Delivering through collaboration - future collaborative opportunities in the UKOTs

Falkland Islands

A. Arkhipkin

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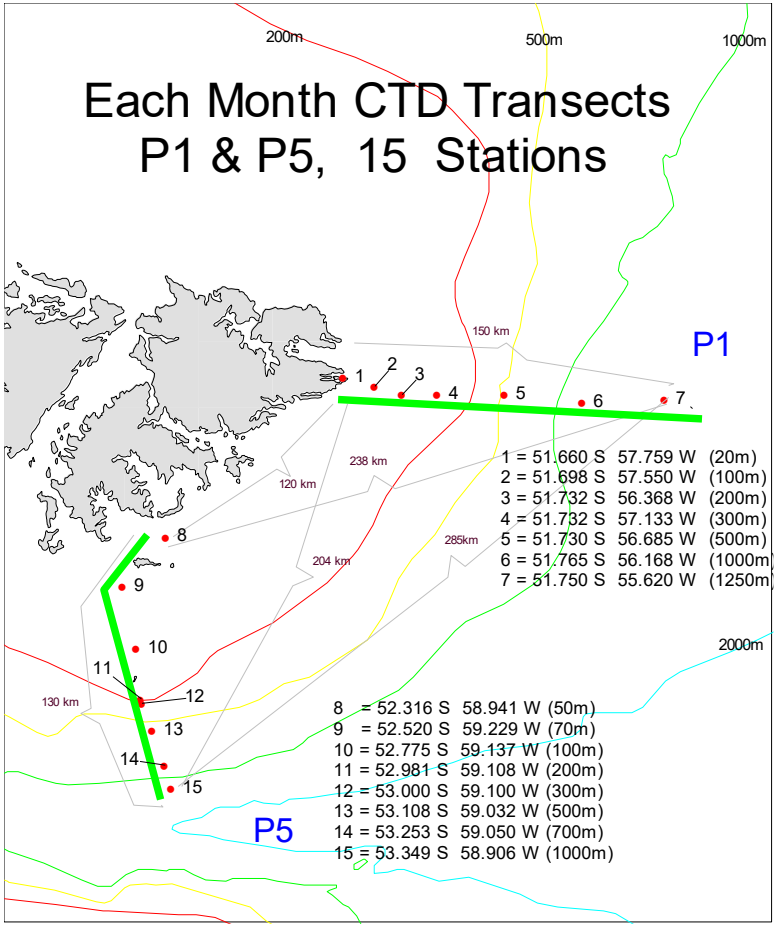
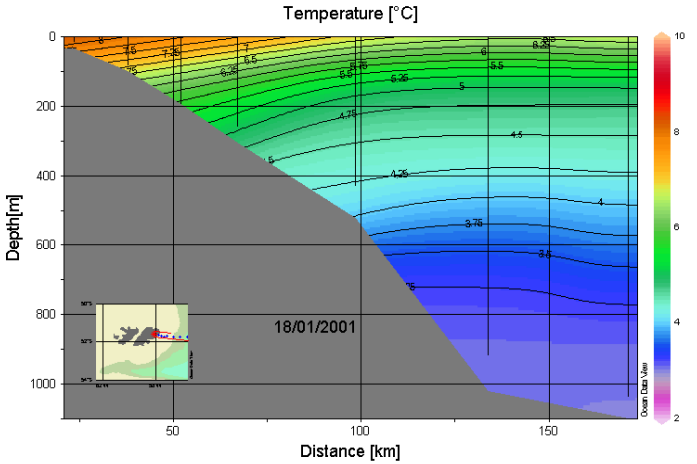
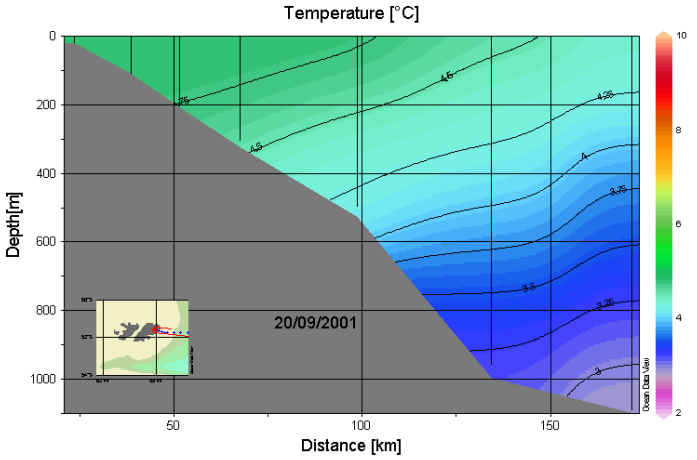
Falkland Islands Government
Stanley
FALKLAND ISLANDS

