



Sustained Scientific Ocean Observation Priorities.

Survey Outline

UKRI (NERC) have commissioned the National Oceanography Centre to lead a study to identify the key priorities in the area of sustained scientific ocean observations. This survey is an important part of the stakeholder engagement process and we are grateful that you are taking the time to contribute your insight and opinions. Estimated time to complete this survey is approximately 35 minutes

PART 1 – ABOUT YOU

* 1. To help us with interpreting the scientific questions and evaluating Equality, Diversity and Inclusion, please tell us a bit about yourself. For a full description of how we will use your data and links to our privacy statements please see below.

What is your name?

Which institution / organisation do you work for

Please specify what role you hold in your institution / organisation.

In which country do you work?

2. How do you identify?

- Female
- Male
- Prefer NOT To Say
- Other (please feel free to specify)

3. Please select your age range:

* 4. Which of the following best describes your organisational affiliation:

* 5. Please tell us about your main areas of interest. (select up to 3)

- | | |
|--|--|
| <input type="checkbox"/> Climate Change | <input type="checkbox"/> Marine Conservation |
| <input type="checkbox"/> Biodiversity & Ecosystems | <input type="checkbox"/> Research |
| <input type="checkbox"/> Disaster Reduction | <input type="checkbox"/> Applied Research |
| <input type="checkbox"/> Energy | <input type="checkbox"/> Technology Innovation |
| <input type="checkbox"/> Food | <input type="checkbox"/> Ocean Governance |
| <input type="checkbox"/> Minerals and Materials | <input type="checkbox"/> National security and defence |
| <input type="checkbox"/> Economic Development | <input type="checkbox"/> Maritime Financial Services |
| <input type="checkbox"/> Other (please specify) | |

* 6. Are you a researcher?

7. Which do you feel best describes your present career stage?

- | | |
|---|--|
| <input type="radio"/> Student | <input type="radio"/> Mid Career Researcher |
| <input type="radio"/> PhD student | <input type="radio"/> Late Career Researcher |
| <input type="radio"/> Early Career Researcher | <input type="radio"/> Retired Researcher |

* 8. Are you answering in a personal capacity or on behalf of an organisation?

- In Personal Capacity
- On Behalf of an Organisation



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PART 2 – OVERALL PERSPECTIVE

The following questions are designed to understand your overall perspective on sustained scientific

ocean observations.

* 9. Which of the following statements most closely describes your involvement with sustained ocean observations? I or my organisation is: (select up to 3)

- involved in making sustained ocean observations.
- involved in developing or producing equipment for sustained ocean observations.
- Uses data from sustained ocean observations.
- Uses advice, assessments or information derived from sustained ocean observations.
- Have a general interest in sustained ocean observations.

* 10. Which of the following statements most closely describes your overall opinion of sustained ocean observations?

- They are important for providing evidence to manage the marine environment, marine risks and resources.
- They are important for addressing fundamental science questions concerning long-term, large scale change and variability in the ocean.
- They provide useful background information for other more specific short-term observations.
- Research investment should focus on grants not on sustained ocean observations.
- It seems like observing for the sake of observing
- They should always meet a UK policy need not just be for answering interesting science questions.
- The UK has a responsibility to contribute to global observing efforts as a good global citizen.
- The UK should focus its observing efforts on understanding and managing UK seas.
- Investment should focus on finding ocean solutions not on ocean observing.
- Ocean observing is needed alongside solutions to design and inform them with evidence.

* 11. To what extent do you agree that the following criteria should be used by UKRI to decide the importance of which sustained ocean observations to fund?

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Whether the observations have a primary scientific motivation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The quality of science supported by the observations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whether the observations need to be long-term and large scale to address the question.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whether there are alternative ways other than sustained in water observations to obtain the necessary data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Whether the observations contribute to agreed international plans for Global Ocean Observing (GOOS).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whether it would be perceived as reputationally damaging for the UK not to contribute its share to an agreed observing plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The uniqueness of the UK's contribution via the particular sustained observation system.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whether the observations contribute to wider societal benefit (e.g. inform UK policy objectives, operational warning systems).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accessibility to data from the sustained observations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The international scientific significance of the sustained observations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The significance for the UK and UK nations of the sustained observations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The extent of international scientific use of data from the sustained observations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Please list any other criteria that you think UKRI should consider

* 13. To what extent do you feel that the following statements are currently accurate?

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The data generated by the observations are openly accessible in a timely fashion in line where possible with FAIR principles (Findable, Accessible, Interoperable, Re-usable).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The observations have wider demonstrable impact beyond science in supporting co-benefits of information and evidence ocean policy, assessments, actions and solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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PART 3 – SPECIFIC OBSERVING SYSTEMS

The following sections explore different observing systems in detail. To skip an observing system, please answer No to the first question and click Next at the bottom of the section.

