

# Making an Ocean Science Research Video



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# Introduction

MEOPAR will be holding its annual meeting on October 19th – 31st 2020. As it will be a virtual meeting, we are asking students and trainees to produce a short (2 minutes maximum) and engaging video highlighting their research. In addition to being shown during the meeting, videos will be uploaded to MEOPAR's YouTube channel and shared on social media, and other platforms. Alternatively, MEOPAR will also provide a hosting space for those preferring to submit a traditional poster instead of a video.

This document and supporting video (insert hyperlink to video) are intended to provide you with some tools and resources to help you create your very own ocean science research video. We wish you good luck, be creative, and most of all, have fun!

## Why make a science video?

Imagine you are at a conference and are about to give a presentation on your research. How many people are in the audience? Although this number will strongly depend on the size of the conference, how many other sessions are running at the same time, and the time slot you are given, the chances are there will be less than 50 people watching your talk. It is very likely that this number will be even lower if you are giving a poster presentation. As for your audience itself, your audience will probably comprise of experts working in a highly specific field; likely to be the same field as yours. Even though posters and talks can take considerable amounts of time to design and practice, they only reach a small number of people with very similar backgrounds.

In contrast, videos can reach hundreds and thousands of people from a wide variety of different backgrounds. By being online, videos can be watched more than once, anytime, by anyone. They can inform funders, decision makers, stakeholders and the wider public about your work. They can motivate others to take your research further and even inspire others to pursue science as a career. Lastly, they might be viewed by the media and allow your research to be featured in newspapers, radio or on TV. Perhaps most importantly, you can refer to your video on your website or resumé, showcasing your work and its impact to funders and prospective employers.

## What you will need

The equipment you will need to make your video depends on how creative you want to be and what resources you have available:

- **Camera:** You will need a camera at the very least. This camera can be your smart phone, tablet, a GoPro, a compact 'point and shoot' camera, a dedicated video camera or an SLR. Try to avoid using the webcam built into your computer as these tend to create very low resolution, poor quality, grainy videos.
- **Tripod:** Using a tripod is a great way to get steady shots, smooth panoramas, and to interview yourself and others. If you do not have access to a tripod, try resting the camera on a flat surface such as a desk or bookshelf. As a last resort, try to hold the camera steady, or ask someone to hold the camera for you, or take a 'selfie' or use a selfie stick.

- **Video editing software:** If you want to keep things as simple as possible, you could try shooting your video in a single take. However, if you want the flexibility to edit out mistakes, stick different clips together, and to add music, text, photos, and narration, then you will need to use some form of video editing software. This can be an app on your phone, the inbuilt software on your computer, or a specialized video editing suite (see the [Section on video editing](#)).
- **Other accessories:** There are a range of other accessories that can help you to make your video sound and look professional. These include windshields (see [Section on audio quality](#)), external microphones and external light sources.



What equipment you use depends on how creative you want to be. To create a very simple video, you could try filming yourself on your smartphone (left). For something more professional, you could use a purpose-built camera, a tripod, and maybe even an external microphone and external lighting (right).

## Step 1: Plan your story

The purpose of a science video is to communicate your research to a broad audience. However, you need to be aware that your audience can be easily confused and have a limited attention-span. Consequently, it is important to break down your research into something clear, concise, and engaging that can be understood by people from non-scientific backgrounds. Try to keep the video interesting and avoid using technical language if possible.

You might be surprised how quickly you use up your two minutes. To help keep your video focused and on time, try to answer these questions:

- **Who?** Who is involved in the research? Which lab group and / or which research organisation do you / they belong to?
- **What?** What does your research focus on? What types of questions are you trying to address?
- **How?** How are you doing the research? Is it a lab study, a field study, or is your research computer-based?

- **Why?** Why are you doing the research? Why are your research questions important? Could your research be of interest to e.g. decision makers or the public?

