BSWG Meeting, GeoHab 2014, May 6th

Start 6:20 pm

End 8:00 pm

Notes taken by: E. Heffron

Draft document for discussion: http://tinyurl.com/BSWGDraft

Note: Presentation was given to all of GeoHab as part of 6th May Acoustic Backscatter session. Please see BSWG_OneYearReport_GeoHab2014_XL-GL.pdf in the Dropbox folder or download from http://tinyurl.com/BSWG-OneYearSummary .

Attendees:

Name	Affiliation
Thomas Meurling	Teledyne-Reson
Lindsay Gee	QPS
Martin Gutowski	Kongsberg
Geir Skogen	Kongsberg
James Daniell	James Cook
Gary Greene	MLML
Jens Steenstrup	R2Sonic
Jacob Van Oostrom	R2Sonic
Kim Picard	Geoscience Australia
Toby Jarvis	Echoview
Justy Siwabessy	Geoscience Australia
Iain Parnum	Curtin University
Robin Beaman	James Cook University
Tim Le Bas	NOC Southampton
Markus Diesing	CEFAS
Rozaimi Che Hasan	UTM
Francis Freire	Stockholm University
Valerie Bellec	NGU
Margaret Dolan	NGU
Vera Van Lancker	RBINS
Silvia Ceramicola	OGS
Veerle Huvenne	NOC
Francesco Mascioli	NLWKN
Boris Radosavljevic	AWI
Alan Jordan	NSW Fisheries
Elizabeth Johnstone	SIO
Daniel Ierodiaconou	Deakin
Sophie Barton	Victoria University/NIWA
Chris McGonigle	University of Ulster
Doug Bergersen	Acoustic Imaging

Chairing Group:

Geoffroy Lamarche - NIWA, editor

Xavier Lurton – IFREMER, editor

Craig Brown – NSCC, Chapter 4

Vanessa Lucieer – IMAS, Chapter 3

Glen Rice- NOAA, Chapter 5

Alexandre Schimel – Deakin University, Chapter 6

Erin Heffron – QPS, glossary/references/etc.

Jonathan Beaudoin – Not formally part of Chairing Group. Formerly UNH, currently QPS; major author on Chapter 6.

Meeting Minutes

1. **Welcome, items to add to agenda:**
   - Nothing to add
2. **Update on outline**
   - Coordinators to give update on each chapter; see presentation for summary slides
     - Chapter 2: X. Lurton on behalf of Tom Weber
       - See presentation for summary of content, chapter standing.
       - Feels chapter is on target as far as level/accessibility
       - Missing: all examples, etc. deal with ideal seafloors; should also be interested in sparse scatters, vegetation, non-sediment (rocks, boulders, etc.)
       - Missing: Documentation of BS magnitudes vs. seafloor type – not easily available in literature, gathering it here would be of value
       - Missing: Discussion on inversion – how far can we invert and get objective info from backscatter
       - Additional contributors would be appreciated
       - No comments from attendees/chairing group
     - Chapter 3: V. Lucieer
       - See presentation for summary of content, chapter standing.
       - How to structure was a stumbling block
       - General concept for chapter: How BS has been used in the past, what has improved, how we can use BS in innovative ways going forward
       - Decision to make two general categories of user type:
         - Mapping for discovery
         - Mapping for environmental monitoring
       - Processing level definition: Difficult to avoid entering the world of classification.

- Discussion on resolution and backscatter mapping scales – still quite a hot topic. Generally decided to lay out where we are and where we want to go without capping things – general feeling that we shouldn't be deciding what people might use the backscatter for.
- Field Data images: completely stuck there.
- Attendee/Chairing Group Comments:
    - Tim LeBas: Chapter can use an intro paragraph explain who the user is, expected level of understanding. *(VL: the backscatter user)*
    - Lindsay Gee: Questions idea of monitoring vs. discovery – many users expect stability and accuracy in what we would be considering "discovery" mapping. *(VL response: We need some way to split out the user with dedicated/understood/documented survey – calibration, good dB values, etc. – vs. those working with archive data with little or no metadata, so that we can define expectations).*
    - Doug Bergersen: "Discovery" reminds him of sidescan terminology; in sidescan they differentiate between "search" and "survey". We may want consider a further distinction like that in "discovery".
    - Craig Brown: Comment regarding multiple systems, wanting to use to generate multiple surveys
    - Iain Parnum: Compilation of applications of backscatter from the literature? *(VL response: Too small a sample size; many articles working with BS collected as bi-product).*
    - X. Lurton: The example in mind for this document was to do something similar to what has been done in the radar/satellite imagery world – defined a number of standards, processing levels, expected performance of data as far as accuracy/resolution per community of users. That situation is a bit simpler (one system for thousands of users), but goals are similar to define groups and technical needs, and we should aim for this.
    - Gary Greene: As a longtime user of sidescan and backscatter, he just wants to hear how this is going to make things easier.
- Strong interest from attendees for this chapter, BSWG chapter organizers will make an effort to reach out to commenters for input on Chapter 3.

