



## **Advances in Marine Biogeochemistry Conference**

8<sup>th</sup> Biennial meeting of the Marine Biogeochemistry Forum  
Special Interest Group of The Challenger Society for Marine Science

6-8<sup>th</sup> September 2017

Scottish Association for Marine Science, Dunstaffnage, Oban PA37 1QA

### **Delegate Information**



## Programme

### Wednesday 6 September

- 08.30 Registration and coffee  
 09.00 AMBIO Bus to SAMS – departs from the clock tower in Oban (near railway station)  
 09.30 **Welcome from Nick Owens, Director at SAMS**

#### Session 1

#### Biom mineralisation

- |                      |                               |   |
|----------------------|-------------------------------|---|
| 09.45                | <b>Keynote - Susan Fitzer</b> | <b>Mechanisms of mussel biomineralisation under climate change: what we know and what we need to find out</b>     |
| 10.15                | Phoebe Stewart-Sinclair       | Vulnerability to climate change: exposure, sensitivity and adaptive capacity of molluscan shellfish aquaculture   |
| 10.30                | Kyle Mayers                   | Seasonality of Coccolithophore populations & calcification rates within a temperate shelf sea system (Celtic Sea) |
| 10.45                | All poster presenters         | Research Highlights of each poster (60 s/poster)  |
| 11.00 Tea and coffee |                               |   |

#### Session 2

#### Deep Sea

- |  |                                  |   |
|--|----------------------------------|---|
| 11.30  | <b>Keynote - Rachel Jeffreys</b> | <b>Shifts in deep-sea food webs linked to climate and food supply</b>   |
| 12.00  | Anna Belcher                     | Deep transfer of copepod faecal pellets in the Southern Ocean in spring: the role of deep zooplankton communities |
| 12.15  | Emma Cavan                       | Increased warming reduces carbon export in the Southern Ocean   |
| 12.30  | Jirina Stehlikova                | Hadal trenches: evidence for particulate-matter dynamics on short time scales                                     |
| 12.45  | Robert Turnewitsch               | New insights into abyssal-hill biogeochemistry  |
| 13.00 Lunch  |                                  |   |
| 13.30 Challenger AGM in Meeting Room 1 (adjacent to Reception) |                                  |   |

#### Session 3

#### "Lab-on-chip" *in situ* sensors

- |                      |                          |   |
|----------------------|--------------------------|---|
| 14.15                | Geraldine Clinton-Bailey | 'Lab-on-Chip' sensors for <i>in situ</i> determination of macronutrients in natural waters  |
| 14.30                | Alexander Vincent        | A seasonal comparison of high-resolution nitrate fluxes into the euphotic zone in the Celtic shelf sea, using a Lab-on-Chip nutrient and microstructure sensors deployed on gliders |
| 14.45                | Jonathan McQuillan       | Next generation sensors for marine microbiology using Lab on a Chip   |
| 15.00                | Julie Robidart           | What microbes can tell us about nutrient mixing in the open ocean   |
| 15.15                | Adrian Nightingale       | <i>In situ</i> chemical sensors based on droplet microfluidics  |
| 15.45 Tea and coffee |                          |   |

#### Session 4

#### Global nutrient and carbon cycling

- |  |                               |  |
|--|-------------------------------|--|
| 16.00  | <b>Keynote - Susan Little</b> | <b>Coupling and decoupling of Zn and Si in the global ocean</b>  |
| 16.30  | Yingxu Wu                     | The impact of upwelling on the DIC-temperature relationship in the surface global ocean                                    |
| 16.45  | Toby Tyrrell                  | Comparison of latitudinal distributions of macronutrients, alkalinity and carbon   |
| 17.00  | Vlad Macovei                  | Temporal variability in the biogeochemistry of the surface North Atlantic - more than a decade of Ship of Opportunity data |
| 17.15 Poster and drinks reception                                |                               |  |
| 18.45 AMBIO bus returns to Oban<br>Informal evening arrangements |                               |  |

