

Southeast Regional Coastal Monitoring Programme

Virtual Annual Review Meeting – Questions & Answer Transcript

All questions are anonymised. Direct questions are in standard text. Answers from the presenter or project team are in blue italics, wider discussion points from attendees are in black italics. If you have any additional questions, please feel free to contact the presenters directly using the contact details provided.

Session 1

Project Progress

Dr Charlie Thompson

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Website Update & Development

Sam Pitman

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Will we be able to query the 3D data regarding e.g. the elevation value? Also, will there be the opportunity to change the colour legend?

We have been trialling various different methods of visualising the data, so far these have all allowed basic querying of elevation value as well as changing colour legends. So it is likely that the final method we choose will allow this.

Hydrodynamics Update

Dr Thomas Dhoop

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With the upcoming changes to kelp in West Sussex and the mooted impacts of Kelp on waves inshore, are there any plans to coordinate installation of wave recording data closer inshore, e.g. wave REX on Bognor Worthing and Brighton Piers to capture data before kelp growth and throughout the development of the kelp beds?

If there is funding and need for it, the CCO would be happy to take that on.

Session 2

Decelerating Chalk Cliff Retreat Rates in East Sussex

Uwe Dornbusch

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How did you define the errors for each of your historic cliff lines? I noticed there were discrepancies dependent on the date.

There is discussion of errors in the historic paper. The column charts shows the average cliff retreat for each section based on 50 m segments. The whiskers on the column charts are one standard deviation of the rate based on the 50 segments.

Could the properties of the chalk be a variable? Was the former cliff fractured and weaker, so more prone to abrasion and frost damage?

Andrew, the chalk is consistent laterally into the cliff, however, if the Eemian cliff was not far seawards and given the periglacial environment during the Last Ice Age this cliff could have been more fractured than the chalk we see now, however, the cliffs were covered by quite thick slope deposits (especially if the cliff top slopes towards the sea). Looking at the profile through the Pre-Eemian cliff at Black Rock, I don't think this was much of an issue but certainly a possibility.

Observation from Peacehaven, February 2021. The cliffs experienced penetrating frosts causing spoiling. This autumn's rains in early October has caused material to again fall onto sea defences. Which has not been observed in my previous 13 years of visiting these cliffs.

The difference is between measurements and anecdotal observations. Back in the 2000s there were several undergraduate thesis at University of Sussex that had swept the promenade at Peacehaven over the winter to estimate the loss from subaerial weathering - always minute. As we know and can see the traces of the digger bucket teeth can still be seen in the Peacehaven cliff 40-50 years after they were created, so subaerial weathering is negligible.

When will the EA's guidance be available?

In the next few months is the best guess.

A fresh look at the UK's most closely monitored beach

Dominique Townsend

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Comprehensive National Coastal Monitoring in Trinidad & Tobago

Maritsa Harry

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Did you look for pebbles west of the White House at Milford?

Yes we did carry out some periodic surveys to the west of the White house and didn't find any pebbles along this part of the frontage. Interestingly it looked as if some of the pebbles headed west from Milford initially but were not recovered again.

How can you make any inferences with any confidence when recovery rates are very low? You cannot account for the results based on the pebbles you have not found again. When are we stopping these pretty, but pretty useless tracer experiments?

I think you're a little harsh in dismissing tracer studies, they're of incalculable value when explaining sediment movement to the great British public. Most of them think that beaches are static and stay the same from year to year. Unless they're at Pagham of course.

I agree, they might be useful for the public - but you can do this with painted pebbles.

We may not get many repeat hits of individual pebbled but we do deploy a lot of pebbles which makes it possible to establish their general behaviour. Whilst there are limitations, they are a really good tool to confirm our understanding of transport direction and are particularly powerful when combined with other research methods.

Thank you for your comment. We tend to vary the intensity of the surveys depending on the information that we are looking for. Agreed that the % retrieval rates tail off towards the end but this is relative to the number of pebbles initially deployed and still gives us really interesting results on transport pathways. This is important for us on heavily managed beaches such as Hayling and Hurst where this information is not always clear from difference plots alone.

I'm glad you see value in the studies. We tried the painted pebbles approach at Hill Head, although unfortunately members of the public picked them up and moved them. We also couldn't detect when they were buried in the beach. The RFID tags can be detected up to <1m beach depth.

Another benefit is as they are individually identifiable, you can add more pebbles or put in different locations without upsetting results.