EXAMPLE – SPECIFIC OBSERVING SYSTEMS: ATLANTIC MERIDIONAL OVERTURNING CIRCULATION (AMOC) at 26N

This section examines in more detail the AMOC 26N sustained ocean observation. Questions within this section are mandatory. To skip the section and go to the next observing system, please select No to the first question.



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Atlantic Meridional Overturning Circulation (AMOC) at 26N

The RAPID array across the Atlantic at 26°N has observed the AMOC continuously since 2004. It tracks AMOC trends and variability to understand of how the AMOC works, and is used internationally as a bench-mark for coupled climate models. <https://rapid.ac.uk/rapidmoc/>

* 14. Do you wish to comment on AMOC 26N?

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

15. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

16. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?

select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

17. What do you think is the primary motivation for these observations?

18. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

20. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

22. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

23. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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Atlantic Meridional Transect (AMT)

AMT makes a spatially extensive and internationally consistent suite of observations of the structure and biogeochemical properties of Planktonic ecosystems in the upper Atlantic Ocean on annual transects from UK to destinations in the South Atlantic and has been undertaken since 1995. <https://www.amt-uk.org/Cruises>

* 24. Do you wish to comment on Atlantic Meridional Transect (AMT)

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

25. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

26. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?
select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

27. What do you think is the primary motivation for these observations?

▼

28. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

29. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

30. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

31. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

32. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

33. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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OneArgo (standard, Biogeochemical (BGC) and Deep Argo)

Globally, Argo generates 100,000 profiles of ocean temperature and salinity per year in the upper 2,000m (for standard Argo) with the array expanded since the first floats were deployed in 2000 with the intention of maintaining over 3,000 floats in operation at any one time. The UK presently has the 5th largest number of active floats - around 4% of the float array, and its efforts are focussed in the North and South Atlantic and Southern Ocean. The array is being diversified to include a subset of floats profiling to full ocean depth (Deep Argo) and a subset with biogeochemical sensors (BGC Argo) <https://argo.ucsd.edu/about/status/>

* 34. Do you wish to comment on OneArgo (standard, Biogeochemical (BGC) and Deep Argo)

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

35. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to? Select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

36. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to? select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

37. What do you think is the primary motivation for these observations?

38. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

39. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

40. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

41. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

42. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

43. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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Continuous Plankton Recorder (CPR)

The CPR determines the abundance and distribution of phytoplankton and zooplankton in the top 20m of the Ocean from plankton recorders towed mainly by commercial vessels with the UK contribution mostly in the North Atlantic and the longest records going back over 80 years. The dataset comprises a uniquely extensive record of marine biodiversity covering ~1000 taxa over multi-decadal periods. <https://www.cprsurvey.org/>

* 44. Do you wish to comment on Continuous Plankton Recorder (CPR)?

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

45. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

46. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?
select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

47. What do you think is the primary motivation for these observations?

▼

48. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

49. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

50. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

51. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

52. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

53. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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GO-SHIP Repeat Sections (24S, 26N, 57N and Drake Passage)

GO-SHIP brings together scientists with interests in physical oceanography, the carbon cycle, marine biogeochemistry and ecosystems, and other users and collectors of ship-based high accuracy hydrographic data to develop a globally coordinated network of sustained, repeated trans-oceanic hydrographic sections (continent-to-continent, surface to bottom) as part of the global ocean/climate observing system. The GO-SHIP plan has some transects sampled repeated at least once per decade with some repeated at least every five years and some annual. <https://projects.noc.ac.uk/class-project/sustained-ocean-observations>

* 54. Do you wish to comment on GO-SHIP Repeat Sections (24S, 26N, 57N and Drake Passage) ?

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

55. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

56. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?

select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

57. What do you think is the primary motivation for these observations?

58. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

59. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

60. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

61. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

62. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

63. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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Sustained Scientific Ocean Observation Priorities.

Ellett Array (gliders, moorings and CTD)

The Ellett array measures the ocean to the west of the UK in a region of warm surface poleward warm water inflow and downstream of overflow of sub-Arctic waters into the subtropical basins and with the CTD element repeated since the 1970s. It is looking at water mass properties and how and why the currents, temperature and salinity have changed over the past few decades. It is a UKRI contribution to the international OSNAP project that is measuring the AMOC in the subpolar North Atlantic. <https://projects.noc.ac.uk/class-project/sustained-ocean-observations>

* 64. Do you wish to comment on Ellett Array (gliders, moorings and CTD)?

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

65. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

66. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?
select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

67. What do you think is the primary motivation for these observations?

▼

68. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

69. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

70. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

71. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

72. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

73. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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Sustained Scientific Ocean Observation Priorities.