## Thursday 7 September

09.00 AMBIO Bus to SAMS – departs from the clock tower in Oban (near railway station)

### Knowledge Exchange: Marine policy and management

09.30 Jacqueline Tweddle From marine biogeochemistry to marine management and policy, and back again

### Session 5

### Organic carbon

**09.45 Keynote - Luke Bridgestock**  
**10.15 John Aldridge** Isotopic insights into the marine biogeochemical barium cycle  
 Lessons learned from modelling SSB benthic observations in the Celtic Sea  
**10.30 Steph Allen** Composition and size structure of plankton communities across the North Atlantic  
**10.45 Stacey Felgate** Using dissolved inorganic carbon (DIC)  $\delta^{13}\text{C}$  and  $\Delta^{14}\text{C}$  ratios to characterise organic matter respiration and blue carbon stability within an East Coast US salt marsh

11.00 Tea and coffee

### Session 6

### Seawater Iron I

**11.30 Keynote – Peter Statham** The changing nature of marine biogeochemistry: past, present and future  
**12.15 Jessica Klar** Stability of dissolved and soluble Fe(II) in shelf sediment porewaters and release to an oxic water column  
**12.30 Alastair Lough** Iron isotopes track the uptake and exchange of iron across an oxic shelf sea  
**12.45 Amber Annett** Trace metal supply from the western Antarctic Peninsula Shelf to the open ocean

13.00 Lunch

### Session 7

### Seawater Iron II

**14.00 Keynote – Martyn Tranter** Glaciers deliver nutrients to coastal waters?  
**14.30 Laura Hepburn** Mineralogy of reactive iron species: Combining sequential extractions and Mössbauer spectroscopy  
**14.45 Deborah Wood** Fe colloids and nanoparticles in aquatic environments: towards a mineralogical understanding  
**15.00 Saskia Ruhl** Ecological and biogeochemical consequences of benthic-pelagic exchanges in shallow coastal ecosystems  
**15.15 Antony Birchill** Iron deficient waters over the Hebridean shelf break  
**15.30 Tea and coffee**  
**16.00 Wenhao Wang** Behaviour of iron isotopes in hydrothermal systems: Beebe and Von Damm vent fields on the Mid-Cayman ultraslow-spreading ridge  
**16.15 Laura Hepburn** Biogeochemical Mn, Fe and S cycling in Kemp Caldera sediments, south of the Antarctic Polar Front

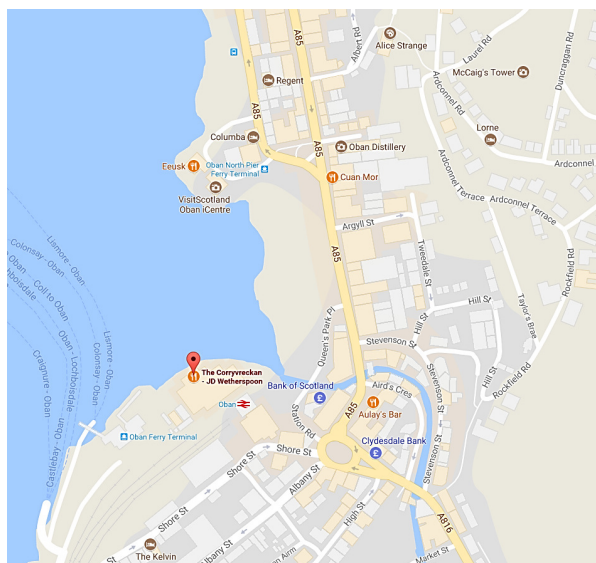
### Finale

### High resolution mass spectrometry

**16.30 Matthieu Clog** Beyond Bulk Isotope Ratios: Looking at Clumped and Position-Specific Isotopes in Light Alkanes  
**16.45 Prize giving**  
**17.15 Poster and drinks reception**  
**18.15 AMBIO bus returns to Oban**  
**19.00 Conference drinks reception and dinner at the Olive Garden Restaurant**  
*after dinner* Conference ceilidh at Skippinish Ceilidh House

## Tuesday 5 September

For those arriving in Oban on Tuesday evening, please join us for an informal drink at the Corryvreckan Pub from 6.30 pm onwards.



## Friday 8 September - Optional workshop

The workshop will start at 9.30 am in Meeting Room 1, adjacent to Reception. We have a lot of interest in this workshop already. At the start of the meeting, we will circulate a sign up sheet for those wishing to take part.