- Chapter 4: Craig Brown
    - See presentation for summary of content, chapter standing.
    - Val Schmidt (UNH) and Mashkoor Malik (NOAA) did a significant amount of authorship
    - Circulated to group and sonar manufacturers, response was that info was fairly generalized but no major complaints.
    - Issue of calibration is being bounced around in multiple chapters, authors are not satisfied with this yet and need more input.

- Still need significant input from R2Sonic, Klein, Edgetech – others?
- Information is useful and helpful if you take time to work through it. An extremely valuable by-product of the process had been the linking up of sonar manufacturers, software providers, and end users.
- Attendee/Chairing Group Comments:
    - L. Gee: Appreciates the summary table at the end of this chapter and feels other sections would be improved with something similar. From user point of view you want to easily access the summary. What is actually happening with each system and how we summarize it is what will make it useful to non-scientist; their use of the document will depend on the summary.
    - G. Lamarche: What we discussed creating was a set of guidelines and recommendations, let's keep that in mind.
    - Jens Steenstrup: Seems to be missing effect of focusing at transmission; if you are doing focusing on the seafloor it has a strong effect. *(XL response: Thought it was mentioned elsewhere, if not it should be addressed; GR response: Addressed in Chapter 5)*

- Chapter 5: Glen Rice
    - See presentation for summary of content, chapter standing.
    - A lot to struggle with in this chapter.
        - Got very stuck on calibration issue, has a lot to do with properties of individual multibeam. Some calibration discussion belongs there, some may not.
        - A lot of differences in backscatter depending on system.
        - The variety of options makes it difficult.
    - Attendee/Chairing Group Comments:
        - Erin Heffron: Feels the chapter as-is it is too general, need to get into per-system information (*GR response: there are a lot of options. Have to have some generality. We are trying to create a more informed community, not just a look-up table)*.
        - Tim LeBas: A best set-up guide would make the document much more used and useful.
        - G. Lamarche: *RE set-up guide* -- Could be added if we have a volunteer to write it, task T. LeBas to explore the idea.
        - L. Gee: Should the authors define a level of user they expect? Is the goal to create a general guideline for backscatter and leave the task of detailed information (sonar, acquisition software, etc.) to someone else?
        - G. Rice: He thinks there are sections that we can direct this section towards; feels it is important not to lose sight of making users life better in short term but also provide information to improve procedures and

results in the long term. Difficult to draw the line where to stop, and perhaps we can decide to point users to different resources or sections for set-up, etc.

- J. Steenstrup: There is a difference in survey procedures when optimizing for hydro vs. backscatter, this should be discussed.

- Chapter 6: Alexandre Schimel
  - See presentation for summary of content, chapter standing.
  - Goal is to define some level of consistency in processing between different processing routines/products. A starting point for those trying to get something beyond a mosaic.
  - Goal to provide one reference document where anyone trying to do processing can start without re-digging through all of the literature and manuals.
  - There is a lot of software and that is fine, but we should be able to have some level of comparability.
  - Proposing three standard datasets as standard datasets for comparison tests: Stanton Bank, Discovery Bay, Refuge Cove – all three have good ground truth data.
  - Attendee/Chairing Group Comments:
    - L. Gee: Agrees that we want standardization of some result OR we want to know why they are different. Regarding the suggestion for standard datasets, he is concerned with the age, lack of metadata, lack of information on acquisition for the proposed datasets. Would propose working with the Shallow Survey 2015 committee – there is time to have input into what id collected and how it is documented, current dataset, better mix of manufacturers.
    - G. Lamarche: *RE standard dataset* -- Waiting for that dataset and working with all of the software proposed will create a lot of work and impact the timeline for this document.
    - J. Beaudoin: *RE standard dataset* -- A good idea, but not yet. The software is not there yet; software manufacturers don't yet know what the problems are that they are seeing. We should start the process with software – unit tests – and go from there. There are still too many moving parts that we don't understand and believes it will be better if we break this into smaller bits.
    - I. Parnum: Implementation of pulse width: good for bathy, problematic with backscatter. Discussion of this has a place in the document, but perhaps more applicable to acquisition?
    - J. Beaudoin: *RE pulse width* – anecdotes/tribal knowledge definitely have their place.
    - G. Rice: *RE pulse width* – needs discussion earlier, perhaps Chapter 4.