By far, one of the most powerful ways to communicate your research is to think of it as a story. Every story features:

- **Characters:** Film yourself and other people involved in your research.
- **Scenes:** Rather than just standing in one place and talking at the camera for two minutes, your video will be more interesting if you show different scenes e.g. you could film yourself walking to work, working in a lab, in the field, or using a computer.
- **Events:** What challenges have you encountered? What discoveries have you made?
- **Climax:** What are your main conclusions and what are their significance?

If your research is highly complex and has many different components, try picking just one aspect of your research and making it the focus of your story. Do not be afraid to cut to stuff out!

For more tips on science storytelling and its effectiveness, see the following resources:

Anneli Sundin et al., (2018) Rethinking communication: integrating storytelling for increased stakeholder engagement in environmental evidence synthesis. *Environmental Evidence*, Vol. 7, article 6. <https://link.springer.com/article/10.1186/s13750-018-0116-4>

Raya Racheva (2019). Communicating user research learnings is a storytelling exercise. Don't stress about the format — focus on your narrative. <https://uxdesign.cc/communicating-user-research-learnings-is-a-storytelling-exercise-2c163e21058e>

## Step 2: Record some footage

### General tips

- **Film in well-lit areas.** Avoid dark rooms or filming in the late evening. Alternatively, use an external lighting source.
- **Avoid shaking the camera.** It is very hard to hold a camera completely steady, so try to avoid holding your camera if you can. Use a tripod, or rest your camera on a flat surface. If you do want to move the camera while filming, aim for smooth, slow movements.
- **Record from multiple angles.** Cutting from one angle to another is a really simple way to help keep your video interesting and your audience engaged.
- **Film longer than you need to.** Record for an additional 5–10 seconds before and after every shot. Longer video clips are easier to edit and blend together. Filming for longer will also help you avoid abrupt starts to dialogue and other scenes.
- **Get more footage than you need.** Film as many different scenes, and interview as many people, as you can. You won't not know what works until you try it. Once you have a catalogue of footage, you can choose the best clips that convey your story. Also, cutting to relevant footage while people talk (i.e. 'B-roll') helps reinforce what they are saying and can help hide your edits (see [Section on B-roll](#)).

## Interviews

Interviewing yourself and others is a great way to add dialogue to your video and communicate a story. When you hear the word 'interview', you might picture two people, sat on separate chairs, engaged in a formal, serious discussion. But this is not what we mean. Rather, the best interviews are relaxed and friendly, and can be as simple as you talking directly to your camera or asking a colleague some simple questions while filming their response.



**An interview does not have to be formal like it is in this picture.** Instead, try to keep it light, simple, and friendly. This will make your interviewee, and the audience watching, feel more relaxed.

## *Framing*

When filming your interviews, try to frame the shot so that you can see the person from above their shoulders to just above their head (i.e. 'head space'). Also, try to frame the shot so the person is slightly to middle-right or the middle-left of the frame, with lots of empty space on the other side (see the image below). This is known as 'looking room' and will give your interview a relaxed, friendly and natural feel. If there is not enough looking room, the shot will feel claustrophobic and off-balance. Alternatively, you could frame the shot so that the person is in the centre and talking directly to the camera. This is commonly used in live news broadcasting, or in corporate videos, where you want to talk directly to the public, employees, or prospective clients. However, it might be too intense for a fun, engaging video about your science research.



**Framing an interview shot.** The top image has been framed so that the person has looking room and head space, creating a relaxed, natural shot. In the middle image, the person does not have enough looking room or head space, creating an off-balanced, claustrophobic type of shot. In the bottom image, the person is looking and talking directly at the camera. This can work well in cases where you want to talk directly to the viewer, such as a corporate video made for prospective clients. However, this approach will likely be come across a bit too intense for a science video.

### *Interviewing someone else*

It is natural for people to become nervous when you point a camera at them. Cameras do this to people and it's your job to try and make them more relaxed. When filming an interview, ask the person to look and talk to you, not to the camera. This will feel much more natural and relaxed for them, and for your audience watching.