### Autonomy in oceanography: New tools to address big questions in biogeochemistry

Julie Robidart, Geraldine Clinton-Bailey, Socratis Loucaides

Ocean Technology and Engineering, National Oceanography Centre, Southampton

The oceans are chronically undersampled in space and time. The first remote satellite observations were transformational in broadening our understanding of the global oceans and we are on the cusp of a parallel revolution in autonomous *in situ* sensing. The Argo float program allows the visualization of the oceans' currents and the new Bio Argo program is delivering 4-dimensional data on marine chlorophyll for the first time. Autonomy in the form of sensors, observing platforms and vehicles offers oceanographers the opportunity to expand their toolkits to acquire high resolution data on marine biogeochemical processes and to address important questions that cannot be answered through research cruises alone. The goal of this workshop is to identify grand challenges in marine biogeochemistry that might be addressed with autonomous systems, and to bring together biogeochemists, autonomous systems scientists and engineers to explore emerging frontiers, new development opportunities and new applications of current systems.

## Poster Presentations

Posters will be on show on both Wednesday and Thursday of the meeting.

Thomas Baer	Culturing <i>Serpula vermicularis</i> in a controlled manipulation experiment in search of palaeoclimate proxies
Chelsey Baker	The effect of mesoscale upper ocean processes on deep ocean carbon flux in the Iceland Basin
Kirsty Crocket	Iron BREW: The role of DOC in Iron Beyond River Etive Water
Ribanna Dittrich	Dissolved Organic Matter Cycling at the West Antarctic Peninsula
David Green	Mesopelagic microbial community analysis of the Extended Ellett Line (EEL)
Natalie Hicks	Benthic microbial diversity influences biogeochemical cycling under future climate scenarios
Korinna Kunde	Iron and phosphorus co-limitation in the sub-tropical North Atlantic
Florence Menet- Nédélec	Comparing passive sampling, mussel caging and biomarkers for the evaluation of water quality for European Directives in Normandy coastal waters (France)
Kati Michalek	Scottish Blue Mussels < <i>Mytilus edulis</i> > - Evidence for Change down the Cultivation Rope
Sevi Modestou	Calling all collaborators: clumped isotope paleothermometry at SUERC
Hoa Nguyen	Long-term Puget Sound plankton dynamics: A comprehensive parameter – space exploration in a new model
Anouska Panton	Sediment biogeochemistry in Christchurch Harbour (UK): Diffusive fluxes and the role of resuspension events
Sarah Reynolds	Biogeochemical cycling of permeable sediments in a shelf sea environment: Celtic Sea, a seasonal study
Charlie Thompson	Controls of temporal and spatial variation in resuspension driven inorganic nutrient exchange in UK shelf seas
Robyn Tuerena	Tidal mixing drives episodic spring-neap pulses of nutrients to the euphotic zone
Seona Wells	Ammonium and Phosphate Excretion by Gelatinous Zooplankton in the Celtic Sea
Matt Wilson	Development of custom assays for the autonomous detection and quantification of targeted marine microorganisms using Lab on a Chip
Cathy Winterton	A 100-year record of changing toxic algae in Scottish coastal waters relating to climate change

## Presenter information

The AMBIO meeting will be held in the **William Spears Bruce Seminar Room**, on the first floor at SAMS, with posters and tea/coffee/lunch in the adjacent Purple Room. The location of these in the SAMS building will be well signposted from Reception.

If you have any other queries regarding oral or poster presentation format, please contact: [ambio@sams.ac.uk](mailto:ambio@sams.ac.uk)

### Oral presenters

The oral presentation slots are 15 minutes each, with a format of 12 minutes for the presentation and 3 minutes for questions. Keynotes have 30 minutes.

Please bring your presentation on a memory stick ready to be uploaded in the morning or during the lunch breaks in advance of your session.

### Posters

On arrival posters can be mounted for display, and remain there for the duration of the meeting. Boards provided will be A0 and **portrait orientation**, and suitable for Velcro or drawing pin attachments.

You also have the opportunity to pitch your poster to the AMBIO audience during the **Research Highlights** slot at 10.45 am on Wednesday. Each presenter will have **60 seconds** to talk about their poster, supported by **one powerpoint slide**.

Please email your single slide to [ambio@sams.ac.uk](mailto:ambio@sams.ac.uk) or bring it with you on a USB stick. These will be uploaded on Wednesday morning, before the Research Highlights slot just before coffee.

