



Cumbrian Lakes: Community engagement



UK Centre for
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Summary

The Cumbrian Lakes Monitoring Platform provides data and knowledge that contribute to our fundamental understanding of lake ecosystem function, and responses to environmental stressors. To maximise the impact of the work done at the Platform, it is important that we engage with the wider community, including universities, Government agencies, non-governmental organisations, charities, the water industry, and the general public.

To assess current levels of engagement, and to identify opportunities to build on this level of engagement, we held a virtual meeting in November 2020. This was attended by 36 delegates from a range of organisations (n=17) actively involved in the management and implementation of government policy in the Cumbrian Lakes. The meeting was hosted by the UKCEH as part of the UK-SCAPE national capability programme.

The meeting included presentations from UKCEH staff and stakeholders, Q&A sessions, an online survey, and structured break out discussions. Together, these activities allowed attendees to hear about current research at the Cumbrian Lakes, consider what they need the monitoring to deliver, and make suggestions on what could be delivered by the Platform in the future.

These activities revealed that the attendees agreed that the Platform has great value as a means of developing understanding of lake ecology, and responses to stressors. Currently, some of our stakeholders make use of data from the platform to contextualise and commission their own work. However, there is a desire within our community for enhanced visibility of data and knowledge from the Platform, and for the creation of materials giving “expert interpretation” of the data, in a readily accessible form.

Following this consultation we propose:

- To produce new content on the Cumbrian Lakes Monitoring Platform for the new UKSCaPE website, and to promote this via social media and through emails to the Research Forum community.
- To produce infographics on the type of data that we collect and analyse from the lakes, and to show some simple ecosystem state indicators, which can also be hosted on the website, and shared via social media.

1. Introduction

The Cumbrian Lakes Monitoring Platform (UKSCaPE work package 7, task 2) delivers long-term, ecosystem-scale research that allows investigation of the impacts of environmental change upon four lake basins in the English Lake District. The data gathered by this initiative are used for fundamental research, contributing to scientific understanding at local, regional and global scales. In addition to these research outcomes, it is important to understand the impact of the Cumbrian Lakes monitoring in terms of community engagement with the data and knowledge that this initiative generates.

To this end, we assessed the current level of community engagement with this monitoring scheme, and the potential for growing current levels of engagement, in November 2020. This assessment, supported by UKSCaPE work package 5, was undertaken as part of the annual Cumbrian Lakes Research Forum. This event, initiated in 2015, brings together a community of stakeholders with regional and national remits, to exchange knowledge, perspectives, and ideas. The goal of the Forum is to improve communication about scientific research, management and regulatory activity between different groups. This is typically facilitated through topical presentations, Q & A sessions, structured discussion activities, and accompanying social media activity. The event is usually a physical meeting, with plenty of networking opportunities. However, in 2020, the Forum had to be held virtually owing to Covid-19 restrictions. This presented additional challenges and opportunities to the organisers, with respect to fostering open discussion amongst attendees, and gathering community feedback.

The programme for the day included seven talks on science, management applications and future policy drivers. One of these talks introduced the scientific basis for the Cumbrian Lakes Monitoring Platform, and some of the key insights that the work has produced in recent years, addressing issues such as the impacts of climate change and nutrient enrichment, phenological change, species introductions and extreme events. This presentation acted as a prompt to elicit feedback from attendees on how UKCEH could improve:

- Awareness of, and engagement with, the data collected from the lakes, and
- Translation of data and research into evidence and knowledge that could be more widely used by our stakeholders.

Two forms of engagement activity were developed to gain a range of feedback from attendees:

- An online questionnaire to gain individual feedback, designed to reveal the attendees' current awareness of, and views on, the Cumbrian Lakes Monitoring Platform. This was launched immediately after the presentation on the scientific basis for the platform.
- A small group break-out discussion session, like those from previous Cumbrian Lakes Research Forum meetings, but this time using an online format of virtual breakout rooms and virtual white boards. In each breakout room, discussion was facilitated by a member of UKCEH staff. The focus of discussion was to come up with specific examples of how we could improve the ability of the stakeholder group to make use of the Cumbrian Lakes Monitoring Platform.

The following report documents and analyses the feedback received from these activities and provides recommendations on how to take forward the suggestions provided by the stakeholder community. Section 2 gives an overview of the meeting attendance, and the breakdown of attendees by employment sector. Section 3 provides the main results from the questionnaire survey on current awareness and use of the Cumbrian Lakes Monitoring Platform. Section 4 summarises the key suggestions for improving engagement with the Platform.

2. Attendees

In total, 39 participants were invited to the Forum via email, based upon a distribution list from previous events. In addition, several participants also forwarded the invitation to colleagues and contacts that they thought might be interested in the event. The number of people registering for the meeting was 40, with 36 attending on the day. Table 1 provides a breakdown of the registrations and attendees by sector. Government Agencies were the most well-represented external stakeholder group at the event, followed by charities/third sector organisations, commercial companies, and universities.