Porcupine Abyssal Plain (PAP)

The Porcupine Abyssal Plain Sustained Observatory is a sustained, multidisciplinary fixed-location observatory in the Northeast Atlantic. For over 20 years (36 years for some elements) Since 1985 the observatory has provided key time series datasets for analysing the effect of climate change on the open ocean and deep-sea ecosystems. <https://projects.noc.ac.uk/pap/>

* 74. Do you wish to comment on Porcupine Abyssal Plain (PAP)?

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

75. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

76. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?

select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

77. What do you think is the primary motivation for these observations?

78. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

79. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

80. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

81. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

82. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

83. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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Sustained Scientific Ocean Observation Priorities.

Contribution to the Global Sea Level Observing System (GLOSS) international coastal and island tide gauge network

Coastal and island tide gauges with sampling frequency of minutes and measurements to agreed standards of accuracy to provide time series of relative sea level (to land), absolute sea level (where land movement is measured), water temperature and air pressure for understanding long term sea level trends, sea level variability and extremes on various timescales, including the evaluation of seiches, storm surges, tides and seasonal patterns and to complement satellite altimetry which has lower frequency of sampling (days).

<https://www.psmsl.org/gloss/>

* 84. Do you wish to comment on Contribution to the Global Sea Level Observing System (GLOSS) international coastal and island tide gauge network ?

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

85. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

86. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?
select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

87. What do you think is the primary motivation for these observations?

88. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

89. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

90. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

91. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

92. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

93. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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Sustained Scientific Ocean Observation Priorities.

Western Channel Observatory (WCO)

The WCO maintains two long-term observing stations in the western English Channel. The WCO allow us to understand the complex coastal and open-shelf ecosystem change and variability on timescales from hours to a century. The longest records are over 100 years.

<https://www.westernchannelobservatory.org.uk/>

* 94. Do you wish to comment on Western Channel Observatory (WCO)?

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

95. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

96. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?

select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

97. What do you think is the primary motivation for these observations?

98. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

99. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

100. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

101. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

102. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

103. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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Sustained Scientific Ocean Observation Priorities.

Ship of Opportunity surface underway measurements including surface meteorology, surface temperatures and pCO₂

Observations of nutrients, Carbon, CO₂ and salinity are collected between the UK and the Bahamas. These observations contribute to the Integrated Carbon Observation System. <https://www.icos-cp.eu/>

* 104. Do you wish to comment on Ship of Opportunity surface underway measurements including surface meteorology, surface temperatures and pCO₂ ?

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

105. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

106. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?
select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

107. What do you think is the primary motivation for these observations?

▼

108. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

109. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

110. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

111. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

112. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

113. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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Sustained Scientific Ocean Observation Priorities.

Marine protected areas

The impact of human activity in the marine environment is extensive and increasing as countries around the world develop their blue economies. Changes in seabed habitats across three different depth domains (shelf, slope and abyssal plain) are observed at the Haig Fras, Darwin Mound and the Whittard Canyon Marine conservation zones. <https://projects.noc.ac.uk/class-project/sustained-ocean-observations>

* 114. Do you wish to comment on Marine protected areas?

- Yes - Continue with questions below:
- No - click next at the bottom of the page to go to Next Observing System

115. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

116. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?

select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

117. What do you think is the primary motivation for these observations?

118. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

119. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

120. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

121. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

122. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

123. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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Please use this section to capture any observing system that you think we have missed.

* 124. Do you wish to add an additional sustained observing system.

- Yes - Continue with questions below:
- No - click next at the bottom of the page to continue

125. Please describe this observing system.

126. In your opinion, which of the following ocean priorities or issues do you think the observations are relevant to?

select all that are relevant

- Physical aspects of climate change and variability (e.g. temperature, circulation, sea level)
- Global carbon cycle
- Marine ecosystems
- Natural hazards and extremes
- Sustainable use of marine resources
- Don't know

127. In your opinion, which Ocean Decade societal outcomes do you think the observations most apply to?
select all that apply

- A clean ocean
- A healthy and resilient ocean
- A predicted ocean
- A safe ocean
- A sustainable harvested ocean
- A transparent ocean
- Don't know

128. What do you think is the primary motivation for these observations?

129. Please indicate the extent to which you agree or disagree with the following statements. These observations:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree
Address a current well-posed scientific question of major scientific significance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are having a demonstrable scientific impact in advancing knowledge and understanding.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are capable of adapting to address multiple scientific questions over an extended duration into the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are no longer needed because the question they set out to address has changed or been answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seem like observing for observing's sake with no clear research question in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

