

Darwin Initiative/D+ Project Half Year Report (due 31st October 2019)

Project reference	DPLUS083
Project title	Soil map and online database as climate change mitigation tools
Country(ies)/territory(ies)	Falkland Islands
Lead organisation	South Atlantic Environmental Research Institute (SAERI)
Partner(s)	James Hutton Institute (JHI), Natural History Museum (NHM), Falkland Island Government (FIG), UK Falkland Island Trust (UK FIT), Universidad de Magallanes (UMAG), Centre for Ecology and Hydrology (CEH)
Project leader	Tara Pelembe – Dr Stefanie Carter Project Manager.
Report date and number (e.g. HYR3)	HYR2
Project website/blog/social media etc.	https://www.south-atlantic-research.org/research/terrestrial-science/soil-map-and-online-database-as-climate-change-mitigation-tools/ SAERI Twitter: @SAERI_FI SAERI Facebook: https://www.facebook.com/S4ERI/ SAERI blogs: https://www.south-atlantic-research.org/news/

1. Outline progress over the last 6 months (April – Sept) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up to end September).

Output 1: Project Management structure, monitoring, evaluation and communications tools established

All project partners have now signed the Memorandum of Understanding (MoU) with the exception of UMAG (**Indicator 1.1**). The lack of a fully signed MoU has not impacted on the progress of the project in the slightest. Project management group (PMG) meetings were held in April, July and October 2019 (**Indicator 1.3**). In the July meeting, the PMG agreed on a timeline for fieldwork, lab work, data entry, data sharing, soil modelling, map production and webGIS production, that – if adhered to – will deliver the project on time.

Project stakeholders were engaged with during the annual winter gathering of most farmers in Stanley (Farmer's Week) in the first week of July (**Indicator 1.4**). The project manager (PM) presented the project at the Expo, which had a mixed audience of farmers and the general public. The soil mapping work was explained with a soil horizon profile display, preliminary maps were showcased on a laptop and the overall project was presented with a poster (Figure 1). The PM also gave a talk on the project to an audience of approx. 25 land managers (members of the Rural Business Association) (Figure 1). Additionally, stakeholders who had previously expressed interest in the project were invited for a 1-1 catch-up with the PM; two farmers made use of that opportunity.



Figure 1: Expo display (left) and project talk (right).

Output 2: WP1, National Soil Map, peatland distribution and soil erosion extent/risk

Data from the first field season was entered into the soil model to produce preliminary maps (**Indicator 2.4**, Figure 2) and data have been analysed (**Indicator 2.8**). Planning for the final fieldwork season, which will take place in November and December 2019, is well underway and it is anticipated that the fieldwork campaign will commence as scheduled. The remaining survey points have been categorised into three different priority groups in order to ensure that the most important points required for a robust soil model are completed (**Indicator 2.7**, Figure 3).

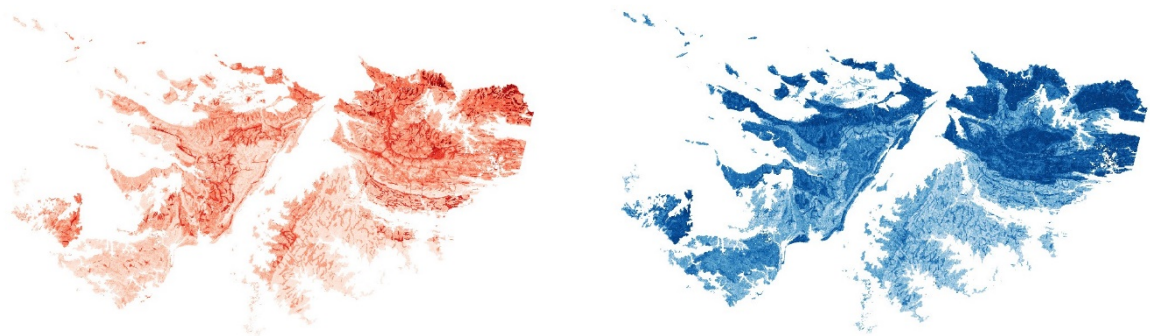


Figure 2: Preliminary maps based on data from the first field season for peat depth (left, the darker the shade of red, the deeper the peat) and pH (right, the darker the shade of blue the lower the pH).