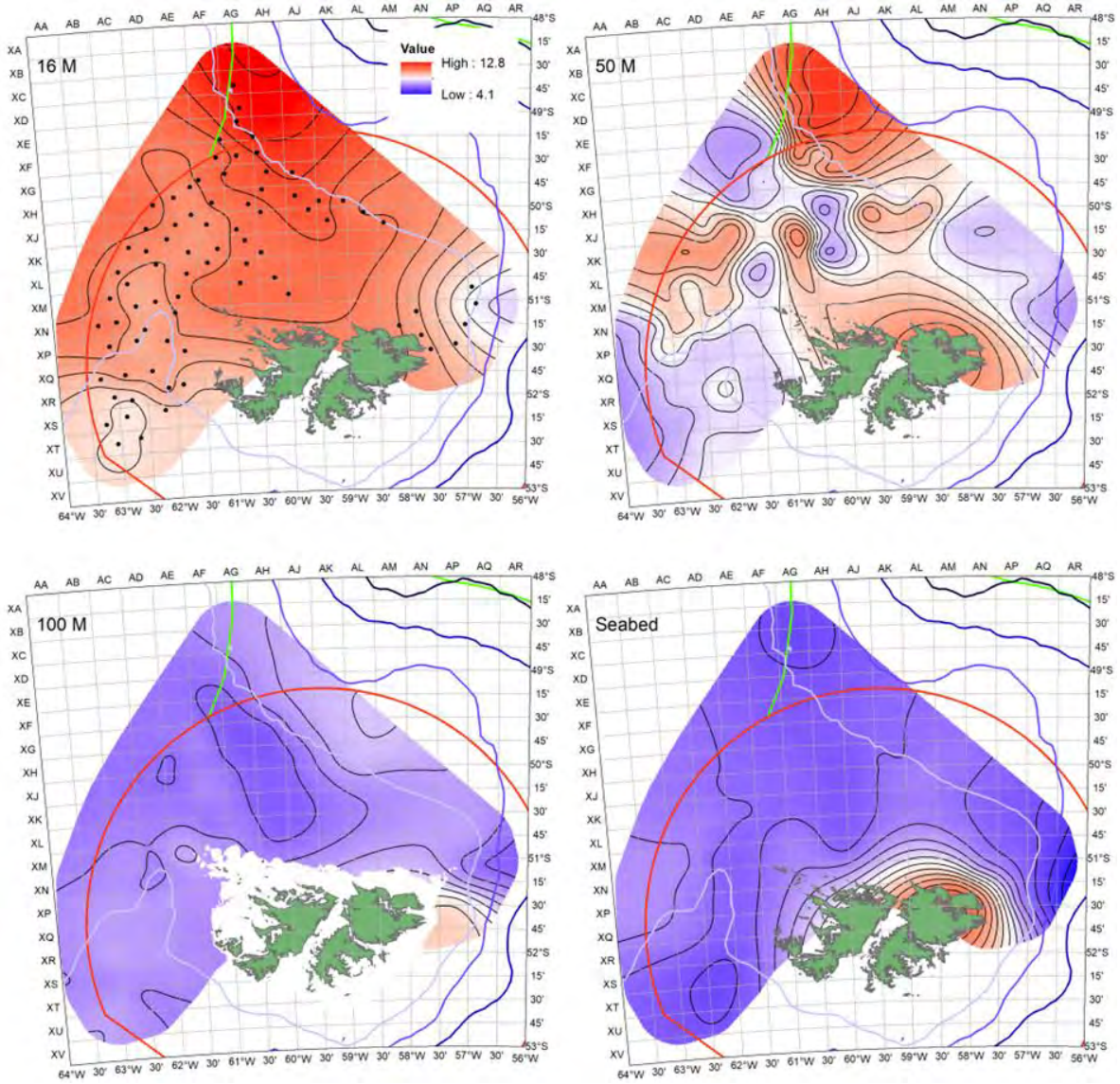
Oceanographic sampling



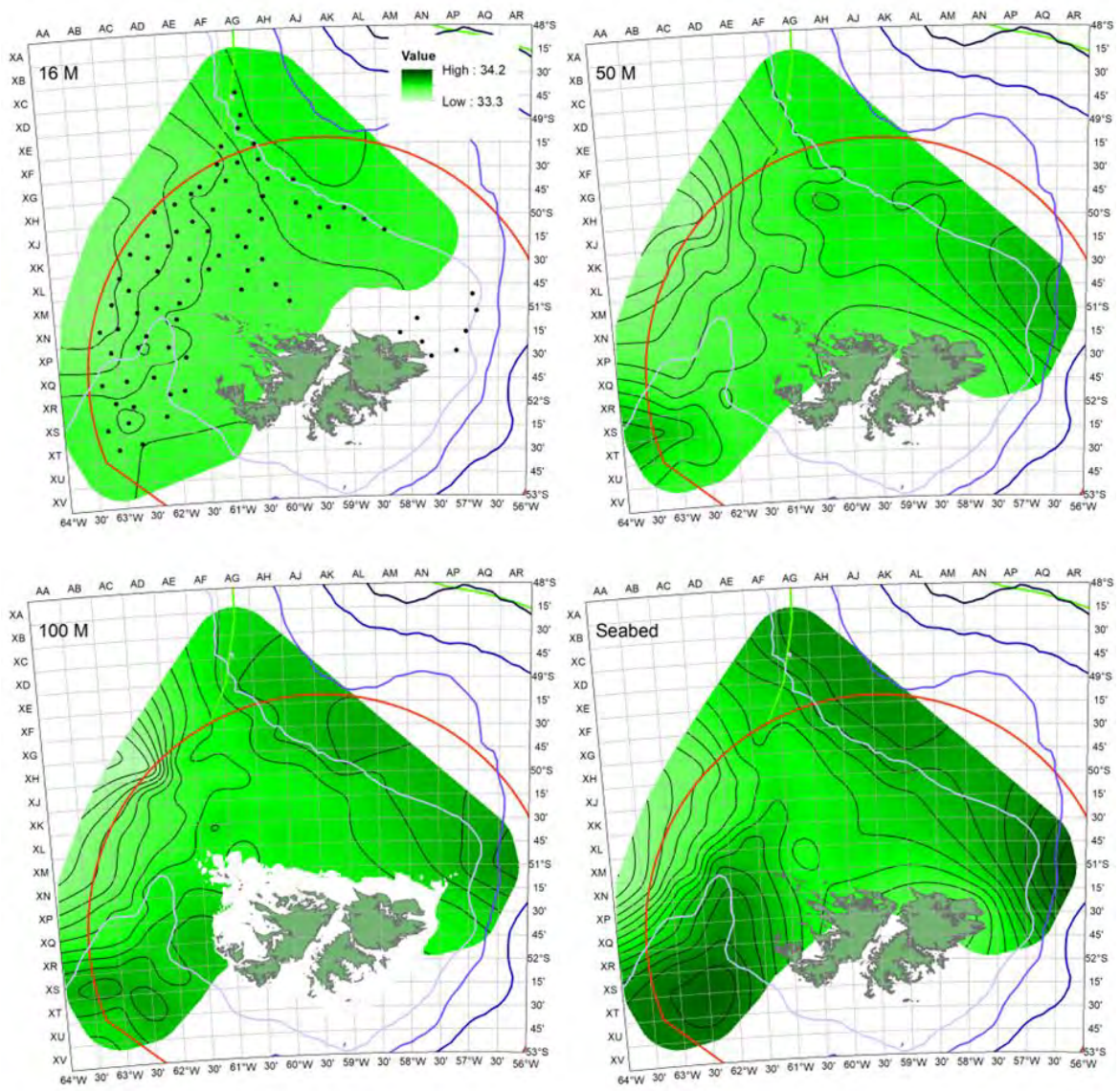




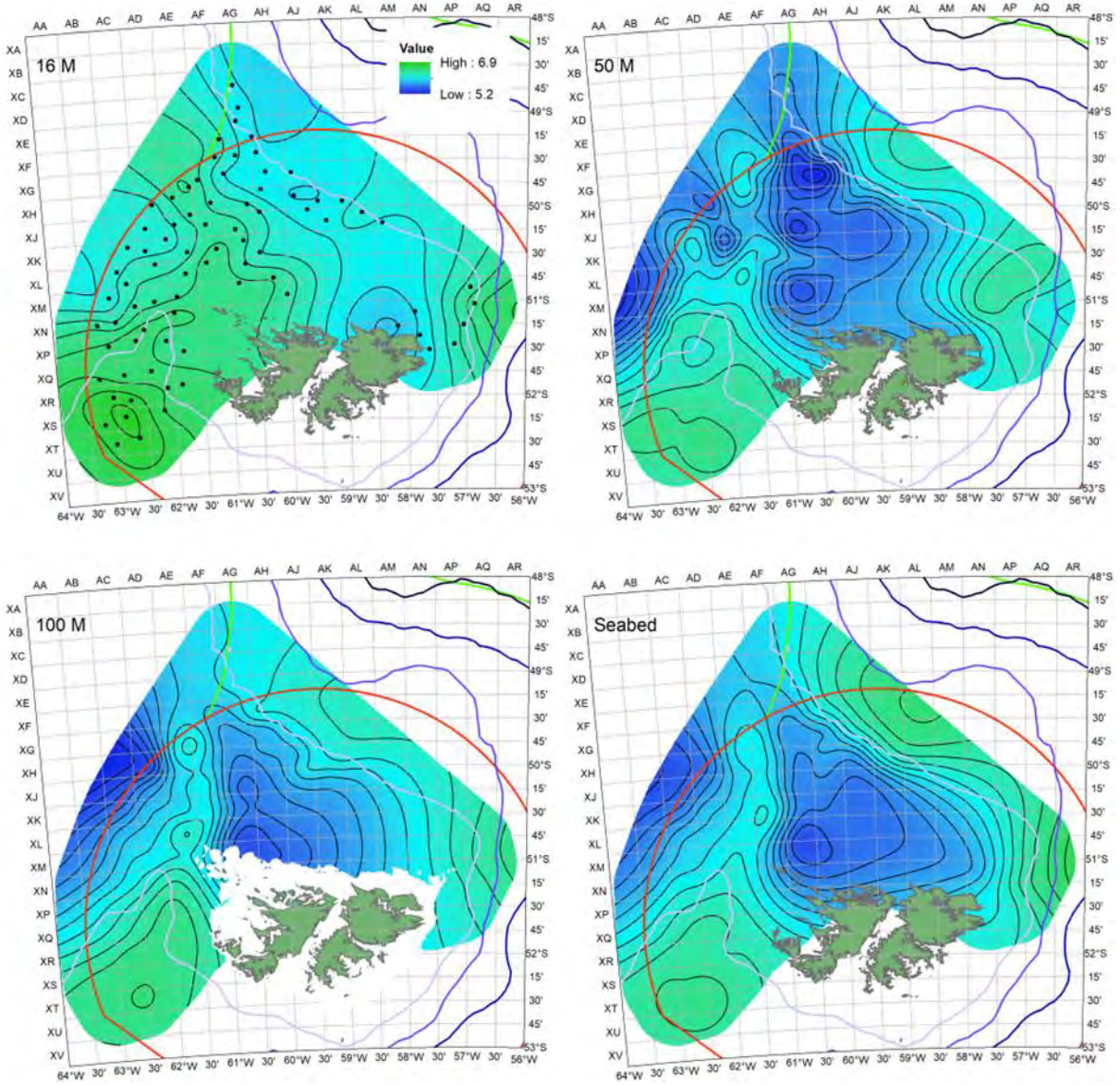