Table 1 *Table of participants registering and attending*

| Type of organisation | Number of Registrations | Number of Attendees |
|-------------------------------------|--------------------------------|----------------------------|
| University | 4 | 4 |
| Government | 0 | 0 |
| Government Agencies | 17 | 14 |
| Non-Governmental public body | 1 | 1 |
| Research Centre | 0 | 0 |
| Commercial | 5 | 4 |
| Charity/ Third sector | 5 | 5 |
| UKCEH presenters / other? | 8 | 8 |
| Total | 40 | 36 |

3. Utility of Cumbria Lake Monitoring

Following a presentation highlighting academic uses of the Cumbrian Lakes monitoring data [available here](#), attendees were asked to complete an 11-question survey (Appendix 1). This was intended to gauge existing knowledge of the Cumbrian Lakes Research Platform amongst the Forum participants, as well as how they currently used Cumbrian Lakes monitoring data, and how they felt the data could be made more useful and accessible to them.

3.1 Respondents organisation and role

As previously noted, survey respondents were dominated by representatives of government agencies. Of these 12 respondents, half considered themselves technical specialists, and a further 2 respondents identified as having a combined technical specialist/academic researcher role (Table 2). Two further academic researchers originated from universities. Two attendees represented the private sector (water industry, commercial/business), and three represented non-governmental organisations or charities.

Table 2. Summary of respondents by employment sector and role

| | Employment Sector | | | | |
|---------------------------------------|-------------------------|----------------------|--|------------|-------------------|
| | COMMERCIAL/ BUSINESS | GOVERNMENT AGENCY | NON- GOVERNMENTAL ORGANISATION OR CHARITY | UNIVERSITY | WATER INDUSTRY |
| ACADEMIC/ RESEARCHER | | 1 | | 2 | |
| ACADEMIC/ RESEARCHER; TECHNICAL | | 1 | | | |
| SPECIALIST CATCHMENT OFFICER | | | 2 | | |
| GROUP/ SECTION LEADER | | 2 | | | |
| MONITORING OFFICER | | 1 | | | |
| PROJECT MANAGER | 1 | 1 | | | |
| TECHNICAL SPECIALIST | | 6 | 1 | | 1 |

| | | | | | |
|-------|---|----|---|---|---|
| TOTAL | 1 | 12 | 3 | 2 | 1 |
|-------|---|----|---|---|---|

3.2 Overall opinion of the Platform

Forum attendees were asked to indicate their level of agreement with the following statement "*The Cumbrian Lakes Monitoring Platform provides essential understanding of how UK lakes respond to environmental stressors*". There were no disagreements with this statement, with the majority of attendees agreeing, or strongly agreeing that the Cumbrian Lakes monitoring provides essential understanding (Fig. 1).

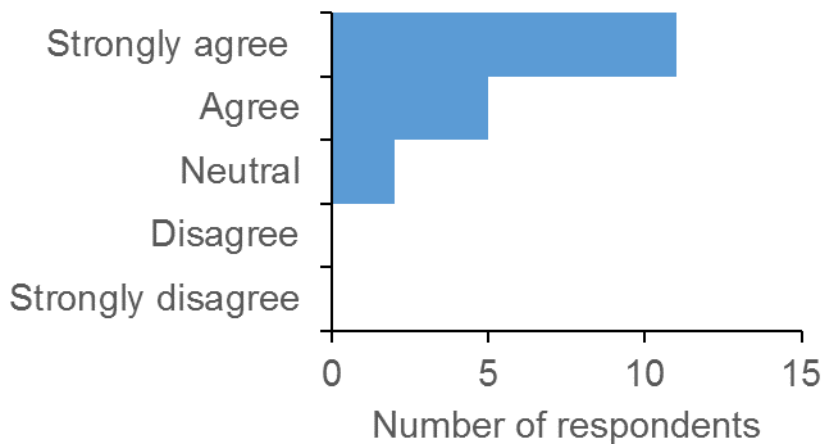


Figure 1. Level of agreement with "*The Cumbrian Lakes Monitoring Platform provides essential understanding of how UK lakes respond to environmental stressors*"

3.3 Current use of the Platform

When asked about previous knowledge/use of the Cumbrian Lakes Monitoring Platform, responses were mixed (Fig. 2). However, the most frequent responses indicated that data and knowledge from the Platform are, currently, used "infrequently" by attendees, or have yet to be used ("this is the first time I have come across the platform").

