across the fields. Satellite images from the Landsat platform go back until May 1999 in the IrriSAT interface at a 30m resolution. Sentinel Satellite images are available from Jan 2016 onwards and are at 10m resolution.
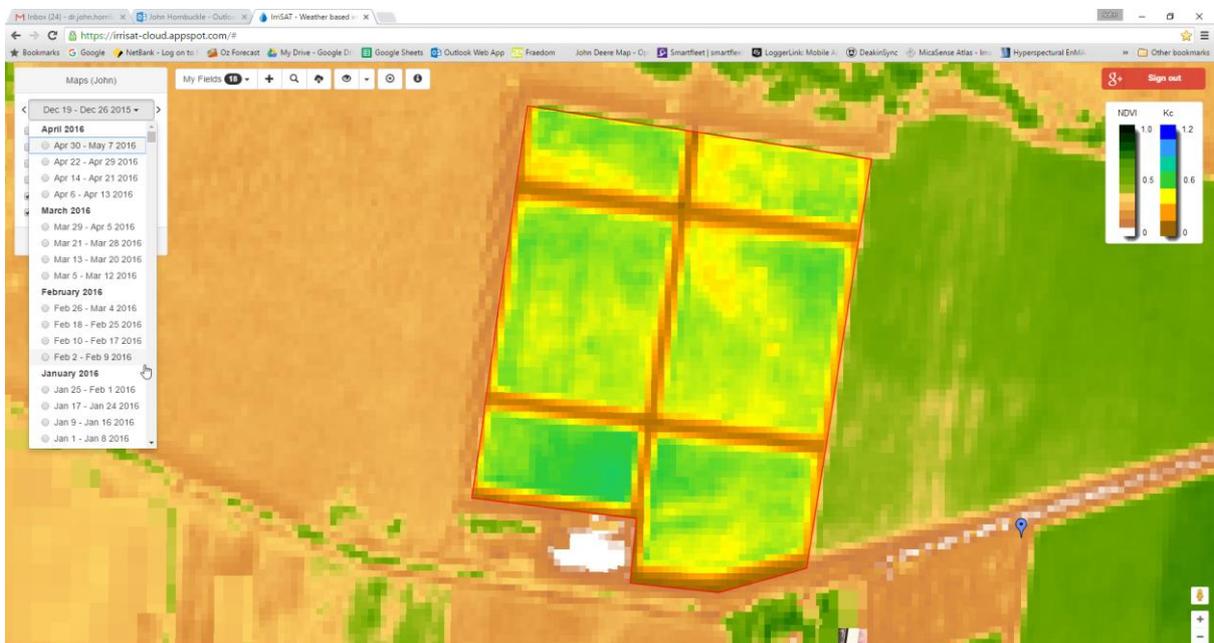

Note: Once saved these fields are housed on the cloud, hence you can access them from any web enabled device i.e. an ipad in the field etc

Step 10: Now click on the new field we have defined. This IrriSAT app will now calculate seasonal daily crop water use for the field. It will automatically retrieve the crop coefficient time series and link to the nearest IrriSAT weather station time series and automatically display crop water use information. This may take a few seconds as it's a lot of data to process "on the run". You should new get a screen showing crop coefficient charts and crop water use charts as shown below.