## Presentation awards

The Marine Biogeochemistry Forum wishes to recognise excellence amongst our graduate student and early career researcher participants. Presenters will be judged on their demonstrated ability to “advance marine biogeochemistry” using either oral or poster presentation formats. The winning candidates will be announced at the end of the meeting.

Prizes will be awarded for the following categories:

- Best PhD talk
- Best PhD poster
- Best Early Career Researcher talk
- Best Early Career Researcher poster



## Location

AMBIO VIII is hosted by the Scottish Association for Marine Science (SAMS). SAMS is located three miles from Oban on the A85 near the village of Dunbeg, and is adjacent to the 13th century Dunstaffnage Castle.



## Getting between Oban and SAMS during AMBIO

Bus travel to and from the AMBIO conference will be provided from Oban town centre on the **“AMBIO” bus**. The bus will have **“AMBIO”** as the indicated destination.

This will leave from the clock tower, next to the railway station, at 9.15 am on Wednesday and Thursday.

It will also return to Oban in the evening, departing after the poster session on both days.

## Travelling to Oban

The nearest airports are Glasgow (ca. 2 hours by car) and Prestwick and Edinburgh (both ca. 3 hours by car).

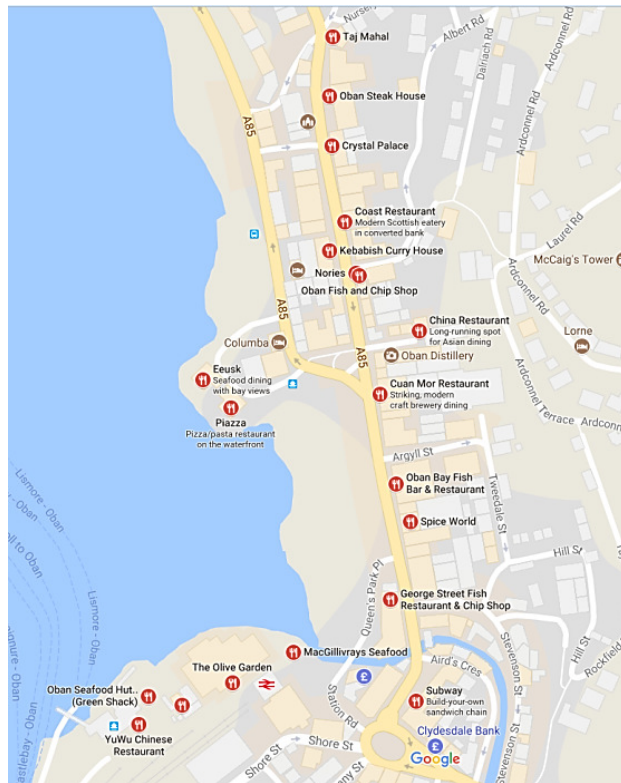
A train service (~3 hour journey) operates between Glasgow and Oban (visit Oban railway station). Please contact National Rail for more details or to book your public transport. All travel options by public transport from the South require travelling through central Glasgow.

If you are driving, we suggest you use the directions available at:

<https://www.sams.ac.uk/about/directions/>

## Restaurants in Oban

The following are a selection of restaurants in Oban.



### Local Oban restaurants

Coast, 104 George Street, Oban PA34 5NT

Cuan Mor, 60 George St, Oban PA34 5SD

### Seafood/Fish n Chips

Eusk, North Pier, Oban PA34 5QD

The Waterfront Fishhouse Restaurant, 1, Railway Pier, Oban PA34 4LW

Nories, 86 George St, Oban PA34 5NN

Oban Fish and Chip Shop, 116 George St, Oban PA34 5NT

### Pub grub

Lorne Bar, Stevenson St, Oban PA34 5NA

Coasters, 38 Corran Esplanade, Oban PA34 5PS

The Corryvreckan, 1, The Waterfront Centre, Oban PA34 4LG

### Pizza/Italian

Piazza, North Pier, Oban PA34 5QD

### Indian

Coriander, 8 Soroba Rd, Oban PA34 4HU

Spice World, 28 George St, Oban PA34 5SB

Taj Mahal, 146 George St, Oban PA34 5NX

### Chinese

Crystal Palace, 130 George St, Oban PA34 5NT

China Restaurant, 39 Stafford St, Oban PA34 5NH

YuWu Chinese Restaurant, 1 Railway Pier, Oban PA34 4LW



## Accommodation



Oban is a popular destination, particularly in summer. It is advisable to book early to secure your choice of accommodation.

