



Meeting Minutes	
<b>Subject</b>	Coastal Change: Progress Meeting #1
<b>Date</b>	7th June 2019
<b>Minute Taker:</b>	Emily Peart
<b>Agenda:</b>	<b>Attendees:</b>
<ul style="list-style-type: none"> <li>1) Introduction</li> <li>2) Living Planet Symposium feedback</li> <li>3) Project Plan</li> <li>4) End-User requirements document</li> <li>5) Update of EO data products</li> <li>6) Project Website</li> <li>7) Any other business</li> </ul>	<ul style="list-style-type: none"> <li>Mark Hennen (<b>MH</b>)</li> <li>Mark Hallows (<b>MHa</b>)</li> <li>Craig Jacobs (<b>CJ</b>)</li> <li>Camillie Pinet (<b>CP</b>)</li> <li>Emily Peart (<b>EP</b>)</li> <li>Andreas Payo Garcia (<b>APG</b>)</li> <li>Jara Martinez Sanchez (<b>JMS</b>)</li> <li>Mark Pattle (<b>MP</b>)</li> <li>Albert Garcia (<b>AG</b>)</li> <li>Martin Jones (<b>MJ</b>)</li> <li>Xavier Monteys (<b>XM</b>)</li> <li>Silvia Caloca (<b>SC</b>)</li> <li>Raul Medina (<b>RM</b>)</li> </ul>

## 1. Introduction

**MH** – Thanked attendees for attending the meeting. Informed that it was the first official progress meeting. Delivered agenda.

## 2. Living Planet Symposium (LPS) Feedback

**MH** – Informed that the presentation was well received and generated a lot of positive feedback and interest. Discussed being approached by Emmanuel Mondon from Digital Globe and asked to present at ENGAGE, 18<sup>th</sup>-19<sup>th</sup> June, Barcelona, showcasing the waterline application being used on WorldView-2 (WV2) data. Mentioned Flood and Coast Conference.

**MJ** – Commented that it seemed to be more flood then coastal erosion but asked if BGS will be sending anyone who can collect information and potentially report back.

**MH** – Asked **APG** if he or anyone else from BGS was attending Flood and Coast.

**APG** was suffering from technical issues and could not respond.

**MJ** – Suggested forwarding the email to **APG** to discuss further.

**ACTION:** **MH** to forward emailing regarding Flood and Coast Conference to **APG**.

**MH** - Asked others if there were any other conferences the consortium could attend or send representatives to about Coastal Erosion. No answers. Asked partners to email if they do know of any, or if they come across any conferences that could be attended by the consortium. Commented that in comparison to the other Coastal Erosion consortium, we had generated results and they had not. Thanked team for being able to produce results in such a short amount of time. Asked others if they had any feedback from LPS. No answers. Asked that if anyone has comments to email **MH** for distribution.

### 3. Project Plan

**MH** – Commented that at end of KO+2, moving into KO+3 (June). Discusses project plan.

### 4. End-user Requirement Document

**MH** - Asked **APG** for a Requirements Baseline Document update (RBD).

**APG** – Discussed RBD. Commented that the document contains around 50 defined products but a lot of the time it is the same product for many different locations, so the document needs to be streamlined to account for this. Added that a meeting will be organised to streamline the document.

**MH** – Agreed that there is a lot of commonality between all of the different products.

**APG** – Informed that the aim is to create a more readable document with well-defined products, then distribute master document for review. Informed that version 1 of the RBD is slightly delayed but assured that the document will be delivered on time.

**MH** – Commented that the functional analysis (FA) and value engineering (VE) are also needed for the RBD and that can begin when the BGS' version of the requirements has been submitted. Suggested **APG** could consolidate all of the user requirements after that and ARGANS could begin work on the FA and VE, the sections can then be brought together at the beginning of KO+4 (July). Commented that the final document needs to be representative of all partners and all partners should be happy with the document.

**XM** – Commented that there is a lot of parallelism between the products from all of the partners so a face to face meeting with representatives from all of the partners and ARGANS would help streamline the document.

**MH** – Agreed. Asked where the meeting could be held as the consortium is international.





**XM** – Suggested ARCTUS could webex in. Reiterated the importance of having a face to face meeting to streamline the document.