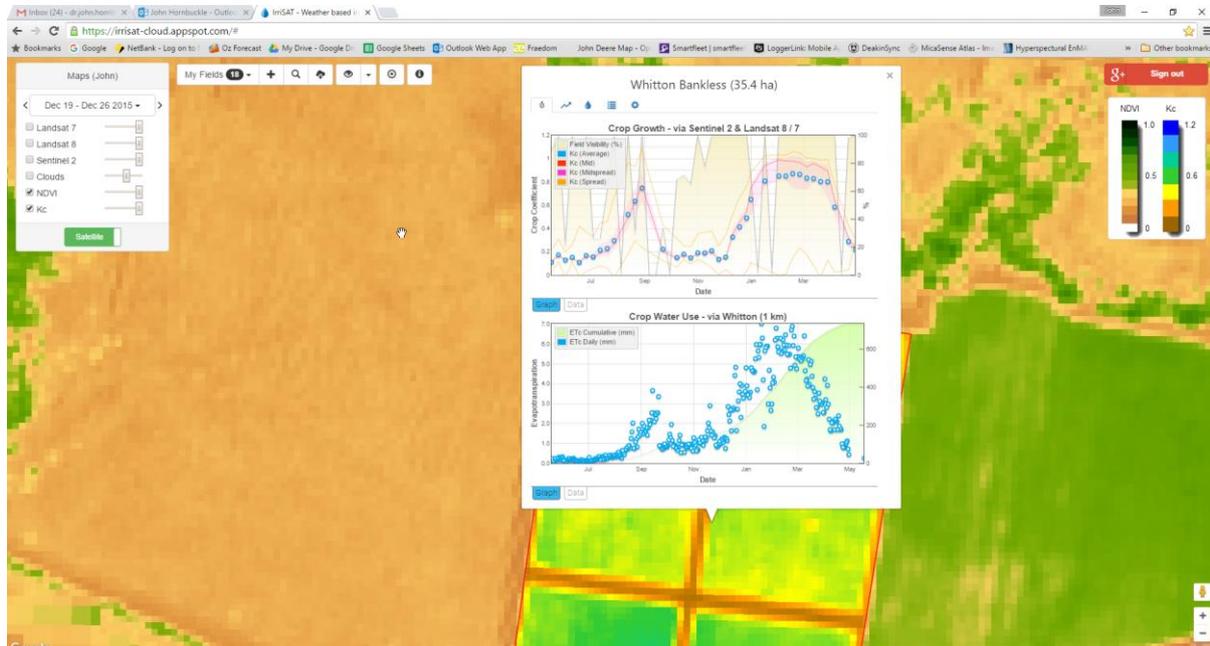

If you click on these charts you can use your mouse wheel to zoom and scroll through the dates to show smaller or larger time scales as shown below.
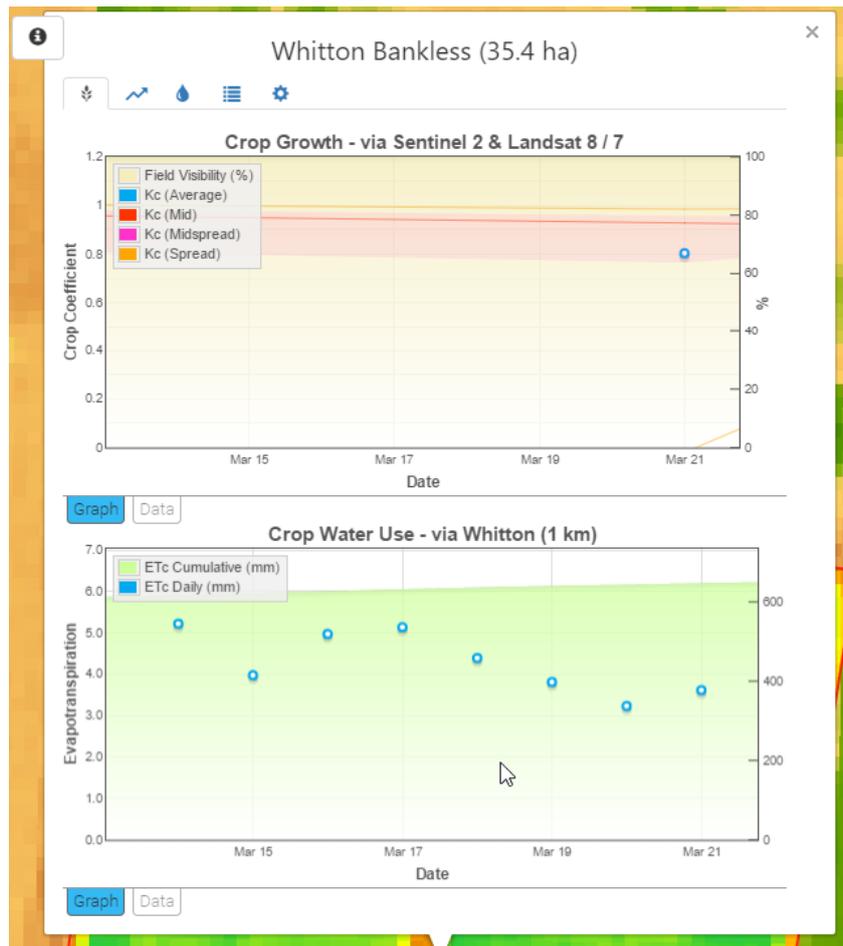
Step 11: Now you can export the data if you wish by clicking on the data tab as shown below at the bottom of each chart. This will allow you to save the file as a .CSV file by clicking on the "Download CSV" button at the top of the chart which can be opened in Excel.