Oceanographic sampling
Temperature



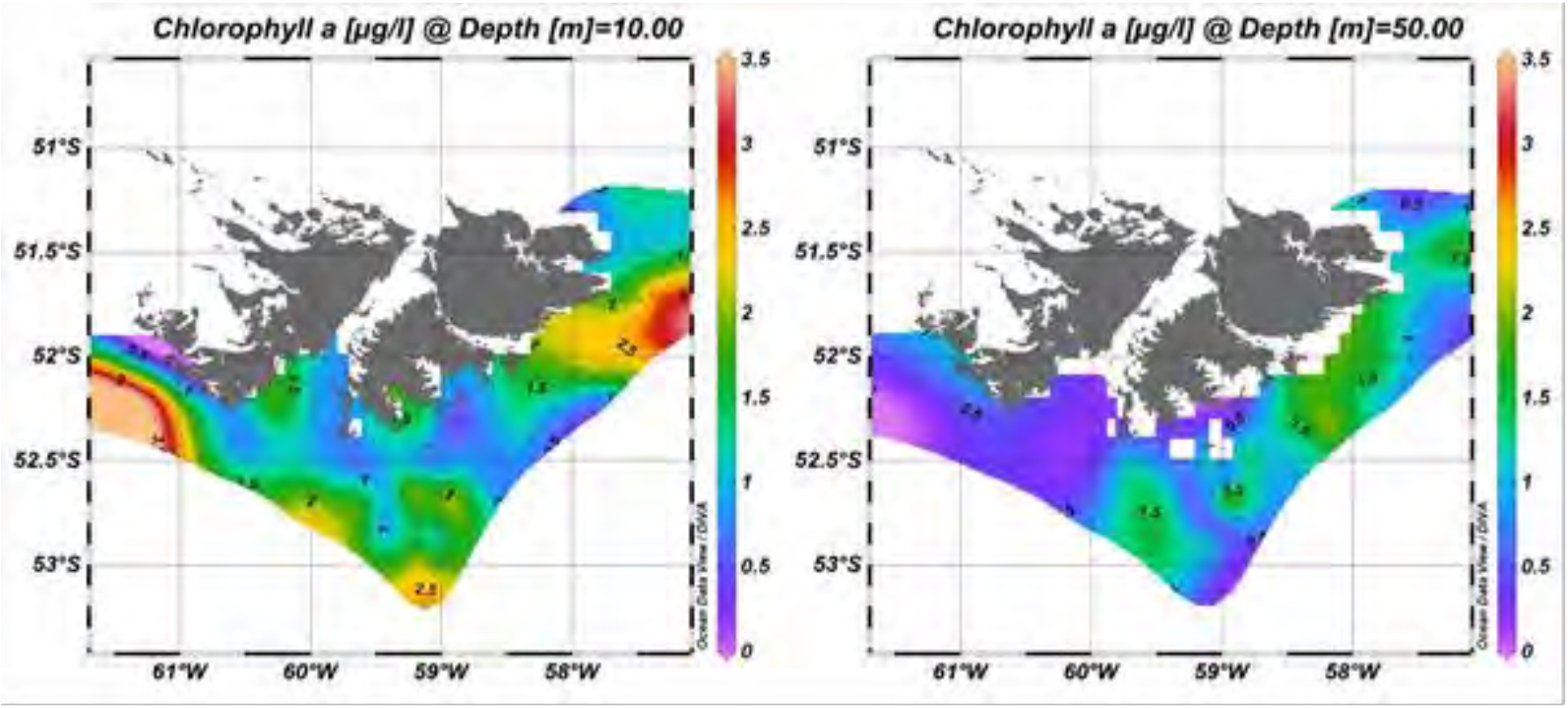
Oceanographic sampling
Salinity



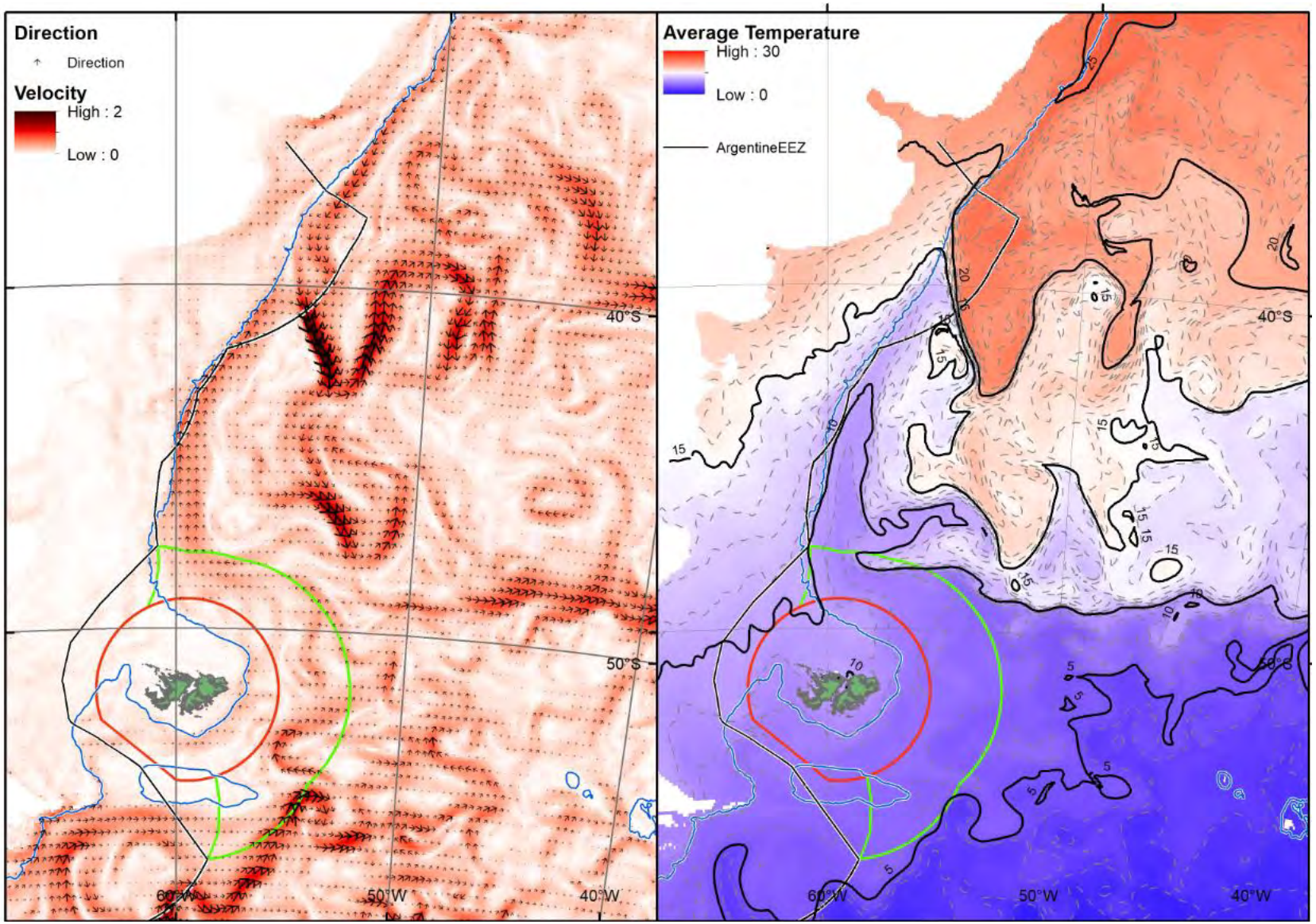