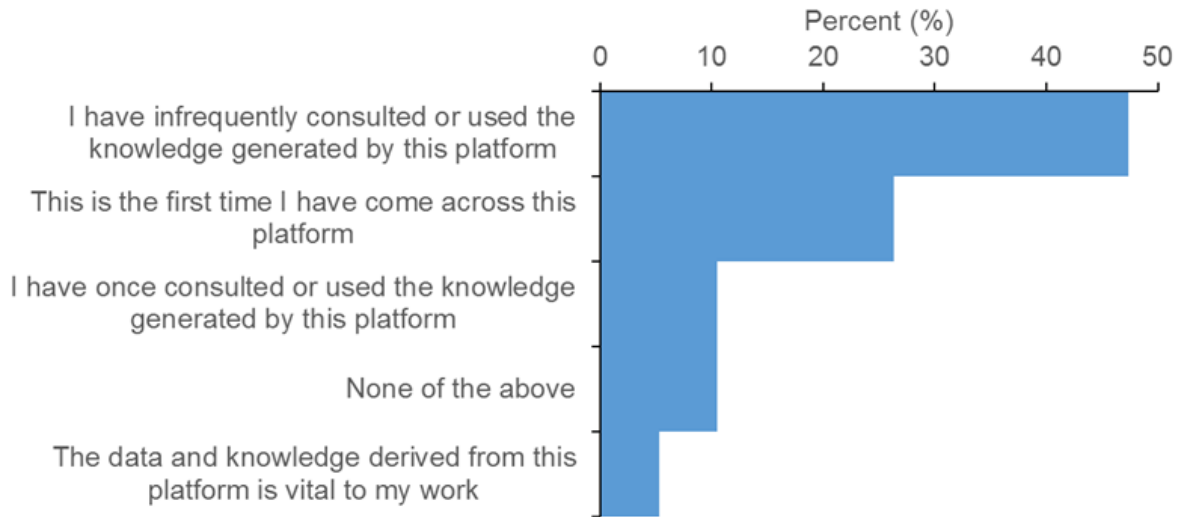


Figure 2. Responses to “How much previous knowledge do you have about the Cumbrian Lakes Monitoring Platform, prior to today's meeting?”

The primary current use of the Cumbrian Lakes Monitoring Platform is to provide data that inform and contextualise other work (Fig. 3). However, other potential uses are currently infrequent, and several attendees have yet to use data and knowledge from the Cumbrian Lakes.

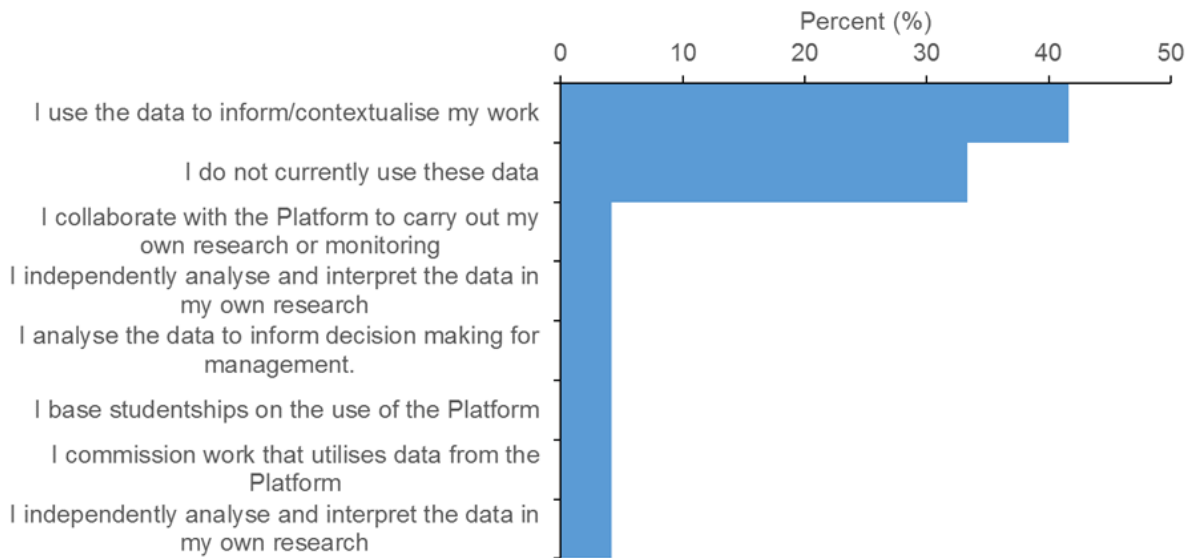


Figure 3. Responses to “How DO YOU make use of the Cumbrian Lakes Monitoring Platform?”

Taken together, the previous three responses indicate that stakeholders see the value of the Cumbrian Lakes Monitoring Platform in generating insights on lake responses to environmental change, and that there is some current community engagement with

this Platform. However, looking ahead, there is clear potential to grow engagement with UKSCaPE research in the Cumbrian Lakes.