Ask some basic questions at first to help get them talking and feeling comfortable in front of the camera. For example, ask them what they had for breakfast, or what was the last movie they watched? If you are using an external microphone, this also gives you sometime to set up your sound levels. Following that, ask them for their name, position, and organisation. This continues to help them relax and you could include this footage in your video if you wanted to introduce them to audience to the e.g. "My name's Dr Andrews, and I'm a post doctoral research fellow at Dalhousie University".

Finally, ask them some questions to try and steer them towards answering the fundamental 'who, what, why and how?' questions described earlier (see [Section on planning your story](#)). Do not interrupt them as they answer. If they are "umm-ing" and "ahh-ing", or taking big pauses between sentences, you can edit those parts out to make their answer more concise and polished. If you tell them this, it may help them relax even more as they do not have to come across like a professional. Instead, that will be your job later when you edit the footage.

### *Interviewing yourself*

Paradoxically, interviewing yourself can be much harder than interviewing someone else. You might be surprised at how nervous, flustered and frustrated you become once the camera starts rolling. Also, as you know you can film countless re-takes, you might spend a really long time trying to get it perfect. However, interviews are never perfect and are best when the person comes across like they are talking naturally, not to a camera. Some tips for interviewing yourself include:

- Do not learn a script or read from a prompt! If you do, it will be very noticeable to the audience, and will come across as odd, wooden, and robotic.
- Instead, have a general idea of what you want to say and ad-lib around it. This will come across much more natural and conversational.
- Smile, be loud and confident. Convey your enthusiasm for your research. This will engage your audience a lot more than if you were to talk in a monotone voice.
- Perhaps try asking a friend or colleague to interview you with their own set of questions. This should create similar results to the interviews you conducted on others.

### *Using B-roll to reinforce the story and hide edits*

B-roll is when the main shot is interspersed with additional and relevant footage. It is a very common technique and helps to reinforce the main story, and hide any obvious video edits. For example, imagine you are watching a news story featuring a 30 second interview with a football player. As the player talks, you are shown some clips of them playing football. This B-roll is relevant to the main story and reinforces that the person talking is indeed a football player. Also, it is highly likely that the football player did not pull off a flawless 30 second interview. Rather,

the film maker would have interviewed them for much longer and is showing the audience the best parts. Hence, they are using the B-roll to help hide their edits and make the different clips appear as be one smooth and concise interview.

The aquaculture research group at Dalhousie University recently made a well edited research video that makes good use of B-roll footage:

<https://www.youtube.com/watch?v=FDiqS6VcP8Q>

The video begins with some music and footage of nice scenery. A researcher's voice then says "aquaculture is growing **animals** and **plants** in the ocean". When they say "**animals**", we are shown a clip of some fish in a tank. When they say "**plants**" we are shown seaweed being harvested. The visual clips are supporting what the person is saying, reinforcing the story. Shortly after, a second researcher begins talking and the video is interspersed with more relevant video clips. This B-roll footage is hiding edits made to the interview resulting in a clear, smooth, concise, and engaging research video.

### *Lighting and skin tone*

During interviews, you need to pay very close attention to the quality of sound and lighting. If the person is poorly illuminated, or the lighting has given their skin an unnatural colour (e.g. blueish or reddish), it is going to be much more noticeable than if you were filming an inanimate object.



**Pay close attention to lighting and skin tone during interviews.** Poor lighting can result in gloomy pictures (left) or unnatural looking skin tone (right). This is slightly more forgivable for the filming of inanimate objects, but for people it can be much more noticeable.