Oceanographic sampling
Oxygen



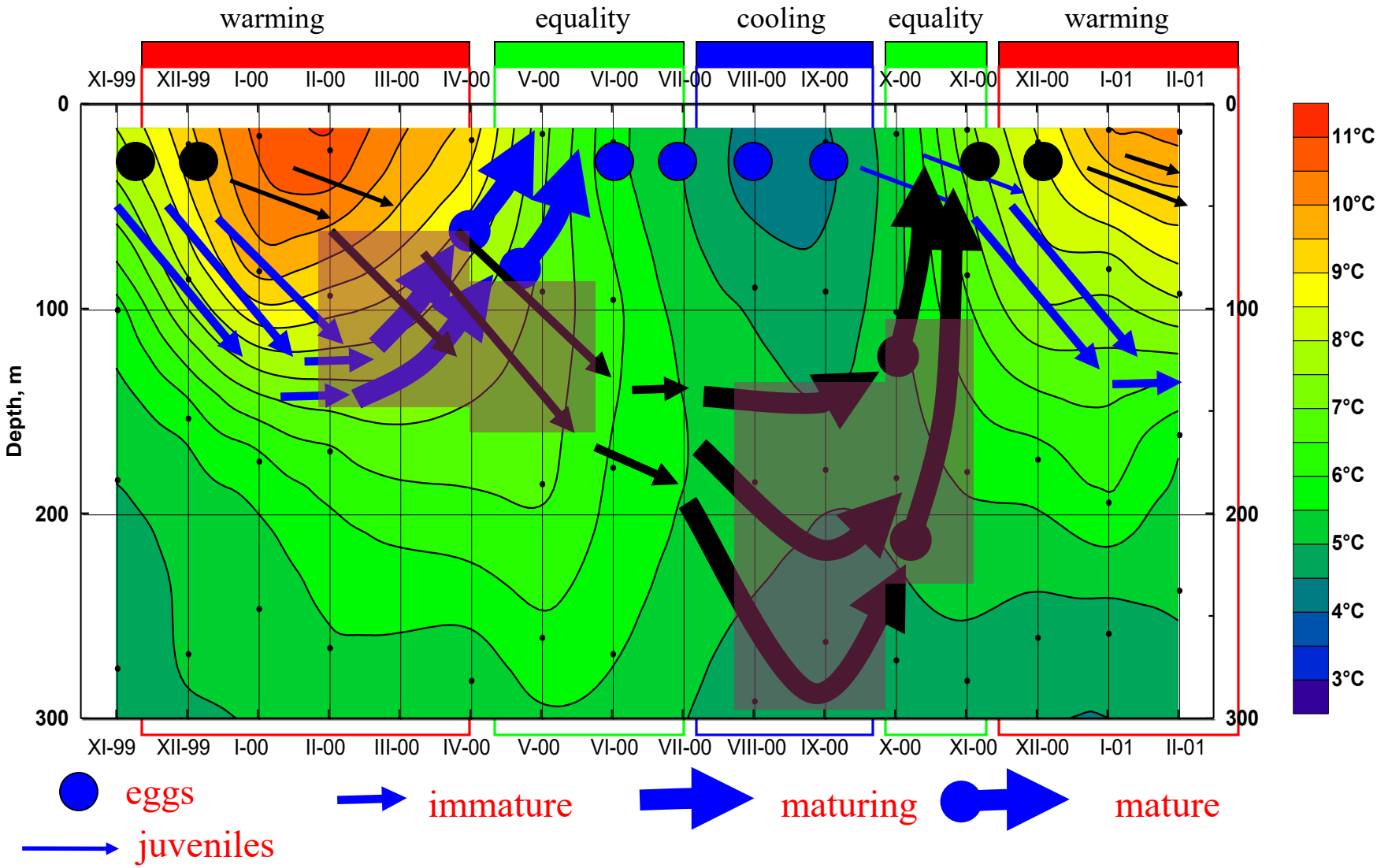
Oceanographic sampling
Chlorophyll
Primary production