3.4 Potential future use of the Platform

Next, we sought information on the potential for stakeholders to engage with the Platform in future. Stakeholders saw a range of potential ways that they could make use of the platform (Fig. 4). In particular, the most popular potential uses included interest in using the data to inform and contextualise other work, collaboration with the platform to carry out new research or monitoring work and the direct commissioning of work that utilises data from the Platform.

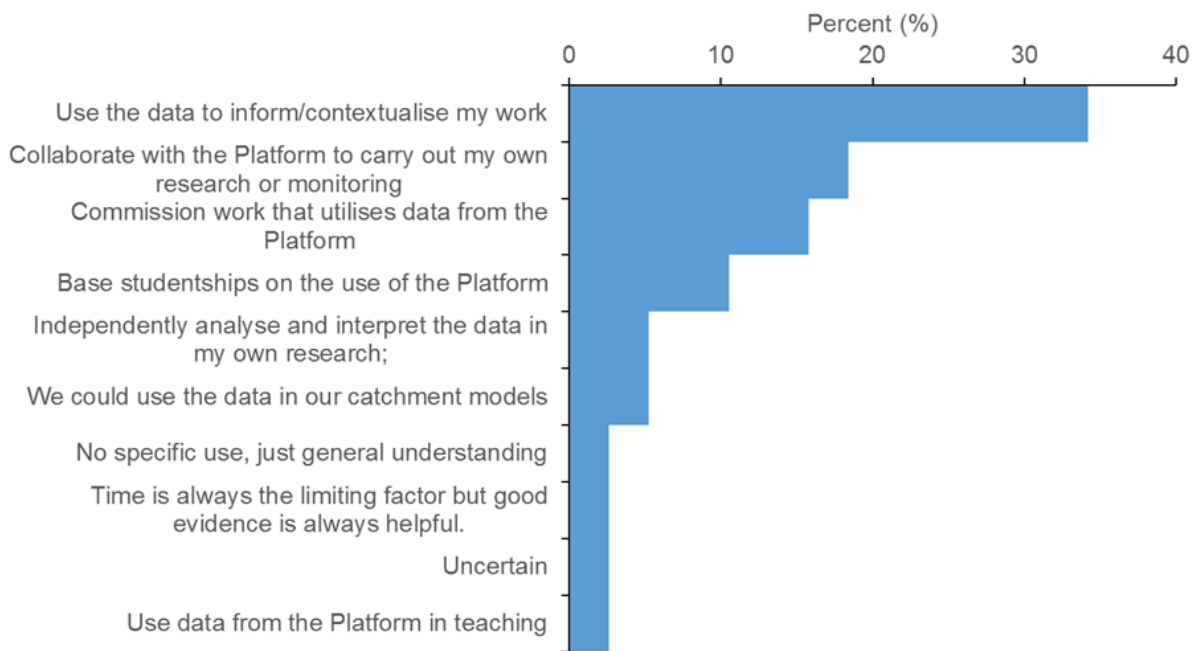


Figure 4. Responses to “How COULD YOU make use of the Cumbrian Lakes Monitoring Platform?”

When asked about the types of data that would be of use, it was clear that many attendees would prefer summaries and interpretation of the data that we collect at the Platform, rather than the raw data themselves (Fig. 5). This likely reflects the relative minority of university academic researchers at the Forum.

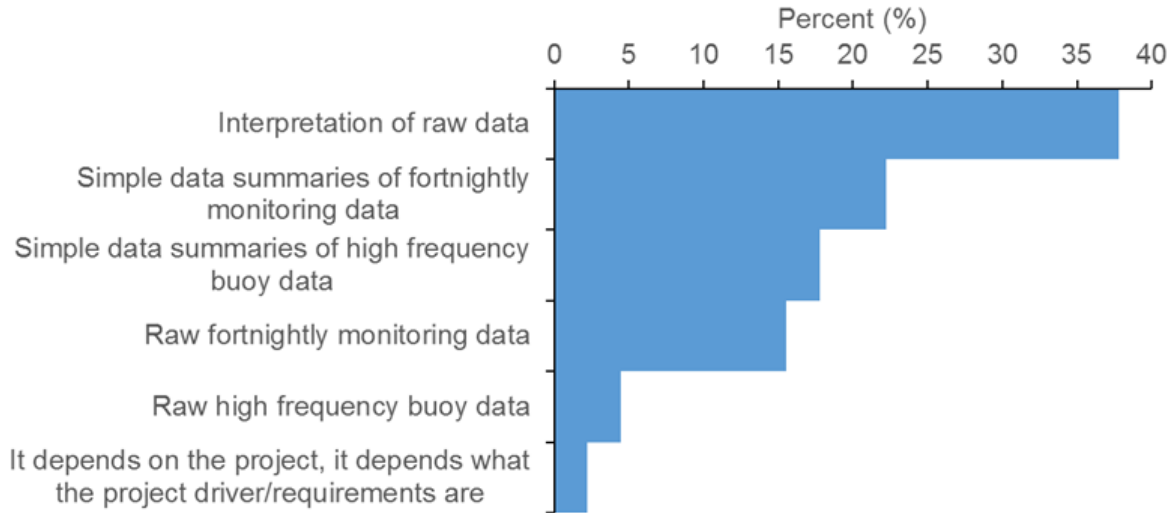


Figure 5. Responses to “What types of knowledge and or data are of most use to you?”