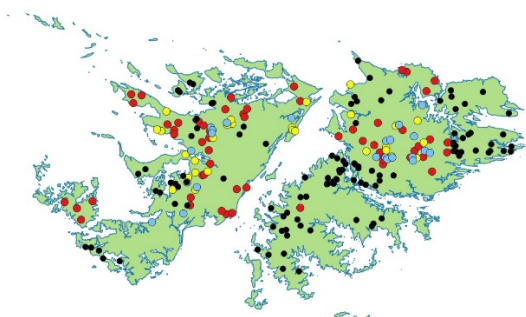


Figure 3: All soil survey points, black = completed, red = high priority, yellow = medium priority, blue = low priority.

Output 3: WP2, assessment of the sustainability of soil management practices and of soils physical, chemical and microbiological properties

All soil samples from the first field season have now been analysed in the lab (**Indicator 3.1**). The DNA sequencing is commencing and it is anticipated that it will be completed as scheduled by the end of March 2020.

Output 4: WP3, Development of soil spatial database and interactive tool for interpreting and describing soils properties and health, displaying soil erosion risk on selected farms.

When the preliminary maps were uploaded onto the webGIS (Output 2), it became clear that the slow speed of the internet in the Falkland Islands would affect the user-friendliness of the webGIS. This was addressed with stakeholders as part of the aforementioned engagement (Output 1). It was decided to produce offline maps additionally to the webGIS in the form of PDF maps. These will be produced for every farm and delivered to them on a memory stick to avoid downloads being compromised by slow and limited internet speed (**Indicator 4.1**).

All data from the first field season have been quality checked and entered into the PostgreSQL data base (**Indicator 4.5**).

Output 5: WP4, Knowledge transfer workshops and training courses

There was no work schedule for Output 5 between April and September 2019.

Additional Outputs

As detailed in the previous reports the project has also set up a CO₂ flux monitoring programme. The equipment arrived on time and was deployed as scheduled, the monitoring work commenced in July 2019 as planned (Figure 4).

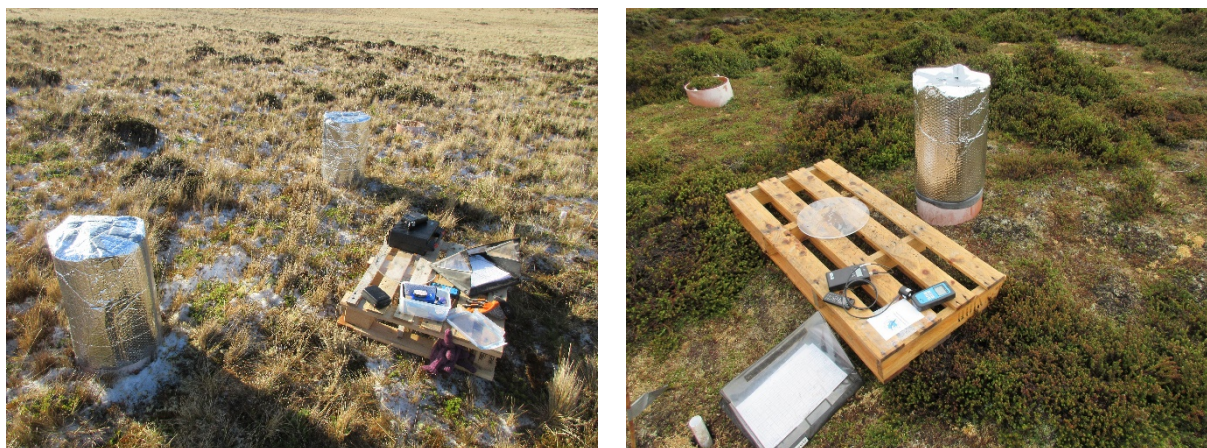


Figure 4: First CO₂ flux measurements on Stanley Common.