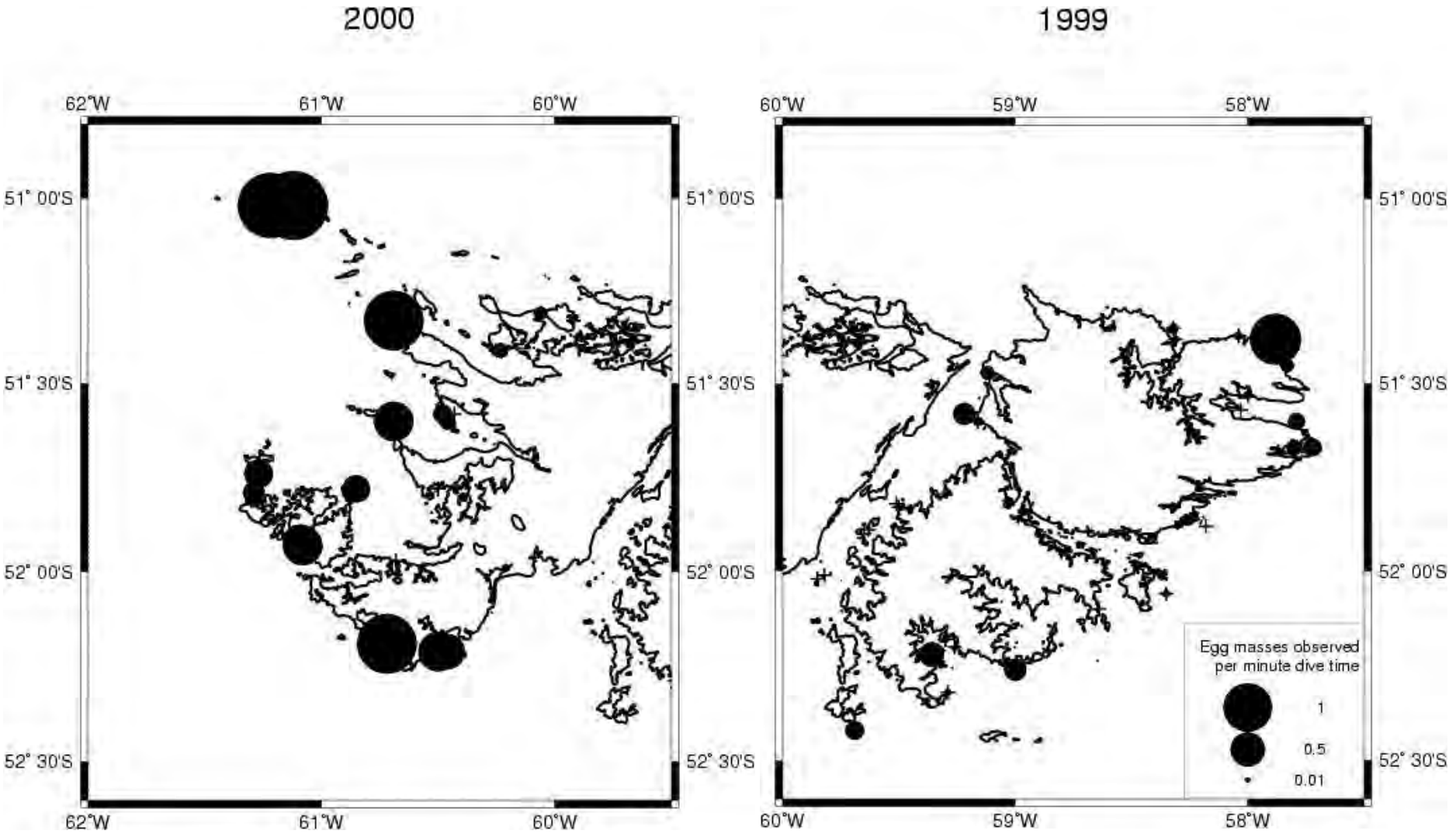
Oceanographic sampling
Currents



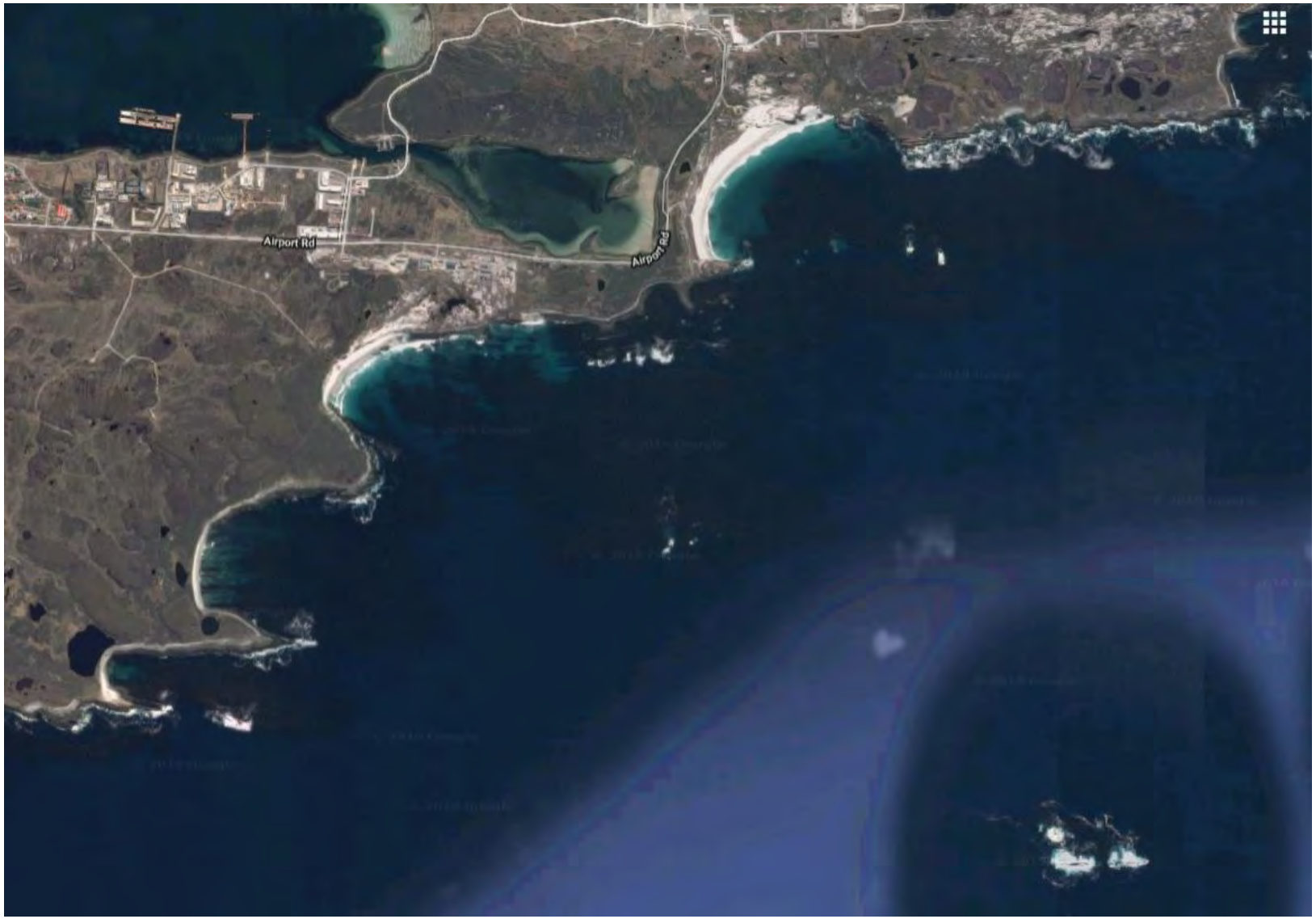
Scheme of the ontogenetic migrations of the first (in blue) and the second (in black) cohort of *L. gahi*



Loligo gahi egg distribution