We then asked how frequently the attendees would need raw data (Fig. 6) and data interpretation (Fig. 7) from the Platform. As noted above, a relatively large proportion of attendees indicated that they did not specifically require raw data, in contrast to interpretation. However, that aside, it appeared that many stakeholders require *ad hoc* access to knowledge from the platform, presumably when their current work requires such input. In addition, there was some interest in annual summaries of the data and knowledge derived from the platform (Fig. 7).

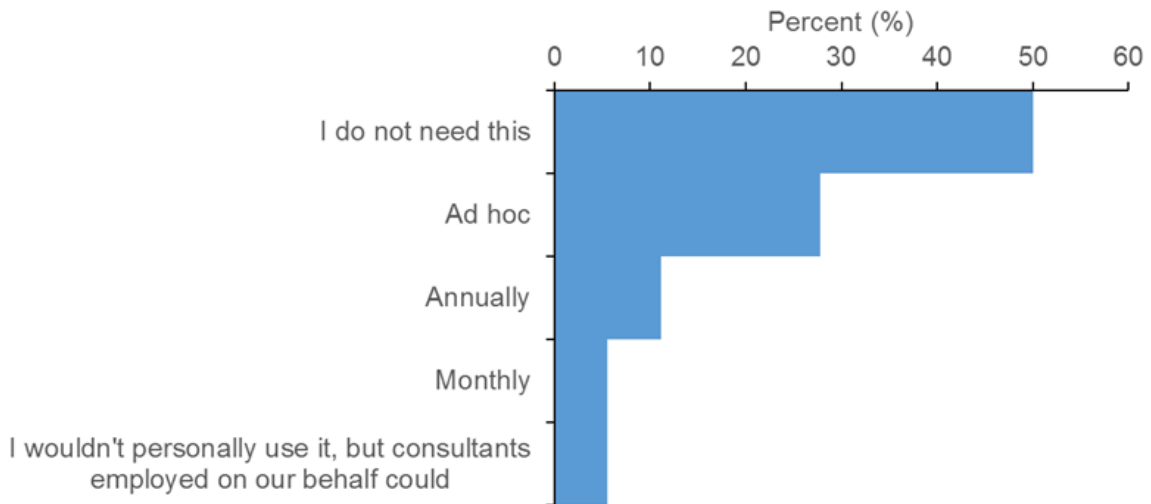


Figure 6. Responses to “How frequently do you need to use RAW DATA from the Cumbrian Lakes Monitoring Platform?”

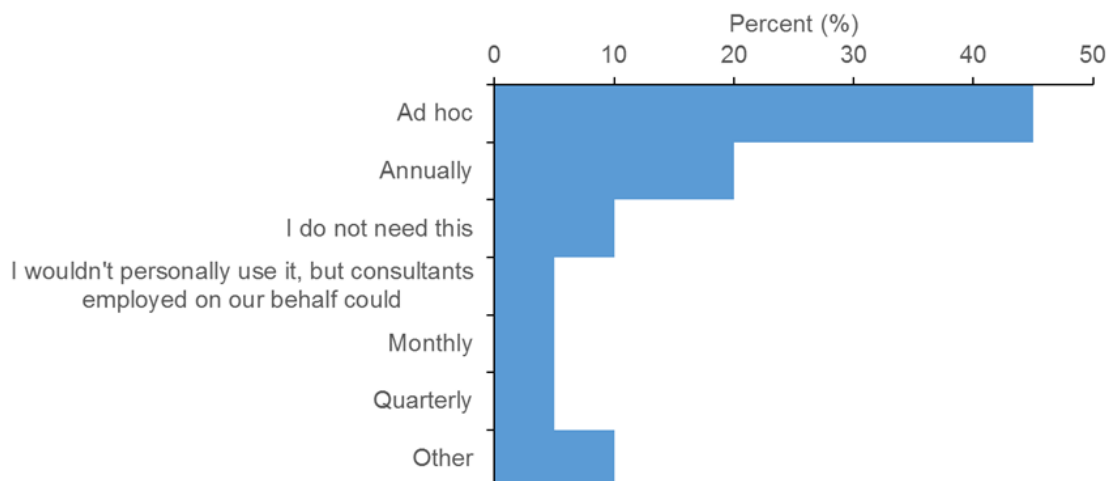


Figure 7. Responses to “How frequently do you need INTERPRETATION OF DATA from the Cumbrian Lakes Monitoring Platform?”