Other comments: 1000 pebbles is the proverbial drop in the ocean. On most beaches surveys provide the best estimate of longshore transport because they are closed systems or can be calculated as such (unless one invokes some magic onshore-offshore transport that tracers do rarely address because of the even more prohibitive costs). So why do an expensive tracer deployment to confirm something you already know (because you can't quantify any further based on the poor retrieval rates). You don't even know how deep the pebbles are, i.e. whether you just look at surface movement or something in relation to the active layer. The only location one could justify tracer studies is on long beaches where you have no boundaries to close your budget (i.e. they work on sandy beaches but using a rather different method).

Obviously in an ideal world all pebbles would be tracked however as with all studies in the coastal environment it is often not practical or possible to do this and you are always going to be limited to a snapshot, however the use of multiple tools can help fill knowledge gaps and give an indication of the bigger picture. Transport rates based on surveys are equally limited (due to missing years, lack of

bathymetry etc.). Tracers is offer another tool in the arsenal that when combined with other approaches allow us to build up and evidence that bigger picture.

What do you do with the pebbles once you've found them? Do you return them or re-use them at new release sites?

We leave the pebbles in situ to hopefully help create longer term datasets, particularly if we are then able to re-survey at later dates. However if required we can look to relocate to help gain info on attrition rates for example.

Hi Sacha, any data on onshore offshore transport and are pebble sizes a factor?

We aren't currently able to infer onshore/offshore movement. We are only able to identify sites where retrieval rates are relatively lower which might indicate where we lose material offshore. We are able to identify potential drift divides and converge zones. We are currently trailing an acoustic method of subsea monitoring which could help us to understand these offshore/onshore movements in the nearshore zone. We will keep you posted!

Further to Sacha's work has anyone else done any sediment chemical fingerprinting? Sediment multi element chemical analysis used to trace sediment source and transport pathways. Provided us with some very useful data.

I'm not proud but I did get involved in the tail end of some radioactive tracers on seaweed early in my career but it's not something that we'd be allowed to do anymore.

I believe they have also used tracer pebbles at Thames Barrier to try and find out where pebbles which were getting stuck in the barrier were coming from. Not sure what the results were though I'm afraid!

The chemical fingerprinting analysis determines chemical composition of the sediment samples, comparison between samples taken at various source sites and along the frontage then allows interpretation of what's happening – does have limitations but no need for tracer pebbles etc.

But is this not for a rather different grain size than pebbles?

The tracer studies definitely work best when coupled with survey data as you say, in particular difference plots. We use the combined method for most of the beaches in the East Solent. Without the tracer studies, we struggle to identify transient drift divides and convergence zones from difference plots alone, as our beaches are so heavily managed. Sacha is investigating an acoustic tracer technique for monitoring pebble movements in the nearshore zone, for which we'll be hearing more on in the near future.

Very good presentation Sacha. This study has certainly improved our understanding of the site by providing an indication of sediment transport pathways and rates. It has provided evidence to back up / challenge established theories and complements the regional monitoring data very well. The information will assist to future BMP update as well as providing an important visualisation tool which is seen as extremely beneficial for the purposes of engagement, especially with local resident groups.

What is the rough cost for producing the tracer pebbles? (Not including deployment and monitoring)

The costs will vary depending on the type of survey, number of pebbles required, the site location etc. There is a lot to consider! But please feel free to contact me and I can provide you with some examples from previous successful studies.

MMO Marine Planning

Lucinda Robinson

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This presentation by Lucinda reinforces the importance of the MMO being involved in our SMPPR process.

Lucinda. How and who do we need to be in contact with to ensure that the MMO inputs into the Shoreline Management Plan Refresh at a regional level?

I believe the MMO have attended the SMP Management Groups for the three SMPs in the Southern Coastal Group area.

Yes, please reach out to your local coastal planner or the general marine planning email address. The local planners would be the best point of contact for input at the regional level.

Free software packages to view and analyse CCO monitoring data; QGIS, SANDS Free, PoinTools & CoastalTools

Adam Baker Gooderson

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Intertidal topography from space – collaborating with the research community to develop practical solutions

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Can you validate the data for standing water from paddling pools in the local area, as there are in Portsmouth/Southsea area. The owner (possibly Portsmouth Council) may well be able to tell you the likely levels at the time/month of interest.

Thanks for that idea - we need pixels that wet and dry rather than stay wet all the time for the method to work.

A pool I had to manage was wet and dry often for various reasons, vandalism, dosing, closing, so may well be enough for the method. Might be worth asking the owner?

Are you saying that, at present, Earth Observation gives a reasonable indicator but, to be sure, use Lidar and other direct survey methods? How far off are we from being able to rely on Earth Observation for our coastal monitoring programmes without having to ground truth?

Short answer is that EO is complementary and not yet suitable for use without ground truth!