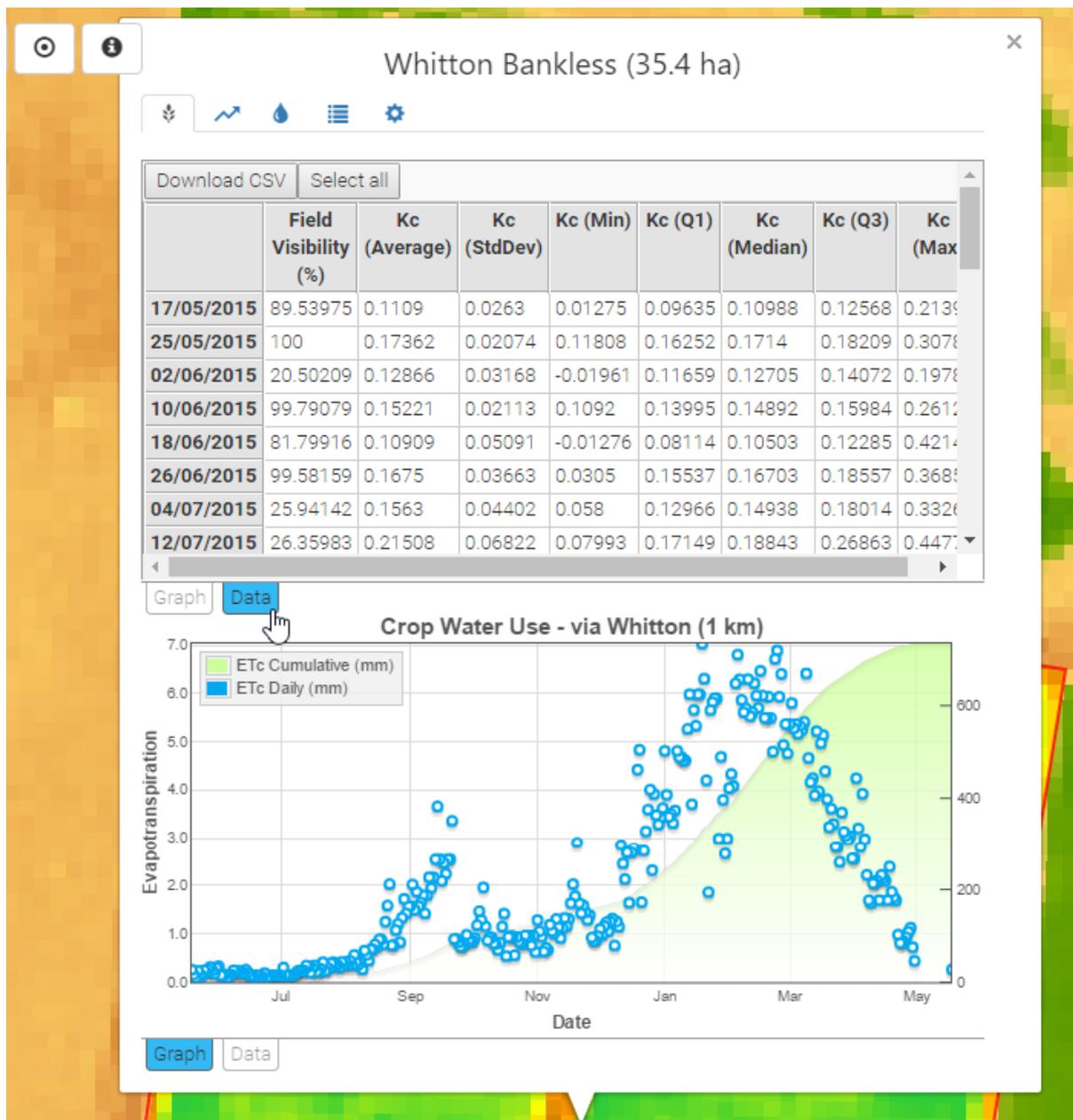
Step 12: Now we can also use IrriSAT to look at forecasted crop water use for the field we are interested in. Simply click on arrow tab as shown below. This will then show forecasted crop water use on a daily basis (blue dots) as well and cumulative water use in green. This is particularly useful for water ordering or planning your irrigation schedule.