3.5 Growing stakeholder engagement

As a first step towards building up stakeholder engagement with the Platform, we asked attendees: “*In your view, is there anything missing from the data and knowledge created by the Cumbrian Lakes Monitoring Platform (e.g. data collected, way the data/knowledge is communicated)?*”. To aid interpretation, we grouped these responses into themes (Table 3). The amassed feedback suggested four areas in which we could work to improve stakeholder engagement with the platform:

1. Improving the ease with which monitoring data can be accessed.
2. Interpreting the raw data in ways that can be more readily used and understood by diverse audiences.
3. Raising wider awareness of the monitoring and research undertaken at the Platform.
4. Clarification of the relationship between the Cumbrian Lakes Platform and other UK monitoring schemes.

Table 3. Free text responses to “In your view, is there anything missing from the data and knowledge created by the Cumbrian Lakes Monitoring Platform (e.g. data collected, way the data/ knowledge is communicated)?”

| Theme | Text comment |
|--------------------------------|---|
| Access Issues | <p>the raw data could be easier to access</p> <p>In all honesty I don't know how to access the data</p> |
| Interpretation | <p>Different ways of sharing the data and understanding the messages</p> <p>Back to basics interpretation for sharing with public</p> <p>I'd like to see some wider interpretation of the processes and functions within lakes which are likely to occur in most lakes, which may influence our data/results and which may influence the effectiveness of measures, or exacerbate impacts from pressures.</p> <p>Producing communications produce customised for specific audiences and timed to link with state of the environment reports.</p> <p>Is there a portal that provides all the talks that have been presented over the years under this platform, that you can search for by subject matter?</p> |
| Promotion/ wider dissemination | <p>Outside the people directly involved it is possible that the data/interpretation created doesn't travel much further. I don't know for certain as I haven't been involved with the platform before but, given my work in collecting samples/data with the EA in Cumbria, the fact that I have seen/heard very little about it might mean that it needs to be communicated to a wider audience. Possibly not so much the raw data but certainly the interpretation of this.</p> <p>Overviews of what data is actually available on the platform</p> <p>More promotion about the data and its accessibility required</p> <p>Better communication to wider audiences beyond research required</p> |
| Integration with others | <p>Perhaps provide examples of where this data has been used and how.</p> <p>Issue with geographical spread of sites (regional data) - it's great but would be even better if we had similar platforms elsewhere e.g. Broads and Meres</p> <p>Is the UK Upland Waters Network data on there too?</p> |

4. Suggestions for improvements

Building upon these insights into the current state of stakeholder engagement with the Platform, and views on what might be provided by the Platform in future, we facilitated a session focussing on how we could build upon the *status quo*, to enable more community engagement. This session comprised facilitated small group discussions (each group containing 5-6 attendees), using a Google Jamboard to capture and group individual ideas into three priority areas. In total four discussion groups were formed and their “raw” Jamboard ideas are provided in Appendix 2.

The higher-level, priority themes that emerged from these discussions were:

- Creation of web-based, downloadable annual/site data summaries, with interpretation of ecosystem state and condition.
- Contacting the writing teams for the key UK environmental reports, to offer content (e.g. State of Nature, State of Natural Resources Report).
- Involvement of UKCEH staff in key stakeholder discussion meetings, to provide updates from the lakes.
- More active promotion of the data available, and where/how they can be accessed and used.
- Online tools for visualising data, potentially in real time.
- Novel approaches to using the data for outreach and public engagement (e.g. using the data to create music, telling stories, infographics)
- Enhanced use of social media, to produce rapid news/updates on recent findings.

5. Next steps

Many excellent suggestions have been made by the Cumbrian Lakes Research community, and we must prioritise our responses to these according to available staff time and project resources. Some of the suggestions made (e.g. online data visualisation) will require significant investments in additional staff time to make them a reality. Others (social media presence) could be worked on with minimal time investment. Furthermore, anything that is done will need to be aligned with impending developments of the UKSCaPE website. As initial steps, we propose:

- To produce new content on the Cumbrian Lakes Monitoring Platform for the new UKSCaPE website, and to promote this via social media and through emails to the Research Forum community.
- To produce infographics on the type of data that we collect and analyse from the lakes, and to show some simple ecosystem state indicators, that can also be hosted on the website, and shared via social media.

Appendix 1 Questionnaire survey

Thank you for agreeing to complete this survey – no question is compulsory and your answers are anonymous.

Most questions are provided with a pre-set series of options but please elaborate in the space provided so we can fully understand your views.