**APG** – Agreed that it is a good idea and added that BGS is happy to host and pay for one representative to visit BGS. Commented that it isn't feasible to open the RBD up to the wider end user community but their opinions should still be considered and they should still be engaged. Questioned who should be engaged at this stage in the project and how, but commented that the sooner they are approached the better. Reiterated that BGS is happy to host a meeting and will email to find the best dates for everyone.

**ACTION: APG** to email **all partners** to organise a face to face meeting to discuss the streamlining of the RBD.

**MH** - Requirement Baseline Document due at the end of August. Recommended holding the meeting by the end of July to give sufficient time to synthesise the final document

**CORRECTION: The RBD is due at the end of KO+4 (July), the face to face meeting should be held by the beginning of July.**

**APG** – Agreed.

**MH** – Thanked **APG** for hosting and paying for travel. Discussed feasibility study phase of the project plan and going forward into production of a time series. Commented that ARGANS will still be needing more data from partners. Discussed testing phase of the project, including validation protocols and acceptance tests. Asked if any questions. No questions.

## 5. Update of EO data products.

**MH** – Discussed working with Digital Globe, working with the WV3 data and preparing for Engage. Commented that the project always planned to use VHR data, so working with VHR data at this stage is a positive. Discussed the data received thus far, including type, resolution and issues found so far. Thanked **XM** for worldview data provided by GSI. Showed Sentinel-2 (S2) waterline and then WV2 waterline and discussed differences between the two.

**MHa** – Informed partners on the current data processing times and planned improvements.

**MH** – Continued to show comparison Barcelona S2 and WV2 images. Commented that now the processor is fully developed the team will be building a time series for the ENGAGE conference.

**XM** – Commented that the WV2 data will add another level to analysis and that if the processor works for WV2 it will work for S2. Asked if the WV2 data will be made available to partners.



**CJ** – Answered that the data was given to ARGANS for R&D, not commercial use but will check.

**ACTION: CJ** to contact DigitalGlobe about distribution of data products to consortium partners.

**XM** – Reminded that GSI is not commercial. Interested in having a full inventory of the data and if they can have access to the data for related projects.

**RM** – Asked if ESA is happy with the consortium using WV3.

**MH** – Answered that ESA didn't specify just Sentinel data and they have VHR data in their archive so that isn't a problem from their side of things. Continued that promoting Sentinel data is good for them but they also want to promote their archive and how EO data copes tracking 25 years of change.

**CJ** – Agreed.

**XM** – Confirmed that in the tender they specified archive data so the project has to use VHR data.

**MH** – Added that ARGANS has also received data from WV3, IKONOS and Quickbird, with images dated as far back as the 1990s.

**XM** – Discussed how this historical VHR data will enhance the products, aid vector extraction and emphasise innovation.

**MH** – Commented that it has to kept in mind that the temporal resolution won't be as good as S2 and S2 will still be the 'bread and butter' of the project, but the VHR data will provide useful validation for the S2 data.

**MP** – Presented work on SAR waterlines, including:

- Using Sentinel GRD files.
- Application of denoising algorithms.
- Using a marching square algorithm to vectorise the images and remove aliasing.
- Application of a Gaussian Blur.
- Interpolation of vectors to geodetic coordinates.
- Showed results of Start Bay and Barcelona.
- Discussed difficulties with noise from metallic reflections but assured they could be improved.

**MH** – In response to a large amount of speckle seen in the near shore area of the image, asked if the image was taken during cloudy conditions, could rain be affecting the image.

**MP** – Answered that unsure but possible.



**MH** – Commented that a plus of SAR data is that we can still get images during cloudy conditions. Commented that the results look very promising for the SAR data.

**RM** – Commented about the image orientation (a mirror image, due to the data being produced by the reflection of emitted C-Band microwave pulse).

**MP** – Answered that in terms of processing the orientation doesn't matter and at the end they are interpolated and the geodetic coordinates corrects the orientation (pre-processing).

**RM** – Reiterated that if SAR data is going to be presented in Barcelona, the images need to be georeferenced properly.

**MP** – Assured that this can be done if needed.

**MH** – Asked if **MP** has any issues with co-registration.

**MP** – Answered that the results seem okay but no statistical analysis has been undertaken yet, this will happen in the future. Reiterated happiness with results so far.

**MH** – Commented that S2 co-registering and georeferencing has always been good but as WV2 is a different data set it is a little different so it has to be co-registered onto the S2 data. Stressed that co-registering means any changes in waterlines won't be caused simply by the use of two different data sets. Reiterated that the results look good and that the next step is to co-register the data so everyone can be sure that it is the waterline moving, not movement caused by the difference between satellite orientations. Asked any questions.