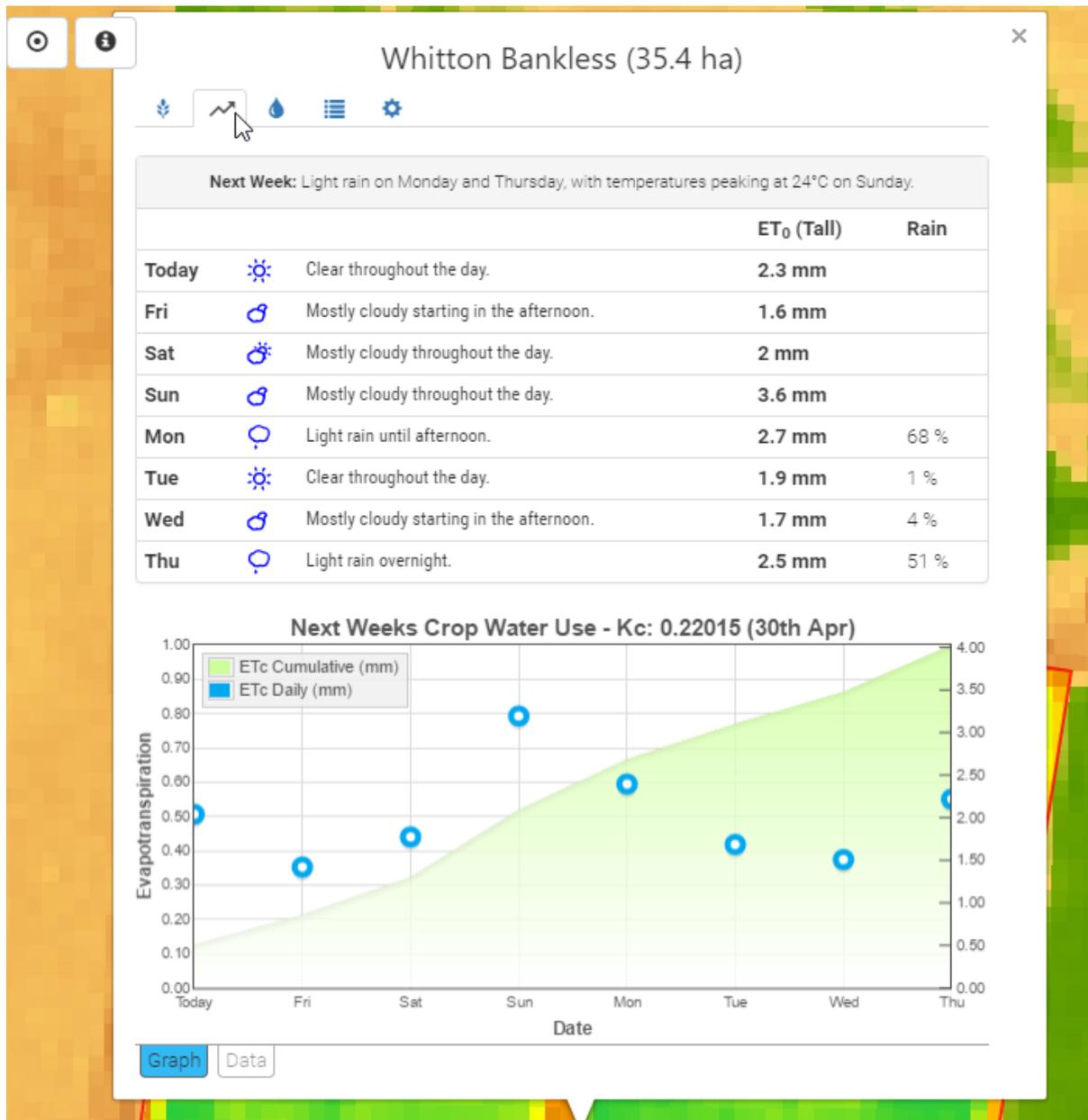
Adding Irrigation data and viewing water balance/deficit data

Step1: The IrriSAT app can also be used to look at a daily deficit water balance when Irrigation and Rainfall information is entered. To do this click on a field you have selected. The Crop Growth and Crop Water Use charts will be shown as below.

Step 2: Now click on the "cog" icon as shown below.