Question 1 – How much previous knowledge do you have about the Cumbrian Lakes Monitoring Platform prior today’s meeting

- This is the first time I have come across this platform
- I have once consulted or used the knowledge generated by this platform
- I have infrequently consulted or used the knowledge generated by this platform
- I have frequently use the data and/or knowledge derived from this platform
- The data and knowledge derived from this platform is vital to my work

Please elaborate on your response (open text box)

Question 2 – “The Cumbrian Lakes Monitoring Platform provides essential understanding of how UK lakes respond to environmental stressors”

Strongly disagree – strongly agree

Please elaborate on your response (open text box)

Question 3 – What types of data from the Cumbrian Lakes Monitoring Platform are of most use to you? (tick all that apply)

- Raw fortnightly monitoring data
- Raw high frequency (4min resolution) buoy data
- Simple summaries of fortnightly monitoring data (e.g. averages, plots)
- Simple summaries of high frequency buoy data (e.g. averages, plots)
- Interpretation of raw data (e.g. long term trends, extremes, derived measures of lake condition/ecological state, climate change indicators)
- Other

Please elaborate on your response (open text box)

Question 4 – How frequently do you need to use raw data from the Cumbrian Lakes Monitoring Platform? (tick all that apply)

- Monthly
- Quarterly
- Annually
- Ad hoc
- I do not need this
- Other

Please elaborate on your response (open text box)

Question 5 – How frequently do you need interpretation of data from the Cumbrian Lakes Monitoring Platform? (tick all that apply)

- Monthly
- Quarterly
- Annually
- Ad hoc
- I do not need this
- Other

Please elaborate on your response (open text box)

Question 6 – How do you make use of the Cumbrian Lakes Monitoring Platform? (tick all that apply)

- I collaborate with the programme to carry out my own research or monitoring
- I independently analyse and interpret the data in my own research
- I use the data to inform/contextualise my work
- I commission work that utilises data from the Platform
- I base studentships on the use of the Platform
- I use data from the Platform in teaching
- I do not current use these data
- Other

Please elaborate on your response (open text box)

Question 7 – How could you make use of the Cumbrian Lakes Monitoring Platform? (tick all that apply)

- Collaborate with the programme to carry out my own research or monitoring
- Independently analyse and interpret the data in my own research
- Use the data to inform/contextualise my work
- Commission work that utilises data from the Platform
- Base studentships on the use of the Platform
- Use data from the Platform in teaching
- Other

Please elaborate on your response (open text box)

Question 8 – In your view, is there anything missing from the data and knowledge created by the Cumbrian Lakes Monitoring Platform (e.g. data collected, way the data/ knowledge is communicated)? (Open text box)

Question 9 – What type of organisation do you work in? Please tick all that apply

- University
- Government Agency
- Non-governmental organisation or charity
- Research Centre
- Commercial/business
- Student
- Other

Please elaborate on your response (open text box)

Question 10 – What is your role within your organisation? Please tick all that apply

- Group/section leader
- Academic/ researcher
- CEO
- Consultant

- Technical specialist
- Project manager
- Catchment officer
- Other

Please elaborate on your response (open text box)

Question 11 – What is the geographic coverage of your work within your organisation? Please tick all that apply

- Local catchment scale (e.g. District or County scale)
- Regional level (e.g. UK regions)
- National level (e.g. UK nations or UK as a whole)
- International (e.g. European, Global)

Please elaborate on your response (open text box)

Thank you for completing this questionnaire. It will help to inform our future work on the Cumbrian Lakes Monitoring Platform

Question in the discussion session later:

Q: How can we improve your ability to make use of the Cumbrian Lakes Monitoring Platform? Please provide specific examples

As a group identify your top three suggestions

Appendix 2 Questionnaire survey

Cumbrian Lakes Research Forum 2020 - Break Out Group 1

Q: How can we improve your ability to make use of the Cumbrian Lakes Monitoring Platform? Please provide specific examples

As a group identify your top three suggestions



Commercial or business

University/research

Government Agency

NGO/Charity

Copy-paste a note coloured by your organisation

Make a short list of the key state of the environment reports in the UK (e.g. State of Nature, State of Natural Resources Report (Wales) and get in contact.

Tell stories!

Web page with email updates when new items are added

Twitter feed highlighting key results

Site summaries with expert commentary on what the data indicates about site quality/condition

Produce simple annual summaries - 1-2 page headline messages for non-specialists. Published on a website for download

List of all the data collected including details of sites, what data is collected, frequency of collection, method of collection etc.

Enable simple data interactive visualisations - ability to generate simple stats - comparison to other lakes

Long term trends in key attributes of sites

Careful use of infographic with points of comparison

Music from weather data:
<https://bobbyowsinski.blog.com/2019/01/22/weather-data-music/>

Making climate data sing!
<https://journals.ametsoc.org/bams/article/98/1/23/69577/Making-Climate-Data-Sing-Using-Music-like>

Think about out of the box cultural links, like using data to make music!

Think about linking up with local and national museums - could be an exciting way to teach limnology and to have data used by a wider community.