### *Avoid background noise and wind during dialogue*

If you are filming in a location that is echoey, windy, or with a lot of background noise (e.g. traffic, boats, computer fans), then the audience are going to struggle to hear exactly what the person is saying. A great hack to remove wind noise is to buy or make your own [windscreen](#). To make one, try cutting a dish sponge, a sock or something furry, and taping it over the microphone. Easy! If you cannot avoid wind and background noise, try adding subtitles (see [Section on subtitles and text](#)) like this research video did, which was filmed on a loud research vessel on a windy day: <https://www.youtube.com/watch?v=oJM8Mz7jSal>

## Step 3: Video editing

### Filming in a single take: an option to avoid video editing

The simplest option for making a research video is to try and film everything in a single take without any video editing. However, it is nearly impossible to create a professional and polished looking piece using this approach because you would not be able to: edit out long pauses, or any “umms” and “ahhs”; cut between multiple angles and video clips; add music or narration; or alter the brightness, colour, or the sound. These are the touches that will make your video look great, and keep your audience engaged and interested.

Nonetheless, Dr Bryce Stewart, of the University of York, provides a good example of a single take research video: <https://www.youtube.com/watch?v=ScaKsDJ2crw>

Bryce keeps the video interesting by explaining how he does some of the lab work, using a scallop shell as a prop, and talking about the wider significance of his research. However, there are several elements he could have improved, including: using a tripod (the camera shakes continuously); an external microphone (you can hear the air conditioning in the background and his voice is just slightly too quiet); moving the camera closer to the scallop rather than using the zoom function on the camera (resulting in a very grainy pixelated image).

### How video editing can improve your video

Instead of filming in a single take, video editing allows you to:

- Record multiple interviews, scenes and angles and stick them together.
- Edit out “umms”, “ahhs”, long pauses and help cut down long interviews into something more concise and easily understood by the audience.
- Intersperse the main shot with relevant B-roll footage (see [Section on B-roll](#)).
- Add narration (see [Section on narration](#)).
- Add music (see [Section on music](#)).
- Add subtitles and other text (see [Section on text and subtitles](#)).
- Alter brightness, contrast, colour saturation, colour tone, volume etc.

### Choosing your editing software

Which editing software you use depends on what resources you have available, and how much creative control you want over your video. The simplest editing software will allow you to stick multiple clips together. More advanced software will allow you to overlay multiple audio clips (e.g. music, narration, and interviews), add subtitles, and alter the settings of your video and audio files (e.g. volume, brightness, contrast, colour). Some of the best editing software cost money (e.g. [Sony Vegas](#) and [Adobe Premiere Pro](#)). However, there are many great free options too, some of which are briefly reviewed in this section.

#### *iPhone / iPad / Mac*

If you are filming on your iPhone / iPad, or have access to a Mac computer, then you can use Apple’s free [iMovie software](#) to edit your video. This software has more limited capabilities on

the iPhone and is more advanced on the Mac. Either way, it is one of the simplest and most intuitive editing suites available, and offers an intermediate level of editing capabilities.

There are countless amazing video tutorials on YouTube about how to use iMovie, but see this video by Teacher's Tech to get you started: <https://www.youtube.com/watch?v=zR5USCibQZw>



Apples users have access to the free iMovie app. This software is widely regarded for being easy to use and intuitive. It offers intermediate editing capabilities.

### *Android phone*

Unfortunately, there are no free editing software suites that are as good as iMovie on Android phones. Instead, you are much better transferring your videos from your phone to a Windows or Mac computer for video editing. However, there are a wide range of editing apps on android cost < \$10, or are free for a limited time, or require you to pay to upgrade to use some premium features. See this list compiled by Android Authority for some of the best android apps: <https://www.androidauthority.com/best-video-editor-apps-android-716248/>

### *Windows*

There are countless video editing software suites available on windows, many of which are free: <https://www.oberlo.ca/blog/best-free-video-editing-software>.

Perhaps one of the simplest, but containing all the features that you probably need for a research video, is [OpenShot](#). It's also available on Mac and has more features than iMovie. See this tutorial by Jonathan Thomas to help get you started:

<https://www.youtube.com/watch?v=VE6awGSr22Q>



OpenShot is good alternative to iMovie. It is relatively easy to use and is packed full of many useful features. It is available on both Windows and Mac.