Oban has a wide range of accommodation on offer from youth hostels and bunkhouses, B&Bs, to four star hotels.

If you are not travelling by car, we recommend you stay in Oban itself as bus travel to and from the AMBIO conference will be provided from Oban town centre.

More information on accommodation in Oban is available at:

<https://www.sams.ac.uk/education/our-area/>

## Conference dinner

The conference dinner is on Thursday evening at the Olive Garden in Oban. The AMBIO bus will leave SAMS after the poster session at ~6.15 pm to take everyone into town. A drinks reception will be held in the Olive Garden from 7.00 pm, with dinner starting at 7.30 pm. Wine will be available with dinner, and additional drinks can be bought from the Olive Garden bar during dinner.

We will circulate the menu options on Wednesday. There will be options for vegetarians and various food intolerances.

## Conference Ceilidh!

We will progress straight from the Olive Garden to the Skipinnish Ceilidh House after dinner. Nothing like a highland fling to help the digestion!



## Delegate list

First	Last	Institution	Email
John	Aldridge	Centre for Environment, Fisheries and Aquaculture Science (Cefas), Lowestoft	john.aldridge@cefas.co.uk
Steph	Allen	University of Southampton	S.R.Allen@soton.ac.uk
Amber	Annett	University of Southampton	amber.annett@gmail.com
Thomas	Baer	Scottish Association for Marine Science (SAMS), Oban	baerth@student.ethz.ch
Chelsey	Baker	University of Southampton	Chelsey.A.Baker@soton.ac.uk
Anna	Belcher	National Oceanography Centre (NOC), Southampton	annbel@bas.ac.uk
Antony	Birchill	University of Plymouth	antony.birchill@plymouth.ac.uk
Luke	Bridgestock	University of Oxford	Luke.Bridgestock@earth.ox.ac.uk
Emma	Cavan	Institute for Marine and Antarctic Studies, University of Tasmania, Hobart, Australia	emma.cavan@utas.edu.au
Rachel	Cave	National University of Ireland, Galway, Ireland	rachel.cave@nuigalway.ie
Geraldine	Clinton-Bailey	National Oceanography Centre (NOC), Southampton	g.clinton-bailey@noc.ac.uk
Matthieu	Clog	Scottish Universities Environmental Research Center (SUERC)	Matthieu.Clog@glasgow.ac.uk
Kirsty	Crocket	Scottish Association for Marine Science (SAMS), Oban	Kirsty.Crocket@sams.ac.uk
Clare	Davies	University of Liverpool	c.davis2@liverpool.ac.uk
Ribanna	Dittrich	University of Edinburgh	ribanna.dittrich@ed.ac.uk
Stacey	Felgate	SAMS/National Oceanography Centre (NOC), Southampton	Staceyfelgate@me.com
Susan	Fitzer	University of Glasgow	Susan.Fitzer@glasgow.ac.uk
Gary	Fones	University of Portsmouth	gary.fones@port.ac.uk
David	Green	Scottish Association for Marine Science (SAMS), Oban	David.Green@sams.ac.uk
Laura	Hepburn	University of Stirling	laura.hepburn@stir.ac.uk
Natalie	Hicks	Scottish Association for Marine Science (SAMS), Oban	Natalie.Hicks@sams.ac.uk
Rachel	Jeffreys	University of Liverpool	Rachel.Jeffreys@liverpool.ac.uk
Tim	Jickells	University of East Anglia	t.jickells@uea.ac.uk
Jessica	Klar	Laboratoire d'Etudes en Géophysique et Océanographie Spatiales, Toulouse, France	jessica.k.klar@gmail.com
Korinna	Kunde	National Oceanography Centre (NOC), Southampton	K.Kunde@soton.ac.uk
Susan	Little	Imperial College London	s.little@imperial.ac.uk
Socrates	Loucaides	National Oceanography Centre (NOC), Southampton	s.loucaides@noc.ac.uk