Cumbrian Lakes Research Forum 2020 - Break Out Group 2

Q: How can we improve your ability to make use of the Cumbrian Lakes Monitoring Platform? Please provide specific examples

University/
research

Government
agency

As a group identify your top three suggestions

Copy-paste a note
coloured by your
organisation

Link to the lake portal so you can find the lake specific data that much easier. A link to the data on the portal would be really useful.

need data from 2013-date for all long term monitored lakes bassenthwaite and Derwent water too

To be honest for a like these are useful in just reminding me that the platform exists and what it could be used for...so advertising/ being visible is useful

Promotion of what data you have and where it can be accessed!

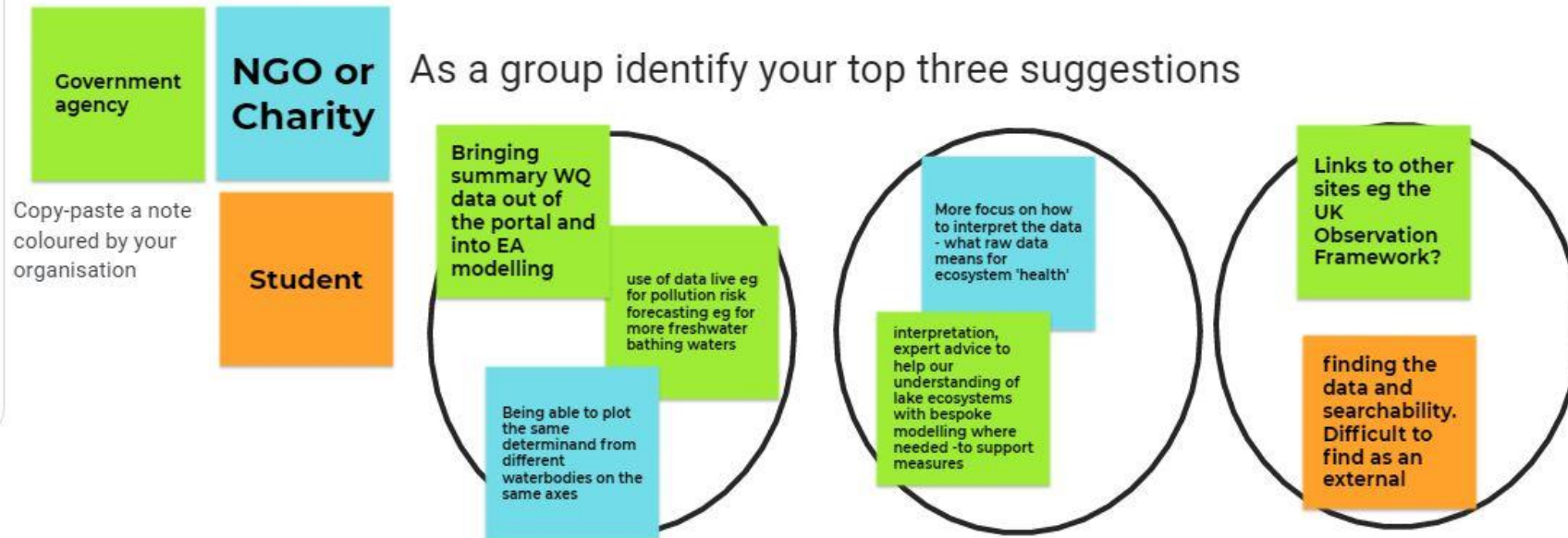
Clear website and promotion of available data. What are the mechanisms and conditions of using the data?

Creating links to wider Universities-modellers /data scientists/students who have the time and could synthesise/analyse data to answer important questions...thinking

Increased promotion that data is accessible and that you are keen to collaborate

Cumbrian Lakes Research Forum 2020 - Break Out Group 3

Q: How can we improve your ability to make use of the Cumbrian Lakes Monitoring Platform? Please provide specific examples



Cumbrian Lakes Research Forum 2020 - Break Out Group 4

Q: How can we improve your ability to make use of the Cumbrian Lakes Monitoring Platform? Please provide specific examples

I can do this using Cti-C, Cti-V or by choosing "duplicate" from the little menu

As a group identify your top three suggestions

Copy-paste a note coloured by your organisation

**University/
research**

**Government
agency**

**NGO or
Charity**

**Commercial or
business**

Student

Presentations at catchment partnership, stakeholder liaison meetings - UKCEH staff involvement, with news from the Lakes.

Real-time data visualization for lake users - swimmers, anglers, fishery owners (automated)

- "good news stories", time scales change, responses of whole ecosystem, results from new methods (e.g. eDNA), linking to people's experiences

Infographics - simple and visual to make it accessible. Different levels of information for different audiences.

engagement with the community on identifying the stories

Providing raw data as context for specific investigations and to validate models

Needs to be easier to find out what data we hold, on how to access. Simple ways to filter data.



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