### *DaVinci Resolve*

[DaVinci Resolve](#) is one of the most powerful, free video editing suites available on both Windows and Mac. It is used by professionals around the world, so it may be too advanced and complex for your needs. However, if you have an interest in video editing and want to make more videos in the future, give it a go! See this fantastic and very in-depth tutorial by Jason Yadlovski to get you started: <https://www.youtube.com/watch?v=u-GzbvmTMn8>



DaVinci Resolve is one of the world's most powerful free editing suites. However, it is highly advanced and comes with a steep learning curve. It would probably not be worth your time learning to use this software if you are not planning on making more videos in the future.

## Video transitions

Video editing software offers hundreds of different effects which you can apply and use in your videos. However, the majority of these are going to be pretty useless unless you are purposefully

trying to make a dramatic, artistic or goofy research video. By far the most important effect you will need are video transitions. These simply allow you to move from one video clip to another. See this link for a very quick 30 second video on the most common video transitions: <https://www.youtube.com/watch?v=jDWmOg-N8wI>

### *Cuts*

Cuts are the simplest video transition and involve cutting from one clip straight into another without the use of any additional effects. Simple cuts are preferred in documentary making and news broadcasting as they do not distract the viewer, and do not invoke any emotion. If you are going for a clean, simple, professional research video, you should use simple cuts as your primary video transition.

### *Fades and dissolve*

Fades are when one video clip briefly fades to black, or fades to white, before revealing the next clip. Alternatively, the first clip can fade away, or 'dissolve', revealing the second clip underneath. Fades and dissolves are a great way to signify to the audience that there is going to be a change in topic but they should be used sparingly, not repeatedly. Whereas, overly long fades add a lot of emotion and drama to a video, which will probably be unsuitable for a short research video. You can also use fades on your audio clips to allow music or dialogue to gently increase or decrease in volume, allowing the audio to gently enter or leave the video.

### *Wipes and more*

Wipes are when the video peels away from one side of the screen to the other, revealing a second video clip underneath. Perhaps the most well-known examples are from the Star Wars series: [https://www.youtube.com/watch?v=cGqAu9gj\\_F0](https://www.youtube.com/watch?v=cGqAu9gj_F0). Wipes work well in Star Wars as they are light-hearted movies originally made in 1970's and 1980's. Unless you are going for a certain look, it may be best to avoid using wipes and any other unusual video transition effects.



**Wipes and other unusual video transitions are used extensively in Star Wars.** They help the audience know that the story is about to move location to a different character and setting. Unless you are a total Star Wars nut or retro TV enthusiast, it is probably best to leave wipes and other unusual video transition effects in the 1970's and 80's.