3. **Watercolumn: To address/not address**

- General feeling of editors is that we should not address watercolumn as a separate concept in this document.
- Attendee/Chairing Group Comments:
    - Danilel Ierodiaconou: If we choose not to address it, will we regret that decision in 10 years? From habitat mapping perspective he is GOING to be very interested in using the watercolumn data.
    - J. Steenstrup: From the sonar perspective, they are the same thing if sonar is calibrated.
    - G. Greene: Agrees with Jens.
    - G. Lamarche: Avoid a separate chapter. Sections within existing chapters would be fine but doesn't think we should break it out.
    - I. Parnum: Feels it would be worthwhile and is happy to take on coordination/authorship. Future proofing of document.
    - X. Lurton: Study Group on Calibration (of the ICES International Council for Exploration of the Sea) issued recently their draft report about Acoustic Instruments calibration (Tom Weber and Xavier Lurton co-authors). This is about fisheries echosounders, so it covers the issue of sonar calibration for water-column applications (although the operation of seafloor-mapping MBES for water-column has some specificities re fisheries sounders). It is of no use to duplicate such a work.
    - Margaret Dolan: I think it is important to keep something in about watercolumn.
    - G. Rice: Agrees that it is important and should be addressed in the long term but we just aren't there yet.
    - Summary (G. Lamarche, X. Lurton): We could address similarities throughout the document, but avoid a separate chapter. Discussion continues, however GL/XL resolved that sections within existing chapters would be fine but not an extended break-out for now.

4. **Gaps and Overlaps:**
    - Based on shortness of time, we decided to skip this discussion. Please send comments on this directly to the chapter coordinators or to Erin Heffron (heffron@qps-us.com) who will pass information to appropriate authors or the editors.
5. **Publication format:**
    - A PDF on the GeoHab website would be the easiest option, but may not give justice to document.
    - Ideas: Contact the IHO (International Hydrographic Organization) regarding publishing, rubber stamp of approval, publish through GeoHab?
    - Attendee/Chairing Group Comments:
        - G. Greene: This is setting up to be a significant document and the major players are involved, adding to its value. Probably should be published through an organization, and there are several options – AGU, others
        - Markus Diesing: Understands need for creditability and cite-ability but if it is something that costs it will prevent people from getting a hold of it and limit the use.

    - G. Lamarche: Free/open source will cost GeoHab in the loss of a potential publication.
    - L. Gee: Why IHO? Concerned that we are considering IHO – the BSWG group is doing a great job and it may be disappointing to hand it to IHO when they are not currently really interested in backscatter.
    - X. Lurton: *RE IHO publication* – established network, a means of document publication, wide diffusion, official aspect to the results, strong interest from hydro community, and it may be important for government and research groups to have it "officialized".
- Summary: G. Lamarche to review options and report back

6. Authorship:

- Suggest that we give chapter coordinator(s) lead authorship. No comments/disagreement expressed.
- The current participating constructors are Kongsberg Maritime/GeoAcoustics, Reson, and R2Sonic. Anticipate participation from a few others. As an expectation of participation, they agree to provide technical information, control the document for accuracy and confidentiality. In return, they will have complete and free access to the working group results, including competitor contributions. Any comments?
    - L. Gee: This extends to software manufacturers. Intellectual property will have to be formerly transferred.
    - No further comments, understood.
- Need to spread the word. Editors to place 3-5 slide presentation on the Dropbox that working group members are encouraged to use anywhere as part of presentations to promote the group

7. More authors:

- We need more active authorship/contributions, not just editing/commenting. Please contact lead author.
- Attendee/Chairing Group Comments:
    - G. Greene: Happy to share data and illustrations.
    - Vera Van Lancker: Habitat signature catalog made for MESH Atlantic as a resource.
    - Alan Jordan: We really need more end user engagement – can we identify people to push this as regional level? Suspect that it will take more than 3-4 slides.

8. Schedule:

- Please get comments to lead authors with goal of having them in document for improved draft by July, 2nd draft Christmas.