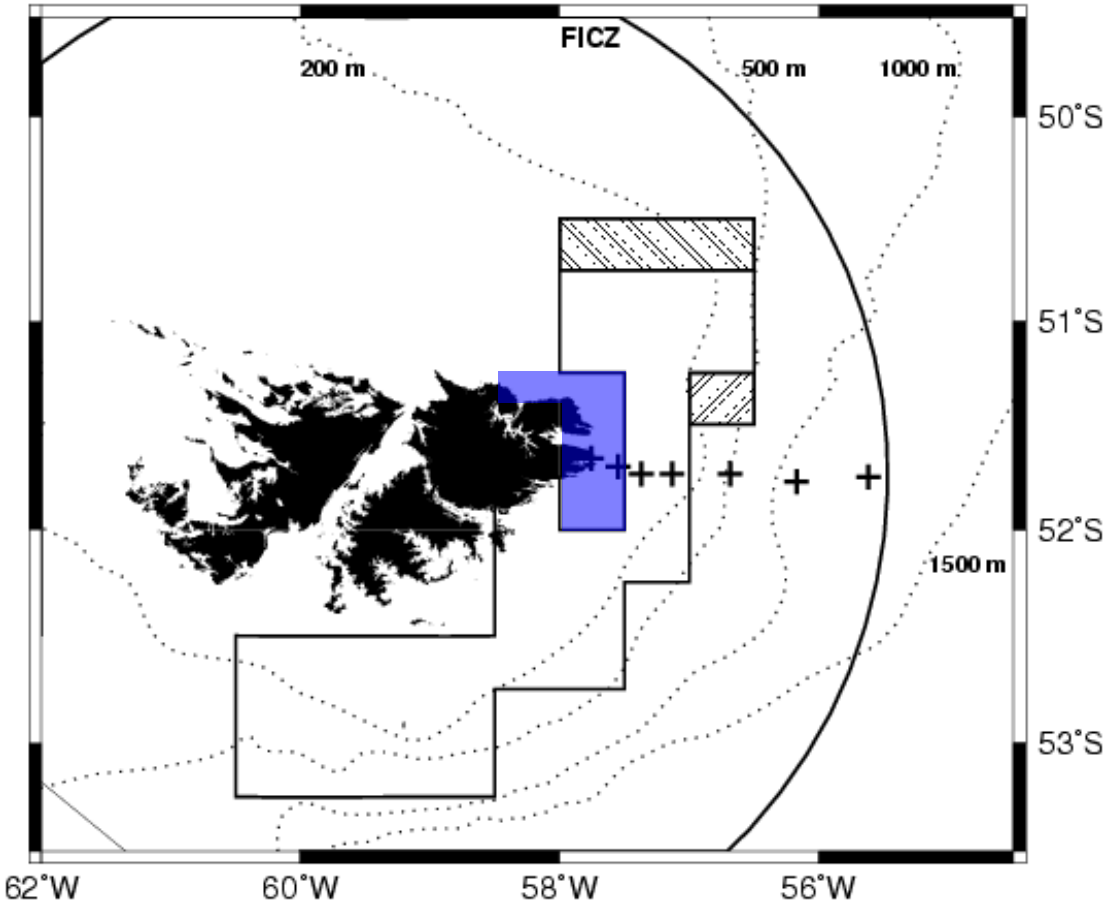
Distribution of kelp area



Distribution of kelp area

Loligo gahi egg development

Loligo box



- In 2000, a new conservation regulations were implemented by FIGFD
- fishing ban in the northern grid squares in the first season (March-May)