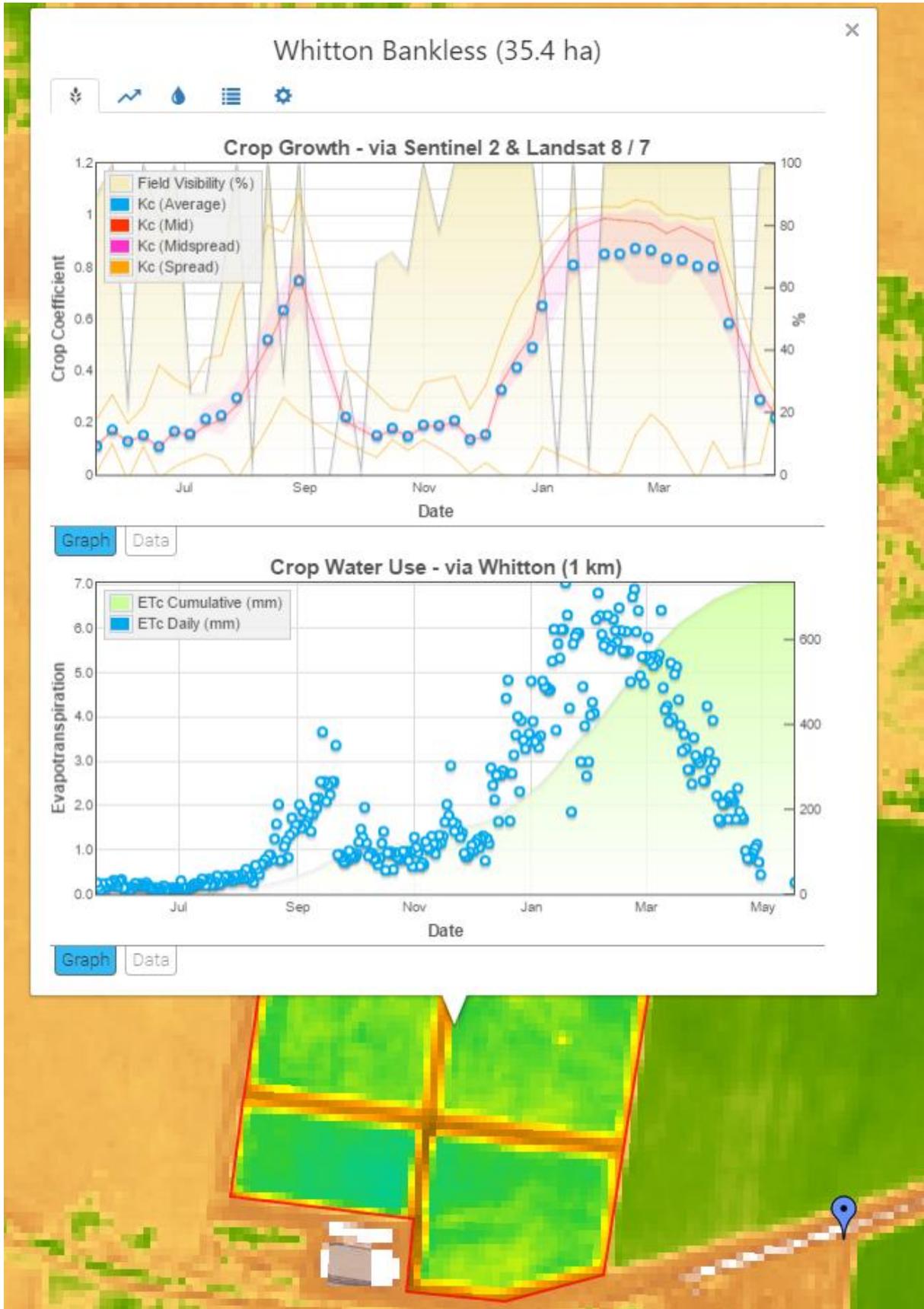
Step 3: Now fill in the boxes for Category, Planting Date and Reference ET. The Category field is simple text that describes your crop, planting date selected by clicking on the calendar and Reference ET can be set to the nearest weather station or select one from the list. You can also add someone such as your agronomist to share your data with by entering their email if you wish. Click apply after making changes to each of the boxes.

Step 4: Now select the raindrop icon/tab and simply drag (mouse click and move left/right) the date time line to the dates you wish to add Irrigation and Rainfall information and enter these in the text boxes for the corresponding days as shown below. After each amount is added click "Apply" and the water balance chart will be automatically updated. This will allow you to look over the irrigation

season and see how well you have matched irrigations to the predicted crop water demands across the season. As before data from these charts can be exported by clicking on the "Data" tab and can be downloaded for further analysis in Excel etc.