**XM** – Asked should we be comparing the SAR and optical waterlines now to address future problems.

**MH** – Answered that a key part of the feasibility study is to compare products as soon as possible to make sure that they're working together properly. Added that data set comparison will begin within the next month.

**XM** – Suggested beginning testing different tidal regimes such as the north latitudes.

**MH** – Agreed and explained reasoning behind sticking to Start Bay and Barcelona case studies but assured testing on other environments will begin in the future.

**XM** – Agreed, but informed that the use of SAR data in areas with high cloud cover was specifically mentioned during the ESA Kick Off. Added that it was something the ESA Technical Officer was very interested in answering so it should be covered by the end of Phase 1.



**MH** – Commented that the list of study sites have been circulated and by the end of Phase 1 we will have produced results for all of the study sites. Added that this will also fill the requirement to cover 200km from all of the four countries.

**APG** – Asked about satellite derived bathymetry (SDB).

**MH** – Answered that ARGANS are working on it but with the recent acquisition of VHR data, the focus has been on downloading the data and preparing the processor for the VHR data but assured it is on the list. Reiterated that in the next month after seeing the RBD, ARGANS can plan what's happening with the products going forward. Thanked **MP**.

**AG** – Presented SAR de-noising methods:

- Showed images of Start Bay without denoising and with various denoising filters.
- Discussed issues with 'bright' artefacts using Barcelona port as example.
- Showed groynes causing bright spots on the images and affecting the waterline

**MH** – Commented that as the groynes are at a right angle to the beach it causes a double bounce reflection, creating a large SAR return.

**AG** - Agreed at it affects the signal, and when removal is attempted the process also removes information related to the waterline.

**MH** – Commented that it would be interesting to create a time series and compare one SAR image to another and see if the same noise pattern is present so it can be subtracted.

**AG** – Suggested a way to deal with this issue could be to avoid using SAR data in areas with coastal defences such as groynes as you can't see any evolution from the sediment, so flag them as unusable. Concluded presentation.

**APG** – Asked if it would be useful to provide **AG** with ancillary data regarding the groynes.

**AG** – Answered yes, useful for optical and SAR processors and for comparison between areas where groynes are and are not present. Reiterated that it is difficult to develop a method to remove them from the SAR image.

**APG** – Suggested that as the groynes are in a fixed location so a weighted average could be used. Reiterated that it will be very easy to provide ancillary data.

**AG** – Repeated that ancillary data is very welcome. Added that it could be incorporated to aid processor improvement and for validation purposes.

**ACTION: APG** to send **AG** UK groyne ancillary data.



**APG** – Commented that there are groynes all around the UK so being able to correct for them is important.

**MH** – Asked if there were any questions. No questions.

## 6. Website

**MH** – Showed website to partners. Commented that information is needed from the partners for the case studies profiles and that eventually it will be a portal for end users to collect data from. Asked if any comments.

**XM** – Commented that when the case study map is zoomed out the case study button for Dublin sits over Northern Ireland.

**MH** – Reassured **XM** that this will be changed.

## 7. Future meetings and AOB.

**MH** – Informed that minutes will be circulated for approval and a doodle poll will be circulated to organise the next progress meeting.

**ACTION: MH** circulate meeting minutes.

**ACTION: MH** circulate doodle poll to organise Progress Meeting #2.

**XM** – Informed that he will need to know at least one month in advance for August.

**MH** – Commented that the poll will be sent either that day or early next week, partners are to answer by end of the next week to give plenty of advanced notice.

**APG** – Confirmed the progress meeting is a different meeting to the RBD meeting.

**MH** – Asked if ESA should attend RBD meeting.

**APG** – Answered no, just end users.

**MH** – Commented that a few partners will be attending ENGAGE so he will see them then as well as providing feedback about the conference at next the meeting, and if available, circulate a video link for the presentation. Thanked all for attending.



## End of meeting.

### Summary of Actions:

- **MH** to forward emailing regarding Flood and Coast Conference to **APG**.
- **APG** to email **all partners** to organise a face to face meeting to discuss the streamlining of the RBD.
- **CJ** to contact DigitalGlobe about distribution of data products to consortium partners.
- **APG** to send **AG** UK groyne ancillary data.
- **MH** circulate meeting minutes.
- **MH** circulate doodle poll to organise Progress Meeting #2.