Coastline dynamics

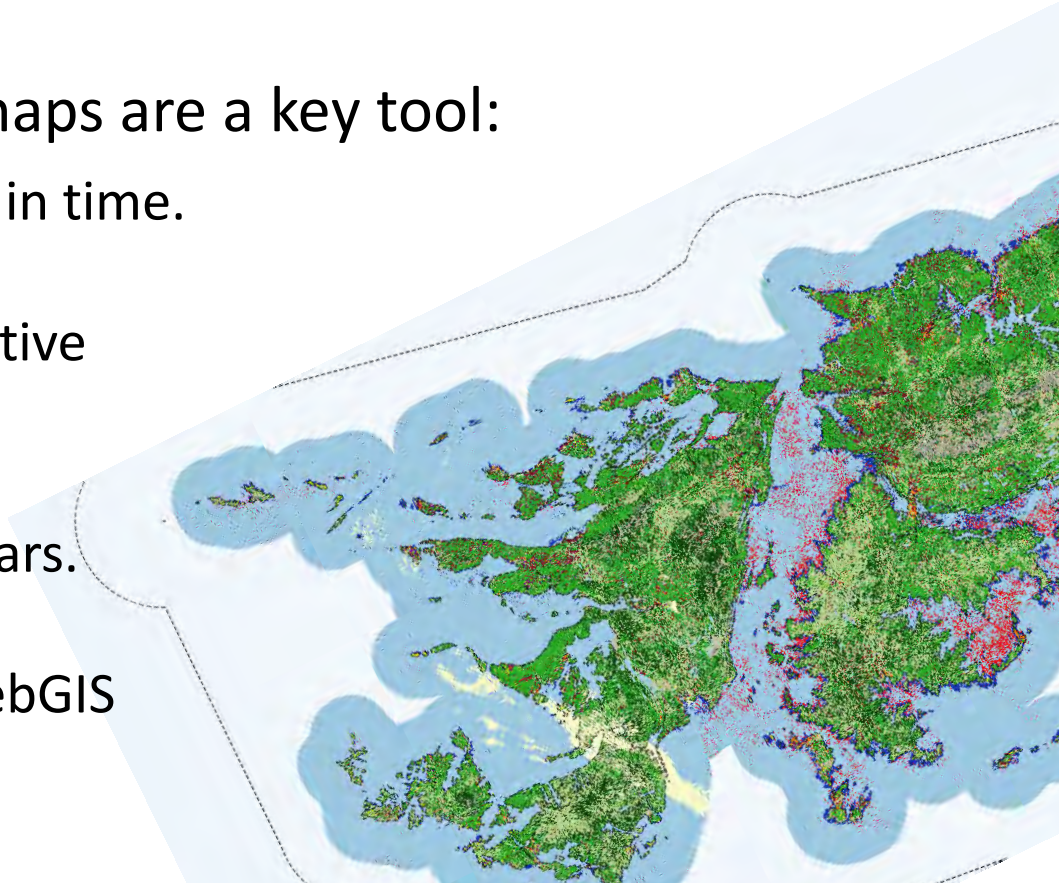
Development of aquaculture for salmon, trout and other valuable fish and shellfish

Semi-automatic feeding systems, with total harvest up to 50,000 t of salmon per year

Environmental Monitoring

- Remote sensing can be a cost-effective and faster way of monitoring our environment.

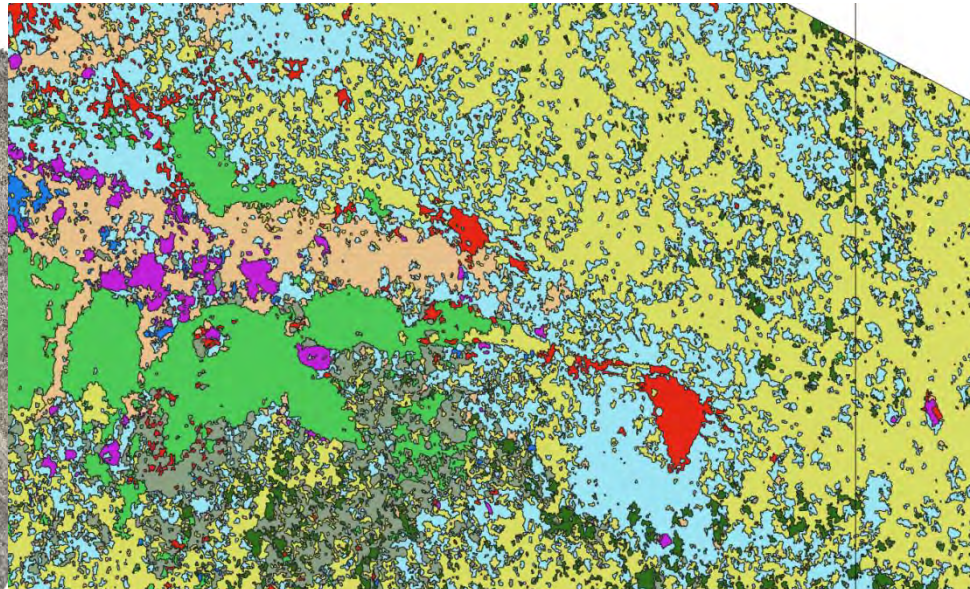
- The broadscale habitat maps are a key tool:
  - At present a “snapshot” in time.
  - When repeated: an effective tool to monitor change.
  - Aim to repeat every 5 years.
  - Open-access through WebGIS



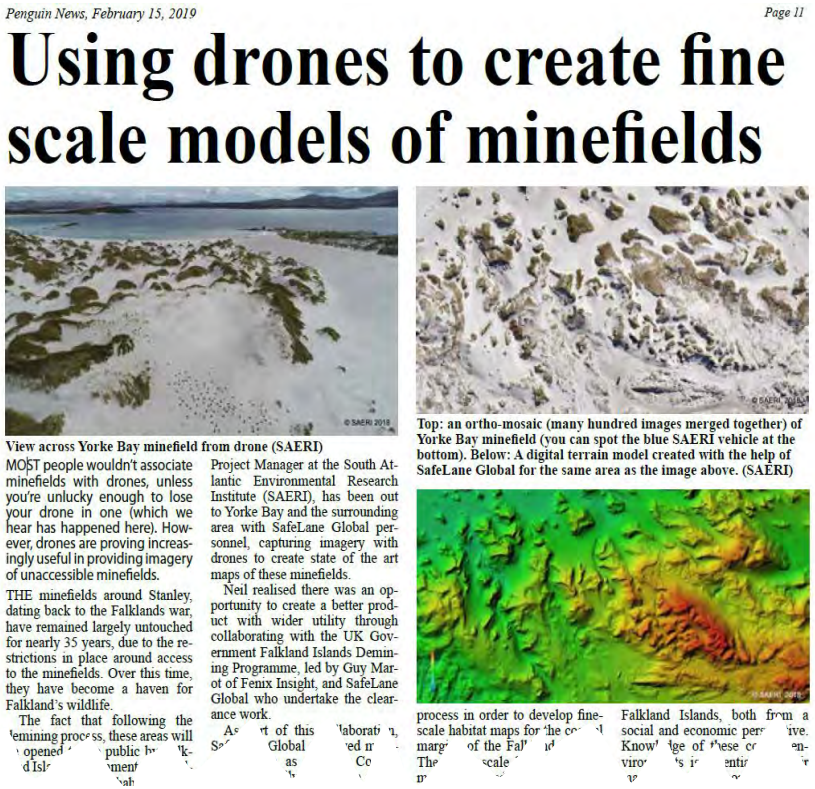
Environmental Monitoring

- Fine Scale Mapping:
  - Priority Areas
  - Pilot for tools.