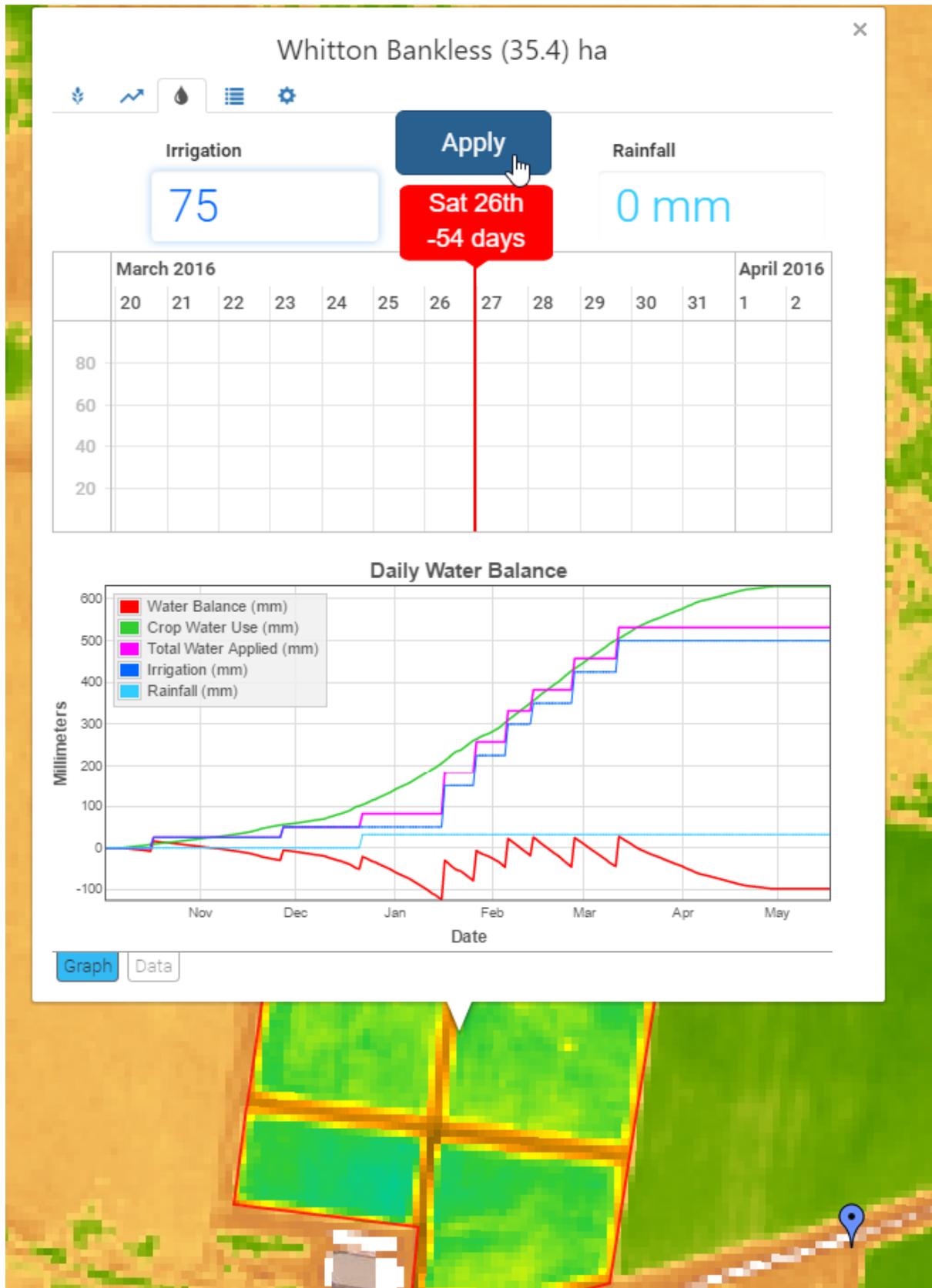
Future additions: The IrriSAT app is being continually changed over the coming two seasons with more functionality to come. Please stay tuned for further updates which will include newer higher resolution satellite data and improved app functionality over the coming 12- 18 months. Any questions or comments please contact John Hornbuckle j.hornbuckle@deakin.edu.au or contact one of the Cotton RDC project *Benchmarking water use efficiency and crop productivity in the Australian Cotton Industry* team members below:

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