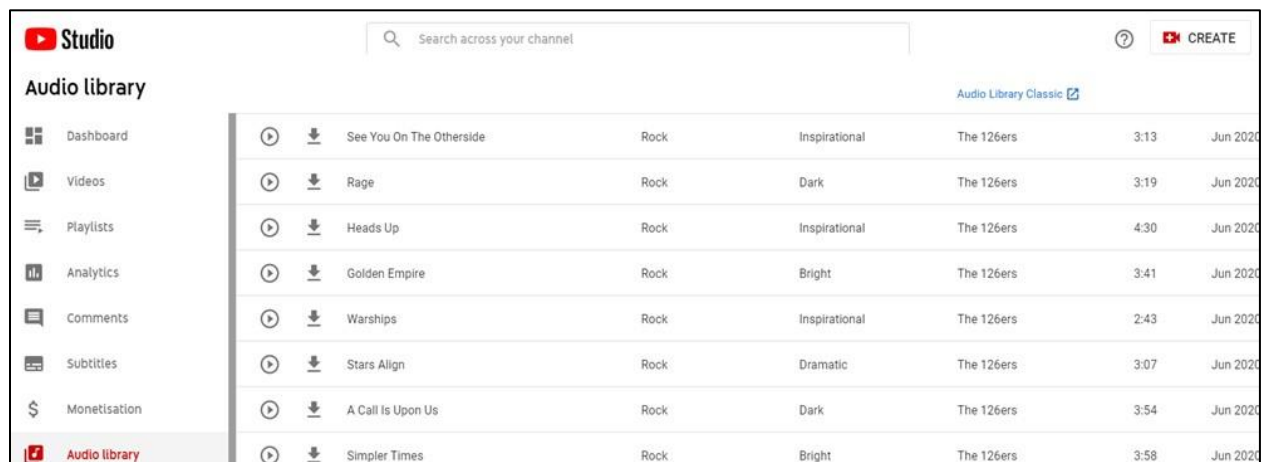
## Key editing principles

Poor editing can distract and confuse your audience, and make your video appear like a series of editing mistakes rather than a professional and polished piece. Video editing is an art-form that takes a lot of practice to master. However, there are some easy, fundamental video editing principles you can follow as explained in this quick 5-minute video by Motion Array Tutorials: <https://www.youtube.com/watch?v=yXcD4KVShO4>.

## Music

Music is one of the most powerful ways to make your video interesting and engaging. However, there are two rules you should follow:

**1) Only use royalty-free music!** You cannot use popular music for free. If you do, your video will be taken off YouTube and you could be in breach of copyright law. Fortunately, YouTube also has one of the largest royalty-free music catalogues, available for you to download and use for free: [www.youtube.com/audiolibrary](https://www.youtube.com/audiolibrary)



**Use royalty-free music only.** The YouTube Audio Library is full of different types of music, all of which are completely free to use. However, some may require you to acknowledge the music creator in your video description to in the video itself.

**2) Use appropriate music.** Choose music that matches the pace and emotion of your video, then edit your video to match the beat and pace of the music. For example, if you overlay fast, exciting techno music over some very long video clips of mountains and streams, it creates a disconnect between what the audience are watching and hearing. Instead, try to cut between clips at a pace that suits the music, and try to initiate the cut on the beat of the music for a truly professional feel. See this video (start at 2:40) for examples on how to do this: <https://youtu.be/t7OHvkQtaME?t=140> . Lastly, make sure the music is quiet enough to hear anyone talking in your video.

## Adding other media

### *Narration*

You could try adding a narrative voice over the top of your video to help unite your interviews and video clips together into a cohesive, unified story. To do this, you could record your voice using your phone or your computer. Alternatively, you could talk into your video camera and just use the audio. Regardless, it is very important to ensure there is no background noise otherwise it will be very noticeable whenever the narrator's voice appears. You may be surprised at just how noisy your computer, street or office can be.

### *Photos and images*

Is it not possible to go out and record your field- and lab-work for this video, but you do have some photos you could use instead? Or is there a graph or some other still visual media you would like to include in your video? You can easily add photos and other images to your video with editing software. You can choose how long the image appears for, and in most editing software, you can slowly zoom in or out of the image, or pan across it, which can add an element of movement to your video, helping to keep your audience engaged. If you do use images, make sure the image is high enough resolution, otherwise the image will be pixelated.

### *Text and subtitles*

Most editing software allow you to add text and subtitles to your video. However, make sure this is one of the last things you do, because you will need to make sure text transitions are timed with the video and dialogue. If you make everything perfect but then decide to make an edit later, it will change the timing of all your text and subtitles. Which can be very frustrating!

## Step 4: Submit your video

To submit your 2-minute research video, please send it to [meoparannualmeeting@meopar.ca](mailto:meoparannualmeeting@meopar.ca) using a file transfer system of your choice (e.g. Dropbox, OneDrive, We Transfer etc). Please try to ensure your video has an aspect ratio of 16:9 (i.e. widescreen), is as high resolution as possible (e.g. 1080p HD) and in a .MP4 format (i.e. the most popular format used on YouTube).