130. Why is long duration justified as a methodology in this case? select up to 3

- The observation is investigating inherently large-scale, long term processes.
- There is a chance something interesting will be found if measurements continue for long enough.
- The observation is investigating processes where the signal to be detected is small compared to background variability.
- The observation is investigating processes here the signal to be detected is intermittent/episodic over long durations.
- The observation supports an operational service.
- The observation supports regularly repeated state of the environment assessments.
- Other (please specify)

131. Please indicate how strongly you agree or disagree with the following statements about the duration of the observations. The observations should:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Continue indefinitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Continue for at least 10 years to address significant outstanding questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform in an operational service or routine monitoring activity within the next 5 years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into an operational service or routine monitoring activity in the medium term (> 5 years).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transform into a statutory monitoring activity within the next five years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

132. The observations primarily concern processes operating at which of the following space scales?

- Global Scale
- Ocean Basin Scale
- Regional or National Scale
- Local Scale (e.g. Marginal Sea or Smaller)

133. Why is the UK contribution to these sustained ocean observations important?

select as many as apply

- The locations are representative of a broad biogeographical or other oceanographic province which would otherwise not be represented at the global level ocean sampling without this UK contribution.
- The locations are only accessible by the UK and without these observations there would be a gap in geographical coverage at important scales in an internationally agreed sampling programme.
- The observations are primarily relevant to processes taking place around the UK or a specific locality in the UK.
- The observations are of very long duration and are unique or distinctive for that reason.
- The observations are a UK contribution to a globally standardised set of observations to which many nations are contributing and lack of contribution from the UK would be seen as not contributing to global efforts
- The UK has a unique or distinctively strong contribution to make to these observations.

134. Select all areas of opportunity for significant technological innovation in terms of this observation within the next 5 years. select all that apply

- Enhance the volume and quality of data generated.
- Provide significant advance towards net zero oceanographic capability.
- Reduce the costs of existing observations.
- Mean these observations will no longer be needed.



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PART 4 - FUNDING

We would like to understand your views on the funding challenges for sustained ocean observations.

* 135. How strongly do you agree or disagree with the following statement?

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Funding for sustainable in situ ocean observations is especially challenging to maintain.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

136. What are your main reasons for this assessment? (select as many as apply)

- Funding agencies do not like long-term financial commitments.
- Sustained ocean observations too heavily rely on research project funding.
- Many scientists would prefer funding spent on research grants not tied up with long term observing.
- There are no operational agencies with institutional funding to support ocean observations.
- Long term observations are of little value in the ocean.
- There are few users of data from long term ocean observations.
- The case for long-term ocean observations has not been made clearly enough.

137. Please list any other reasons that you wish to include.

138. If you believe that funders other than UKRI should primarily be funding these observations, please list them

139. If you believe that it would be possible to reduce the cost of these observations either by scaling them back, making them less frequently or measuring them in other ways, please explain.



PART 5 – GENERAL COMMENTS

140. Please add any further comments about existing observations

141. Please provide any suggestions for new or emerging observations that should be made on a sustained basis.



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PART 6 – GDPR Declaration

The National Oceanography Centre (NOC) provides the Secretariat for the UK SSOOP project and so applies the NOC approach to General Data Protection Regulation (GDPR).

The NOC is committed to ensuring that it is accessible to everyone regardless of gender, ethnic or nationality, disability, religion, sexual orientation, gender reassignment, socioeconomic background or age. We aim to foster an environment free from harassment, unfair and unlawful discrimination where everyone is treated fairly. We gather and analyse diversity data to assess the extent to which we are achieving our diversity and inclusion aims. We use this information to review our processes to ensure they are fair and transparent, and do not have an adverse impact on any particular group.

We believe that the personal data on this form will be gathered for a legitimate purpose, namely to gauge the views of the research community on the future of marine science, and it will be processed in accordance with Data Protection laws.

The information will only be used for statistical purposes with access restricted to staff affiliated to the NOC who will be involved in processing and monitoring the data. No information will be published or used in any way that allows individuals to be identified. We recognise that some people may regard this information as private and have therefore none of the questions concerning personal information are mandatory. You do not have to complete these questions, but it will add value to this exercise if you can complete as much as possible.

Data from the survey will be stored on secure servers in Europe and complies with GDPR requirements as of May 2018. Data will be kept until the results are known and we estimate that this will be around 12 months, after which it will be destroyed.

For further details about how NOC will process your personal data, plus the rights that you have under the law, please see the NOC Privacy Notice (<https://noc.ac.uk/about-us/privacy-notice>).

Your attention is drawn to the Terms of Reference for the UK SSOOP project, which are available on request from Kristian Thaller, Project Manager. If there are any other questions or comments relating to this survey, please feel free to contact us at: kthall@noc.ac.uk