Alastair	Lough	National Oceanography Centre (NOC), Southampton	A.J.M.Lough@soton.ac.uk
Vlad	Macovei	National Oceanography Centre (NOC), Southampton	Vlad.Macovei@noc.soton.ac.uk
Kyle	Mayers	University of Southampton	Kyle.Mayers@soton.ac.uk
Jonathan	McQuillan	National Oceanography Centre (NOC), Southampton	jonmcq@noc.ac.uk
Florence	Menet	IFREMER, Port en Bessin, France	Florence.Menet@ifremer.fr
Kati	Michalek	Scottish Association for Marine Science (SAMS), Oban	Kati.Michalek@sams.ac.uk
Rachel	Mills	University of Southampton	Rachel.mills@soton.ac.uk
Sevi	Modestou	Scottish Universities Environmental Research Center (SUERC)	sevasti.modestou@glasgow.ac.uk
Hoa	Nguyen	University of Strathclyde	nguyen-thi-thai-hoa@strath.ac.uk
Adrian	Nightingale	University of Southampton	A.Nightingale@soton.ac.uk
Anouska	Panton	University of Portsmouth	anouska.panton@port.ac.uk
Sarah	Reynolds	University of Portsmouth	sarah.reynolds@port.ac.uk
Julie	Robidart	National Oceanography Centre (NOC), Southampton	j.robidart@noc.ac.uk
Saskia	Ruhl	Plymouth Marine Laboratory	sru@pml.ac.uk
Peter	Statham	National Oceanography Centre (NOC), Southampton	pjs@soton.ac.uk
Jirina	Stelikova	Scottish Association for Marine Science (SAMS), Oban	Jirina.Stehlikova@sams.ac.uk
Phoebe	Stewart-Sinclair	Scottish Association for Marine Science (SAMS), Oban	Phoebe.Stewart-Sinclair@sams.ac.uk
Charlie	Thompson	University of Southampton	
Martyn	Tranter	University of Bristol	m.tranter@bristol.ac.uk
Robyn	Tuerena	University of Liverpool	Robyn.Tuerena@liverpool.ac.uk
Robert	Turnewitsch	Scottish Association for Marine Science (SAMS), Oban	Robert.Turnewitsch@sams.ac.uk
Jacqueline	Tweddle	University of Aberdeen	jftweddle@abdn.ac.uk
Toby	Tyrrell	University of Southampton	Toby.Tyrrell@soton.ac.uk
Alexander	Vincent	National Oceanography Centre (NOC), Southampton	agv1e15@noc.soton.ac.uk
Iain	Vincent	Planet Ocean	iain@planet-ocean.co.uk
Wenhao	Wang	University of Southampton	Wenhao.Wang@soton.ac.uk
Seona	Wells	University of Aberdeen	s.r.wells.09@aberdeen.ac.uk
Phillip	Williamson	University of East Anglia	P.Williamson@uea.ac.uk
Matt	Wilson	University of Southampton	mw6g14@soton.ac.uk
Cathy	Winterton	Scottish Association for Marine Science (SAMS), Oban	Cathy.Winterton@sams.ac.uk
Deborah	Wood	University of Stirling	deborah.wood@stir.ac.uk
Yingxu	Wu	University of Southampton	Yingxu.Wu@soton.ac.uk

## Contact details

For any other matters, please find relevant contact details below.

### Conveners:

Natalie Hicks: [Natalie.Hicks@sams.ac.uk](mailto:Natalie.Hicks@sams.ac.uk)

Kirsty Crocket: [Kirsty.Crocket@sams.ac.uk](mailto:Kirsty.Crocket@sams.ac.uk)

Gary Fones: [Gary.Fones@port.ac.uk](mailto:Gary.Fones@port.ac.uk)

## Industry partner and sponsors



### Challenger Society for Marine Science

The foremost learned society representing the UK academic marine research community.

<http://www.challenger-society.org.uk/>

### Planet Ocean Ltd

Iain Vincent

Business Development and Sales Manager

E-mail: [iain@planet-ocean.co.uk](mailto:iain@planet-ocean.co.uk)

[www.planet-ocean.co.uk](http://www.planet-ocean.co.uk)

### Marine Alliance for Science and Technology in Scotland (MASTS)

A consortium of organisations engaged in marine science, and represents the majority of Scotland's marine research capacity.

<http://www.masts.ac.uk/>

### Scottish Alliance for Geoscience, Environment and Society (SAGES)

Brings together world-leading expertise in geoscience and environmental science from across Scotland's research base, creating a multi-disciplinary alliance at the forefront of earth and environmental research.

<http://www.sages.ac.uk/>