Overall progress

The project is progressing as expected. All loose ends from the first fieldwork season have been tied up now, such as soil analyses, data entry, data quality checks, entering of data into the data base. A workflow timeline for the remainder of the project has been created and agreed upon by the PMG. This will deliver the project on time if adhered to. Planning for the upcoming and final fieldwork season is almost complete and it is anticipated that the fieldwork will go ahead as scheduled. The project is on track and there are currently no known issues, which might impact upon the project significantly.

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

As mentioned above (Output 1), the MoU with UMAG still has not been signed and it is doubtful whether this will happen before the end of the project. So far, this has not affected project progress and it is unlikely that it will. SAERI has signed individual contracts with the fieldworkers directly instead of going through UMAG, which was also the solution applied last year. Otherwise, the fieldworkers would have not been able to come to the Falklands.

No other notable problems have occurred. On the contrary, some issues, which had arisen previously, have been resolved with practical solutions discussed and agreed in PMG meetings. These will not impact upon the project – assuming the submitted change request is granted. The change request addresses the following issues (outlined below): 2.1, 2.3, 3. The other issues listed below are mentioned as 'lessons learnt', the solutions that have been applied to these issues have also been described.

Issue 1: Fieldwork during the first field season was slower than anticipated and it was questionable whether all scheduled survey points could be completed in the second and final field season which could compromise the robustness of the final maps.

Solution: The PM liaised with project partner Matt Aitkenhead who is responsible for the soil modelling and map creation. Matt has categorized all remaining points into three different priorities: high, medium and low (Figure 3). The PM is confident that all high priority points can be completed in the upcoming field season as well as many medium priority points; the robustness of the final maps will therefore not be compromised significantly.

Issue 2: After soil samples were processed and preliminary maps were issued a few problems regarding map creation were noted. These were discussed in the PMG meeting in July and solutions were agreed upon by the PMG.

2.1 Current testing for 'total aluminium' is inadequate because accurate values cannot be derived for many of the sampling points leaving large gaps in the data.

Solution: Soil samples will be sent to a lab in the UK to test for 'exchangeable aluminium' which is more meaningful for the stakeholders than 'total aluminium' and will deliver accurate results

2.2 In the preliminary maps certain landscape features (stone runs, lakes, ponds and rivers) were not mapped

Solution: Shapefiles for these features will be obtained from other maps and projects and this mask will be applied onto the soil maps before they are issued.

2.3 Slow internet limits access to the maps on the webGIS on the Falkland Islands

Solution: As outlined under Output 4 offline maps will be produced and distributed to land owners on memory sticks.

Issue 3: FIG Project partner - The Department of Agriculture (DoA) highlighted to the PM that most of the lab technician's time allocated to the Soil Mapping Project was used up during the first field season. The lab technician will only be able to spend approx. 5 working days on the project during the upcoming field season, which is not enough to carry out the lab analyses.

Solution:

The 5 working days will be spent on processing the soil samples as they come in during the field season and on training the PM on analysing the soil samples. The PM will carry out the analyses with an assistant.

2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?	
Discussed with LTS:	<u>Yes</u> / <u>No</u>
Formal change request submitted:	<u>Yes</u> / <u>No</u>
Received confirmation of change acceptance	Yes/ <u>No</u>

3a. Do you currently expect to have any significant (e.g., more than £5,000) underspend in your budget for this year?	
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Estimated underspend: £
3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year. If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary.	

4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?
No.

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R25 and asked to provide further information by your first half year report, please attach your response as a separate document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but **should also** be raised with LTS International through a Change Request. **Please DO NOT send these in the same email.**

Please send your **completed report by email** to Darwin-Projects@ltsi.co.uk. The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 25-035 Darwin Half Year Report**