- Other Invasive Species
- Coastal Erosion
- Habitat Restoration
- Land-use planning



Detecting Change



Penguin News, February 15, 2019 *Page 11*

Using drones to create fine scale models of minefields

View across Yorke Bay minefield from drone (SAERI)

Top: an ortho-mosaic (many hundred images merged together) of Yorke Bay minefield (you can spot the blue SAERI vehicle at the bottom). Below: A digital terrain model created with the help of SafeLane Global for the same area as the image above. (SAERI)

MOST people wouldn't associate minefields with drones, unless you're unlucky enough to lose your drone in one (which we hear has happened here). However, drones are proving increasingly useful in providing imagery of unaccessible minefields.

THE minefields around Stanley, dating back to the Falklands war, have remained largely untouched for nearly 35 years, due to the restrictions in place around access to the minefields. Over this time, they have become a haven for Falkland's wildlife.

The fact that following the [illegible] process, these areas will [illegible] opened [illegible] public [illegible] d Isl[illegible] [illegible]ment [illegible]

Project Manager at the South Atlantic Environmental Research Institute (SAERI), has been out to Yorke Bay and the surrounding area with SafeLane Global personnel, capturing imagery with drones to create state of the art maps of these minefields.

Neil realised there was an opportunity to create a better product with wider utility through collaborating with the UK Government Falkland Islands Demining Programme, led by Guy Marot of Fenix Insight, and SafeLane Global who undertake the clearance work.

As [illegible]rt of this [illegible]laborati[illegible], S[illegible] Global [illegible]ed m[illegible] as Co[illegible]

process in order to develop fine-scale habitat maps for the co[illegible]l marg[illegible] of the Fal[illegible]d The [illegible] scale [illegible] m[illegible]

Falkland Islands, both from a social and economic pers[illegible]ive. Know[illegible]ge of these co[illegible]en-viro[illegible]s i[illegible]entif[illegible] a[illegible]

- Minefield 7 – A priority Area
  - needed at that point in time.
  - Gave a comparison to historic data.
  - Avoided having to enter a minefield.

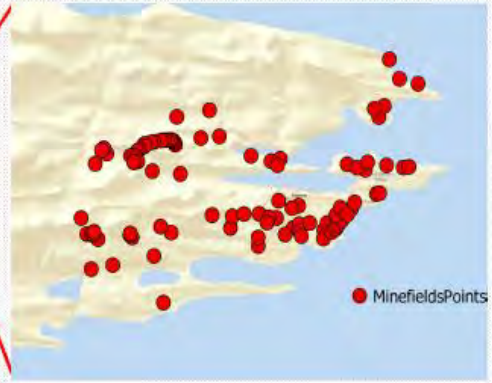
Habitat Recovery GIS Tool for the Demined Areas of the Falkland Islands

Anthony M. Vazquez | Douglas Flewelling, Ph.D. | Denise Blake

University of Redlands

Problem

The Falkland Islands Government has requested for an ArcMap Desktop Python script tool to be developed. This script tool would need to be able to measure healthy vegetation in a demined area, calculate a rate of recovery based on multiple images, and predict when the vegetation would recover within the demined portions of the regions.

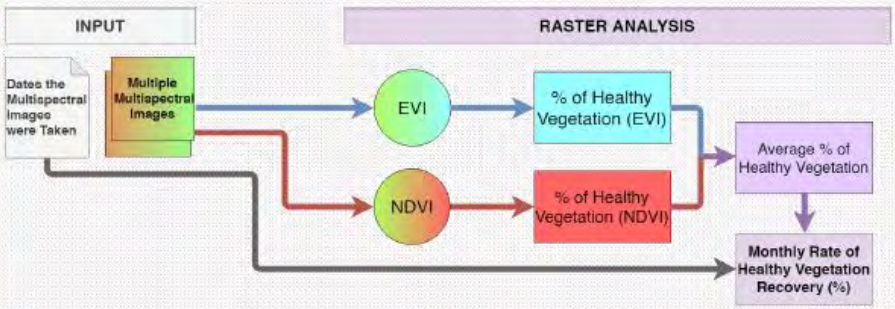


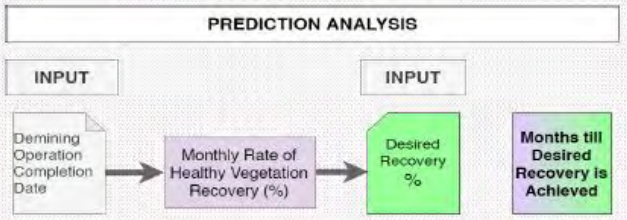
Solution

ArcMap Desktop Python script tool

Input:
- Multispectral Images
- Date of when Each Multispectral Image was Taken
- Date of when Demining Operations were Completed
- Desired Percentage of Recovery

Output:
- Monthly Rate of Healthy Vegetation Recovery (%)
- Months till Desired Percentage of Recovery is Fulfilled





The Falkland Islands Agriculture Service
Directorate of Natural Resources

Delivering through collaboration - future collaborative opportunities in the UKOTs

Dr Matthew McNee and Tom McIntosh

Presented by A. Arkhipkin




"Spatial tools for conservation planning in remote spaces"

- Spatial tools for conservation planning in remote spaces can have a positive impact on productive and environmental factors on Rangelands farm systems
- **Rangelands** include all those environments where natural ecological processes predominate and where values and benefits are based primarily on natural resources. They are areas which have not been intensively developed for primary production.
- The Falkland Island farms do fit into this category.
- This presentation scopes some possibilities. However any of these ideas would need to be tested with the farmers who manage the farms and new technologies fit for purpose with a wide range of collaborators would be required

"Spatial tools for conservation planning in remote spaces"

- Spectral imaging for plant health on the islands with climate change e.g. health of greens, whitegrass, coastal plants.
- Quantifying spatial variation of factors at field or farm level e.g fodder density to better meet nutritional requirements of livestock

"Spatial tools for conservation planning in remote spaces"

- Spectral imaging for management of production issues such as ditches which lead to stack mortality
- Any automatic mobile scarecrow initiatives that would reduce predation by protected bird life

"Spatial tools for conservation planning in remote spaces"

- Provide insight on spatial variation in on-farm experiments e.g. performance of re-seeds with different management
- Using drones to check on sheep e.g. drones directed by GPS collars on the sheep
- Collecting data to add to the digital signature of individual sheep (e.g. location, food source, with lamb, abandoned lamb etc.)
- Using drones to identify best shelter for sheep with different bad weather conditions e.g. real-time meteorological data collected in relation to landscape topography